

WATER WELL MANUAL



Michigan Department of Environmental quality
Office of Drinking Water & Municipal Assistance
Environmental Health Section



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Water Well Manual

INTRODUCTION

The purpose of this manual is to provide an individual with an understanding of water well construction practices and the regulation of water supplies in Michigan. Among the topics covered in the manual are: water supply regulations, hydrology, well construction methods, pump and pressure tank fundamentals, sampling and testing, and plugging abandoned wells. Most chapters contain an introduction, supporting text from various sources, and the corresponding rules in the Well Construction Code.

This manual also serves as a study guide for those individuals who are seeking registration as a water well drilling contractor or pump installation contractor in the state of Michigan.

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This manual can be found at: www.michigan.gov/deqwaterwellconstruction

MICHIGAN WATER WELL CONSTRUCTION AND PUMP INSTALLATION CODE

The first well code became effective on February 14, 1967, when the Michigan Department of Public Health promulgated the administrative rules authorized by passage of the Ground Water Quality Control (GWQC) Act (1965 PA 294). The most recent revisions to the well code went into effect on April 21, 1994. The statute authorizing the well code is now Part 127 of the Michigan Public Health Code, 1978 PA 368, as amended.

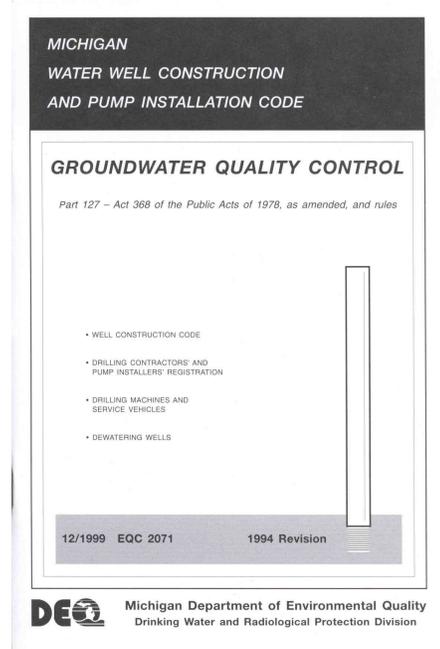
Michigan's water well construction and pump installation code (water well code) contains minimum specifications for the location and construction of water wells and associated pumping equipment. The code establishes standards for the materials and methods used to complete water wells, and install pumps, pressure tanks, piping, valves, and controls. Standards for the plugging of abandoned water wells, dewatering well construction and abandonment standards, reporting requirements, minimum qualifications for the registration of water well drilling contractors, drilling machine registration requirements, and code enforcement provisions are also covered.

The well code booklet can be ordered from:
Michigan Department of Environmental Quality
Office of Drinking Water & Municipal Assistance
Environmental Health Section
P.O. Box 30241
Lansing, Michigan 48909-7741

The well code and statute can also be downloaded from the DEQ website at:

www.michigan.gov/deqwaterwellconstruction

The well code and statute are found under the "**Laws & Rules**" section.



ACT 368
PUBLIC HEALTH CODE STATUTE

The following Acts and Rules contain the regulation of water supplies.

Ground Water Quality Control Act

- * Passed March 31, 1966
- * Contractor Registration
- * Well Drilling Advisory Board
- * Rules: Well Construction Code

Ground Water Quality Control Rules

Administrative Rules Promulgated By Michigan Department of Public Health

- * Adopted: November 23, 1966
- * Effective: February 14, 1967 to April 20, 1994

Safe Drinking Water Act

Act 399 PA 1976

- * Based on federal Safe Drinking Water Act
- * Act Effective: January 4, 1977
- * Rules Effective: January 11, 1978

Act 294, PA 1965 (GWQCA)

- * became Part 127, Act 368 PA 1978 (Michigan Public Health Code)
- * amended in 1972 to include Dewatering Well Standards

Part 127, Act 368

- * revision project 1990 to 1993
- * Minimum Program Requirements (MPRs) were established for each core program

Sections 12701 to 12715 of Michigan Public Health Code

- * Section 12701 – **Definitions**
 - o Person
 - o Pump
 - o Pump Installer
 - o Well
 - o Well Drilling Contractor

