# Ohio Administrative Code

## Rule 3701-28-11 Development, startup, and operation of new, repaired and altered wells.

Effective: January 1, 2020

(A) For purposes of this rule:

(1) "Drawdown" means the extent to which the water level in and near a well is lowered when water is pumped or flows from the well.

(2) "Pump test" means to withdraw water from a well at a constant or stepped rate while measuring the drawdown in the well at specific time intervals for a specific period of time.

(3) "Sustainable yield" means the volume of water that can be consistently discharged from well over a period of time.

(B) Wells shall be properly developed, by the private water systems contractor, upon completion or whenever an alteration or a repair requires development until turbidity and the production of sand and finer material in the well is minimized.

(1) Mechanical development shall be performed so as not to cause damage to the components of the well. Mechanical development techniques include: mechanical surging; air surging or air lifting; overpumping and backwashing; high velocity jetting; bailing; and hydrofracturing. Any mechanical development method that utilizes a chemical reaction must meet NSF 61-2016.

(2) Chemical development procedures may be used in conjunction with mechanical procedures in accordance with the following requirements:

(a) Chemical development procedures used on a well, except chlorination, shall be performed by a registered contractor.

(b) Any chemicals used for well development or rehabilitation shall meet NSF 60-2016 and shall be used in accordance with the manufacturers recommendations and in a manner to prevent damage to

the well or pump and prevent any hazard to humans or property. Any acid used shall be inhibited and neutralized upon removal from the well.

(c) Dispersing agents shall be used only when necessary to disaggregate clay particles to enhance removal. Chlorine shall be added to the mix water to prevent bacterial growth. Dispersing agents shall be immediately flushed from the well and aquifer to prevent bacterial growth in the aquifer.

(C) Upon completion of development of the well, the static water level shall be measured and recorded, and a pumping test shall be conducted to determine the sustainable yield of the well in gallons per minute, or gallons per hour, and the water level drawdown to ensure adequate capacity for the estimated average daily demand of the well. The registered contractor may use the contractor's pump or the well owners pump, a bailer, air blowing or air lifting to determine the accurate yield of the well. The pump test should be conducted for a period of time sufficient to determine the sustainable yield. For flowing wells, the flow rate may be measured using an orifice plate with manometer or equivalent. Water discharged from a pumping test shall not be discharged into or onto household sewage treatment systems.

(D) Materials used in disinfecting private water systems shall meet the following requirements:

(1) Be sodium hypochlorite at a strength of five per cent or greater. Sodium hypochlorite solutions shall be used within the manufacturer's posted expiration date. Sodium hypochlorite solutions with fragrance additives shall not be used for disinfection of private water systems.

(2) Be calcium hypochlorite products designed for use as a private water systems disinfectant. The product shall be prepared and placed in the well using the manufacturer's requirements. Calcium hypochlorite products should not be used to disinfect wells completed in limestone or dolomite aquifers, or where the water in the well has high levels of dissolved calcium unless recommended by the manufacturer or the department.

(3) Sodium hypochlorite and calcium hypochlorite shall not be mixed with other chemicals that may cause an adverse reaction for disinfection purposes and all manufacturer's directions must be followed.

(4) Be distilled white vinegar.

(5) With the exception of sodium hypochlorite and distilled white vinegar, any product used in the disinfection of a private water system must comply with NSF 60-2016 and be designated by the manufacturer for use as a well disinfectant and/or cleaning agent.

(6) Other products authorized by the department.

(E) All new, repaired, or altered wells shall be disinfected with products authorized under paragraph (D) of this rule to neutralize contamination after construction, development, installation, alteration, or repair, prior to water being removed for human consumption.

(1) The registered private water systems contractor performing the construction, development, installation, alteration, or the person performing the repair shall disinfect the private water system according to this rule at the time of completion of the portion of work performed by that person.

(2) The owner of the private water system shall provide access to the system to ensure that the entire private water system, including the plumbing and all related fixtures, are disinfected in accordance with this rule, prior to placing that private water system into service.

(F) Procedures for disinfection shall include the following:

(1) For new system construction, the well shall be developed and all loose debris and material purged from the well and the distribution system.

(2) For system alterations, the private water systems contractor shall assess the need for physical or chemical cleaning of the well and distribution system, and implement such processes as needed to ensure proper disinfection of the system.

(3) The gallons of water to be disinfected shall be determined by calculating the total capacity of the private water system including water stored in a well casing, pressure tanks, existing plumbing and attached fixtures, and all related storage.

(4) Authorized disinfectants shall be used in accordance with the manufacturers requirements. When sodium or calcium hypochlorite is used, an initial disinfection solution between one hundred and five hundred milligrams per liter shall be used, and control of pH is recommended as determined by field testing methods.

(5) Disinfectants shall be distributed throughout the well and distribution system, including the borehole and washing the sides of the casing, and if necessary to ensure complete disinfection, into the aquifer.

(6) Disinfectants shall remain in the system an adequate amount of time to ensure proper disinfection or in accordance with the manufacturers recommendations. Where required, control of the pH of the water shall be implemented to ensure proper disinfection. When sodium and calcium hypochlorite is used as a disinfectant without pH control, the contact time shall be a minimum of eight hours.

(7) Upon completion of the disinfection process, all disinfectants shall be purged from the well and the distribution system. Discharge of purged disinfectants into sewage treatment systems must be minimized.

(G) If a water sample result obtained from a sample collected at the point of discharge of the private water system exceeds the bacterial standards in paragraph (N) of rule 3701-28-04 of the Administrative Code, the private water systems contractor and the owner of the private water system shall ensure that the entire private water system is disinfected, in accordance with disinfection requirements stated in paragraphs (E) and (F) of this rule, prior to placing that private water system into service.

(H) When two consecutive samples exceed the maximum contaminant levels specified in paragraph (N) of rule 3701-28-04 of the Administrative Code for coliform CFU or MPN, escherichia coli, or primary pathogenic microorganisms, or the presence of opportunistic bacteria of concern are identified from water samples collected at the point of discharge of the private water system, the following enhanced disinfection procedures shall be used by the private water system contractor or contractors in a phased approach prior to the board of health or the director initiating an investigation into to the compliance of well construction:

(1) The system shall be evaluated by the registered private water systems contractor to determine any necessary corrections or repairs to the system. Necessary corrections or repairs should be made to the system prior to additional enhanced disinfection steps being performed;

(2) The casing and borehole walls shall be physically or chemically cleaned;

(3) All debris, loose materials and biological slimes shall be removed from the well;

(4) The well shall be disinfected by the registered private water systems contractor using an an approved disinfectant solution, in accordance with paragraphs (E) and (F) of this rule;

(5) The introduction of a volume of the chlorine disinfectant solution, as described in paragraph (E) of this rule, that is two or three times the total volume of water stored in the casing into the well to displace chlorinated water into the aquifer; or

(6) The private water systems contractor or contractors shall document all corrective work or disinfection procedures implemented and submit a completion form to the board of health describing any corrections or repairs made to the system and the specific enhanced disinfection procedures utilized.

(I) Except when a board of health investigation has determined that a private water well has been constructed in compliance with this chapter, continuous disinfection shall not be installed on any new or existing private water system well that is not otherwise required by this chapter.

(J) All water samples shall be collected and processed in accordance with rule 3701-28-04 of the Administrative Code.