



ABSTRACT

A sole-source aquifer (SSA) is defined by the U.S. Environmental Protection Agency (USEPA) under regulations in the Safe Drinking Water Act of 1974. It is defined as an aquifer which contributes more than fifty percent of the drinking water to a specific area and its contribution would be impossible to replace if the aquifer were to become contaminated. Any project within such a designated area that receives federal funds must address the project's potential impact on ground water to the satisfaction of the USEPA. This 'project-review area' includes all or part of the 'stream-flow source zone,' the upstream watershed that may contribute recharge to the aquifer. The USEPA has designated seven sole-source aquifers in New Jersey. Their project-review areas are mapped at left.

REGULATORY AUTHORITY AND IMPLEMENTATION

The sole-source aquifer program was authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 as follows:

"If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for federal assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer".

A sole-source aquifer supplies at least fifty percent of the drinking water consumed in the area overlying the aquifer. An additional criteria is that there exist no alternative drinking-water sources. The process to identify and designate a sole-source aquifer begins with a petition submitted to the USEPA. This petition is published in the Federal Register. After a comment period, and perhaps changes to the petition, USEPA rejects or approves the petition. If approved, the USEPA publishes a notice of approval in the Federal Register

SOLE-SOURCE-AQUIFER REGIONS

A sole-source-aquifer consists of three regions. The regions may or may not overlap, depending on specific site conditions and USEPA's determination. The three regions are: (1) the recharge zone; (2) the stream-flow source zone; and (3) the project review area. The zones of different sole-source aquifers may also overlap.

The recharge zone is that area through which water directly recharges the aquifer. It is usually the areal extent of the aquifer. For example, the New Jersey Coastal Plain SSA encompasses the entire Coastal Plain. Recharge can enter the aquifer throughout its areal extent.

The stream-flow source zone is the area that drains to the recharge zone. Because water flowing out of the stream-flow source zone may enter the recharge zone, contamination of this source water could contaminate the sole-source aquifer. For example, the New Jersey Coastal Plain sole-source aquifer receives recharge from the Delaware River. For this reason, the Coastal Plain SSA's stream-flow source zone includes all of the upstream portions of the Delaware River in New Jersey, Pennsylvania and New York. For some sole-source aquifers, the recharge zone is defined by watershed boundaries. For these SSAs the recharge zone and the stream-flow source zone coincide. This is the case for the Rockaway sole-source aquifer.

The project-review area is the area in which USEPA requires all projects receiving federal funds to be reviewed in order to determine if the project will affect the SSA's water supply. For most sole-source aquifers the project-review area is the combined recharge zone and stream-flow source zone. The project-review area of each SSA in New Jersey is mapped at left and described in the following section.

SOLE-SOURCE-AQUIFER PROJECT-REVIEW-AREAS IN NEW JERSEY

Described below are the seven sole-source aquifers designated in New Jersey. The map at left shows all of the USEPA project review areas in New Jersey. Overlapping areas are indicated in the text, not on the map.

The Buried Valley sole-source aquifer is formally known as the 'Buried Valley aquifer in southeastern Morris and western Essex Counties.' Its notice of approval was published in the Federal Register, vol. 45, No. 91, 5/8/80, pp. 18732 - 18733. The recharge zone is defined by the outside boundaries of the municipalities of Berkeley Heights, Bernards, Caldwell, Chatham Borough, Chatham Township, Essex Fells, Fairfield, Harding, Livingston, Millburn, Montville, Morris, New Providence, North Caldwell, Parsippany-Troy Hills, Roseland, Summit, Warren and West Caldwell. Totally included in the recharge zone are East Hanover, Florham Park, Hanover, Long Hill, Madison, Morristown, and Morris Plains. The stream-flow source zone is defined by those portions of the Passaic, Rockaway and Whippany River watersheds that drain to the recharge zone. USEPA's project-review area is both the recharge zone and the stream-flow source zone.

