Division of Drinking and Ground Waters

Response to Comments
April 20, 2009

Draft water well standards and plan approval rule amendments
OAC 3745-9-01, Definitions
OAC 3745-9-02, Scope and Exemptions
OAC 3745-9-04, Well Siting
OAC 3745-9-09, Well Development and Pump Test
OAC 3745-91-10, Drinking Water Source Protection Plan

Agency Contact for this Package

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Ohio EPA issued public notice and requested interested party comments on draft rule amendments to the Ohio Administrative Code (OAC) for the period of July 7, 2008 to August 8, 2008. The proposed amendments covered portions of the water well standards and plan approval rules. This document summarizes the comments and questions received during the interested party public comment period.

Ohio EPA reviewed and considered all comments received during the interested party comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format.

Introduction

Ohio EPA Division of Drinking and Ground Waters drafted amendments to the water well standards in Chapter 3745-9 and plan approval in Chapter 3745-91 of the Administrative Code. The draft amendments are, in part, a result of the five year rule review requirements of Section 119.032 of the Revised Code.

General Comments about Rules Package

Comment 1: Why doesn't the Agency change its process so new wells are approved before they are drilled not after. The Agency could agree with the proposed well construction methods before the well was drilled. (Ohio AWWA Water Utility Council)

Response 1: In many instances, until the well is drilled and developed it is impossible to know some of the exact design criteria (depth, screen size, capacity, etc.) due to the variability in hydrogeologic conditions that are encountered during the drilling operation. Though construction methods can be agreed upon and have been specified with significant detail in rule, the final construction details can be significantly different than those predicted at the time of the well siting. If a significant difference occurred in the final well construction from what was approved in a pre-drilling approval it would require another plan submission increasing cost and time to both the public water system for as-built drawings and Ohio EPA in review time.

Comment 2: Regarding wells which are pumped into a surface water reservoir before treatment, are they treated like GUI or are they treated like a well that would only receive GW treatment? (Ohio AWWA Water Utility Council)

Response 2: Each well would be designated based on influences to the water being delivered by the well and not where it is being pumped. If the well meets the criteria for ground water it would be designated as such and therefore if used directly would only need to receive treatment in accordance with the requirements of a ground water designation. Once the water entered the reservoir further treatment may be required.

Comment 3: In response to our plan approval application for two recent wells, we received a letter advising that our submittal was not complete as we had not provided the well information. Of course, such information is not available until finalization of the project. Rather than having a plan sitting out there unapproved until actual installation, OEPA should consider approving the plans but adding a section in 3745-91 regarding final acceptance of a well. This section could point out that while the plans were approved for construction, the following must be turned in for actual acceptance of the well as a public resource:

1. A copy of the 24-hour pumping test performed when the wells are drilled.
2. A copy of the chemical analysis, performed at a laboratory certified by the State of Ohio.
3. Well analysis established by OAC 3745-9-08 (D) will require two new consecutive total coliform samples be collected from a well at least twenty-four hours apart once well work is completed.

4. Owner submittal letter
5. Properly completed well development worksheet.
6. Well logs

(City of Fairborn)

Response 3: The proposal would add another plan submission requirement costing the water system and Agency additional resources. See response for Comment 1. The Agency intends to use its current process for approving use of new water supply wells. The current plan approval process is detailed in the well site acceptance letter sent to the public water system and is outlined in the document "Guidelines for the Design of Small Public Ground Water Systems".

OAC 3745-9-01 Definitions

Comment 4: The draft definition of 3745-9-01(CC), the Inner Management Zone is defined as the area that will provide water to the well within one year time of travel. The City believes this is too restrictive. Currently, the City employs a set radius of 1000 feet while affording the Director of Public Utilities an opportunity to grant a variance from that figure if circumstances merit. (City of Columbus)

Response 4: The Agency maintains that it is most protective to locate a new public water supply well such that certain waste management activities are not located within the proposed one year time-of-travel boundary.

A new provision is being proposed to allow the applicant to apply for a variance in accordance with OAC 3745-9-02 if conditions specified in (A)(8), (A)(11) and (A)(12) of rule 3745-9-04 cannot be met. The applicant must make an adequate demonstration that documents the site hydrogeology, engineering controls, or other physical barriers are sufficient to minimize the risk of contamination being drawn into the well.

