

Michigan Department of Environmental Quality  
Drinking Water and Radiological Protection Division

**CAPACITY  
DEVELOPMENT  
REPORT TO THE  
GOVERNOR - 2002**

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# Capacity Development Report to the Governor - 2002

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## List of Acronyms

|           |  |
|-----------|--|
| Act 399   | Safe Drinking Water Act, 1976 PA 399, as amended     |
| AWWA      | American Water Works Association                     |
| CCR       | Consumer Confidence Report                           |
| CDP       | Capacity Development Program                         |
| CECs      | Continuing education credits                         |
| Committee | Mentoring Committee of the Michigan Section, AWWA    |
| CWS       | Community water system                               |
| DCIS      | Department of Consumer and Industry Services         |
| DEQ       | Department of Environmental Quality                  |
| DWP       | Drinking Water Program                               |
| DWRF      | Drinking Water Revolving Fund                        |
| DWRPD     | Drinking Water and Radiological Protection Division* |
| EAD       | Environmental Assistance Division*                   |
| FY        | Fiscal Year  |
| MFS       | Municipal Facilities Section                         |
| MHCs      | Manufactured housing communities                     |
| MMBA      | Michigan Municipal Bond Authority                    |
| MRWA      | Michigan Rural Water Association                     |
| NCWSs     | Noncommunity water systems                           |
| NOAA      | National Oceanic and Atmospheric Administration      |
| OTU       | Operator Training Unit                               |
| PWSSP     | Public Water System Supervision Program              |
| RCAP      | Rural Community Assistance Program                   |
| SDWA      | Federal Safe Drinking Water Act                      |
| SWAP      | Source Water Assessment Program                      |
| TMF       | Technical, managerial, and financial                 |
| UPEA      | U.P. Engineers & Architects, Inc.                    |
| USGS      | U.S. Geological Survey                               |
| WHPP      | Wellhead Protection Program                          |

\*This Report covers CDP activities prior to the DEQ reorganization, which was effective September 15, 2002; therefore, it refers to the DWRPD rather than the new Water Division and refers to the EAD rather than the new Environmental Science and Services Division.

# Capacity Development Report to the Governor - 2002

## Introduction

The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) require each state to develop a Capacity Development Program (CDP) to ensure community and noncommunity water systems (NCWSs) acquire and maintain technical, managerial, and financial (TMF) capacity to ensure a safe, reliable, and abundant supply of drinking water to all customers.

Michigan's CDP has been implemented by the Department of Environmental Quality's (DEQ's) Drinking Water and Radiological Protection Division (DWRPD) through amendments to the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), by application of capacity development polices and guidance documents and through cooperation and/or partnerships with other agencies.

The purpose of this document is to report to Governor John Engler 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 their Governor by September 30, 2002, and every three years thereafter and 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 additional topics that help to enhance capacity. This report will be available to the public on the DEQ's Web site at [www.michigan.gov/deq](http://www.michigan.gov/deq), at the DWRPD's district offices, and at the public's request.

## 1. Effectiveness of the Capacity Development Strategy

### Objective of the Strategy

The objective of the strategy is to help systems achieve and maintain TMF capacity by adding a capacity assessment component to the Technical Assistance Program and Public Water System Supervision Program (PWSSP).

The authority to implement the CDP has been blended into our long-standing program of technical assistance. The following two documents describe our CDP:

- *New Community Water System Capacity Guideline Document, May 1, 2000*
- *Capacity Development Strategy for Existing Public Water Systems, August 1, 2000*

The new Community Water System (CWS) Program, described in the first document, above, relies on two control points: construction permit and final inspection. Only after a final inspection and after the system has demonstrated TMF capacity in all three areas is approval granted to commence operation. For the purpose of implementing capacity development policies for new systems, either of the following systems that is currently

not a CWS, due to serving fewer than 15 living units or 25 people, is also considered "new":

- A system that is designed to eventually serve 15 living units or 25 people, such as a subdivision that is planned to have 30 lots or an apartment complex planned to have 24 units.
- An existing system that proposes to extend or expand its water system adding to its customer base and thereby growing to become a CWS. Examples of these proposals include adding a new well or increasing storage volume.

A system that simply increases the number of users without altering or constructing water system infrastructure does not fall under the policy requirements of a new system.

### **Accomplishments With Objectives**

#### *New Systems*

The control points of construction permit and final inspection have worked very well to ensure new systems have TMF capacity before they commence operation.

CWS: The field staff spend a considerable amount of time with the proposed new CWSs to get them started on the right track. Most of the new systems are residential subdivisions. The field staff work closely with the developers and their engineering consulting firms to complete the TMF capacity assessments before approval is granted to serve water to the public. The financial capacity assessment is a new requirement in Michigan and requires some forethought into 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 meets requirements before commencing operation. 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 later when they expand.

NCWS: For the NCWSs the new systems program raises the level of awareness of the responsibilities of a supplier of water to the public. However, it is too early to determine if this has any long-term impact on compliance.

