

Fiscal Year 2020 Operator Certification Annual Report
Submitted by
Michigan Department of Environment, Great Lakes, and Energy
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1. **Authorization:** Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399).

The most recent revisions to Part 19, *Examination and Certification of Operators*, of the 1979 Administrative Rules promulgated under Act 399 (Part 19 Rules) occurred in 2015 and included updates to R 325.11906a, *Restricted certificates*; R 325.11910, *Application for examination; notice to accepted applicants of examination*; and R 325.11915, *Renewal requirements*. Changes included updates to restricted licenses, examination application deadlines, and minor updates to renewal category requirements.

On July 12, 2017, the Michigan Governor signed legislation that extended the reauthorized fees for training and certification of operators of drinking water facilities. The extension allows fees to be collected through October 1, 2021. These funds assist the Michigan Department of Environment, Great Lakes, and Energy (EGLE) in maintaining adequate staffing for the Drinking Water and Environmental Health Division (DWEHD), Operator Training and Certification Unit (OTCU).

The OTCU strives to implement the Operator Certification Guidelines that are based on the following three public health objectives: (1) customers of any public water system be provided with an adequate supply of safe, potable drinking water; (2) consumers are confident that their water is safe to drink; and (3) public water system operators are trained and certified and have knowledge and understanding of the public health reasons for drinking water standards.

2. **Classification of Systems, Facilities, and Operators:** As defined in the Part 19 Rules, water systems are classified based on complexity, capacity, and/or population served. Michigan has three classification categories, and five levels within each category (level 1 is the highest; level 5 the lowest).

Certification Classifications:

Class F - Complete Treatment Systems (F-1, F-2, F-3, F-4, and F-5)

Class D - Limited Treatment Systems (D-1, D-2, D-3, D-4, and D-5)

Class S - Distribution Systems (S-1, S-2, S-3, S-4, and S-5)

Water systems must be under the supervision of a drinking water operator certified in the appropriate system classification. This requirement applies to all community water supplies (CWS), nontransient noncommunity water supplies

(NTNCWS), and transient noncommunity water supplies (TNCWS) that employ treatment.

In Michigan, the classification of the water supply is the responsibility of district and local health department (LHD) staff. Changes in classification occur infrequently and, when it does occur, field staff work closely with the supply on any new certification requirements.

There are currently 1,381 CWSs required to have a certified Operator in Charge (OIC). There were six CWS violations for lack of an OIC determined during fiscal year (FY) 2020. Four of the violations were resolved within one month, and two violations were resolved within approximately three months. CWSs are aware of the OIC requirement, and EGLE staff provide assistance to all supplies in maintaining compliance.

Number of Certified Operators by Classification:

Distribution (S) Licenses		Complete Treatment (F) Licenses		Limited Treatment (D) Licenses	
S-1	626	F-1	175	D-1	135
S-2	590	F-2	139	D-2	224
S-3	999	F-3	239	D-3	412
S-4	1,141	F-4	338	D-4	374
S-5	425	F-5	53	D-5	219

EGLE allows complete treatment systems to request provisional certificates for operators in training at the F-4 certification level. A provisional certificate allows the operator to gain valuable on-the-job knowledge while also being certified to qualify as a shift operator. Provisional certificates are temporary (not to exceed two years), requiring individuals to take and pass the certification exam to obtain permanent certification. Provisional certificates must be approved by EGLE. In FY 2020 there were 20 provisional certificates issued.

The State of Michigan allows for reciprocity for out-of-state operators wishing to hold a Michigan drinking water certificate. EGLE has an application and review process for operators wanting to move to the State of Michigan to fill a job vacancy. The out-of-state certificate is compared with Michigan's requirements, and a temporary certificate may be issued by EGLE to an individual who holds a similar operator certificate in another state. The certificate is temporary and valid only until the next available EGLE examination. In FY 2020 EGLE issued five reciprocal certificates.