Comment 5: OAC Rule 3745-9-01 contains definitions (BB)(c) and (DD)(b) which reference definitions found in OAC Rule 901:10-1-01. OAC Rule 901:10-1-01 is the definition section of the Ohio Department of Agriculture (ODA) livestock environmental permitting program rules. OAC 901:10 applies to concentrated animal feeding facilities (CAFFs) and concentrated animal feeding operations (CAFOs), those facilities permitted and legally regulated by ODA. Is it safe to assume that since the proposed draft revised rules reference

"animal waste management facility" and "land application area" as defined in OAC 901:10-1-01 that the proposed draft rules will only apply to those livestock farms permitted by ODA? If this is not the case, the language in the proposed draft rules must be modified to clarify this point. (Ohio Farm Bureau Federation)

Response 5: Yes, the rule citation and definition are intended to apply only to an “animal waste management facility” or “land application area” regulated by Ohio Department of Agriculture. However, all owners or operators must maintain sanitary isolation control within their sanitary isolation radius as approved by the Director. This distance varies between a 50 foot to 300 foot radius.

3745-9-04, Well Siting

Comment 6: What is the logic behind 500' vs. 300' in 3745-9-04(A)(8)(f) ? All such units must be approved and geological conditions have a high probability of changing from a 300' to 500' isolation distance. There is a provision for variance but this restriction should be addressed in those construction recycling(sic).

3745-9-04(A) (8)(b). reference to existing installations where no problems exist. The major contaminant would be bacterial which is monitored monthly. Zone of influence should be just one year flow, not 300'. This rule could prevent a NPDES permit from being issued on an existing complex even though wastewater could conform to drinking water standards. It all but precludes a 100% recycling effort on the premises. Further it will interfere with local zoning that allows dense population on limited land. (Joel Helms)

Response 6: The 500 foot distance is consistent with state rules that regulate construction and demolition debris facilities.

A new provision is being proposed to allow the applicant to apply for a variance in accordance with OAC 3745-9-02 if conditions specified in (A)(8), (A)(11) and (A)(12) of rule 3745-9-04 cannot be met. The applicant must make an adequate demonstration that documents the site hydrogeology, engineering controls, or other physical barriers are sufficient to minimize the risk of contamination being drawn into the well.

Comment 7: It is unclear if the proposed draft rules will apply only to new public water supply wells or to both existing and new public water supply wells. The description of what is covered by the draft rule changes in the fact sheet leads one to believe that the specific setback distances for waste management activities will apply to all (existing and new) public water supply wells. If this is the case, what accommodations will be made for those livestock farms (CAFF or CAFO) with valid, legal ODA permits allowing them to use land application areas located inside of the proposed three hundred foot setback? Will they be grandfathered or will they be forced to comply with the draft rules if and when they are adopted? What about the small to medium sized livestock farms not permitted by ODA? Will the same conditions apply? (Ohio Farm Bureau Federation)

Response 7: The provisions will apply to all public water system wells that receive plan approval effective on or after January 1, 2010.

All owners or operators of any public water system well must maintain sanitary isolation control within their sanitary isolation radius as approved by the Director. This distance varies between a 50 foot and 300 foot radius and is dependent on the average daily pumping volume.

At this time, the proposed requirement would apply only to animal waste management facilities or land application areas permitted by the Ohio Department of Agriculture.

Comment 8: A comparison of the Ohio EPA proposed draft rules and the ODA livestock environmental permitting program rules revealed that the sections of the two sets of rules related to siting and land application areas are consistent except for one situation. Appendix A, Table 2 to ODA rule OAC 901:10-2-14: Land application restrictions and setbacks, places a one hundred (100) foot setback requirement from private and public wells when manure is surface applied with incorporation within 24 hours or applied via direct injection into the soil. The proposed draft rule OAC 3745-9-04 (A)(8)(c) places a three hundred (300) foot well siting setback requirement from all land application areas. This conflict and inconsistency between the two sets of rules can easily be resolved if Ohio EPA adopts the ODA rules for siting and land application of manure per Appendix A Table 2 to rule OAC 901:10-2-14. (Ohio Farm Bureau Federation)

Response 8: The rule has been revised to reflect the recommendation. The intent was to limit storage of temporary stockpiles outside 300 feet.

All owners or operators of any public water system well must maintain sanitary isolation control within their sanitary isolation radius as approved by the Director. This distance varies between a 50 foot and 300 foot radius dependent on the average daily pumping volume.