The Coastal Plain sole-source aquifer is formally known as the 'New Jersey Coastal Plain aquifer system.' Its notice of approval was published in the Federal Register, vol. 53, no. 122, 6/24/88, pp. 23791 - 23794. The recharge zone is defined as the New Jersey Coastal Plain physiographic province. Its stream-flow source zone includes all upstream portions of the Delaware River watershed in New Jersey, Pennsylvania and New York. USEPA limits its project-review area to the recharge zone and that portion of the stream-flow source zone that lies within two miles of the main stem Delaware River.

The Highlands sole-source aquifer is formally known as the 'Highlands aquifer system in Passaic, Morris and Sussex Counties, NJ and Orange County, NY.' Its notice of approval was published in the Federal Register, vol. 52, no. 192, 10/5/87, pp. 37213-37215. The recharge zone is defined by the outside boundaries of the Wanakee River watershed and the Pequannock River watershed. Its stream-flow source zone is the same as the recharge zone. USEPA's project-review area is the same as the recharge zone.

The Northwest New Jersey sole-source aquifer is formally known as the 'Fifteen Basin aquifer systems of New Jersey.' Its notice of approval was published in the Federal Register, vol. 53, no. 121, 5/23/88, pp. 23685-23687. The recharge zone is defined by the outside boundaries of the following watersheds: Delawanna Creek, Flat Brook, Lopatcong Creek, Musconetcong River, North Branch Raritan River, Papakating Creek, Paulins Kill, Pequest River, Pochuck Creek, Pohatcong Creek, South Branch Raritan River, Shimmers Brook, Van Campens Brook and Walkkill River. It also includes that portion of the Millstone River watershed outside the Coastal Plain. Its stream-flow source zone is same as recharge zone with the inclusion of the entire Millstone River watershed. USEPA's project-review area is the same as the stream-flow source zone.

The Ramapo sole-source aquifer is formally known as the 'Ramapo River basin aquifer system.' Its notice of approval was published in the Federal Register, vol. 57, no. 168, 9/28/92. The recharge zone is defined as the portion of the Ramapo River basin which lies in the Piedmont physiographic province in New Jersey and New York. Its stream-flow source zone is defined as the entire Ramapo River watershed in New Jersey and New York. USEPA's project-review area includes the entire Ramapo River watershed in New Jersey and New York.

The Ridgewood sole-source aquifer is formally known as the 'Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey.' Its notice of approval was published in the Federal Register, vol. 49, no. 16, 1/24/84, pp. 2943-2945. The recharge zone is defined as the outside boundaries of the municipalities of Ridgewood, Midland Park, Glen Rock and Wyckoff in Bergen County. Its stream-flow source zone is defined as the upstream portions of Ho-Ho-Kus Brook and Saddle River Run watersheds. This includes all or portions of the municipalities of Allendale, Franklin Lakes, Hillside, Ho-Ho-Kus, Mahwah, Montvale, Ramsey, Saddle River, Upper Saddle River, Waldwick, Washington and Woodcliff Lake (all in New Jersey), and Ramapo Township in New York. USEPA's project-review area includes both the recharge zone and the stream-flow source zone.

The Rockaway sole-source aquifer is formally known as the 'Unconsolidated Quaternary aquifer in the Rockaway River area, New Jersey.' Its notice of approval was published in the Federal Register, vol. 49, no. 16, 1/24/84, pp. 2946-2948. The recharge zone is defined by the outside boundaries of the Rockaway River watershed, the Black (Upper Lammington) River watershed in Roxbury and the Lake Arrowhead watershed in Denville and Mountain Lakes. Its stream-flow source zone is the same as the recharge zone. USEPA's project-review area is the same as the recharge zone.

FOR FURTHER INFORMATION

The sole-source aquifer program is a federal program. USEPA offers guidance on the sole-source-aquifer designation process at <http://www.epa.gov/region02/water/aquifer/petition/>. Questions about its application in New Jersey should be directed to:

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