

**Michigan Department of Environment, Great Lakes, and Energy  
Drinking Water and Environmental Health Division**

# **CAPACITY DEVELOPMENT REPORT TO THE GOVERNOR 2020**

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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 supplies 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 Gretchen Whitmer the effectiveness of Michigan's capacity development strategy as managed by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for fiscal years (FY) 2017-2019. Each state risks losing 20 percent of the annual Drinking Water State Revolving Fund (DWSRF) allotment if it does not submit a report to its governor by September 30 of every third year and 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, system planning, and asset management. As a result, the strategy to help supplies maintain technical, managerial, and financial (TMF) capacity is a reflection of our long-standing tradition of providing technical assistance.

As a result of an effective strategy, new public water supplies are demonstrating adequate capacity before they begin serving water to the public, and existing supplies are continuing to enhance and maintain capacity. A strong emphasis on assistance has moved supplies toward enhanced capacity.

Supplies with adequate TMF capacity typically maintain high rates of compliance with health-based standards. Additionally, supplies use a multibarrier approach to provide safe water to the public. A multibarrier approach 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 and installation 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.

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

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

committed over \$1.1 billion in low-interest loans for 301 projects to construct, upgrade, and replace infrastructure.

- Relationship with EGLE district staff: Water system operators maintain a relationship with district staff who are the primary contact with water supplies for capacity development. A prime objective of the district 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 supply's operation.
- Source Water Protection: More supplies are taking steps to protect their drinking water sources.
  - Federal funding for Wellhead Protection Programs (WHPP) is available through the DWSRF for supplies using groundwater. Under the sponsorship of EGLE, Michigan State University's Department of Civil and Environmental Engineering developed a modeling tool for mapping Michigan's Wellhead Protection Areas (WHPA). The Michigan Groundwater Management Tool (MGMT) makes systematic and intelligent use of statewide groundwater-related data to develop a WHPA. EGLE uses the MGMT to delineate WHPAs at no cost. Before the MGMT, the cost for producing a traditional WHPA was an average of \$36,000 to the public water system. The MGMT has provided nearly 2,600 provisional WHPAs in the state.
  - Beginning in FY 2015, EGLE also provides a surface water intake protection grant to assist in the development and implementation of a plan to protect surface water sources used for public drinking water. Five communities have received over \$102,000 since the creation of this program.
- Operator Certification and Training: Act 399 requires a certified operator to be available at all community and nontransient noncommunity water supplies (NTNCWS). These operators must maintain their certification by earning continuing education credits (CEC). As a result, new training courses are developed based on operator feedback, DWEHD staff input, and in response to new regulations with which water supplies must comply.
- Asset Management: In an effort to ensure water supplies are effectively planning for long-term needs, new rules were promulgated requiring community water supplies (CWS) serving more than 1,000 people to implement an asset management plan by January 1, 2018. Plans must include an inventory of assets, level of service goals, capital improvement plans identifying five- and 20-year needs, and other information.
- Other programs available to supplies include financial assessments and technical assistance provider services.
- Per- and Polyfluoroalkyl Substances (PFAS): As a part of the Michigan PFAS Action Response Team's (MPART) effort to address the threat of PFAS contamination in Michigan, a statewide sampling survey was conducted in FY 2018-2019. During this time, all CWSs with their own source, as well as a large number of NTNCWSs, had samples collected and analyzed for the presence of PFAS compounds. Based on results, EGLE and local health departments (LHD) worked with supplies to minimize exposure, including the installation of treatment or switching water sources. The results of the testing also helped inform the rule writing process, which began in FY 2019.

New regulations continue to challenge water supplies. The state of Michigan promulgated updates to the Lead and Copper Rule (LCR). The updated rule lowers the lead action level to 12 parts per billion (ppb) beginning in 2025, requires lead service line replacements at water supply expense, prohibits partial lead service line replacement except during emergency repairs, enhances public notice, and requires distribution system material inventories. While these changes have positive impacts on public health, they challenge water supplies due to an increase in costs associated with lead service line replacements and testing.

The continuing endeavors of water supplies to maintain TMF capacity will help them meet the challenges of operating a public water supply. This report is available on EGLE's Web site at <http://www.Michigan.gov/DrinkingWater> and to the public in paper format, on request.

