

**New Philadelphia Codified Ordinance (relevant sections)**

*947.04 TEST WELL/SAMPLING WELL/MONITORING WELL/SOIL BORING/SOIL SAMPLING STANDARDS.*

(a) If not otherwise regulated by the Director of the Ohio Environmental Protection Agency (Ohio EPA), or another Ohio agency, board, or commission, then the "Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring," or other standards adopted by the Director, shall be used as a guide for monitoring well construction and sealing to prevent the contamination of ground water.

(f) All aspects of a test well, sampling well and/or monitoring well or soil boring or soil sampling activity shall follow Ohio Administrative Code Section 3745-9-03, and shall incorporate the recommendations of the "Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring (TGM)."

[Comment: TGM refers to a series of PDF documents that was originally published in 1995. These documents will be periodically updated by the Ohio EPA. This rule incorporates this guidance by reference. At the effective date of this rule, a copy may be obtained from "Ohio EPA, Lazarus Government Center, 50 West Town Street, Columbus, OH, 43215-3425," (614) 644-3020, [www.epa.state.oh.us](http://www.epa.state.oh.us). The document is available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Columbus, OH, 43215-3425." Individual sections can be downloaded from the Ohio EPA website at the following URL: <http://epa.ohio.gov/ddagw/tgmweb.aspx>]

(i) At any point subsequent to the drilling of the test well, sampling well and/or monitoring well or securing a soil boring or any type of sample from a soil sampling activity, a contaminant is identified in excess of applicable Ohio EPA and/or US EPA standards, the City of New Philadelphia is to be notified in harmony with the notification requirements of the Ohio EPA and/or U.S. EPA. (Ord. 17-2012. Passed 1-14-13.)

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**OAC 3745-9-03**

(A) If not otherwise regulated by the director, or another Ohio agency, board or commission, the "Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring," or other standards adopted by the director, shall be used as a guide for monitoring well construction and sealing to prevent the contamination of ground water.

(B) A monitoring well that is damaged or deteriorated shall be either repaired to a state consistent with construction requirements of paragraph (A) of this rule, or sealed in accordance with paragraph (A) of this rule.

(C) A monitoring well that is no longer being used shall be sealed in accordance with paragraph (A) of this rule.

[Comment: This rule incorporates the "Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring," published in February 1995 and as amended through April 2015. This rule incorporates this guidance by reference. At the effective date of this rule, a copy may be obtained from "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215," (614) 644-2752, [www.epa.ohio.gov](http://www.epa.ohio.gov). The document is available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215."]

Effective: 6/13/2016

Five Year Review (FYR) Dates: 03/28/2016 and 06/13/2021

Promulgated Under: 119.03

Statutory Authority: 6111.42, 6109.04

Rule Amplifies: 6109.04

Prior Effective Dates: 05/01/03, 09/01/09

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***Technical Guidance Manual for  
Hydrogeologic Investigations and Ground Water Monitoring***  
Chapter 9 Sealing Boreholes and Decommissioned Monitoring Wells  
As per OAC 3745-9-03(A)

***2.2.5 Grouting the Borehole<sup>1</sup>***

The borehole should be pressure grouted using a tremie pipe as the drilling stem is removed. The sealant should be applied in one continuous procedure to prevent segregation, dilution, and bridging (Aller et al., 1991). The pipe should be in constant contact with the sealant to prevent air pockets from forming. The borehole should be sealed from the bottom up to the frost line (approximately two to three feet from the surface). The overflowing grout should be regularly evaluated as it reaches the surface. When the observed material is similar to that being pumped in, this stage of the sealing is considered complete. Wells sealed in-situ should be sealed from the bottom up to approximately three feet from the surface.

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<sup>1</sup> [http://epa.ohio.gov/Portals/28/documents/TGM-09\\_FINALSept2016.pdf](http://epa.ohio.gov/Portals/28/documents/TGM-09_FINALSept2016.pdf)

- Small diameter wells or boreholes (<2 inches) may present special challenges. A small diameter (3/4 inch) grout pipe can be used; however, high pumping pressures or less viscous materials may be necessary (ASTM D5299-99(2012)e1). Grouting machines are available for use with small diameter wells. A grouting machine reduces problems of bridging and incomplete seals associated with adding materials from the ground surface.
- When sealing wells that have two or more saturated zones or in flowing wells, it may be necessary to use a packer assembly. An inflatable packer can be placed at the top of the producing water zone to stop or restrict flow. The borehole can be sealed by pressure grouting from the bottom of the hole to the top of the packer. The packer can then be deflated and the grouting process continued.
- If dry sealant is introduced by gravity pouring, care must be taken that bridging does not occur. This can be accomplished by slowly adding the grout and stopping periodically (e.g., every five feet) to measure, tamp the grout and add water to hydrate. The amount of added water should be in accordance with manufacturer specifications. Coarse grade or bentonite pellets should be poured over a wire mesh to remove fines.