#### *Existing Systems Recently Classified as CWSs Due to Expansion*

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

#### *Existing Systems*

Many of the capacity development efforts have been in effect since the inception of Michigan's Drinking Water Program (DWP) in 1913. Several parts of Act 399 include

requirements to ensure sufficient capacity to provide water to the public, such as well construction, reliability, and general and contingency plans. As a result, the strategy developed to help existing systems maintain TMF capacity is a reflection of our DWP with the addition of a capacity assessment component.

To prioritize CWSs for capacity assistance, we track the overall rating of a system's performance based on the periodic evaluation or sanitary survey. Those systems rated deficient are receiving highest priority.

### **Progress Continuing to Make Implementing the Strategy**

#### *Technical and Managerial Capacity*

A major portion of our technical assistance is under the PWSSP with field staff performing their job functions that provide technical capacity assistance such as evaluations and plan review. Another portion of the technical assistance effort is through the technical set-aside to fund a four-year contract with U.P. Engineers & Architects, Inc. (UPEA), to perform on-site visits to small municipal systems, small privately-owned systems, schools, day care centers, and manufactured housing communities (MHCs) and to perform training for operators. To date UPEA has visited nearly 1,300 water systems and has trained over 400 nontransient noncommunity operators of schools and day care centers. The on-site visits to privately-owned CWSs and to schools have been well received and beneficial. Together, the DWRPD and UPEA reassessed the site visits to municipally-owned CWSs and are redirecting the focus of the CWS site visits to other DWP needs, such as performing source water assessments in the scope of work of the contract. The contract has been extended until February 2004 to complete this work.

#### *Financial Capacity*

Financial assessments are conducted on each new system before it is approved to commence operating. Certain existing systems must also undergo assessments:

- New CWSs: The DEQ's Environmental Assistance Division (EAD) is working closely with the DWRPD to perform these financial assessments of new CWSs. Technical assistance set-aside funds are used to reimburse the EAD for financial assessments of new systems.
- New NCWSs: Oversight of the NCWSs has been delegated to the local health departments. A system has recently been developed and is being implemented to reimburse the local health departments for the assessments they perform on new systems.
- Existing Water Systems: Existing systems undergo a financial assessment only if they apply for a DWRF loan or if the system's lack of capacity is due to financial issues. To date none have undergone an assessment, however, some of the water systems have financial concerns. At our request the EAD has developed a pilot project to assess the financial capacity of existing systems.
- DWRF loan applicants: As part of the loan approval process, the EAD performs a user charge system analysis and the Michigan Municipal Bond Authority

(MMBA) reviews their finances to ensure the ability of the system to pay off their loan while protecting the facilities with proper operation and maintenance.

- Pilot Project for Financial Assessments on Existing Systems: To help existing CWSs improve financial capacity, a pilot project has been initiated to recommend procedures, identify potential obstacles, and suggest strategies for the possible implementation of a program to assist water systems with financial concerns and problems.

Each system selected for the pilot study serves a population of less than 10,000, received a deficient or marginal rating in a recent evaluation, and is not making satisfactory progress toward correcting the deficiencies due in some part to financial difficulties. Participating systems are those whose next step would otherwise be escalated enforcement. It is anticipated that systems will participate in both the pilot project and later in the financial capacity assistance program to avoid escalated enforcement. Ultimately, the plan is to provide this capacity assistance to all systems that meet the criteria listed above.

#### *Resources Available*

Numerous resources exist to help systems build technical, financial, and/or managerial capacity. One challenge is matching the various agencies that provide this technical assistance with the water systems most in need of their assistance. DWRPD staff has compiled a "yellow pages" type index of technical assistance providers and included a summary of the services that each organization can provide. Some of the groups in the index include the following:

- American Water Works Association (AWWA)
- Michigan Rural Water Association (MRWA)
- Rural Community Assistance Program (RCAP)
- Rural Utilities Service
- A variety of resources available in the DEQ

The index is available to systems and community leaders through DWRPD staff; the DEQ's Web site at [www.michigan.gov/deq](http://www.michigan.gov/deq); and through the newsletter of the Michigan Section, AWWA, which is widely distributed to personnel in the water business.

#### **Coordination With Other Agencies**

##### *Within State Government*

Relationships with other agencies within state government have been vital to the successful implementation of the DWP and will continue to play an important role.

- Operator certification: The EAD and the DWRPD have worked closely in the operator certification program. The EAD is the state agency that certifies

operators for drinking water systems. The EAD's Operator Training Unit (OTU) maintains the certification of operators, coordinates the continuing education that is required for operators to maintain their certificate by accrediting training courses and conducting training, and coordinates the testing for certification. DWRPD staff participate in EAD's training efforts by serving as instructors, by drafting examination questions, by preparing and grading exams, and by proctoring at exam sites.

- **Financial assessments:** The EAD's Municipal Facilities Section (MFS) performs the financial assessments of the new CWSs and has begun the pilot project to perform financial assessments of existing CWSs that have financial concerns. In conjunction with the MMBA, they also review the financial capacity of DWRP loan applicants. The MFS involved DWRPD staff in the development of the pilot project, and DWRPD field staff are serving as liaisons between the systems and the MFS as the pilot project gears up.
- **Licensing MHCs:** The MHCs are licensed to operate through the Department of Consumer and Industry Services (DCIS). The DWRPD provides input into the licensing process through certificates of noncompliance for those MHCs that do not comply with various public health statues and rules including drinking water. These certificates may lead to license revocation that essentially shuts down the MHC.