## List of Acronyms

ACO	Administrative Consent Order
Act 399	Michigan Safe Drinking Water Act, 1976 PA 399, as amended
AMP	Asset Management Plan
ARRA	American Recovery and Reinvestment Act of 2009
AWWA	American Water Works Association
CECs	Continuing Education Credits
CCR	Consumer Confidence Reports
CDP	Capacity Development Program
CWS	Community Water Supply
DWEHD	Drinking Water and Environmental Health Division
DWSRF	Drinking Water State Revolving Fund
EGLE	Michigan Department of Environment, Great Lakes, and Energy
EFCN	Environmental Finance Center Network
ERP	Emergency Response Plan
FAP	Financial Action Plan
FY	Fiscal Year
LCR	Lead and Copper Rule
LHD	Local Health Department
MGMT	Michigan Groundwater Management Tool
MRWA	Michigan Rural Water Association
NCWS	Noncommunity Water Supply
NTNCWS	Nontransient Noncommunity Water Supply
OTCU	Operator Training and Certification Unit
PFAS:	Per- and polyfluoroalkyl substances
RCAP	Rural Community Assistance Program
RTCR	Revised Total Coliform Rule
SDWA	Federal Safe Drinking Water Act
SME	Subject Matter Experts
SWIPP	Surface Water Intake Protection Program
SWPP	Source Water Protection Program
TMF	Technical, Managerial, and Financial
TNCWS	Transient Noncommunity Water Supplies
USEPA	United States Environmental Protection Agency
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Program
WTP	Water Treatment Plant

## 1.0 Introduction

This report examines the effectiveness of the strategy, progress toward improving capacity, and tools used to help improve capacity.

### 1.1 Capacity Development Program (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 CWSs and noncommunity water supplies (NCWS) achieve and maintain TMF capacity by adding a capacity assessment component to the Public Water System Supervision Program. The strategy is an ongoing process to:

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

The CDP is implemented by EGLE, Drinking Water and Environmental Health Division (DWEHD), through amendments to Act 399; by application of CDP policies and guidance documents; and through cooperation and/or partnerships with other agencies.

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

#### 1.1.1 New Supplies

*New Community Water System Capacity Guideline Document*, May 1, 2000. New supplies must demonstrate TMF capacity before serving water to the public. The new supplies 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 supply. For CWSs, the financial and managerial capacity requirements may still be pending while the supply is under construction. Approval to commence operation is not granted until after an acceptable final inspection and approval of a financial plan and operations plan that address financial and managerial capacity.

For NTNCWSs, the DWEHD has delegated the authority to LHDs to review, approve, and issue construction permits. When these water supplies 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. During the past three years, eleven new CWSs and 49 NTNCWSs became active.

### 1.1.2 Existing Supplies

The *Capacity Development Strategy for Existing Public Water Systems*, dated August 1, 2000, lists the programs, tools, and/or activities to help supplies acquire and maintain capacity. The existing system strategy relies primarily on the capacity assistance component of the drinking water program, which the DWEHD has traditionally referred to as technical assistance. Through routine system evaluations, including sanitary surveys and site visits, DWEHD staff identify which supplies need capacity assistance and prioritize assistance subject to available resources. The DWEHD will not request a financial capacity assessment of an existing water supply unless violations, deficiencies, or other factors indicate the supply lacks technical or managerial capacity. For CWSs, capacity assistance is provided through DWEHD staff or through other technical assistance providers to help communities build TMF capacity. For NCWSs, the DWEHD delegated the authority to the LHDs 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 supplies, EGLE, technical assistance providers, and other organizations and agencies that affect the capabilities of water supplies, including:

- EGLE, DWEHD:
  - Community Water Supply Section
  - Field Operations Section
  - Environmental Health Section
  - Enforcement staff
- EGLE, Environmental Support Division
- EGLE, Finance Division, Water Infrastructure Financing Section
- LHDs
- Michigan Finance Authority
- Technical Assistance Providers such as:
  - Michigan Section, American Water Works Association (AWWA)
  - Michigan Rural Water Association (MRWA)
  - Rural Community Assistance Program (RCAP)



- United States Department of Agriculture, Rural Development, Rural Utilities Service
- Environmental Finance Center Network (EFCN)

## **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, system planning, and asset management. As a result, the strategy to help supplies maintain TMF capacity is a reflection of our long-standing tradition of providing technical assistance.

As a result of an effective strategy, new public water supplies are demonstrating adequate capacity before they begin serving water to the public, and existing supplies are continuing to enhance and maintain capacity. A strong emphasis on capacity assistance has moved supplies toward enhanced capacity.

