

4.0 SUPPORT PROGRAMS AND RECOMMENDATIONS

There are a number of management and regulatory programs that are applicable to many of the groundwater problems and groundwater management issues previously discussed. The following section outlines some specific program areas in which the states provide a lead role in the management of the basin's groundwater resources. These programs need to receive continued support and, in many instances, substantial expansion. In the following section, the groundwater management issues are discussed and recommendations for improvement are made.

4.1 Issue: Protection of Groundwater Sources of Supply and Aquifers

Problem: *Contamination of groundwater resources from the affects of improper land use planning and zoning.*

The Wellhead Protection Program and regulations only provide for the protection of public supply wells, and only within the immediate vicinity of the wells. Proper land use planning and zoning are essential for protecting critical groundwater recharge areas, as well as areas of high yield, from contamination. Many times these critical areas lie outside of the zone protected under the current regulations. Although non-regulatory, state/local source water protection plans are critical to protecting aquifers and critical sources of groundwater. With increasing development in many areas, source water protection plans provide the framework for proactive planning to prevent groundwater pollution from occurring in critical recharge areas, which improves the chances of protecting future sources of water supply as well.

Recommendation: Encourage the states and local jurisdictions to develop regulations and programs designed to protect critical aquifers from contamination because wellhead protection programs do not provide for protecting future public supply wells, domestic wells, and other uses of wells.

Problem: *Lack of comprehensive groundwater quality datasets showing the extent and severity of nonpoint source pollution affecting groundwater resources basinwide, and the lack of management plans necessary for improving conditions.*

Nonpoint source contamination is the leading cause for contamination of water resources within the basin. According to the most recent state 305(b) water quality reports, the two most dominant sources of contamination include AMD and agriculture. Currently, state programs emphasize surface water quality monitoring, with very little resources dedicated to groundwater quality monitoring at a regional scale. Less than 10 percent of the aquifers in the basin are monitored for quality on a regular and continuous basis. Although all public water suppliers are required to monitor water quality parameters regularly, the information is not compiled and analyzed by hydrogeologic unit. There is a need to compile this type of information, and collect additional data, to better determine the water quality health of aquifers and water-bearing zones in order to assess trends. The monitoring efforts that do exist focus on just a few of the more heavily utilized aquifers in the basin.

No new actions would mean continued limits on groundwater quality monitoring resources and a lack of the continuous monitoring needed to determine trends. As nonpoint source contamination increases from growing development, these developing communities could be at a greater risk of pollution.

Recommendation: Continue and expand monitoring and research, in cooperation with member jurisdictions, related to nonpoint source contamination, including agricultural and other sources of groundwater. In addition, the Commission has in the past used private/existing wells to collect

monitoring data, and plans to continue such efforts when appropriate. The Commission recommends encouraging such cooperative efforts both for Commission initiatives, and those initiated by other agencies and local jurisdictions. The information obtained can be used to assess the severity of the problem and the need for management initiatives. Several programs support the assessment and implementation of such actions and include TMDLs, USEPA's 319 Nonpoint Source Program, and United States Department of Agriculture/Natural Resource Conservation Service (USDA/NRCS) water programs.

Problem: *Degradation of water quality conditions in aquifers from point source discharges.*

Groundwater is hydraulically connected to the surface water. This connection is fairly direct in many of the higher yielding aquifers in the basin. Valley fill and karst aquifers are many times closely linked to surface waters, based on proximity to streams and presence of sinkholes, respectively. In the case of the valley fill aquifers in the northern parts of the basin, water frequently migrates back and forth between the stream/river and the sand/gravel aquifers located adjacent to the stream/river. In areas where the surface water body recharges the aquifer, a pollutant discharge in close proximity to this recharge zone could have an adverse influence of water conditions within the aquifer. In karst areas, sinkholes can provide the same type of conduit to aquifers, carrying pollutants from a nearby discharge. In cases such as these, surface discharge permit issuances should be sensitive to aquifer recharge areas.