#### *Outside State Government*

In addition to coordinating with other state agencies, the DWRPD works closely with the following agencies outside of state government, especially in the areas of source water assessments and protection:

- Michigan State University, Institute of Water Research
- Local health departments
- United States Geological Survey (USGS)
- National Oceanic and Atmospheric Administration (NOAA)
- City of Detroit

#### **Lessons Learned**

##### *Technical Assistance Contract*

As mentioned earlier, the DWRPD has a four-year contract with UPEA to conduct on-site technical assistance visits to water systems. Two equally important roles of DWRPD field staff are technical assistance provider and enforcer. The field staff voiced concern that UPEA technical assistance providers might duplicate the technical assistance efforts of DWRPD staff. As a result the visits were reassessed, as previously mentioned, to focus on nontransient NCWSs and on source water assessments at the small CWSs. UPEA visits have been particularly helpful at schools and systems with high operator

turnover rates where they help new operators to set up record keeping systems and to understand the basics of the drinking water requirements.

#### *Self-Assessment Tool*

In developing Michigan's CDP, the DWRPD intended to implement a self-assessment program to help systems to identify capacity elements that need improvement. In the meantime the AWWA designed a self-assessment tool and the Mentoring Committee (Committee) of the Michigan Section, AWWA, began a pilot project to test the tool. The mentors assured the systems participating in the pilot project that the information would stay with the system and would not flow back to the regulators of the DWRPD. This focus on assistance rather than enforcement may have prompted a more honest, and, therefore, more productive, self-assessment of the system's capacity.

#### *Oversight Consolidation*

The regulating responsibility for community drinking water systems serving nursing homes shifted from the DCIS to the DEQ in January 2002. As the drinking water regulations became more complex, oversight of these water systems became more difficult. Consolidating oversight of these systems with the other CWSs is resulting in more consistent application of rules, regulations, policies, and procedures. It is anticipated that consistent oversight and the new requirement for a certified operator by December 8, 2002, will significantly improve compliance at these systems.

### **Proposed Modifications Based on Past Experience**

#### *Compliance Data*

Compliance data will be one baseline for measuring progress in the CDP. However, comparing compliance data from one year to the next becomes more difficult because of the rapidly increasing numbers of new rules and requirements each year. For example, the percent of CWSs in compliance with state drinking water requirements decreased from 81 percent in Fiscal Year (FY) 2000 to 77 percent in FY 2001, but enforcement of the new Consumer Confidence Report (CCR) rule boosted the rate of noncompliance significantly. The CCR rule required all CWSs to deliver an annual water quality report (i.e., CCR) to their consumers. DWRPD staff provided considerable assistance to systems the first couple of years, and the rate of compliance was very high. Subsequently, however, systems were expected to produce their CCR with less assistance from DWRPD staff. Many small systems failed to produce their CCR, and hence compliance rates decreased.

With the onslaught of many new regulations that are likely to have a disproportionate impact on small systems, the number of systems in compliance may not tell the true story of improved capacity. Small systems make up the majority of systems in the state, and they make up the majority of systems in noncompliance. However, the majority of the population served by CWSs is supplied by large systems that generally comply with requirements. To put compliance data into perspective, it may be useful to compare the percent of population served by CWSs that are in compliance with health-based standards and monitoring and reporting requirements. During the four quarters of

calendar year 2001, the percent of the population served by CWSs meeting all health-based drinking water standards ranged between 99 percent and 99.9 percent with an average compliance rate of 99.6 percent.

As the CDP continues, other baselines will be established as the number of programs available to systems in need of assistance increases. It may also be relevant to track the amount of technical assistance provided by DWRPD staff and other technical assistance providers, such as the increasing opportunities to earn continuing education credits, the number of certified operators, and the number of TMF capacity assessments conducted.

### *Financial Assessments*

At the strong suggestion of the stakeholders who met to develop the strategy for Michigan's CDP, it was decided that financial assessments would be conducted only when a system experienced deficient capacity due to financial difficulties. Depending on the success of the financial capacity pilot project mentioned earlier, it is anticipated that a system with a deficient rating that is not making satisfactory progress to correct the deficiency will choose to undergo a financial capacity assessment before being subjected to escalated enforcement action. Additionally, an assessment may be available to systems that request it.

## **2. Progress Toward Improving Capacity**

### **Baseline**

In this report the baseline against which the success of the CDP is measured is primarily compliance data; however, as mentioned earlier, other factors are also considered to give a more accurate picture. We will look at the following:

- DWRF projects and their successes
- New small systems and their successes compared to other small systems with fewer requirements at startup
- Systems that participated in self-assessments
- Capacity assistance from DWRPD staff
- Partnerships between systems
- Activities of other organizations to enhance capacity particularly in relation to assessments, training, and certification of operators

### **Early Indications of Progress Against Baseline**

#### *Compliance Data Overall*

Overall, compliance with state drinking water requirements has been very good. In calendar year 2001 the percent of Michigan's population served by CWSs meeting all

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health-based standards ranged from 99 percent to 99.9 percent. Most of the violations, either health-based (violations of drinking water standards) or nonhealth-based (monitoring and reporting violations), occur at the smallest water systems where operator turnover is very high and where drinking water resources are scarce. However, most of the population live and work in large municipalities that can afford to employ and train experienced operators and have the resources to commit to a viable DWP.