### *2.1 New Supplies*

New supplies 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. Experience has shown that new supplies that have fulfilled capacity development requirements are more likely to perform at a high level. Prior to a formalized CDP, district staff only required adequate technical capacity before a construction permit was issued.

#### 2.1.1 Community Water Supplies (CWS)

Proposed CWSs are primarily new residential developments such as subdivisions, apartment complexes, and elder care facilities. District staff interacts with developers and their engineering consultant to complete the capacity assessments before approval to serve water to the public is granted. Most developers who phase their projects understand that it is more cost-effective to install a system meeting CWS requirement at the beginning of the project instead of upgrading the water supply when they expand. In addition to the traditional technical assessment, these new CWSs must complete financial and managerial assessments. The financial capacity assessment requires that the supply consider future operational costs. The managerial capacity assessment requires an operations plan, a certified operator, and a sampling site plan, as well as other plans, to ensure the supply has adequate managerial oversight and organization before commencing operation.

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

- Supplies that did not meet the definition of a CWS at initial start-up but are designed to one day meet the definition.
- Supplies that are not currently classified as a CWS but propose to extend their distribution system to serve additional customers, thereby meeting the definition of a CWS. These supplies are usually privately-owned, residential subdivisions that were previously exempt from CWS requirements due to their small size.

A program goal is to help identify subdivisions and similar supplies where an expansion, which would reclassify the supply as a CWS, is occurring early in the expansion process. By identifying these new supplies early in their transition, staff would be better able to assist to ensure the supply is fulfilling all capacity development requirements.

### 2.1.2 Nontransient Noncommunity Water Supplies (NTNCWS)

An NTNCWS is a supply that serves at least 25 of the same people for at least six months a year, but not in a residential setting. Examples include schools, daycares, or businesses with their own water supply. EGLE has delegated the authority to LHDs to review, approve, and issue construction permits for NTNCWSs. When water supplies begin the permit application process, the LHD helps them outline their TMF capacity. Prior to receiving approval to commence operation, the NTNCWS must submit a TMF and a contingency plan and designate a certified operator.

Transient noncommunity water supplies (TNCWS) that are reclassified to either a CWS or an NTNCWS are expected to go through the capacity development process as part of their reclassification.

## 2.2 Existing Supplies

Existing supplies are achieving and maintaining TMF capacity as demonstrated by their compliance, as discussed in Section 3.1, and their efforts to manage their supplies effectively with qualified and educated staff. An increase in compliance can be contributed to several factors:

- District staff interaction with supplies.
- Availability of 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.
- Policy updates, guides, fact sheets, templates, and forms provided to district staff, LHDs, and supplies.
- Promotion and maintenance of EGLE Web site content and YouTube videos for operators on topics such as filling out forms, sampling techniques, and rule revisions.

Many of these factors will be discussed in Section 4.

## 3.0 Progress Toward Improving TMF Capacity

Supplies 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 supplies have sufficient TMF capacity.

Through the construction permit and sanitary survey process, district staff helps to ensure supplies obtain a safe source and continue to provide safe drinking water.

### 3.1 Compliance Rates

Comparing compliance data from one year to the next can be difficult because of the rapidly increasing number and complexity of rules and requirements each year. With new regulations that have had a disproportionate impact on small supplies, the number of supplies in compliance may not tell the true story of improved capacity. Small supplies, as defined under Act 399, are those serving 10,000 or fewer people.

Although small supplies, which make up a majority of the CWS inventory in Michigan, typically have higher rates of noncompliance, larger supplies serve the majority of the population and have lower rates of noncompliance. This means that a large percentage of the population is generally served by a water supply that is in compliance.

The following table summarizes compliance, by percentage, in Michigan with health-based drinking water standards and with monitoring and reporting requirements compared to the goals shared with the USEPA for calendar years (CY) 2017-2019.

	Goal	CY 2017	CY 2018	CY 2019
<b>Compliance with Health-Based Standards</b>				
Percent of people served by CWSs meeting all health-based standards	95	97.5	96.7	97.3
Percent of NTNCWSs meeting all health-based standards	95	99.1	99.1	97.9
Percent of TNCWSs meeting all health-based standards	95	99.7	99.7	98.7
<b>Compliance with Monitoring and Reporting Requirements</b>				
Percent of people served by CWSs without significant violations <sup>1</sup>	95	90.6	96.2	93.9
Percent of CWSs without significant violations	90	87.1	91.7	91.4
Percent of NTNCWSs without significant violations for acute health risks <sup>2</sup>	95	89.2	95.7	96
Percent of NTNCWSs without significant violations for chronic health risks	90	91.9	95.2	94.6

<sup>1</sup> 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.