LHDs are contracted by EGLE to provide technical assistance and oversight to NCWSs in Michigan. Currently, there are 1,301 active NTNCWSs and 78 TNCWSs identified as requiring a certified operator. At the time of this writing, 122 NTNCWSs and zero TNCWSs are without an OIC according to the NCWS

database. LHDs pursue systems without OICs as described in Section 4 of this report.

3. **Operator Qualifications:** To receive certification, individuals must pass an examination for each desired level of certification. To qualify for an examination, individuals must meet minimum education and experience criteria as outlined in the Part 19 Rules.

The minimum on-the-job experience required depends on the Category (F, D, or S) and Level (1-5). The table below describes the minimum experience necessary to take the exam. For example, to qualify for the F-4 exam, an operator needs a minimum of three months of full-time work to qualify.

EXPERIENCE QUALIFICATIONS (months)

F-1: 60	D-1: 48	S-1: 48
F-2: 30	D-2: 24	S-2: 24
F-3: 15	D-3: 12	S-3: 12
F-4: 3	D-4: 6	S-4: 6
F-5: Not Required	D-5: Not Required	S-5: Not Required

Examinations are designed to test the skills and knowledge necessary for each certification category and level. Examinations are validated per the process described in Section 7 of this report.

Some existing operators possess “grandfathered” certifications. Currently, 139 operators hold grandfathered licenses, and an additional 22 operators hold both a grandfathered license and a standard license in a different certification category. These numbers may fluctuate from year to year because, though an individual’s license may expire, he/she can reapply during the one-year renewal grace period. These individuals must meet the same continuing education credit (CEC) requirements as unrestricted license holders. It is no longer the practice of EGLE to issue this type of license.

4. **Enforcement:** EGLE provides technical assistance to address when a CWS fails to submit reports and/or required samples, submits inaccurate or incomplete reports, or there are operational concerns. EGLE monitors compliance status, issues violations, and trains owners and operators to promote compliance. EGLE had one operator enforcement case in FY 2020 that involved the revocation of certification for two operators from the same water supply.

The majority of CWSs without an OIC are due to situations such as operator turnover and retirements. The EGLE policy titled “Community and Noncommunity Water Supply Systems - Required Operations Oversight” defines minimum oversight for community and noncommunity water supplies during standard operation and/or when the OIC leaves (interim operation). CWSs are

required under R 325.11905 to have classified systems under the supervision of an OIC certified in the system classification. In addition, all CWSs are required by Act 399 to designate a backup operator to be responsible when the OIC is unavailable. For larger systems serving greater than 4,000 people, the backup operator must hold the appropriate certification, either a treatment or a distribution license. If the backup operator does not have the required level of certification, EGLE Public Water System Supervision (PWSS) field staff work with the water supply to establish an interim OIC while also pursuing a permanent replacement. The same applies to smaller CWSs where the designated backup operator is not required to hold any certification. In these cases, the interim solution often is to contract with a properly certified operator to provide oversight until a permanent arrangement can be made.

The amount of time a CWS may operate under an interim OIC is determined on a case-by-case basis. If a CWS has an existing employee who is eligible to take the appropriate certification examination, it is common practice to allow the operator to continue being trained to operator shifts if they are existing staff and are eligible for the next exam; then the employee can take the exam and become certified. This time period should not exceed six months as examinations are usually offered twice per year. If no existing employee is eligible, then CWSs are expected to pursue a new OIC as soon as possible. What is considered timely is determined by EGLE field staff based on system-specific circumstances. If a CWS does not retain an OIC by the end of the interim period, EGLE issues a violation/deficiency for failure to have a qualified OIC. Continued failure may result in escalated enforcement, such as an Administrative Consent Order or other escalated action.