The following table shows the number of systems that violated drinking water requirements, including monitoring and reporting requirements, during 2000 and 2001:

| Summary Table  | 2000       |              |              | 2001       |              |              |
|--|------------|--------------|--------------|------------|--------------|--------------|
|  | CWS        | NCWS         | Combined     | CWS        | NCWS         | Combined     |
| Total Number of Regulated Systems                        | 1,490      | 10,878       | 12,368       | 1,473      | 10,821       | 12,294       |
| Total Number of Systems in Violation*/Percent of Systems | 289<br>19% | 2,192<br>20% | 2,481<br>20% | 344<br>23% | 1,735<br>16% | 2,079<br>17% |
| Total Number of Violations                               | 380        | 3,396        | 3,776        | 450        | 3,173        | 3,623        |

\* Generally lower than the total number of violations, as one system may violate multiple requirements.

This reflects a decrease in the percent of all systems that violated drinking water regulations. However, due partially to the enforcement of the CCR rule, as mentioned earlier, the percent of CWSs in violation increased by four percent. A significant part of the noncompliance is due to the 231 CWSs that did not deliver their annual CCR by the due date. Early indications show that the CCR compliance rate will be significantly better in 2002 than earlier years.

The following table summarizes the number of systems and the percent of each category of system where the most common violations occurred:

| Violations Summary Table | 2000 |   |       |    |          |    | 2001 |    |       |    |          |    |
|--------------------------|------|---|-------|----|----------|----|------|----|-------|----|----------|----|
|                          | CWS  |   | NCWS  |    | Combined |    | CWS  |    | NCWS  |    | Combined |    |
|                          | #    | % | #     | %  | #        | %  | #    | %  | #     | %  | #        | %  |
| Total Coliform MCL       | 85   | 5 | 386   | 4  | 471      | 4  | 75   | 5  | 346   | 3  | 421      | 3  |
| Total Coliform M/R       | 96   | 6 | 1,480 | 14 | 1,576    | 13 | 65   | 4  | 1,135 | 10 | 1,200    | 10 |
| Lead/Copper M/R          | 50   | 3 | 213   | 2  | 263      | 2  | 11   | 1  | 83    | 1  | 94       | 1  |
| CCR                      | 76   | 5 | N/A   |    | See CWS  |    | 231  | 16 | N/A   |    | See CWS  |    |

Key:

CCR: Consumer Confidence Report

CWS: Community water system

MCL: Maximum contaminant level—This is a health-based drinking water standard.

M/R: Significant monitoring and reporting violations—They occur when no samples are taken or no results are reported during a compliance period or when follow-up monitoring was not performed after a positive total coliform sample.

N/A: Not applicable—Michigan requires day care centers and K-12 schools to provide an abridged annual water quality report instead of a CCR, and that compliance data is not included here.

NCWS: Noncommunity water system

All total coliform MCL violations are considered very serious and are acted on accordingly. Only one violation in 2001 and four violations in 2000 involved detecting indicators of fecal contamination in the drinking water.

The failure to collect a sample is not considered a direct public health threat because Michigan's drinking water program does not rely solely on monitoring to protect public health. The primary barriers to prevent contamination of water systems include proper well system construction; isolation from contaminant sources; proper design, operation, and construction of treatment facilities (where surface water is the source); periodic inspections with correction of deficiencies; owner/operator education, training, and certification; and oversight. These activities provide the foundation for safe drinking water, and periodic sampling is only a tool to assess ongoing safe operations. Therefore, a missed sample from a properly constructed water system with a satisfactory history of safe samples may be a violation, but not a direct threat to public health.

*DWRF Projects*

The 1996 Amendments to the SDWA authorized the creation of a revolving fund to provide low-interest loans to qualified water systems for repairs or enhancements to public water systems. This fund is similar to the State Revolving Fund created to assist water pollution control projects.

Michigan's DWRF Program is designed to assist water systems in satisfying the requirements of the SDWA by offering low interest loans to eligible water systems. The DWRF is co-administered by the DEQ and the MMBA. The DEQ handles all programmatic issues, while the MMBA serves the DWRF Program with its financial expertise.

