Miscellaneous Helpful Information

This appendix includes:

- List of Resources Available to Small Systems
- Typical Duties of a Privately-Owned Small Water System Operator: Use this list to develop a job description for a water operator or to develop job interview questions for a contract operator.
- Typical Work Duties of a Municipal Water Supply System Operator: Use this to communicate to customers and local officials the wide range of responsibilities of a water operator to protect public health.
- Water System Programs, Plans, and Records

Resources Available to Small Systems

DEQ Web site for Community Water Systems: www.michigan.gov/deq, click on Water, Drinking Water, Community Water Supply

EPA Web site for small systems: http://water.epa.gov/type/drink/pws/smallsystems/index.cfm

General Information

- Regulations 101

Quick Reference Guides

- Arsenic and Clarifications to Compliance and New Source Monitoring Rules: A Quick Reference Guide , EPA 816-F-01-004, January 2001
- Radionuclides Rule: A Quick Reference Guide EPA 816-F-01-003 June 2001
- Stage 1 Disinfection and Disinfection Byproducts Rule: A Quick Reference Guide EPA 816-F-02-021 December 2002rev1
- Stage 2 DBPR: A Quick Reference Guide For Schedule 3 Systems EPA 816-F-06-003
- Stage 2 DBPR: A Quick Reference Guide For Schedule 4 Systems PDF EPA 816-F-06-004
- Total Coliform Rule: A Quick Reference Guide, EPA 816-F-01-035 November 2002
- Consumer Confidence Report Rule: A Quick Reference Guide, EPA 816-F-02-026 November 2002
- The Public Notification Rule: A Quick Reference Guide, EPA 816-F-00-023 May 2000
- Lead and Copper Rule: A Quick Reference Guide, EPA-816-F-08-018 June 2008
- Lead and Copper Rule: A Quick Reference Guide for Schools and Child Care Facilities that Are Regulated Under the Safe Drinking Water Act, (546 K PDF FILE, 5 pgs), EPA 816-F-05-030 October 2005

STEP (Simple Tools for Effective Performance) Guides: See EPA's Web site for small systems management help at http://water.epa.gov/type/drink/pws/smallsystems/managementhelp.cfm for these and other references:

Capacity Building Tools

- Small Systems Guide to Safe Drinking Water Act Regulations: The First STEP to Providing Safe and Reliable Drinking Water - STEP Guide Series (PDF 35 pp, 3 M), EPA 816-R-03-017, September 2003
- Strategic Planning: A Handbook for Small Water Systems -- STEP Guide Series (PDF 30 pp 1 M), EPA 816-R-03-015, September 2003
- Taking Stock of Your Water System: A Simple Asset Inventory for Very Small Drinking Water Systems (PDF 45 pp, 920 K), EPA 816-K-03-002, October, 2004
- Asset Management: A Handbook for Small Water Systems -- STEP Guide Series (PDF 50 pp, 976 K), EPA 816-R-03-016, September 2003
- Setting Small Drinking Water System Rates for a Sustainable Future – STEP Guide Series (PDF 62 pp, 341 K), EPA 816-R-05-006 January 2006
- Drinking Water Security for Small Systems Serving 3,300 or Fewer Persons (PDF 47 pp, 4 M)

Training Opportunities

- EPA Drinking Water Academy
- DEQ Operator Certification

- Multimedia training tools for water operations from Montana Water Center
- National Environmental Services Center at the West Virginia University

Typical Duties of a Privately-Owned Small Water System Operator

The Safe Drinking Water Act requires that a community water system be under the responsible supervision of a certified operator. Typical duties of the operator of a privately-owned small water system include:

- Oversee all aspects of water system operation, maintenance and monitoring.
- Assist in repair, testing and disinfection of water mains.
- Routinely flush and clean water mains.
- Keep water system plans up to date.
- Operate and maintain well pumps and hydropneumatic pressure tanks.
- Collect and transport water samples.
- Supervise treatment and assure proper monitoring and control.
- Clean and disinfect storage tanks.
- Protect equipment and facilities from corrosion.
- Monitor pump motors to detect unusual noises, vibrations or excessive heat.
- Adjust and clean pump seals and packing glands and clean mechanical seals.
- Repair and overhaul pumps, motors, chlorinators and control valves.
- Safely handle, store and utilize treatment chemicals.
- Keep records and prepare reports.
- Provide cost data and budget needs to the system owner.
- Perform efficiency tests on pumps, wells and other equipment.
- Troubleshoot and correct minor electrical and mechanical equipment problems.
- Monitor for hazardous atmospheres and confined spaces and correct any problems before entry.
- Conduct safety inspections, follow safety rules and provide safety training.
- Troubleshoot and address water related complaints.
- Discuss with customers their water-related concerns.
- Communicate effectively with owners, employees, customers, regulatory personnel and others.
- Respond to water system emergencies.