<sup>2</sup> Acute health risks mean those contaminants that have serious adverse effects on human health as a result of short-term exposure.

Compliance with health-based standards remains high. However, there was a decrease in the percent of supplies without monitoring violations during this period. This decrease is due in part to new and expanded monitoring requirements, including the Stage 2 Disinfection and Disinfection Byproducts Rule, the Revised Total Coliform Rule (RTCR), and the Revised Michigan LCR. Expanded requirements mean more opportunities for violations to occur. As water supplies adjust to new regulations, a decrease in violations is expected.

Compliance with monitoring requirements is considered a measure of success, specifically related to the water supply's managerial capacity. 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 due to the multibarrier approach that is taken to protect public health.

### 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 helps provide assurance that the multiple barriers are functioning, and the integrity of the water supply 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 to eliminate and prevent potential pathways for contaminants to enter the water system. A general plan, or layout and description of the water system and its service area, must be submitted. This plan requires supplies that 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 district staff.

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 supplies to contamination, and to inform the public of the results. After the heavy investment in the assessment process, efforts have been made to move from assessment to protection. Water supplies are encouraged to protect their sources through voluntary programs discussed in Section 4, Tools Used to Improve TMF Capacity.

The DWEHD is encouraging supplies, particularly new supplies, 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. Two changes have been made to the general plan requirements to encourage long-term planning and asset management. Beginning in January 2016, all municipal supplies, and on January 1, 2018, all privately-owned supplies, were required to complete five- and 20-year capital improvement plans. Also beginning on January 1, 2018, all CWSs that serve greater than 1,000 people were required to submit and maintain an Asset Management Plan (AMP). Approximately 96 percent of the water supplies required to submit an AMP have done so, and district engineers are working with those supplies who have yet to submit a plan or need to make revisions to their existing plan.

Although not all public water supplies are required to have an AMP, EGLE has actively promoted AMPs through training, the ability to use Drinking Water State Revolving Fund (DWSRF) loans to complete AMPs, advertisement of resources on our Web site, and partnerships with technical assistance providers. This asset management approach is expected to enhance their capacity to manage their assets at the lowest possible cost.

Finally, oversight of the water supply by qualified operators helps to ensure all the elements of the waterworks system are functioning properly. All CWSs and NTNCWSs, and certain TNCWSs, must be under the responsible charge of an operator certified by EGLE. Larger supplies are also required to designate a certified backup operator. Certification is renewable by completing CECs. Training that provides CECs to drinking water operators must be approved by EGLE.

#### 4.0 Tools Used to Improve TMF Capacity

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

##### 4.1 Drinking Water State Revolving Fund (DWSRF)

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

Prior to the creation of the DWSRF, project financing for CWSs was left largely to the local unit of government or to individuals investing in their own supplies. The DWSRF provides a source of infrastructure financing. Through FY 2019, the DWSRF has committed \$1,130,176,712 in low-interest loans for 301 infrastructure projects.

The following table summarizes the loan commitments for FY 2017 to FY 2019:

DWSRF Loan Commitments by FY			
	2017	2018	2019
Number of Projects Committed	4	4	8
Commitments of Funds (\$M)	\$56.2	\$31.1	\$65.2

Commitments include projects to increase a supply's capacity to reliably provide an adequate supply of water. In FY 2017-2019 many of the projects involve replacing aging distribution infrastructure. In FY 2019 principal forgiveness was given to disadvantaged communities and those supplies who were applying for lead service line replacement projects. Examples of projects that were funded in FY 2017-2019 are given below:

- The city of Bay City received a \$5,000,000 low interest loan for replacement of water mains and associated lead and galvanized service lines. One million dollars was provided as principal forgiveness.
- The city of St. Joseph received a \$16,095,000 low interest loan for water main replacement and improvements to the water treatment plant (WTP). The WTP improvements included a new high-service pump station, new chemical systems, improvements to the filter systems, and the below-grade concrete reservoirs.

Michigan's drinking water program relies heavily on proper water system design and construction to prevent jeopardizing the safety of both the source and finished water. To that end, priority of DWSRF projects favor improvements that are proposed to address drinking water quality and public health.

##### 4.2 Assistance by District and Local Health Department (LHD) Staff

Water supply operators work closely with district staff, who are their primary contact for capacity development. The CWSs are served by DWEHD staff in one of eight district offices, and NCWSs are served by staff from one of 44 LHDs under contract with the DWEHD.