Prior to the creation of the DWRF, project financing for CWSs 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 2001 the DWRF has provided low interest loans for 62 projects totaling nearly \$160 million. Of those, 10 loans were made totaling \$26.71 million in FY 2001. All ten of these systems have remained in compliance with all drinking water standards and monitoring requirements since receiving funds. The following table summarizes the loans since FY 1998:

| <b>DWRF Projects</b>       | <b>FY 1998</b> | <b>FY 1999</b> | <b>FY 2000</b> | <b>FY 2001</b> |
|----------------------------|----------------|----------------|----------------|----------------|
| Number of Projects Funded  | 24             | 21             | 7              | 10             |
| Commitments of Funds (\$M) | \$53.24        | \$51.38        | \$27.64        | \$26.71        |

All 17 of the systems that received DWRF money during FY 2000 and FY 2001 have complied with the drinking water standards, including the village of Blissfield where the village built a water treatment plant to improve turbidity and installed equipment to remove nitrate to avoid noncompliance with the standard. The city of Adrian expects to receive funds in FY 2002 to upgrade the water treatment plant to alleviate turbidity violations. The village of North Branch expects to receive funds in FY 2002 to install a new well and replace water mains. They received extra points on their DWRF scoring because the system they were building was designed to reduce arsenic below the new MCL. The city of Eaton Rapids was in compliance with the nitrate MCL, but they received funds in FY 2000 to extend water to homes whose private wells had high nitrate levels.

To date, eight systems have received commitments for funds in FY 2002.

### *New Systems*

Since the CDP began, 20 systems have commenced operation and none have exceeded a drinking water standard, though a few have received monitoring and reporting violations. Some of the requirements such as a five-year budget, an operations plan, and a certified operator were previously waived for small systems. However, these requirements are now due at or before the final inspection and have helped to ensure new systems are ready to operate a water system before commencing operation.

### *Self-Assessment Participants*

The Committee performed a pilot study of the national AWWA's capacity self-assessment tool by meeting with six, small municipally-owned CWSs working through the self-assessment questionnaire together. The questionnaire covers all aspects of water system TFM capacity. This helps the water system operator and the municipal leader to identify the elements of the water system that need improvement. The self-assessments remain with the systems, and the answers are not shared with regulators. Feedback from the self-assessment process has been very positive.

Since the pilot study, five additional communities have participated in the self-assessment, and more systems are being referred to the Committee by district field staff, by the MWRA, and by engineering firms employed by water systems.

It is too early to determine if the self-assessment program is helping to enhance capacity; however, the systems that participated in the self-assessment have not violated a drinking water standard and only two had monitoring violations, the most common type of violation. Improvements in capacity may be the result of a variety of factors such as the technical assistance provided by the DWRPD's district staff. Also, systems that recognize the benefit of a self-assessment are often not significantly deficient in capacity. It may be impossible to directly correlate the self-assessment program with enhanced capacity, though tracking evaluations and compliance status of these systems will continue. The mentors will continue to provide the self-assessments.

### *Evaluations, Visits, and Construction Permits*

Evaluations, visits, and construction permits have continued to receive attention in the field offices. The following table shows the number and percents of these activities in the last two FYs:

| <b>System Evaluations, Visits, and Construction Permits</b> |                |      |                |      |
|---|----------------|------|----------------|------|
| <b>Data as of July 22*</b>                                  | <b>FY 2001</b> |      | <b>FY 2002</b> |      |
| Evaluations Conducted                                       | 303            |      | 341            |      |
|   | #              | %    | #              | %    |
| Satisfactory  | 232            | 77.0 | 226            | 66.0 |
| Marginal  | 29             | 9.6  | 35             | 10.0 |
| Deficient   | 17             | 5.6  | 20             | 5.8  |
| Not Rated   | 25             | 8.2  | 60             | 18.0 |
| Visits  | 1,115          |      | 931            |      |
| Permits (Received/Issued)                                   | 1,466 / 1,480  |      | 1,317 / 1,443  |      |
| Permits Issued Within 10 Business Days of Receipt           | #              | %    | #              | %    |
|   | 1,134          | 77   | 1,181          | 82   |

\* Data is from October 1 through July 22 of each FY.

This data reflects the following:

- A 12.5 percent increase in the number of evaluations of water systems conducted—A major objective on the performance appraisal of the field staff is the percent of evaluations they are expected to conduct. A greater effort is being made to meet those expectations.
- An 11 percent decrease in the percent of evaluations that are satisfactory—A set of criteria for evaluations was developed, and the field staff are more apt to rate a system less than satisfactory based on more consistent criteria. In the past year the Field Operations Section staffing has remained fairly stable with little turnover in many districts. As a result, staff gained the experience and confidence to visit and conduct evaluations at the more difficult systems, which are likely to receive a less than satisfactory rating.
- The percent of evaluations that are rated marginal and deficient was nearly the same.
- To date, several evaluations are still pending in FY 2002 and some remain pending from FY 2001—A greater effort is being made to more accurately track evaluations.
- A 16.5 percent decrease in the number of on-site visits to meet with operators and local officials, conduct evaluations, or check on progress of projects—A greater effort is being made to more accurately track visits. The DWP is also experiencing reduced staffing in several key districts due to an inability to attract qualified candidates, more recently, and to hiring restrictions.
- A decrease in the number of construction permits issued and received and a 5 percent increase in the number of permits issued within ten business days of receipt—The decrease may be due to an overall construction slowdown.