- * 12703(1) – **Applicability**
 - Sec 12701 to 12715 do not apply to:
 - o Dewatering well 2 inch or less and 25 feet or less in depth
 - o Artesian pressure relief wells at hydroelectric projects
 - o Wells used with drilling of oil/gas wells
 - o Brine, test, storage, or disposal wells

- * 12703(2) – **Criteria for persons drilling wells on their own property**
 - Single-family dwelling on owned/leased property
 - Permanent residence of owner
 - Not intended for public use
 - Not intended for another residence
 - Well record must be submitted
 - Must comply with water well code

- * 12704 – **Requires Registration**
 - Well Drilling Activities:
 - Construct/reconstruct/repair well
 - Operate well drilling machine
 - Install/remove well casing or screen
 - Grouting/plugging abandoned wells
 - Well development
 - Hydrofracturing
 - Chemical treatment/rehabilitation

 - Pump Installation Activities:
 - Selection/placement of pump
 - Making entrance to well
 - Installing any of the following:
 - Pitless adapter
 - Suction line
 - Well cap
 - Discharge line
 - Pump drop pipe
 - Pressure tank

- * 12704(3) – **Registration Fees (initial and annual renewal)**
 - \$40 well drilling contractor
 - \$25 pump installer
 - \$10 additional well drilling machine

- * 12705 – **Registration Certificate**
 - Nontransferable
 - Expires April 30 each year
 - 50 percent penalty after July 1

- * 12706 – **Drilling Machine Identification**
 - Registration number (issued by DEQ)
 - Rig decals
 - Both sides of rig
 - Minimum 2 inches high
 - Contrasting colors

- * **12707 – Water Well and Pump Records**
 - Filed within 60 days of well completion
 - Copy to owner, local health department (LHD), and DEQ
 - Complete on DEQ form

- * **12708 – Inspection Authority for DEQ or LHD**
 - Permits entry onto property during reasonable hours

- * **12709 – Requires DEQ and LHDs to:**
 - Investigate suspected statute/rule violations
 - Order responsible person to correct violation

- * **12709(2) – Authorizes DEQ to:**
 - Suspend registration of person who violates statute or rules

- * **12715(1)– A person is guilty of a misdemeanor if they violate:**
 - The statute
 - The rules and water well code
 - A correction order

- * **12715(3)– Attorney General or local prosecuting attorney are responsible for:**
 - Prosecuting persons who violate Sec. 12701-12715 of GWQC Act

LOCAL HEALTH DEPARTMENT'S ROLE IN GROUNDWATER PROTECTION

Introduction

Michigan incorporates a preventive public health strategy to ensure that newly installed water well systems are safe and reliable. Drinking water program is administered as a joint effort between Michigan's local health departments (LHD) and the DEQ. The Well Construction Code allows the state of Michigan to delegate well permitting duties to the LHDs.

Funding

LHDs receive state funding from an annual appropriation by the state legislature to Department of Community Health. There is a contract between the state and LHDs for delivery of services such as: well and sewage system permitting and food service inspections.

Minimum Program Requirements

The LHD's must comply with the Minimum Program Requirements (MPR) to receive state funding. MPRs require LHDs to do the following:

- Issue well permits
- Inspect water supplies
- Investigate groundwater complaints
- Investigate contamination sites
- Approve water supply systems

The DEQ evaluates the LHDs on an annual basis to ensure that they are complying with the MPRs.

LOCAL SANITARY CODES

LHDs each have their own local sanitary code that covers water supplies. Water wells constructed in Michigan must comply with local code requirements. Fail to comply with a local code requirement is a violation of Rule 112, Part 127 Act 368 PA 1978.

Local code requirements may be more stringent than the state code for matters such as isolation distances and water sampling. Permits in areas of groundwater contamination may also have more stringent permit conditions. Many LHDs have "well first" areas that require an acceptable water supply be obtained prior to obtaining a sewage disposal permit or building permit.