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

Capacity of supplies is assessed through the sanitary survey process. District staff detail their findings and recommendations in a letter to the supply, 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 supplies understand the severity of the deficiencies and importance of acting on the recommendations. For CWSs, the sanitary survey includes an overall evaluation to indicate no deficiencies, minimal deficiencies, or significant deficiencies exist.

The following table summarizes sanitary surveys, visits, and construction permits issued for CWSs:

<b>CWS Sanitary Surveys, Visits, and Construction Permits</b>			
	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
Number of Sanitary Surveys Conducted	427	492	388
Number of Minor Deficiencies	135	329	573
Number of Significant Deficiencies	20 at 14 supplies	32 at 20 supplies	15 at 13 supplies
Number of Visits*	1,599	1,671	1,546
Number of Construction Permits Issued	1,070	1,015	1,046

\*Includes sanitary surveys

The CWS program reported an increase in the number of minor deficiencies that were cited in FY 2018 and FY 2019. This increase is likely due to updates made to the sanitary survey process in late FY 2018. The new process involves a series of questions used to ensure consistency between engineers throughout the state. Adoption of new survey questions, new areas of emphasis, and updated survey guidance likely contributed to new deficiencies or recharacterization of findings previously identified as recommendations.

The number of sanitary surveys conducted in FY 2019 was lower than the number conducted in FY 2017 and FY 2018. This is likely due to a couple of different factors. The first is that there were fewer sanitary surveys due in FY 2019 compared to FY 2018. The second is that staff were still learning the new sanitary survey process, which may have initially increased survey time, although overall it is a more thorough process.

In addition to sanitary surveys, DWEHD staff perform routine visits to CWSs at a variety of intervals based on the type of supply. The purpose of these visits is to continue to build relationships between EGLE and the CWSs, as well as to ensure that supplies are not experiencing problems between the sanitary survey visits.

Deficient supplies 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 supplies.

For CWSs, sanitary surveys are conducted every three years by DWEHD field staff. This frequency coincides with the requirements of the series of Surface Water Treatment Rules and

the Ground Water Rule. Each of the eight required sanitary survey components is rated individually and entered into SDWIS.

The required components of a sanitary survey include the source, treatment, distribution system, finished water storage, pumps and controls, monitoring and reporting, system management and operation, and operator compliance. Each component may be rated as a significant deficiency, minor deficiency, recommendations made, or no deficiencies/recommendations.

DWEHD staff detail their findings and recommendations in a letter to the supply. These letters may include a list of milestones with dates by which the items are expected to be addressed. Options for capacity assistance may also be offered, such as recommending a financial assessment or contacting available technical assistance providers for specific assistance. These evaluation letters help supplies understand the severity of the deficiencies and prioritize response activities.

In addition to sanitary surveys, DWEHD staff perform routine visits to CWSs at a variety of prescribed intervals based on the type of supply. The purpose of these visits is to continue to build relationships between EGLE and the CWSs, as well as to ensure that supplies are maintaining their TMF capacity between sanitary survey visits. District staff are available to meet, as needed, with community leaders or attend municipal meetings to discuss the benefits of building TMF capacity.

System operators and managers have many other opportunities to interact with district staff outside the capacity assessment arena. District staff attend, participate, and present at periodic regional operator meetings to discuss upcoming regulations and regional issues and to network with operators and managers. District 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 supply begins to develop a project plan to apply for a DWSRF loan, district staff consult with the supply and work with its consulting engineer to ensure the project plan addresses system priorities.

For NCWSs, sanitary surveys are conducted every five years. Surveillance visits are required by policy annually for any supply with regulated treatment. Annual visits are required under the rules for a supply that is on a reduced (annual) total coliform sampling schedule.

The frequency of NTNCWS surveillance visits is as follows:

Type of NTNCWS	Site Visit Frequency	Sanitary Survey Frequency
Supply with regulated treatment	Once per year	Every five years
Supply with annual total coliform sampling requirement	Once per year	Every five years
Supply without regulated treatment and on quarterly total coliform monitoring	No visit beyond sanitary survey	Every five years

NTNCWS Evaluations and Visits			
	FY 2017	FY 2018	FY 2019
Number of sanitary surveys conducted	2,064	1,919	2,025
Number of visits for supplies with annual total coliform sampling	1,450	1,317	1,226
Number of annual treatment surveillance site visits	223	225	228

As previously mentioned, oversight of NCWSs is provided by 44 LHDs under contract with the DWEHD. The Noncommunity Water Supply (NCWS) Section 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 supply compliance. Training of LHD staff is conducted extensively during these visits to inform, explain, and discuss new and updated program issues and procedures. NCWS Section staff also hosts an annual two-day LHD conference/training event, attended by nearly all LHDs. The NCWS Section staff maintains a reference manual for LHDs with current policies, procedures, guidance, templates, and forms needed to implement the drinking water program. The NCWS Section staff also presents topics at groundwater, other environmental health conferences, and training webinars.

