

ARCHIVE: Archived due to the 2009 rule revision. Refer to VA30007.09.0010 for the updated document.

TITLE: Identification of Ground Water Zones

DATE EFFECTIVE: January 2003

HISTORY: Update of VA30010.98.002 (FAQ #1) - Revision was necessary to clarify the guidance within the document. However, the technical content of the archived TDC document remains accurate.

KEYWORDS: Ground water, saturated zone, ground water zone, ground water classification, protection of ground water

RULE/ AUTHORITY: OAC 3745-300-01(A)19; 3745-300-07(D)(1)(b); 3745-300-07(D)(1)(f); 3745-300-07(D)(3); 3745-300-07(D)(4); 3745-300-07(D)(8); 3745-300-07(E)(3)(b); 3745-300-10(A)(6); 3745-300-10(C)

QUESTION: When ground water occurs in two or more geologic horizons, how can it be determined whether the horizons should be considered single or multiple ground water zones?

BACKGROUND: OAC 3745-300-07(D)(f) requires an evaluation of property-specific geologic, hydrogeologic, and physical characteristics. Part of the evaluation consists of identifying ground water zones. This identification of the ground water zones is integral to determining the applicability of the provisions for ground water protection under OAC 3745-300-10(E)(1) and ground water classification under OAC 3745-300-10(C). For each ground water zone, OAC 3745-300-07(D)(3) requires the volunteer to demonstrate whether chemicals of concern in the ground water zone meet or exceed unrestricted potable use standards. This determines whether a zone is subject to protection under OAC 3745-300-07(D)(4) or response requirements in accordance with OAC 3745-300-10(F).

ANSWER: To determine whether the geologic horizons at a property should be considered single or multiple ground water zones, the starting point is the evaluation conducted under OAC 3745-300-07(D)(1)(f). Based on the evaluation, a volunteer collects information to define the hydrogeologic environment at the property using the methods and procedures outlined in OAC 3745-300-07(E)(1) and (3). OAC 3745-300-07(E)(3)(b) references Ohio EPA's Technical Guidance Manual

for Hydrogeologic Investigations and Ground Water Monitoring (February 1995), Chapter 3, as a source of data collection, field testing and sampling techniques to evaluate saturated zones. "Saturated zone" is defined in OAC 3745-300-10(A)(6) to mean a part or layer of the earth's crust, excluding the capillary zone, in which all voids are filled with water.

The information collected under OAC 3745-300-07(D)(1)(f) and 3745-300-07(E) should be reviewed to identify saturated geologic material that is of overall similarity with respect to type and character and is distinctly different from overlying, underlying, or surrounding materials. Such identified materials generally constitute individual ground water zones. Type and character of the saturated material includes, but is not limited to, grain size, horizontal and vertical hydraulic conductivity, potential yield of wells, ground water flow direction, and material type. Ohio EPA suggests that hydraulic factors such as flow direction, yield to wells, and hydraulic conductivity generally be given the most weight in the evaluation. Hydraulic interconnection with different horizons should be given added weight only if the interconnection is exceptionally strong. Finally, CPs/volunteers should consider whether a ground water zone may contain isolated seams of dissimilar material that are not thick or extensive and do not serve as a preferential pathway off-property.

EXAMPLES:

Fine-grained materials (clays and clayey silts) with isolated pockets or lenses of coarser-grained material can be considered one ground water zone if none of the pockets or lenses is a potential pathway for the ground water to emanate from the property. Whether seams are isolated can be determined from exploratory borings that are sufficient in number, depth, location, and sampling.

If an upper sand and gravel is separated from a lower sand and gravel by a leaky clay confining layer, the two permeable units should be considered two separate ground water zones.

Where a coarse sand and gravel directly overlies and is in direct hydraulic connection with a high yielding fractured bedrock aquifer, the two horizons should be considered one ground water zone.

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CONTACT:**

For any questions concerning this issue, please contact the VAP central office at (614) 644-2924 or DDAGW-VAP Support Staff at (614) 644-2752.