### **Partnership Roles Among Systems**

Partnerships have formed among water systems to discuss system issues; find solutions to problems; discuss treatment practices; keep up with the ever-changing federal requirements; and provide a friendly, competitive spirit between operators. Some groups are informal while others are formal associations with dues paying members and

training programs accredited to grant continuing education credits (CECs). Members and participants may include water plant supervisors, operators, DEQ staff, consultants, and vendors, depending on the group or its focus. Below is a list of just some of the groups in existence:

- Northeast Michigan Water Association
- Northern Lower Michigan Water Association
- South Central Michigan Water Association
- Southwest Michigan Operators
- The St. Clair River Operators Association
- West Michigan Operators Association

Additionally, many water systems open their training sessions to operators of other systems when space is available.

Large water systems, such as the Detroit Water and Sewerage Department or the city of Wyoming, hold customer meetings to update their customer system on current water system issues unique to the regional system. DWRPD staff is many times invited to these customer meetings to discuss regulatory matters.

### **Partnership Roles With Stakeholders**

#### *Michigan Section, AWWA*

DEQ staff from both the DWRPD and EAD and the Michigan Section, AWWA, have worked closely together for many years. Many DEQ staff fill leadership roles in the Michigan Section, AWWA, and serve on their committees. Each spring and fall the Michigan Section, AWWA, hosts a CECs accredited training meeting for operators and invites DEQ staff to participate. Operator training and certification efforts are shared by the AWWA, DWRPD staff, and EAD staff.

As mentioned earlier, the Committee performed the pilot study of the AWWA's capacity self-assessment tool. The Committee is a corps of retired waterworks professionals who have provided free assistance since 1996 to small CWSs that request it. The mentors assist with operations and maintenance programs, pumps, storage, rates, metering, records, cross connection, CCRs, and system self-assessments.

#### *RCAP*

The RCAP provides assistance to small, rural, low-income communities with a population of less than 1,000 to develop and manage affordable solutions to water, as well as wastewater and solid waste systems. Technical assistance providers work on-site with system operators, local community leaders, and community officials at no cost to qualifying communities.

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The types of assistance provided are completely dependent on the community needs, but generally include these:

- Assessing needs for capacity development
- Reviewing options available for securing financial assistance
- Conducting rate studies
- Conducting public education on the necessity of the projects
- Assisting in the engineering consultant selection process
- Conducting community support surveys
- Helping communities to apply for financing for capacity development projects

The RCAP also provides hands-on technical assistance to train and educate local officials. They stress the need for water systems to achieve and maintain financial solvency and to continually fund capacity development projects through rates and charges and capital improvement funds within their own budgets. Technical assistance to local officials includes the following:

- Rate structure reviews and recommendations
- Project selection and scope
- Compliance issues, SDWA, and new rule requirements
- Equipment maintenance and replacement programs
- Interim financing options to expedite projects

The Rural Outreach Council of Michigan helps to inform communities and organizations of the assistance available through the RCAP.

### *MRWA*

The MRWA helps rural communities, serving fewer than 10,000 people, with administrative, managerial, or operational concerns. Since January 2000, the MRWA conducted over 2,200 on-site visits to water systems to assist them with primarily management and financial issues. In 2001 they provided over 300 hours of hands-on training to almost 900 students representing over 300 communities. Training topics included these:

- Budgeting
- Rate studies and rate making

- Distribution system operations such as hydrant and valve maintenance and system flushing
- Municipal cross connection control program
- Monitoring requirements and sampling procedures
- Well rehabilitation

### **Problems that the DWRPD and Systems Face Most Frequently**

#### *Cost of the Project Plan is an Eligible Cost for DWRP Loans*

The cost incurred in development of a project plan was considered to be a barrier for entry into the DWRP Program for small systems. As a result Section 5403(b)(3) of Part 54 of the SDWA and 2000 PA 147 provide for cash flow relief for small communities with populations under 10,000 by allowing them to borrow up to \$100,000 on a short-term basis for planning costs relating to the DWRP Program. The loan may be made through the sale of bonds to the MMBA for eligible planning costs of a proposed project on the DWRP Project Priority List. To date, systems have not taken advantage of this option. This loan is only necessary when the system's project is not able to be funded during the FY. This loan option has only been available during the last two FYs, and during that time all projects on the project priority list have been funded so no systems have needed the loan. However, lack of knowledge of its availability may still be a deterrent to DWRP participation.

#### *Dealing With Certain Categories of Small Systems*

The resources in small systems are generally not as abundant as those in large systems, and the operators in small systems may also have other responsibilities in the community such as grounds maintenance, sewer, garbage, and snow removal. Small CWSs may under fund the water system in order to meet other community needs. As a result, the following challenges of any water system become increasingly difficult for small systems:

- Budget for replacement and upgrading of equipment and mains
- Implement programs to maximize the existing system such as leak detection programs and hydrant flushing programs
- Provide training for operators
- Stay abreast of impending regulations that may have significant impact

The financial assessment pilot program mentioned earlier is anticipated to help raise the awareness in municipalities of the importance of a dedicated and sufficient budget for the water system, a plan for upgrades and replacements, and a rate structure that reflects the operation and maintenance needs of the system, especially those without a dedicated revenue stream such as apartments, condominiums, and MHCs.