Recommendation: Support the member jurisdictions in their efforts to consider the affect of wastewater discharges on groundwater, including sensitive recharge areas, when issuing National Pollutant Discharge Elimination System (NPDES) or State Pollutant Discharge Elimination System (SPDES) permits. This should potentially include the installation of monitoring wells in particularly vulnerable aquifers.

Problem: *Limited support for local development of source water protection plans.*

Section 1442 of the Safe Drinking Water Act (SDWA) requires states to assess the vulnerability of public drinking water sources to raw water contamination. After the assessment process is complete, there is no mandate for the formulation of protection plans based on the assessment results. In addition, a very limited number of resources are dedicated to promotion of source-water protection, as well as the technical guidance needed to implement such plans. Many times, the communities responsible for implementing source-water protection efforts lack the technical expertise needed to properly utilize the data and information compiled during the assessment phase. There needs to be experienced technical staff available to guide protection efforts, or refer communities to the resources best suited to assist their efforts. All three member states are working towards shifting priorities from assessment to protection, providing assistance through grants and workshops, guidance documents, technical assistance, and establishment of spill detection and early warning systems. However, the absence of sufficient resources prevents a comprehensive and sustained approach to addressing the problem.

Recommendation: Assist communities with groundwater source protection by utilizing existing source-water assessment data and aquifer test data to provide educational and technical assistance in formulation of protection plans. The overwhelming need for education on this subject far exceeds the resource capabilities of any one agency or organization. The success of source water education and protection activities resides with building broad partnerships among both public and private partners, based on the need for the protection of water supplies to span a number of issues/areas (i.e., land use planning, hazardous material handling, municipal ordinances, water quality monitoring).

When appropriate, the Commission will continue to be involved with source water protection activities at all levels, and continue to partner with the PRWA and others involved with source water education (i.e., League of Women Voters, AWWA, AWRA), providing a regional, basinwide framework.

4.2 Issue: Water Use and Availability Information

Problem: *Not all large volume withdrawals (>10,000 gpd) are registered (documented).*

Without documentation of large volume users, groundwater use and availability assessments would be incomplete. Cumulative impact analysis is essential to proper management of the groundwater resource.

Recommendation: Require large volume users of groundwater (>10,000 gpd) to register (document) their use. In addition, require all registered (documented) withdrawals to be reregistered (updated) periodically. Coordinate with member states and others to maintain a vibrant data set.

Problem: *Data on large volume users needs to be available for management use.*

In order to properly track use and availability, a centralized database should be developed to enhance the capabilities for management of the resource. Cumulative impacts are an increasing concern in many areas of the basin. If planners and managers were able to keep track of potential areas where cumulative impacts are likely, a proactive approach to management could be employed prior to problems arising.

Recommendation: Maintain a centralized database containing information on large users, and make these data available to planners and managers throughout the basin. Access and use of the information would be subject to security considerations.

Problem: *Well information (water use) is not available to all agencies and local managers.*

In order to properly track use and availability, a centralized database should be developed to enhance the capabilities for management of the resource. Cumulative impacts are an increasing concern in many of the basin. If planners and managers were able to keep track of potential areas where cumulative impacts are likely, a proactive approach to management could be employed prior to problems arising.

Recommendation: Maintain a centralized database containing well location information, and make these data available to planners and managers throughout the basin. Access and use of the information would be subject to security considerations.

Problem: *Groundwater managers, planners, and decision-makers often do not have ready access to fundamentally important, basinwide information on groundwater.*

The availability of groundwater is often critical to the success of a private, community, or industrial project. However, in many instances, projects are well underway before water availability problems are discovered. Ready access to groundwater availability and yield information would help in screening sites and projects for feasibility. The data could readily be portrayed on maps that could be made available on-line.

Recommendation: The Commission should partner with the appropriate agencies to develop the required information for the entire basin, and make it available on-line at an appropriate web location.

4.3 Issue: Well Requirements

Problem: *Improper well construction and abandonment procedures can cause aquifer contamination.*

Under normal conditions, water that falls to the ground surface and recharges aquifers is filtered as it passes through the soil zone. This process generally removes many of the possible contaminants picked up from land surface. If a well is not constructed or abandoned properly, the well can act as a conduit for quickly transmitting potentially polluted surface waters to an aquifer.