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**OAC 3745-9-10 (relevant sections)**

(A) An abandoned well shall be sealed in accordance with this rule and rule 3745-9-07 of the Administrative Code.

(1) "The State of Ohio Regulations and Technical Guidance For Sealing Unused Water Wells and Boreholes(2015)" shall be used as a guide.

(2) Plan approval is not required in accordance with Chapter 3745-91 of the Administrative Code to seal an abandoned well, test hole or dry hole. A public water system may apply to the director for a variance from this rule in accordance with rule 3745-9-02 of the Administrative Code.

[Comment: The "State of Ohio Regulations and Technical Guidance For Sealing Unused Water Wells and Boreholes, 2015." This rule incorporates this guidance by reference. A copy may be obtained from "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215 ," (614) 644-2752, [www.epa.ohio.gov](http://www.epa.ohio.gov). The document is available for review at "Ohio EPA, Lazarus Government Center, 50 West Town Street, Suite 700, Columbus, OH, 43215."]

Effective: 6/13/2016  
Five Year Review (FYR) Dates: 03/28/2016 and 06/13/2021  
Promulgated Under: 119.03  
Statutory Authority: 6111.42, 6109.04  
Rule Amplifies: 6109.04  
Prior Effective Dates: 02/15/75, 05/01/03, 04/19/12

**REGULATIONS AND TECHNICAL GUIDANCE FOR  
SEALING UNUSED WATER WELLS AND BOREHOLES<sup>2</sup>**

As per OAC 3745-9-10(A)(1)

***Sealing Environmental Wells and Boreholes***

When sealing monitoring wells and boreholes no single method and material are suitable for all situations. Site-specific characteristics may merit modifications or procedures not discussed in this document. Additional information can be found in the references listed in the “Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring”.

Inspect the well and remove any obstacles (i.e., pumps, pressure lines, other debris, etc.) that may interfere with the placement and performance of the sealing material. If necessary, a camera survey can help to identify the depth and construction of the well if this information is not known. The outer protective casing should be removed. Inspection of the well and annular seal are not necessary for sealing of exploratory boreholes....(p. 41)

If no casing was ever installed, the borehole can be either pressure grouted from bottom to top with neat cement, bentonite or a cement/bentonite mix, or be sealed by slowly pouring coarse grade or pelletized bentonite. If pouring is conducted, the bentonite should be poured over a screened trough to filter out the fine bentonite before it enters the borehole. If the borehole is mostly dry, water should be added to hydrate the bentonite. The upper two to three feet of the borehole can be filled in with native soils or finished to match the surrounding surface (i.e. blacktop parking area). (p. 42)

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<sup>2</sup> <http://water.ohiodnr.gov/portals/soilwater/pdf/wells/Sealing%20Guide%20Final%20Doc.pdf>

***Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring***

**Chapter 15 Use of Direct Push Technologies for Soil and Ground Water Sampling**

Page 15-8, 15-9<sup>3</sup>

If using (Direct Push Technology):

--Dual-tube sampling should be used whenever possible. This is especially important if there is a potential for sloughing to a lower zone. If a single-tube is used for vertical profilers, it is imperative sealed samplers are used.

--Closed-barrel samplers should be used for most applications. The only situation where non-sealed samplers would be acceptable is with single sample collection events above the saturated zone.

--If recovery of samples or cave-in of the probe hole is problematic, the data quality objectives should be supplemented or different sampling techniques employed.

--Probe holes should be sealed using retraction grouting with a tremie tube and a liquid slurry material. Sealing probe holes by surface pouring of dry granular bentonite is acceptable if: (1) the boring has penetrated no further than the top of the uppermost saturated zone; and (2) the soils overlying the uppermost saturated zone do not contain waste material or free product.

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<sup>3</sup> [http://epa.ohio.gov/Portals/28/documents/TGM-15\\_Final\\_20160928.pdf](http://epa.ohio.gov/Portals/28/documents/TGM-15_Final_20160928.pdf)