The technical assistance provider contract with UPEA is directed at small systems, as mentioned earlier. The training they have conducted for operators of small systems and the on-site technical assistance visits to NCWSs have been very well received. Providing safe water to day care centers and schools are high priority, but those systems have some of the highest operator turnover rates and their operators are usually employees with other nondrinking water related responsibilities. Additionally, a school may be the only building in the school district that is served by privately-owned wells, yet makes disproportionate resource demands on the school district to operate and maintain the drinking water system. As a result, the one-on-one technical assistance that UPEA provides is important.

## **New Challenges**

### *New Regulations*

New regulations traditionally have been geared to CWSs, but since the early 1990s, NCWSs must also comply. Some of the new regulations affect small systems more significantly than large systems, particularly the following:

- Arsenic Rule; date to comply is January 2004 for monitoring requirements and January 2006 for the new arsenic standard
- Radionuclides Rule; effective December 8, 2003
- Long-Term 1 Enhanced Surface Water Treatment Rule; effective January 14, 2005
- Ground Water Rule; proposed rule

Part of the technical assistance set-aside funds are being used to evaluate the effect of the Arsenic and Radionuclides Rules to determine what treatment, if any, should be installed or upgraded to comply with the new regulations.

- Special monitoring for arsenic is being performed at sources and of backwash water, lagoon discharge, and decant water at iron removal plants that may contain high arsenic levels.
- Radionuclides monitoring is being conducted in targeted systems in the Upper Peninsula where uranium levels may be high.

### *Security*

On June 12, 2002, President George W. Bush signed into law the Bioterrorism Preparedness Act (HR 3448) which amends the SDWA to require CWSs serving more than 3,300 people to complete vulnerability assessments and to update emergency response plans. The need to address security issues will continue in the future.

### 3. Additional Topics

Other efforts in the DWP that affect capacity include consolidating to provide for reliability and standby power, training (especially operator certification), and source water assessment and protection. The following is a summary of these efforts:

#### **System Consolidation and Restructuring**

The DWP has a long-standing tradition of encouraging regionalization when feasible. As a result, the first system in Michigan to apply for DWRP money used part of the funds to consolidate numerous small systems into one large system that became a part of the Detroit regional system. Many DWRP projects are funded to enhance reliability through alternate water sources and increased storage volume or to gain standby power. These Michigan requirements on public water systems can be more easily accomplished frequently through combining the efforts of adjacent systems.

#### *Reliability*

A reliability study must be performed at each CWS and updated every five years to ensure a continuous supply of drinking water. The DEQ will issue a construction permit only after an adequate study is conducted or when the DEQ determines that an adequate quantity of water is available for that system. Where ground water is the sole source of water supply, a minimum of two wells is required, each with their own pumping units. Simply by summing the parts of individual systems can a regional system provide the reliability required under Act 399.

#### *Standby Power*

A standby power source to provide a continuous supply of finished water during power outages is required of CWSs that have 50 or more service connections or serve 200 or more people. Systems that are exempt from this requirement are those that are licensed annually such as MHCs and health care facilities. Regionalizing as few as two small systems into one can provide the required standby power for both systems. The DEQ has considered requiring standby power of existing CWSs, regardless of populations served, but a full analysis of this proposed change to the administrative rules has not yet been conducted.

All new CWSs, regardless of the population served, must conduct an analysis of system reliability during power outages as required by the new systems capacity assessment policy. Based on this analysis, the DEQ may require standby power before a new system provides water to the public.

#### *Cost Benefit to Regionalize*

Rather than creating a new system, the DWRPD encourages combining with an adjacent system to take full advantage of regionalization. New systems are required to perform a cost benefit analysis of regionalization before the system may supply water to the public and are discouraged from creating a separate new system unless the benefits outweigh the costs of regionalization.

Before a privately-owned CWS may begin operations, they must first obtain a refusal from the local government to take ownership of the water system.

Additionally, a privately-owned CWS must establish an escrow account to be used by the DEQ for water system emergencies. Establishing an escrow account may have encouraged an owner of a development to combine with an adjacent system. However, the level of the escrow account has remained the same for some years, and the low level may no longer serve as an incentive to regionalize.

### **Training Efforts, Especially Operator Certification**

#### *Operator Certification*

The 1996 Amendments to the SDWA require that all CWSs and nontransient NCWSs be under the supervision of a certified operator by December 8, 2002. DEQ administrative rules also require certified operators for transient water systems that employ certain treatment methods. These amendments will help to ensure each system is operated by an individual who is trained in the requirements of the SDWA. This rule requires that a certified operator be available at an additional 225 CWSs and over 1,700 nontransient NCWSs that previously were exempt from certification requirements. For owners and managers of privately-owned systems, the requirement for certified operators is raising the awareness of the importance of a quality water system. Soon we will be able to gauge the impact of the new operator certification requirements in the noncommunity program. Prior to the new requirements, the rate of violations of the total coliform and nitrate requirements were about the same for transient NCWSs that are exempt from the new requirement and nontransient NCWSs that must have a certified operator.

A provision was added to the rule to allow a restricted option.