#### 4.3 Financial Assessments

Both new and existing supplies have opportunities to achieve and maintain financial capacity. Financial capacity assessments are not required of existing supplies unless serious deficiencies in technical or managerial capacity exist. However, voluntary participation in financial assessments continued.



#### 4.3.1 New Supplies

New supplies must demonstrate financial capacity before serving water to the public. In the NCWS Program, the supply 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, supplies submit their financial plan and supporting documents to EGLE for review and approval during the construction permit stage. Supplies may complete their financial plan during the construction phase of the water supply but must receive approval prior to the final inspection to commence operation of the water supply.

Privately-owned new CWSs are subject to additional requirements to ensure they are able to provide an adequate supply of drinking water. Proposed supplies must stipulate to certain conditions such as: obtaining a local government's refusal to accept ownership of the supply; establishing an escrow account available to the DWEHD for immediate repair or maintenance of the supply; providing contact information of operation personnel; and agreeing to seek EGLE approval before transferring ownership. The stipulation ensures private owners understand their responsibilities prior to establishing the water supply.

#### 4.3.2 Existing Supplies

To help existing CWSs improve financial capacity, the DWEHD conducted financial assessments of supplies that serve a population of less than 10,000 that could benefit from and agreed to an assessment. An analyst in the EGLE, Finance Division, assesses the selected community's existing financial health and develops a Financial Action Plan (FAP). The assessment is a review of financial documents and an on-site meeting with supply representatives. An FAP is a tailor-made comprehensive plan to strengthen the supply'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 DWSRF. The supply is expected to carry out the FAP, and the DWEHD is available to assist when requested. The FAP is intended to also be a guide for district staff. An outline of a typical assessment report is included in the Appendix. From FY 2017 to FY 2019, five CWSs underwent financial assessments.

### 4.4 *Source Protection*

Supplies are continuing to take steps to protect their drinking water sources. The SDWA established rules for funding WHPPs and Surface Water Intake Protection Programs (SWIPP) through the DWSRF. 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 DWSRF capacity development set aside funds, which is later described in Section 4.4.2.

#### 4.4.1 Source Water Assessments to Protection

The SDWA required that all of Michigan's 18,000 CWSs and NCWSs 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 DWEHD and local, state, and national agencies. A project to update the CWS assessments is ongoing. The NCWS and LHD

staff, which oversee these supplies, continue to work with NTNCWSs to update source water assessments and educate owners and operators of actions they can take to identify and manage risk.

#### 4.4.2 Source Water Protection Program (SWPP)

A WHPP is an SWPP for water supplies that rely on water wells, and it assists communities in protecting their groundwater sources. A goal of a WHPP is to minimize the potential for contamination by identifying and protecting the area that contributes to water supply wells and avoids costly groundwater cleanups. Of the 426 municipal supplies in Michigan using groundwater as their water source, 231 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 231 supplies, 168 have completed all the steps and have an approved WHPP or have met the substantial implementation standard. As a result, 59 percent of the population that obtains drinking water from groundwater is in communities taking action to protect their sources. An additional 113 groundwater supplies have attained substantial implementation by completion of a source water assessment with no issues identified. 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 and updating their approved programs.

The DWEHD, through a contract with Michigan State University's Department of Civil and Environmental Engineering, developed the MGMT. The MGMT can scientifically map WHPAs for public water supply wells using information from existing statewide databases such as Wellogic, Map Image Viewer, and the Groundwater Inventory Mapping Project. The WHPA is the surface and subsurface area contributing groundwater to the well. Michigan's WHPP defines the WHPA with a ten-year time-of-travel. This provides a reasonable length of time to respond to environmental problems within the WHPA while providing an area that can be reasonably managed. The MGMT has developed comparably accurate predictions of spatially-detailed and representative groundwater flow patterns and WHPAs. Most of these MGMT delineations closely parallel traditionally developed WHPAs, which cost an average of \$36,000. Although the contract with Michigan State University ended in FY 2019, the MGMT is still running and being used for wellhead delineations.