Comment 9: While we believe the overall intention of the draft rule revisions is to, in part, provide for the long-term protection of the well's source water, we harbor serious concerns that proposed revisions to OAC rule 3745-9-04 "Well Siting" ignore some fundamental tenets of hydrogeology and jeopardize future development of the state's ground-water resources as a drinking water source. Specifically, we are concerned that proposed paragraphs (A)(11) and (A)(12) of OAC rule 3745-9-04 will unequivocally restrict siting a public water well where a human or animal waste management facility is located within the proposed well's inner management zone or where a landfill or monofill is located within the proposed well's drinking water source protection area, respectively. While these siting criteria may at first seem logical or reasonable, we are concerned that a land use precedent would be set that subjugates the development of ground-water resources to existing waste disposal practices. This is troubling for several reasons:

• First, public water wells can only be sited where aquifers exist that are capable of sustaining the necessary ground-water yields (a basic tenet of hydrogeology). As a result, these wells cannot just be located anywhere; they need to be located where ground-water resources are available. Restricting this use of a natural resource for the greater good (i.e., drinking water) because of an existing waste management facility in the area seems, at best, a backwards land use priority and at worst, a potential land "taking";

• Secondly, source water protection areas cannot be defined until after test borings are drilled, a test well is installed, and a pumping test is performed. As a result, a significant monetary and time investment could be made by a public water purveyor only to find out that the delineated wellhead protection area includes a landfill (this is especially true in areas relying on rock aquifers as their source of water supply); and

• Thirdly, there is a concern over the *a priori* reasoning behind the draft rule-making that a human or animal waste management facility or landfill represents an "existing source" of ground-water contamination as opposed to a "potential source" (that is to say, all such waste management facilities will release contaminants that will degrade the ground-water quality). Under the existing source water protection program, water purveyors need to develop acceptable source control strategies to monitor and/or mitigate the impacts of potential pollution sources within their wellhead protection area. If a facility is found to be causing ground-water pollution, that facility would be responsible for the cleanup. This existing approach to wellhead protection is protective of the public health while at the same time permitting the development and use of the state's ground-water resources as a source of drinking water despite the local presence of potential sources of contamination.

Given all the above, we would strongly encourage the DDAGW to eliminate proposed paragraphs (A)(11) and (A)(12) of rule OAC 3745-9-04. (Bennett and Williams Environmental Consultants, Inc)

Response 9: The Agency believes that it is most protective to site a new public water supply well such that certain waste management activities are not located within the proposed drinking water source protection area for the well/wellfield. It is not the Agency's intent to limit development of the state's ground water resources. It is the Agency's intent to provide a sufficient buffer between existing waste management facilities and new public water system wells or wellfields.

A new provision is being proposed to allow the applicant to apply for a variance in accordance with OAC 3745-9-02 if conditions specified in (A)(8), (A)(11) and (A)(12) of rule 3745-9-04 cannot be met. The applicant must make an adequate demonstration that documents the site hydrogeology, engineering controls, or other physical barriers are sufficient to minimize the risk of contamination being drawn into the well.

The Agency agrees that a precise drinking water source protection area or capture zone for the 1 and 5 year time-of-travel boundaries cannot be developed until hydrogeologic studies are completed for the wellfield. However, a preliminary source water protection area can be developed

using existing hydrogeologic information for the aquifer to estimate the boundaries of the source water protection area. The Agency intends to develop a preliminary drinking water source protection area to evaluate siting conditions. In those cases where the drinking water source protection area or inner management zone are determined to be in close proximity to an existing waste management activity as identified in the rule, a more thorough analysis may have to be performed prior to well approval.

Comment 10: 3745-09-04 (A)(8)(a)-The 50 foot setback seems arbitrary. How is the 50 feet calculated for radial collector wells? (Ohio AWWA Water Utility Council)

Response 10: The 50 foot distance is based on criteria for determining whether a well is potentially under the direct influence of surface water. For a radial collector well, the 50 foot distance would be calculated from the end of the furthest-reaching lateral(s), unless a variance is granted under Ohio Administrative Code 3745-9-02.

Comment 11: 3745-9-04(A)(4) Well Siting: … In our opinion, the Well Standards Rules are replete with similar arbitrary “rules of thumb” that should not be rigid standards when technical analysis supports alternative approaches. The rule should be augmented to provide a method for determining alternative isolation setbacks based on site-specific factors such as aquifer type, geologic setting and aquifer/aquitard properties. (Eagon and Associates, Inc)

Response 11: The Agency is proposing siting criteria to provide a buffer between public water supply wells and potential sources of pathogens and other waste management practices. Some of the new siting criteria as drafted in OAC 3745-9-04(A)(11) apply only to new wells located in hydrogeologically sensitive settings for community or nontransient noncommunity public water systems.