NCWS PWSS staff monitor compliance in the noncommunity program through regular communication with the LHDs. The quarterly review process for LHD data entry was modified in 2019 to include notification and follow up on operators whose license expired during the quarter. This new process has successfully reduced the number of systems lacking a certified operator over the course of the fiscal year. Follow up to an NCWS lacking a certified drinking water operator is initiated and conducted primarily by LHD staff, who provide written notification to the water supply pursuant to the Part 19 Rules. Failure by the NCWS to comply within 30 days could warrant escalated enforcement by the LHD, which may involve an informal meeting or other activities as appropriate. Staff from EGLE, DWEHD, Noncommunity Water Supplies Unit, assists LHD staff with further escalated enforcement activities. Guidance material and template letters are available to LHD staff. When LHD enforcement actions are unsuccessful, EGLE compiles the list of systems without OICs and sends them a Violation Notice. EGLE also hosted training for operators that work at NCWSs across the state to provide guidance and education on how to remain in compliance.

Additionally, if EGLE has substantial concerns about misconduct of an existing operator, a referral for investigation can be made. Investigations can be referred to the Michigan Department of Natural Resources, Environmental Investigation

Section (EIS), for potential criminal enforcement. The EIS serves as the investigative and law enforcement specialist for EGLE.

5. **Certification Renewal/Approved Operator Training:** Michigan's Operator Certification Renewal Program is based on a three-year renewal cycle for all certification levels. The number of CECs required for renewal ranges from 24 contact hours for the highest CWS certification levels to nine contact hours for the lowest certification levels. The DWEHD, OTCU, manages the Operator Training and Certification Tracking System (OTCTS) to record the number of CECs awarded to certified operators.

A renewal notice is mailed to applicable operators approximately two months prior to the certificate expiration date. The mailing includes instructions for obtaining a copy of the renewal application from the OTCU Web site. A phone number is also provided for operators to call and request that a hardcopy application be mailed. An operator that allows their certificate to expire may reinstate it up to one year from the date of expiration, provided the individual obtained the additional prorated number of CECs. There were 380 operators who let their certificates lapse and were reinstated before the end of the one-year grace period. Operators that went beyond the grace period had their certifications removed from the database. If they wish to become recertified, they must reapply and retake the certification examination.

The Advisory Board of Examiners (ABE) advises EGLE in program implementation and on revision to the Operator Certification Program. The ABE met six times in FY 2020. A list of meetings can be found on the OTCU Web site at Michigan.gov/EGLEOperatorTraining and clicking on "About Us" and "Certification Boards." Minutes are available upon request.

One of the main functions of the ABE is to review and approve training courses and programs for drinking water CECs. Continuing education course approvals are granted during regularly scheduled ABE meetings and potentially between meetings using a letter ballot process. The list of courses approved by the ABE is available on the OTCU Web site. This makes it possible for certified operators to check the Web site prior to attending training to be sure a course has been approved for CECs.

As a component of their program review, the ABE recommended to the OTCU that all certified operators at CWSs be required to attend courses for CECs that are technically and/or managerially related to the operation, maintenance, or management of a drinking water system. The higher the certification level, the greater the number of technical or managerial continuing education contact hours required. Drinking water certification renewals are subject to the continuing education criteria laid out in Table 1 below. Notification of the CEC category requirement is mailed to operators when they renew their current certificate or pass a new certification examination. This information is also available on the EGLE Web site.

Table 1: Minimum Requirements for Continuing Education

Highest certification level held	Minimum number of continuing education training hours required to renew	Minimum number of continuing education training hours categorized as technical, managerial, or both
1 or 2	24	18
3	24	12
4	12	6
5	9	no minimum

All examinations are normally offered twice a year, providing two opportunities each year to qualify for and take an exam, or retake a previously failed exam(s). However, FY 2020 was unusual due to the COVID-19 pandemic. Spring examinations originally scheduled to take place in May 2020 were postponed, rescheduled for July 2020, and then, ultimately, cancelled. EGLE made significant adjustments in order to conduct the fall exams. EGLE lowered group size, required masks and social distancing, required health screening forms, and followed other risk mitigation protocols. EGLE successfully administered the exams in November 2020, with distribution exams hosted on November 4 and treatment exams hosted on November 10. The OTCU received 1,250 applications in FY 2020, a decline over FY 2019, likely due to the COVID-19 pandemic.