The DWEHD, Community Water Supply Section, has redefined "Substantial Implementation," allowing smaller supplies to obtain this source water protection status. Nonmunicipal water supplies can obtain substantial implementation by using a self-assessment to identify specific risks to their drinking water sources. Once risks have been identified, corrective actions can be put in place to reduce risk of contamination. This allows these supplies to obtain substantial implementation since they have limited control of their WHPA as compared to municipal supplies that may have local control by land use planning and ordinances. At least 899 CWS and 1,465 NCWS supplies had provisional delineations completed by the MGMT.

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 and the watershed that impacts it. To date, eleven communities have completed an SWIPP. An SWIPP grant program, which began in FY 2015, has stimulated protection activities for municipalities that utilize surface water as their source for drinking water. This has helped fund five new intake protection plans.

To further protect surface water intakes, the DWEHD 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 the Detroit River in 2008. In FY 2018 the network was reestablished with help from EGLE, Office of the Great Lakes; the Southeast Michigan Council of Governments; and Wayne State University. \$375,000 was allocated by the Michigan Legislature for monitoring systems, which were installed in November 2018. Thirteen drinking water treatment facilities are equipped with a range of analytical devices. The monitoring system includes data transmission, data visualization, automated notification/alarm service, and data archiving. 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 helped purchase the equipment; however, local communities must pay to continue operation and maintenance of this equipment.

In addition, in FY 2019 funding became available to conduct monthly (July through October) raw and finished tap cyanotoxin samples for all surface water systems, including two tribal-owned supplies, and weekly sampling (July through mid-December) for those supplies which were considered vulnerable to harmful algal blooms (HABs).

#### 4.5 *Operator Training and Certification*

Per Act 399, a properly certified operator must be available at all CWSs, all NTNCWSs, and certain TNCWSs. 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 DWEHD, OTCU, provides numerous training courses each year. 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 approximately 1,380 CWSs, approximately 1,300 NTNCWSs, and around 80 TNCWSs that employ treatment for either public health purposes or aesthetic reasons. Operators certified in treatment systems must provide oversight at CWSs and NCWSs that employ treatment.

A CWS occasionally finds itself without a certified operator, usually due to unanticipated operator turnover or retirements. District staff work with each of these water supplies to pursue an interim certified operator while also pursuing a permanent replacement. There is continual turnover of certified operators in NCWSs, and the effort to retain certified operators at these small supplies is an ongoing process.

Major OTCU activities from FY 2017 to FY 2019 include:

- Training opportunities available for small community and nontransient noncommunity operators to meet renewal requirements for their certifications.
- Training opportunities included courses taught by EGLE staff, as well as cosponsored courses with the Michigan Section, AWWA, and other technical assistance providers, RCAP, EFCN, and MRWA.
- Completed a Lean Process Improvement process, which resulted in updated exam processing procedures, renewal process, and updated forms.
- Utilized SMEs to validate new questions for licensing examinations. The SMEs include water system operators holding licenses of the highest level in their category.

- Maintenance 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.
- Highlighted the online course offerings to help operators find online course offerings to allow for remote learning.
- Maintenance of a web-based database allowing DWEHD technical staff access to readily confirm a certified operator's status.
- Development and administration of all exams, twice annually.

#### 4.5.2 Small System Training

For the past several years, DWEHD staff has conducted training specifically for small CWSs and awarded CECs to operators who participated. A small CWS is a supply that serves fewer than 10,000 customers. Many attendees are operators employed by more than one supply or may also work at NTNCWSs, so this targeted training is improving the operation and maintenance of many more supplies than the number of operators attending. General topics covered included new regulatory requirements, monitoring and reporting, and operational issues. Specific topics change each year, and over the past three years have included meters, LCR revisions, Consumer Confidence Reports (CCR), emergency response, system maintenance, Level 1 assessments and RTCR, bacteriological sampling, radiological monitoring, construction permit requirements, interactive "what's wrong with this picture," common complaints (and solutions), cross connection inspections, hydropneumatic tanks, and well maintenance. The training is offered at three sites around the state. Registration at the three sites totaled 100 individuals in 2017; 116 in 2015; and 154 in 2019. These represent many more water supplies, as several of the attendees represent multiple CWSs.