Comment 12: 3745-9-04(A)(8)(a) – The required setback from a stream or lake should not be applied to a ground-water well at a combined ground-water/surface water facility where all of the water is treated as surface water. (Eagon and Associates, Inc)

Response 12: The provision will apply to all newly installed public water system wells, unless a variance is granted under OAC 3745-9-02.

Comment 13: I have often felt setbacks per se may not meet the needs of quality assurance for municipal wells. In the alternative, monitoring wells up-gradient from the draw down could warn of moving underground contamination before it impacts the extraction well(s).

In some of the buried terminal moraine or buried eskers, associated with Ohio glaciated lands, could easily move groundwater contamination well over 300 feet, especially in gravel deposits trapped in buried rock valleys. Other underground strata conditions may produce a similar end result. The assumption groundwater contamination does not leave the originating property has proved invalid. (James Titmas, P.E.)

Response 13: The voluntary installation of early warning detection monitoring wells is recommended as part of drinking water source protection programs.

Comment 14: As with the 2003 version, this rule remains arbitrary and does not account for site-specific conditions often encountered that support less stringent or, in certain cases, more stringent isolation radii. In an attempt to simplify well siting requirements, this rule appears to broad-brush the isolation requirements as if each well is producing the "Estimated Average Daily Water Demand" (EADWD) when, in fact, typical municipal water systems rely on multiple wells, often in multiple wellfields. Arguably, if the arbitrary standards must be used, the EADWD numbers presented in this rule should be replaced with the per-well maximum daily design capacity of the particular well. The rule should be augmented to provide a method for determing alternative isolation setbacks based on site-specific factors such as aquifer type, geologic setting, and aquifer/aquitard properties. (Eagon and Associates, Inc.)

Response 14: The Agency recognizes and agrees that different geologic settings may warrant different protective strategies with regards to well siting criteria, the sanitary isolation radius and long-term site protection. The vast majority of the wells approved by the Agency serve very small transient and nontransient noncommunity facilities and non-municipal community systems. These systems do not typically have the resources or the time to invest in obtaining detailed geologic information to make such a technical demonstration. In absence of a technical assessment of the geologic conditions, a standardized approach in setting the

sanitary isolation radius is protective, time-tested, and acceptable for the majority of wells sited for public water supplies. The Agency is not proposing to change isolation radius values shown in the table in 3745-9-04 (A)(4) at this time.

However, for community municipal public water systems the opportunity for an alternative method to determine the isolation radius is available, on a case-by-case basis. The applicant may have to conduct a hydrogeologic investigation study and apply for a variance in accordance with rule 3745-9-04 of the administrative code. Additional information is provided in Chapter 3, Section 3.3 (F) of "Guidelines for Design of Small Public Water Systems" (2005).

Regarding the use of Average Daily Demand as a means of determining the required sanitary isolation radius, we concur that the word choice in the table could be misleading for the situation you described. However, the example you cited (using the well pump capacity for sizing a well based upon 24-hours of continuous pumpage) is actually the Average Daily Demand that should be used for that well and for determining the isolation radius requirement.

The vast majority of wells approved by the Agency do not serve municipal systems with multiple wells and/or well fields. Additionally, most wells serving public water supplies do not run continuously for extended periods of time. The Agency has historically utilized accepted water demand estimates for sizing supply and treatment requirements. These estimates vary by the type of the facility in question and will continue to be utilized for determining the minimum required isolation radius and for sizing the minimum pump capacity required to meet the peak hourly demand and/or minimum required storage.

<u>3745-9-06 Well Construction, specific geologic conditions</u>

Comment 15: 3745-9-06(A)(3) - We propose that the rules regarding grouting for a confined aquifer should be revised so that a confined aquifer overlain by greater than 25 feet of till, or other low perm *(sic)* material, where multiple aquifers would not be cross-connected, does not have to be grouted to the top of the aquifer when the well is installed by the cable tool method as this requires an additional string of well casing during construction. 25 feet of grout should be sufficient in such a situation. Grouting to a greater depth can

significantly increase well construction costs, when cable tool methods are employed, without providing a significant degree of additional protection. (Eagon and Associates, Inc)

Response 15: This is outside the scope of the current rulemaking. We will consider this comment during future rule reviews.