- **Restricted Certification Option:** It is recognized that there are many competent small system operators that may not meet the initial requirements to become certified, so a restricted certificate is allowed for existing operators at their current system if they receive additional training. The required training is being conducted by 20 of Michigan's 43 local health departments and a technical assistance provider under contract. It is anticipated that all the operators in the approximately 1,450 NCWSs and several CWSs will meet their training requirements by the December 8, 2002 deadline and receive their restricted certificate.
- **Unrestricted Certification Option:** Other operators will pursue an unrestricted certificate through an examination process and will be able to serve their own systems as well as a third-party contractor to other water systems. To certify operators for the new level 5 classification, an examination had to be developed. As a result, the DWRPD worked closely with the EAD to build a database of questions for exams using criteria established by the American Boards of Certification. The examinations are anticipated to be offered twice a year.

CECs: Operators must maintain their certification by earning CECs. To meet this requirement, the OTU of the EAD offers over 30 courses every year for the 3,538 certified operators. Additionally, about 85 other organizations sponsor or conduct

training courses accredited by the EAD as worthy to grant CECs. Many of these training opportunities are on-line.

The OTU also participates in conferences and training sessions with professional organizations such as the MRWA; the Michigan Water Environment Association; and the Michigan Section, AWWA.

#### *MHC Program*

This program oversees the drinking water, wastewater, drainage, storm sewers, and general health and safety issues of MHCs. To address drinking water issues, the MHC Program staff conducted five sessions in 2002 to train about 230 people representing operators, owners, managers, and maintenance personnel. Some attendees serve all of those functions at their systems. Topics included:

- Waterborne diseases
- Regulatory update
- Chlorination
- Arsenic
- Security
- Well investigation
- Flushing
- Case study on water system renovation

The operator feedback was very positive, and the participants appreciated the effort of the DEQ.

#### **Source Water Assessment and Protection Efforts**

##### *Source Water Assessment Program (SWAP)*

The SWAP helps communities to identify potential contaminant threats to their source water, either from surface or ground water. The assessment is designed to:

- Identify the areas that supply public drinking water
- Inventory contaminants and assess water supply susceptibility to contamination
- Inform the public of the results

Michigan has almost 12,000 CWSs and NCWSs with an estimated 18,000 sources to assess by May 2003. Approximately 9,000 of the 12,000 public water systems requiring assessments are underway.

The DEQ is working to complete source water assessments at all public water systems by the end of 2003 through contracts and partnership agreements. Michigan State University's Institute of Water Research and the local health departments are under contract to complete source water assessments of the NCWSs. Joint Funding Agreements were continued with the USGS to develop the connecting channels flow model in southeast Michigan and to assist with surface water and karst source water assessments. In addition, a Memorandum of Understanding was fulfilled by the NOAA's National Buoy Data Center to equip and operate a real-time weather station on Lake St. Clair to support the connecting channels flow model. The DEQ has an agreement with the city of Detroit to perform source water assessments for the surface waters of southeast Michigan.

UPEA recently completed a pilot project to determine if source water assessments are feasible under the existing contract with the DEQ. UPEA currently conducts on-site technical assistance visits to small CWSs and schools. The pilot project included training UPEA staff and performing assessments at CWSs that are already scheduled to receive an on-site visit under the current contract. As a result of the pilot project, it was determined that the assessments can be completed during the on-site visits statewide. UPEA has completed the 11 pilot assessments and are continuing to perform assessments at other CWSs.

#### *Wellhead Protection Program (WHPP)*

The WHPP assists local communities utilizing ground water for their drinking water in protecting their water source. A WHPP minimizes the potential for contamination by identifying and protecting the area that contributes water to municipally-owned CWS wells and avoids costly ground water cleanups. Of the 490 municipal systems in Michigan, approximately 251 are involved in some aspect of wellhead protection such as performing a delineation, inventorying the potential threats, and developing contingency plans. Of those 251 systems, 83 have completed all the steps and have an approved WHPP. As a result, 88.2 percent of the population of the state served by municipal systems are in communities taking action to protect their ground water sources.

#### *Well Abandonment Program*

To manage abandoned wells identified within delineated wellhead protection areas of CWS sources, grants were funded under the Clean Michigan Initiative to 35 communities. Some highlights of these projects include conducting public education programs, identifying and mapping the location of abandoned wells, developing technical language and specifications for bidding abandoned well plugging work, and developing proactive abandoned well plugging ordinances.

## **Summary**

The CDP is progressing steadily to enhance the TMF capacity of CWSs and nontransient NCWSs through the implementation of capacity assessment policies. The new systems policy uses the control points of construction permit and final inspection while the existing systems policy adds a capacity assessment component to the technical assistance already provided by DWRPD field staff and other technical assistance providers. Initially it was thought that the baseline by which the success of the CDP would be measured was compliance data, however, comparing compliance

data from one year to the next may not be an accurate assessment of improving system capacity because of new rules and requirements imposed each year as a result of the 1996 Amendments to the SDWA. The success of the CDP can also be measured by other factors, such as the increasing opportunities to earn CECs, the number of certified operators, and the number of capacity assessments conducted. To examine those other measures, we will continue to look at the DWRF program, the new systems program, partnerships among systems, and the activities of other organizations to provide assistance.