#### 4.5.3 NTNCWS Training – LHD and Level 5 Operators

Training of LHD staff is conducted to inform, explain, and discuss new and updated program issues and procedures. This training occurs in many ways, including formal educational events and during the program evaluation process. In FYs 2017, 2018, and 2019, 70-100 LHD staff attended an annual two-day training conference hosted by EGLE. Topics included updates from the USEPA, treatment of drinking water, source protection and well isolation, PFAS, program management, Michigan Revised LCR, and cross connections.

EGLE staff hosted a total of 12 statewide training sessions to Level 5 (specific to NTNCWSs) drinking water operators in 2018 and 2019. Approximately 180 operators attended the trainings. The trainings covered a variety of topics ranging from rules, sampling guidance, treatment, and well construction. This also provided an opportunity to help prepare individuals for taking the Level 5 exam.

The NCWS Section staff maintains a comprehensive study guide for individuals pursuing certification to operate an NCWS. It may also be useful for operators of other small CWSs. 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*

EGLE is responsive to various federal programs and the security and emergency response needs of the public water supplies. Planning, training, and coordinating are all a part of the effort to emphasize emergency management for all natural and man-made incidents. DWEHD staff participate on the steering committee for the Michigan Water/Wastewater Agency Response Network (MiWARN), a group that encourages mutual aid between utilities during emergencies, as well as the Association of State Drinking Water Administrator's Security and Resilience Committee.

In May 2019 EGLE staff participated in the USEPA Water and Power Black Sky Workshop, which included training and coordination between water utilities, power utilities, and government agencies.

District staff will continue to be involved in safety and security enhancements through the construction permit process and the operation of new supplies as well as during inspections.

#### 4.7 *Enforcement*

Evaluations and compliance information becomes the basis for enforcement. When supplies fail to return to compliance, escalated enforcement, including Administrative Consent Orders (ACO) and EGLE orders, can be initiated.

Before escalated enforcement is used, many supplies are encouraged to return to compliance before they are assessed fines for violations. Michigan's administrative fines policy for monitoring and reporting violations helps enforce timely contaminant monitoring and submittal of results; monthly operation reports (MOR) for supplies that employ treatment; and issuance and submittal of the CCR.

When a fine is not applicable or does not prevent further violations, the DWEHD may pursue escalated enforcement, which may include an ACO. Program staff may first attempt targeted technical assistance to return supplies to compliance or prepare them for upcoming requirements, especially when options are particularly expensive or when acceptable alternatives are not readily available. As a result, 46 drinking water cases received further enforcement action from FY 2017 through FY 2019. This includes 43 ACOs and two referrals to the Department of Attorney General.

A majority of these cases were referred for escalation based on system inadequacies such as lack of sufficient capacity, WTP deficiencies, or violations of active consent orders.

#### 4.8 *Robust Information Sharing Network*

The DWEHD, the USEPA, and others have identified that current Information Technology (IT) used by the DWEHD is outdated. The DWEHD has secured initial, Phase 1 funding, and in FY 2020 began working on an Information Technology Modernization Project that will benefit public water systems by providing opportunities for improved transparency and communication, streamlining processes, increasing data quality control, and enhancing decision-making capabilities through analytics, trends and insights, automated alerts, and data-driven actions.

The first release of functionality for the Michigan Environmental Health and Drinking Water Information System (MiEHDWIS) is on target for September 2020 and will allow a portal for water supplies to upload documents.

In addition to MiEHDWIS, other IT applications and projects are being pursued, including an updated operator certification portal and sanitary survey software.

#### 4.9 *Summary*

Every three years the DWEHD 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.

Public water supplies 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 multiple barriers are, indeed, functioning and the integrity of the water system is maintained on a continuous basis.

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

New regulations, aging infrastructure, emerging contaminants, and other issues will continue to challenge water supplies. Continuing endeavors to maintain TMF capacity will help to meet these challenges.

Recent high-profile water supply events in Michigan and around the country serve to highlight the importance of effective capacity development. Ensuring public water supplies maintain robust TMF capability is an essential component of public health protection. Government, water supply owners and operators, and citizens alike must continue to invest in activities and programs that help water supplies succeed in providing safe and reliable drinking water to their customers.

This report is available to the public, on request, or on the EGLE Web site at [www.Michigan.gov/CommunityWater](http://www.Michigan.gov/CommunityWater).

## **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 supply expenses.

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

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

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, DWSRF informational brochure, DWSRF project plan preparation guide, securing a DWSRF loan fact sheet, and a fixed variable allocation spreadsheet to prepare the budget and determine water rates.