Recommendation: Support state and local programs for well construction and abandonment standards and improved controls to prevent pollution. Several towns and municipalities in the basin have established successful ordinances to protect groundwater quality through controls on well abandonment and construction procedures. Examples are available from the state or respective state rural water associations. The Commission will continue to support state/local efforts for developing construction standards, as outlined in the Commission's Annual Water Resources Program document.

Problem: *Lack of certification program for drillers in Pennsylvania and the need for improving existing licensing/certification programs and well driller training in other basin states.*

Proper installation of a well should be performed by a licensed and certified professional to ensure that public health standards are met, and aquifer integrity is preserved. Currently, Pennsylvania has a licensing program for well drillers in the state. However, the only requirement for licensing is a nominal fee. There needs to be a certification program in place to further ensure that both groundwater resources, and the health of the public dependent on those resources, are protected.

Recommendation: Support legislation that works toward the development of a well driller's certification program in Pennsylvania, and support the improvement of programs that provide training and licensing/certification for all well drillers.

Problem: *The observation well network does not have the capability to monitor the dynamic response of aquifers in the basin to changes in precipitation.*

The observation well network should have adequate geographic coverage, measurement frequency, and sufficiently rapid reporting time to monitor aquifer responses to rainfall events and droughts, and make timely water management decisions. It also is important to provide good maintenance of all observation wells. This information is useful to water managers in evaluating drought impacts to water supplies and drought recovery. In the Susquehanna Basin, observation wells are located in nearly every county (67 in Pennsylvania, 7 in New York, and 4 in Maryland), which provides for adequate geographic coverage. However, the well in Otsego County, New York (OG-23), has a depth of 15 feet, is located in low permeability glacial till, and should be replaced with a deeper well in an aquifer more typical of those used for water supply in the area, and provides a more accurate and meaningful reflection of groundwater response to precipitation. Water levels in some of the network wells are measured only monthly, and measurements should be continuous or otherwise increased in order to adequately monitor aquifer response. In addition, to maximize the utility of the network for water managers, automatic recorders and telemetry platforms should be installed in all wells to allow for the timely acquisition and evaluation of the data.

With the current monitoring instrumentation, real-time data is available from the observation wells in Pennsylvania. However, assessment of groundwater conditions in Maryland and New York during critical drought periods will be a minimum of four to six weeks behind real-time

conditions. A long-term action is for New York and Maryland, in cooperation with USGS, to place real-time data monitoring wells in their Susquehanna Basin counties.

Recommendation: The Commission should support effective maintenance of the observation well network by the USGS, and work toward improving the network, through cooperative agreements between USGS and the member jurisdictions. The goal is to provide a useful observation well with real-time monitoring capability in each county in the basin. Well OG-23 should be replaced with a well located in an aquifer that is commonly used for water supply and constructed to provide accurate monitoring of the water table or aquifer head.

4.4 **Issue: Assessment of State/Federal Groundwater Programs and Program Coordination**

Problem: *State and federal agencies need to ensure their groundwater programs are current and responsive. In addition, these programs need to coordinate management activities to enhance program effectiveness and efficiency.*

The three states in the basin and the federal government have important and active groundwater programs that address many key issues. There is a need to make periodic assessments of their separate programs to identify gaps, changes required, major unresolved issues, etc. Pennsylvania is addressing groundwater issues and management as part of its ongoing water resource planning effort (Act 220). Maryland makes an annual report on groundwater protection. New York is currently undergoing a review of its groundwater program, and reevaluations will be conducted, as needed. The federal government is guiding state source water assessment and protection programs, as well as addressing other groundwater pollution issues (i.e., Chesapeake Bay Program nutrient issues, Superfund cleanup).

In addition, agencies should ensure that their own departments and programs are effectively communicating internally to provide for optimal use and protection of the resource. In particular, programs charged with environmental protection and resource extraction should coordinate to preserve the sustainability and integrity of groundwater resources.

Recommendation: The Commission's member jurisdictions should continue periodic assessments of their groundwater programs to identify needed improvements and plan for their implementation.

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