This outline is offered as general guidance for operators of small privately-owned community water systems in Michigan. Duties may be more extensive for municipally-owned and larger systems. Individual duties will vary depending on the complexity of the water system, the degree of treatment provided qualifications of subordinate personnel and other factors. This outline was modified from an outline originally published in *"Water Distribution System Operation and Maintenance",* U.S. Environmental Protection Agency, Office of Drinking Water, 1994.

Typical Work Duties of a Small Municipal Water System Operator
For water system without treatment

- Maintain a routine monthly bacteriologic sampling program to monitor the bacteriologic quality of the municipal water supply.

- Develop and carry out on a continuing basis an effective cross connection control program.

- Record the daily water pumpage from each well supply.

- Periodically check water levels in the municipal well supplies for both static and pumping water levels.

- Establish and maintain an up-to-date general plan of the water system showing the location of valves, hydrants, storage tanks, water mains, and their size, pumps, wells, and pumping facilities.

- Establish and maintain a routine hydrant flushing program with appropriate records and a card filing system covering all hydrants.

- Establish and maintain a yearly valve operation program with a record keeping system. A record of the location of all water main valves should also be established and kept with the water department's copy of the general plan.

- Carry out all maintenance requirements per manufacturers specifications and requirements concerning the wells, pumps, controls, flow meters, etc.

- Carry out the meter reading programs according to schedule.

- Visually observe the physical condition of all water utility structures (i.e., pump houses, hydrants, elevated storage tank).

- Supervise and/or observe construction of all new mains, service lines, and/or modifications to the water supply systems.

- Carry out the necessary maintenance programs to maintain the water supply system in good repair (cleaning and painting of the pump house, pump house piping and appurtenances, fire hydrants, buildings in general; perhaps establish a maintenance contract with a tank company).

- Become an active member in the Michigan Section of the American Water Works Association and attend spring regional, AWWA Section, and any other meetings pertinent for water utility personnel.

- Prepare, distribute, and update as necessary a contingency plan outlining a program for rapid correction of emergencies, such as power outages, water main breaks, system contamination, etc.

- Periodically operate and place online the standby power source in order to assure continuous operation of the water supply system.

- In the event chemical treatment of the water supply becomes necessary, daily monitoring of the chemical feed pumps, solutions barrels, and feed system in general will be mandatory. In conjunction with treatment of the water supply system, the individual who is most directly responsible for maintaining the water supply system must attain the necessary water treatment operator's certification. When treatment is practiced, submission of a monthly operation report is mandatory.

- Establish files for retaining bacteriologic and chemical reports in accordance with EPA requirements.

NOTE: The above listed duties are not necessarily all inclusive of what could be necessary to maintain a municipal water supply system in good repair and to assure the adequate supply of water meeting all state drinking water standards.

Water System Programs, Plans, and Records
Managerial, Financial and Technical Capacity

Managerial

- Water Ordinance
  - Ownership of water mains
  - Construction standards: materials, approvals
  - Water restriction programs: sprinkling ban
  - Hydrant use
- * Cross Connection
  - Private systems, wells, extension of water mains

- Customer Service Agreements?

Financial

- Rate Schedule
  - Tap in fee, commodity (ready-to-serve) charge
  - Turn-on fee, turn-off fee, late fee
  - Irrigation meters
  - Routine rate adjustments

Technical

- Water System Master Plan
  - Service area
  - Storage requirements
  - Transmission requirements
- * General Plan
- * Reliability Study

- Record Keeping
  - Water mains
  - Valves
  - Hydrants
  - Meters
  - Service lines
  - Main Breaks
- * Sample results of compliance monitoring

- Operation & Maintenance
  - New taps, requests for service
  - Water main leaks or breaks
  - Complaints
  - Routine flushing
  - Valve exercising
  - Meter reading and change-out
  - Hydrant inspection and repair
  - Miss Dig requests
  - Tank inspection

- * Construction Permits
  - Municipal engineer review and approval
  - Transmittal to DEQ for review and approval
  - Construction inspection/As-builts

- * Water System General Plan
  - Map of system: locations of mains, valves, hydrants, tanks, master meters, interconnections, etc.

- * Cross Connection Control Plan
  - Ordinance
  - Program: who, what, when, where, how
  - Manual

- * Emergency Response Plan
  - What to do in an emergency
  - Personnel and equipment available to respond to a problem
  - Outline

- * Microbial and disinfection Monitoring
  - Sampling site plan reviewed and approved
  - Primary sampling sites and check sampling sites (repeat samples)

* Certified Operators
  - S-3 for municipalities serving 1,000 to 4,000
  - S-4 for municipalities serving fewer than 1,000

AWWA membership
Continuing education requirements
Contract operation alternative

* A requirement under the Michigan Safe Drinking Water Act, 1796 PA 399, as amended, and the administrative rules, being MCL 325.1001 et. al and R 325.10101 et. al, respectively.