Examination offerings are promoted through targeted mailings via traditional mail or e-mail, by various associations related to the drinking water community, and on the EGLE Web site, which shows the exam schedule, exams offered, and application postmark deadline for the calendar year.

There were 1,368 operators required to renew their licenses in FY 2020 or lose certification. See Table 2 below for FY 2020 renewal rates. In addition, 351 new licenses were issued to CWS and NCWS operators around the state.

Table 2: FY 2020 Certification Renewal Rates

FY 2020 Renewals	
Levels 1-4 (CWS)	848
Level 5 (NCWS & CWS with no treatment and distribution system limited in extent)	120
Total Drinking Water Renewals	968

6. **Resources and Training Needed to Implement the Program:** Enhancements to OTCTS are needed to aid in the tracking of certified operators. These updates are included in a large DWEHD IT upgrade project currently underway. During FY 2020, the OTCU continued to move forward assessing vendors and reviewing

business requirements for inclusion in this project. The current database tracks certification and renewal of drinking water operators, but not the OICs. OIC designations are tracked in SDWIS/State and WaterTrack.

The OTCU utilizes a computer-managed Test Scoring Machine, Optical Mark Read scanner (Scantron Insight 4ES), to eliminate hand-scoring and reduce administrative workload, allowing the OTCU to combine the score of a performance-based activity with an objective score. ParTest is exam question item banking software that provides the ability to record, maintain, and inventory validated and referenced examination questions. In addition, ParTest allows the user to create examinations comprised of multiple objectives and maintain statistical response data for each exam question, which in turn helps the exam administrator determine the level of difficulty for each exam question.

ParScore, a complement to ParTest, allows the exam administrator to grade examinations and provides a variety of reporting capabilities. ParScore also tracks individual response data and provides the ability to post statistical response data to ParTest. ParScore provides the ability to maintain individual exams for each applicant and provides a detailed summary of examination results on each examination objective, which is provided to each examinee.

The OTCU resides in the DWEHD, which allows for coordination of training and certification activities between the OTCU and staff responsible for implementing other PWSS Program activities. It allows some OTCU activities to be distributed among other PWSS staff as needed, such as reviewing draft exams and teaching courses. Presently, the OTCU consists of five employees: a manager, two analysts, an office assistant, and a technician. An engineer position was proposed for FY 2020; however, the COVID-19 pandemic resulted in a hiring freeze and this was delayed. There will be continued review of resource sufficiency in FY 2021 with the intent to hire the new position.

7. **Stakeholder Involvement and Exam Question Validation:** The primary method of stakeholder involvement is the ABE. Act 399 requires EGLE to appoint the ABE to assist EGLE in the examination of individuals as to their competency to operate public water supplies. The makeup of the ABE is such that broad-based stakeholder involvement is assured. The ABE consists of two certified water treatment operators, two certified water distribution operators, one superintendent or manager of a supplier of water, one representative of the administrative branch of a local governmental agency, two members of the public at large, and one professor of sanitary or environmental engineering at a Michigan university. The ABE is required to meet at least twice each year to advise EGLE on program implementation and any proposed revisions to the operator certification program.

Additionally, three groups of subject matter experts (SMEs) meet routinely for the development and validation of certification examination questions. Each group consists of drinking water SMEs certified at the highest level within each of the

three exam classifications. The charge of the SMEs is to assist EGLE and the ABE with review and validation of existing examination questions for the Level 1 through 4 exams and to develop new exam questions. The level of effort contributed by these stakeholder groups is significant. Exam questions validated by the various SME groups have been used since 2004. The older questions in the examination question pools are reviewed periodically for relevance to new standards, practices, and technology. All new exam questions are developed in conjunction with and reviewed by these stakeholder groups. Existing Level 5 examination questions for the S-5 and D-5 have been developed and validated by EGLE staff. Questions for the F-5 have been written and validated by SMEs. New Level 5 questions will be developed and validated by SMEs and EGLE.

