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MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Common Deficiencies & How to Address Them

Small Systems Training 2020

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Common Causes of Deficiencies

- Fall 2018 – EGLE updated their sanitary survey process
  - Checklists
  - Promote consistency across state
- Rule Changes
- Previous recommendations

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Common Deficiencies

- Install Water Level Device
- Pressure Relief Valve
- Overflow Screen
- Chemical Injection Tap and Energized Outlet
- Source Capacity
- Operator Oversight
- Cross Connections
- General Plans

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Install Water Level Device

Rule 829. (1) The following is required of each well serving type I public water supplies:

- (d) Each well shall be equipped with a means to measure the water level.

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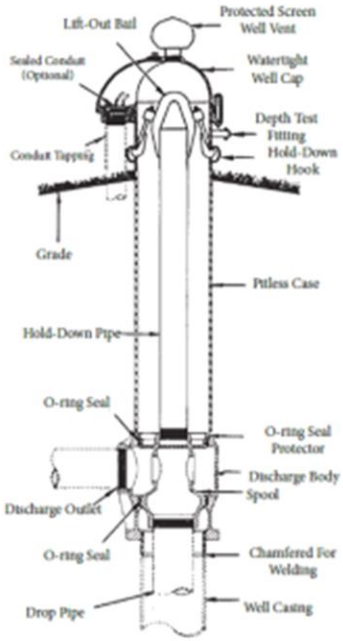
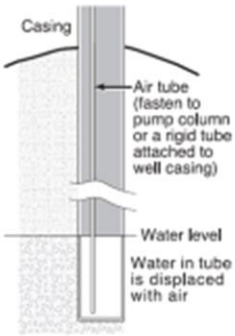
Install Water Level Device (Continued)





Depth = 90 ft -gauge pressure x 2.31ft
90 ft- 7 psi x 2.31 ft = 16.17 ft
90-16.17
= 73.83 ft

G. Morgan Powell and Danny Rogers, Measuring the Depth to Water in Wells, Kansas State University, July 2009.
http://www.ksre.ksu.edu/
https://www.bakerwatersystems.com/uploads/files/pdf/monitor-industrial-product-catalog.pdf

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Pressure Relief Valve

- Ten State Standards Section 7.2.4 Hydropneumatic Tank Systems, Appurtenances: A pressure relief valve shall be installed and be capable of handling the full pumpage rate of flow at the pressure vessel design limit.
- Part 127 - Well Construction Code also has a requirement for a pressure relief valve if the pump is capable of developing water pressures greater than the manufacturer's rated working pressure of the pressure tank.

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Overflow Screen

- Rule 1112 in Act 399 - storage tanks that are used for the storage of finished water shall have no unprotected openings.
- Overflows must have a #24 mesh screen non-corrodible screen.
- #24 mesh screen can prevent the entry of insects such as: black widow spiders, house fly, deer tick, mosquitos.
- They are still required with flapper covers because flapper covers can become stuck in the open position.

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Chemical Injection Tap and Energized Outlet

Rule 829. (1) The following is required of each well serving type I public water supplies:

(b) Each well shall be provided with an electrical outlet energized with the pump motor, chemical injection taps, and space necessary for the addition of chemicals so that treatment equipment can be readily connected to the well discharge line in the event the department requires chemical treatment to protect the public health.

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Source Capacity

- Rule 1204 of Act 399 states that Type I supply must meet firm capacity. Firm capacity of a groundwater supply is equivalent to the capacity of the source water with the largest well out of service.
- Manufactured housing communities are required to meet 1 gpm/site.
  - Example: A MHP with 50 licensed lots must have a firm capacity of 50 gpm.
- Firm capacity may be achieved with additional storage if water is not available.
  - Additional storage would consist of elevated storage, or ground storage with booster pumps.