PUBLIC WATER SUPPLIES IN MICHIGAN

Public water supplies (Type I, Type II, Type III) are regulated under Act 399 PA 1976 (Safe Drinking Water Act). Examples of public water supplies include: municipal water supplies, apartment complexes, schools, restaurants, campgrounds & parks, retail stores, and two private homes sharing one well. The construction regulations of public water supplies are in conjunction with Part 127 Act 368 PA 1978. Local health departments regulate Type II and Type III supplies. The DEQ regulates Type I supplies.

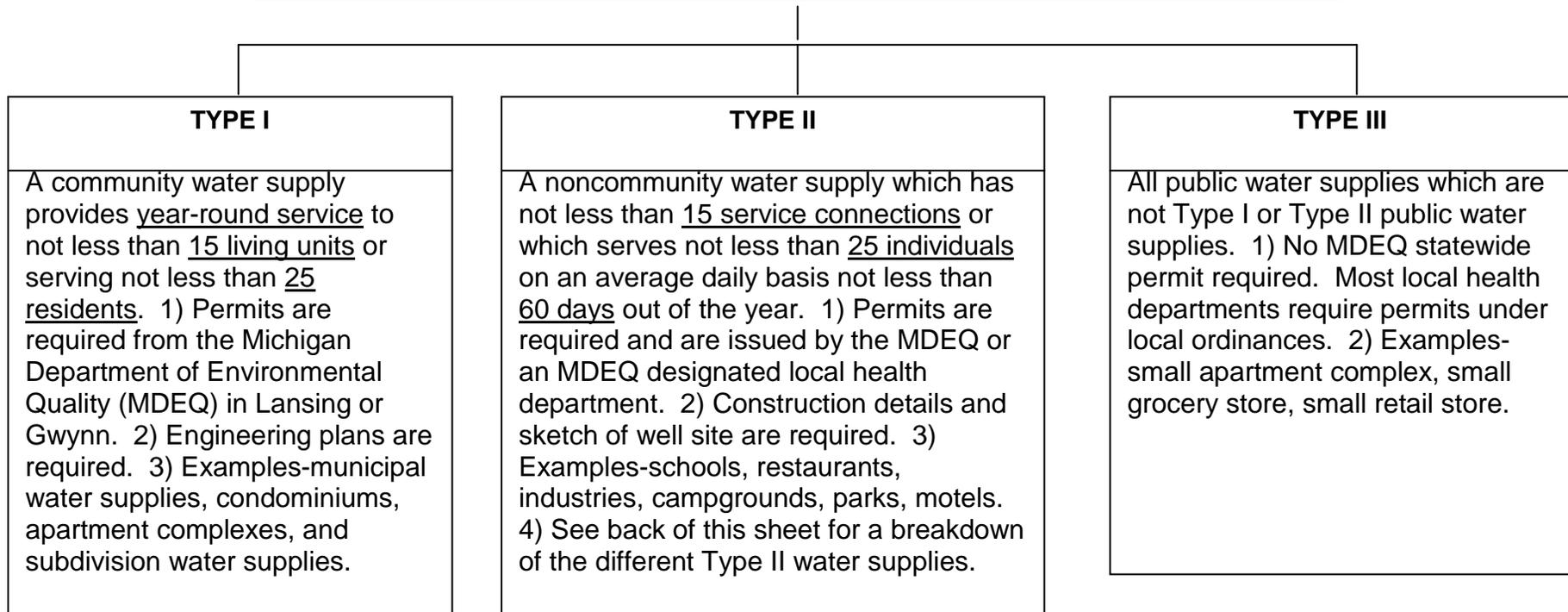
Summary of Selected Public Water Supply Rules (refer to Act 399 for complete requirements)