Exam pass rates are an indication of the overall difficulty of the test. However, it should be noted that the number of examinees for each test can skew the numbers significantly, particularly for exams with a low number of examinees.

Average Percent Pass Rate (Spring 2010 - Spring 2020)

Distribution (S) Licenses		Complete Treatment (F) Licenses		Limited Treatment (D) Licenses	
S-1	45%	F-1	42%	D-1	40%
S-2	46%	F-2	35%	D-2	46%
S-3	48%	F-3	57%	D-3	58%
S-4	55%	F-4	57%	D-4	58%

EGLE staff continues to serve as exam proctors for all exams, creating a consistent test taking experience for examinees.

8. **Program Review:** The ABE, working with OTCU staff, review program activities on an ongoing basis. Reviews are primarily of activities coordinating operator certification procedures conducted by staff in the OTCU and by providing input on program policies. Internal review activities needing attention include exam formulation, exam grading, review of program policies and procedures, etc.

The exam proctoring process has recently been improved. Additional enhancements were made to the proctor process in FY 2020 due to the COVID-19 pandemic. Proctors receive a detailed written description of the process. This year there were several additional documents to ensure the safety protocols necessary to conduct an exam safely during the COVID-19 pandemic. In addition, there was an instructional webinar to assist proctors with the FY 2020 process and allow for questions.

The exam application process is also undergoing continuous improvement. A short video was developed to assist operators with properly completing an exam application. This has improved overall application quality and reduced the number of follow-up calls OTCU staff have to make. During the COVID-19 pandemic, it was critical to communicate via the OTCU Web site. These web

updates improved customer service during this time and reduced the amount of phone calls the OTCU would have received during this unprecedented event.

Michigan's Office of the Auditor General (OAG) conducts periodic program reviews. Previous reviews of the EGLE operator certification program component were completed, and their recommendations were implemented. The OAG conducted a Performance Audit of select PWSS Program elements during 2016 but did not select OTCU activities as a primary focus of that audit.

EGLE routinely conducts internal controls evaluations (ICE) of major programs. The most recent ICE reviews of the community and noncommunity water supply programs, conducted in 2016, incorporated review of OTCU elements.

A number of the United States Environmental Protection Agency (USEPA) review activities incorporate assessment of OTCU activities. The USEPA's 2017 OTCU program review assessed elements of the OTCU and enforcement of OIC requirements; and the USEPA's annual Drinking Water State Revolving Fund set-aside review includes evaluation of OTCU program activities. Year-end reviews of this OTCU report and the PWSS year-end report also provide opportunity for the USEPA review of program activities.

Recent in-house review of the OTCU resulted in updated application forms and Web site, updates to examination application scoring guidance documents, and a peer review process for certain examination application scoring. Additionally, the OTCU undertook a Lean Process Improvement exercise in 2017, which it still benefits from, that was facilitated by Michigan's Office of Performance and Transformation. It provided a thorough review of program processes. This resulted in recommendations for process improvement with emphasis on needed IT solutions. The OTCU implemented several of the recommendations and is currently working on IT solutions.

9. **Implementation Update/Summary of Major Program Activities:** Major operator certification activities conducted since the 2019 Annual Report include:

- The COVID-19 pandemic created program implementation challenges in FY 2020. Program staff spent significant time adjusting processes and procedures to address these challenges, including modification of exam hosting protocols, converting training to a virtual environment, and adjusting to a teleworking environment.
- Conducted several virtual training events in the summer and fall of 2020 due to the COVID-19 pandemic.
- EGLE maintains an inventory of 180 approved virtual courses and it continues to increase offerings.
- Continued updates to the Web site format and content, with frequent updates during the COVID-19 pandemic.