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Operator Oversight: Rule 1905(9) of Act 399 states that a waterworks shall have in place a plan for proper operation of the waterworks system when the operator in charge is not available.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

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OPERATOR DESIGNATION FORM FOR COMMUNITY WATER SUPPLY

Issued under authority of 1976 PA 399, MCL 325.1001 et seq., and Administrative Rules, as amended.
Failure to submit this information is a violation of Act 399 and may subject the water supply to enforcement penalties

Administrative Rule R 325.11905(1) requires water supplies to be under the supervision of an operator in charge (OIC) certified in the system classification. Please use this form to designate an OIC, back-up operator, or if appropriate, a back-up operations plan. The OIC must be re-designated with a change in ownership, staff, or operator service. Submit the information to the appropriate Department of Environment, Great Lakes, and Energy (EGLE) district office.

Supply Name:			
System Classification:		WSSN:	

Operator in Charge			
License(s) Held:		Operator ID:	
Operator Mailing Address:			
City, State, Zip:			
Phone:		Emergency Phone:	
Email:			
Signature:			

Administrative Rule R 325.11905(7-8) states that a class D-1 or class D-2 system shall designate one or more operators holding a D-4 or higher certificate as a back-up operator. A class S-1 or class S-2 system shall designate one or more operators holding an S-4 or higher certificate as a back-up operator.

Back-up Operator:			
License(s) Held:		Operator ID:	
Operator Mailing Address:			
City, State, Zip:			
Phone:		Emergency Phone:	
Email:			
Signature:			

Please list any other designated operators in this section (such as distribution operators)

Other Operator:			
License(s) Held:		Operator ID:	
Operator Mailing Address:			
City, State, Zip:			
Phone:		Emergency Phone:	
Email:			
Signature:			

Operator designated by water supply owner or designated representative (Examples: city manager, public works director, management company, owner, administrative contact)

Signature:			
Name:		Date:	

Administrative Rule R 325.11905(9) states that a waterworks system shall have in place a plan for proper operation of the waterworks system when the OIC is not available. You may use this form to record a plan. For a D-1, D-2, S-1 or S-2 system, or systems with designated treatment and distribution operators, please list who will address specific items within the water supply. A smaller system may provide this plan in lieu of designating a certified back-up operator.

1. This back-up operations plan will be implemented as follows: (Please specify how and when the plan will be implemented by your supply. List names of individuals and/or water suppliers that will be utilized.)

2. The following is a summary of the routine minimum daily operation requirements (attach another page if necessary).

Cross Connections: Part 14 of Act 399 states a Type I water supply must develop a control program for the elimination and prevention of all cross connections. Annual Report due by March 31st of each year.

Sample template for Cross Connection Control Program for Small Systems:

Cross Connection Control Program for the_____Water Supply,_____County
WSSN:_____

In accordance with the requirements set forth by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the _____ water system agrees to implement the State of Michigan cross connection control rules to protect the _____ water supply system from cross connections.
"Cross Connection" is defined as a connection or arrangement of piping or appurtenances through which a backflow could occur.
"Backflow" means water of questionable quality, waste, or other contaminants entering a public water supply system due to a reversal of flow.
I, _____ the _____ of the _____ water supply system, hereby stipulate to develop a comprehensive program for the elimination and prevention of all cross connections by the following actions:
Comply with the Water Supply Cross Connection Rules of the DEQ being
R 325.11401 to R 325.11407 of the Michigan Administrative Code and the DEQ Cross Connection Rules Manual.

1. Authorize _____ to inspect all properties served by the public water supply where cross connections with the public water supply are deemed possible. Individuals responsible for carrying out the cross connection inspections and reinspections shall have obtained necessary training through any available manuals on cross connection prevention, including the Cross Connection Rules Manual as published by the EGLE, and attendance at cross connection training sessions sponsored by the EGLE or other recognized agencies.
2. Initially survey each building and periodically conduct re-inspections based upon the degree of plumbing hazards associated with their drinking water plumbing.
3. Eliminate any potential and/or existing cross connections in compliance with all applicable codes and rules.
4. Authorize _____ to establish the time frame for compliance with any order for the installation of backflow prevention devices, assemblies, or re-plumbing.
5. Accept only the methods outlined in Chapter 4 of the Cross Connection Rules Manual to protect against the hazards of cross connections.
6. Re-inspections shall be in accordance with the schedule as noted in Chapter 13 of the Cross Connection Rules Manual. _____ water system will re-inspect:
    a. Annually for high hazard accounts
    b. Every ____ years for low hazard accounts
    c. Re-inspections shall be based upon the complexity of the building's internal plumbing, plumbing change frequency and the potential for backflow of contaminants/pollutants into the potable water supply.
    d. Re-inspections of the premise will be made whenever it is suspected or known that modifications have taken place with piping systems serving a particular water customer.
7. All testable assemblies shall be tested at least once every three years. Additionally, all testable backflow prevention assemblies shall be tested at the time of installation or relocation and after any repair. Records of test results shall be maintained by the water system owner. Only individuals that hold a valid Michigan plumbing license and have successfully passed an approved backflow testing class shall perform such testing.
8. The water system owner shall maintain sufficient and accurate records of its local cross connection control program and report annually on the status of the program to EGLE on a form provided by the department.