ISOLATION Rules 808 and 812, Pages 32 and 33	Type I and IIa – Standard isolation area 200 feet – no sewer lines, septic systems, etc., in isolation area.
	Major isolation area 2000 feet – No lagoons, landfills, groundwater contamination sites, chemical storage in isolation area.
	Type II and III – Standard isolation area 75 feet – no buried sewer lines, septic systems, etc., in isolation area unless written deviation. Major isolation area 800 feet – no lagoons, landfills, groundwater contaminations sites, chemical storage in major isolation area unless under written deviation. Also see chemical storage areas.
CHEMICAL STORAGE AREA Rule 812, Page 33	Type I and IIa/IIb and III – Wells shall not be located within 2,000 / 800 feet respectively of chemical storage areas (including fuels, oils, degreasers, etc.) unless a written deviation has been issued. Chemical type, volume, containment, well capacity, hydrogeologic conditions, etc., are to be considered in the approval of deviations.
CASING TERMINATION Rules 817, Page 35	Type I and IIa – Casing must be minimum of 12 inches above ground surface.
	Type IIb and III – In addition to 12 inches above grade, casing may be 12 inches above floor of approved basement offset.
PUMPING EQUIPMENT Rule 826, Page 37	Type I and IIa – Must be located above established ground surface.
	Type IIB and III – May be in approved basement offset. Pressure tanks may be buried if approved by the MDEQ.
DEVIATIONS Rule 802, Page 31	Shall be approved by the department in writing and based on information showing that public health will not be adversely affected.
GROUTING Rule 822, page 36	Well grouting shall be in accordance with permit specifications.
CLASSIFICATIONS Rule 107(h), Page 5	Public Water Supply – Any water supply serving drinking water to other than a single family residence.
Rule 107 (f), Page 3 Rule 502 (a), Page 17	Type I or community – Year-round water service to 25 or more residents or 15 or more service connections. Permit required from DEQ. Examples are municipal systems, apartments,

	mobile home parks with greater than 15 lots.
Rule 106 (c), Page 5 Rule 502 (2a), Page 17 Act 399, Part 325.1004	Type II or noncommunity – Nonresidential water supplies that serve water for drinking or “household” purposes to at least 25 persons per day at least 60 days per year or have at least 15 service connections. Permits are required statewide prior to construction.
	Type IIa – Average daily water production for the maximum month greater than or equal to 20,000 gallons per day. Examples are industries, large seasonal resorts.
	Type IIb – All other Type II supplies. Examples are food service establishments, campgrounds, schools, rest areas.
	Type II nontransient – A Type II water supply that routinely serves the <u>same</u> 25 or more individuals on a daily basis at least 6 months per year. Examples are schools, daycare centers, factories, offices and other work sites.
	Type II transient – Any Type II (noncommunity) water supply that does not meet the definition for a Type II nontransient water supply. Examples are motels, restaurants with less than 25 employees, medical offices, parks, campgrounds, churches, and marinas.
Rule 502 (c), Page 17	Type III – All public water supplies that are not Type I or Type II. Examples are small businesses, some gas stations, Grade A dairies.

Michigan's Safe Drinking Water Act 1976 PA 399

A "public water supply" means a waterworks system that provides water for drinking or household purposes to persons other than the supplier of the water, except those systems that supply water to only one living unit. Public water supplies are classified



A living unit is a house, apartment, or other domicile occupied or intended to be occupied on a day-to-day basis by an individual, family group, or equivalent.

A service connection is a direct connection from a distribution water main to a living unit or other facility for the purposes of providing water for drinking or household purposes.

TYPE II

A noncommunity water supply which has not less than 15 service connections or which serves not less than 25 individuals on an average daily basis not less than 60 days out of the year. 1) Permits are required and are issued by the MDEQ or an MDEQ designated local health department. 2) Construction details and sketch of well site are required. 3) Examples-schools, restaurants, industries, campgrounds, parks, motels.

Customer Type

TYPE II NONTRANSIENT

A Type II water supply that routinely serves the same 25 or more individuals on a daily basis at least 6 months per year. (Examples-schools, daycare centers, factories, offices and other work sites)

TYPE II TRANSIENT

Any Type II (noncommunity) water supply that does not meet the definition for a type II nontransient water supply. Examples include motels and restaurants with less than 25 employees, medical offices, parks, campgrounds, churches, and marinas.

Average daily water production

Average daily water production

TYPE IIa

Type II supplies with an average daily water production for the maximum month equal to or greater than 20,000 gallons per day.

TYPE IIb

Type II supplies with an average daily water production for the maximum month of less than 20,000 gallons per day.

TYPE IIa

Type II supplies with an average daily water production for the maximum month equal to or greater than 20,000 gallons per day.

TYPE IIb

Type II supplies with an average daily water production for the maximum month of less than 20,000 gallons per day.