3745-9-09 Well Development and Pump Test

Comment 16: The Agency received two comments concerning the proposed term "stabilized yield" and the criteria to determine when stabilized yield has been achieved for the required pumping test. In addition, they noted the requirements associated with conducting a pumping test at 1.5 the average daily design capacity is often difficult to achieve due to various hydrogeologic conditions. It was recommended the Agency provide more flexibility and allow for shorter duration pumping tests to reflect real world pumping conditions utilized by many public water systems (e.g., pumping daily for 6-8 hours). (Reynolds, Inc., Eagon and Associates, Inc.)

Response 16: After careful consideration, the Agency is proposing to add some flexibility to the rule and will remove the term and criteria for "stabilized yield" and replace it with "sustainable yield".

In keeping with the Plan Approval rules in Ohio Administrative Code Chapter 3745-9 that reference well pumping tests requirements in the 2003 Ten States Standards, minor modifications are being proposed to allow for a pumping test at a level lower than 1.5 times the design capacity for high use wells. The applicant must provide an adequate demonstration of the specific hydrogeologic and well design criteria to support the lower pumping test design level.

To allow additional flexibility, a shorter duration (e.g., 8 hrs) pumping test is being proposed for medium use noncommunity public water system wells.

Comment 17: 3745-9-09 (B) - Secondly, and somewhat related to the issue of how to assess a water wells hydraulic characteristics, is the notion of requiring the supervision of a hydrogeologist as an acceptable alternative to the method of constant rate pump testing. There is no definition of a "hydrogeologist" in the framework of the rules, existing or

revised. Given that the State of Ohio does not presently require any type of certification, registration or licensing of geologists, what would qualify as a "hydrogeologist" as cited in the revision? (Reynolds, Inc.)

Response 17: The term "hydrogeologist" will be supplemented with "or a person with demonstrated competency in performing pumping or aquifer tests".

Comment 18: 3745-9-09 - There is a grammatical error throughout this section of the Rule that should be corrected. "Pump test" should be changed to "pumping test". We are not testing "pumps"; we are performing tests by pumping wells to determine the hydrogeologic characteristics of the wells and aquifers. We recommend doing a word search and universally changing "pump" tests to "pumping" tests. (Eagon and Associates, Inc)

Response 18: The term "pump test" has been changed to "pumping test".

Comment 19: 3745-9-09 Appendix – Total Coliform has been added to the draft new-well parameter list and should be removed. Total coliform sampling requirements are addressed in other sections of the rule. Sampling for total coliform at the end of the constant-rate test, before the permanent production equipment has been installed is inappropriate and is prone to false-positive detections. (Eagon and Associates, Inc)

Response 19: The Agency concurs and has removed the total coliform reference in the appendix to rule 3745-9-09.

Comment 20: Proposed 3745-9-09 Appendix **-** Having recently drilled and analyzed new wells, we found that the terminology used in the regulations regarding parameters differed on occasion from that used by the laboratory especially in regards to Volatile Organic Chemicals. We had to call the lab to make sure the correct VOC's had been tested for (in example EPA terminology Dichloromethane vs. lab terminology Methylene Chloride). If more than one term can be used for the same chemical, both names need to be noted in some manner (perhaps with alternate names in parenthesis or an asterisk with additional names noted). (City of Fairborn)

Response 20: To ensure consistency among various chapters of Ohio Administrative Code 3745, no changes will be made to the appendix to the rule. However, the Agency will consider

listing chemical synonyms and CAS registry numbers in a guidance document.

3745-91-10 Drinking Water Source Protection Plan

Comment 21: Two comments were received expressing concerns that it may be difficult to develop and submit a drinking water source protection plan within one year of plan approval, especially for public water systems with sophisticated wellfields, multijurisdictional coordination, zoning and ordinance programs and funding considerations. (City of Columbus, City of Fairborn)

Response 21: The Agency recognizes the complexities of completing a comprehensive protection plan for larger community public water systems. The rule has been revised to allow 2 years to complete the plan.

Comment 22: 3745-91-10-(A) - states that a "public water system that receives approval…for a public water system well" shall develop or update a protection plan. The question is whether the Director's action is based on approval of the siting of a well or the approval of the operation of a well post-sampling? (City of Columbus)

Response 22: The Director's action will be based on the date a public water system receives plan approval from the Director for use of the well, not the date the Agency transmits its well site acceptance letter to the public water system.

End of Response to Comments