OWNERS CERTIFICATION

By signing below, I hereby certify to implement and maintain an active cross connection control program in accordance with the provisions listed in this document.

_____
Signature of Water System Owner or Designated Representative

_____
Typed or Printed Name of Water System Owner or Designated Representative

_____
Date

This cross connection control program will take effect immediately upon approval of EGLE.

Sample Template for Cross Connection Report for Small Systems, Residential Only:

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

2019 WATER SUPPLY CROSS CONNECTION REPORT
FOR SYSTEMS SERVING ONLY RESIDENTIAL ACCOUNTS

Issued under authority of 1976 PA 399, as amended, MCL 325.1001 et seq., and its administrative rules.
Failure to submit this form is a violation of the Act and may subject the water supply to enforcement actions.

Return the completed form by March 31, 2020, to the appropriate Department of Environment, Great Lakes, and Energy (EGLE) district office to comply with administrative Rule R 325.11404 that states "a water utility shall report annually to the department on the status of the cross connection control program on a form provided by the department." For district office addresses, visit Michigan.gov/CommunityWater and then click on *District Offices Map and Contact Information.*

WSSN: _____

A. Name of water system: _____ County: _____

B. Year that the current written cross connection control program was approved by EGLE: _____

C. Number of living units connected to the water system: _____

D. Number of other types of units connected to the water system: _____

E. Number of units in lines C and D that were inspected for cross connections in 2019: _____

F. Number of units in line E where a cross connection(s) was found to exist in 2019: _____

G. Number of units from line F where corrective actions have been completed: _____

H. Answer the following questions:

Are any of the following connected to the system?	Yes	No	If yes, how is each protected? (AG, AVB, DCVA, HBVB, NP, PVB, RPZ, SC, VDCV) List all that apply.
Lawn irrigation/sprinkler systems	☐	☐	
Fire suppression/sprinkler systems	☐	☐	
Swimming pools or hot tubs	☐	☐	
Private wells or other sources of water	☐	☐	
Boiler (make-up) water connections	☐	☐	
Water to air conditioners or heat pumps	☐	☐	
Water assisted sump pumps	☐	☐	
Water softeners or other water treatment	☐	☐	
Outside hose spigots	☐	☐	
Fire hydrants or flushing standpipes	☐	☐	
Other	☐	☐	

I. Total number of testable backflow preventers in system: _____

J. Number of backflow preventers tested in 2019: _____

Narrative Description of Program: Outline briefly any changes or significant findings since last reporting. Use additional sheets if necessary.

Name: _____ Title: _____ Date: _____

General Plan

Part 16 of Act 399 requires a waterworks system to have a general plan depicting the following information:

- (a) The general layout of the entire waterworks system, including treatment systems and distribution systems, and the location of valves, hydrants, storage tanks, watermains, pumps, wells, and pumping facilities.
- (b) Rated capacity of the waterworks system, including capacity of the developed water source, treatment system, storage tanks, pumping facilities, and equipment to maintain system reliability.

As of January 1, 2016, water supplies that are licensed annually by the State and serving less than 50 service connections, or less than 200 people, we also required to meet these requirements.

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General Plan (continued)

- Communities that provide fire protection are required to also meet the following items:
  - (a) A hydraulic analysis of the distribution system showing pressure contours under peak demands.
  - (b) An inventory of water main by size and material and age.
  - (c) Service area maps including existing and future service area boundaries.

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