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- Technical assistance providers hosted several trainings. The Rural Community Assistance Partnership (RCAP) conducted trainings in the following areas: water quality issues with return to service; disinfection; compliance with Act 399; and sustainable utility management. The Michigan Rural Water Association (MRWA) offered numerous courses in cross connection control and reporting, lead and copper, emergency management tools, and water storage tank training to approximately 250 operators across the state.
- Continued work on a new IT system to provide electronic exam applications and renewal applications. Met with and provided information to IT project team. Currently, SDWIS and WaterTrack hold data on designated OICs, while the OTCTS tracks certification and renewal of operators. With the new IT system, the hope is to integrate this information.
- Facilitated workgroups responsible for updating materials and content of several multi-day operator courses.
- Updated the three-day training courses to virtual sessions during the COVID-19 pandemic. Offered Basic Math and Hydraulics, Limited Treatment, Water Treatment I, and Distribution courses.
- Updated internal guidance document detailing examination application scoring methods and criteria.
- Offered several extra basic math courses virtually during the COVID-19 pandemic, and a new basic chemistry course was offered twice.
- Assisted with facilitation of numerous internal EGLE staff training events designed to train new staff and serve as a refresher for existing staff.
- Provided training opportunities for small community and NTNCWS operators to meet renewal requirements for their certifications. Five virtual sessions were conducted in the summer of 2020.
- Maintained an Intranet application allowing EGLE technical staff access to readily confirm a certified operator's status.
- Maintained a web-based application allowing certified operators to view pertinent information regarding their certifications. Operators can look up certificate renewal status, a list of courses completed, and other information.
- Provided PWSS staff a list of expired and about-to-expire operators four times each year.
- Mailed notification of impending expiration to operators. When an operator's certificate expiration date is within eight weeks of the current date, a time-delayed web link allows for printing of their renewal application so the operator can more easily renew certificate(s).
- Updated and enhanced a web-based listing of all ABE-approved courses to assist drinking water personnel in maintaining certification. This update included newly added virtual training due to the COVID-19 pandemic, with over 180 approved virtual courses.
- SME workgroups met once following the November 2019 exams to validate the F, D, and S exam item banks.
- Targeted notification to certified operators detailing training opportunities and program changes for both EGLE courses and USEPA contractor trainings.

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- Provided certified operators critical EGLE Laboratory information to help maintain compliance with sampling requirements.
- Provided regional training at various locations around the state of Michigan for both community and NCWS operators and coordinated with USEPA grant-funded contractors by cosponsoring and promoting the training to operators.
- Met with the MRWA, RCAP, and had a conference call with the Environmental Finance Center Network (EFCN) to coordinate and prioritize USEPA-contracted training administered by them.
- Developed webinars for small system operators at no cost to operators.
- To help the city of Flint (City) address workforce issues and attract skilled workers, EGLE connected the City with Delta College. The City and Delta College are partnering to train Flint high school students to work in this drinking water field.

Major operator certification activities planned for the coming year:

- Continue progress on enhancements or replacement of OTCTS to expand/improve IT capabilities, including a robust online application process.
- Continue to update short-course training materials and have them available in a virtual environment. If resources allow, develop new course content, such as an Advanced Chemistry course and an Advanced Distribution course, along with expanding other training opportunities.
- Continue to assist and facilitate in-house training.
- Develop new exam questions for Scantron item bank for all levels.
- Continue SME workgroups to validate new F, D, and S exam questions.
- Continue no/low cost continuing education training opportunities to small CWS and NTNCWS operators.
- Develop new training modules, such as chlorination basics, for small CWS and NTNCWS operators.
- Develop new webinars to help operators complete renewal applications.
- If resources allow, document recommendations for potential rule updates and associated stakeholder process.
- Pursue extension of certification fee authorization beyond October 21, 2021. Evaluate current fee amounts for potential fee increase proposal.

Questions about this report may be forwarded to:

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