# 3.0 MANAGEMENT ISSUES AND RECOMMENDATIONS

The purpose of this section is to describe some of the policies and issues related to the management of groundwater resources and identify recommended actions. Included are issues related both to the Commission and other agencies that manage groundwater resources and to the Commission's interaction and coordination with those agencies.

## 3.1 Issue: Multi-Agency Coordination

Coordination among member state and federal agencies and the Commission results in efficient data collection, planning, monitoring, and management of the basin's water resources. Coordination among member state and federal permitting programs and the Commission's Project Review Program results in consistent approvals, appropriate conditional requirements, and sound management of the water resource.

***Problem:*** *Coordination among water resource agencies can be ineffective or incomplete.* Limitations in resources among member state and federal water resource management agencies, and the Commission, dictate the efficient use of human and technical resources and avoidance of duplication of effort among agencies in order to effectively achieve agency goals and objectives. Therefore, ongoing communications and coordination in water resource data collection, planning, monitoring, and management programs is essential. Similarly, within member state and federal water quality and quantity permitting programs and the Commission's regulatory program, sharing written review memoranda, correspondence, and other ongoing communication is essential to the coordination necessary to eliminate conflicting approvals, inappropriate conditional requirements, and unilateral action.

Conflicting and/or unilateral approval actions can undermine the water resource management goals and objectives and program effectiveness of other water resource agencies. Lack of coordination between water resource permitting agencies occurs when water quantity permitting programs fail to consider water quality permitting issues and vice-versa in processing an approval. Also, lack of coordination among program areas beyond water supply, such as mining and waste management, can lead to conflicting approvals. Other water resource considerations such as water-related recreation, wetlands, endangered species, TMDLs, archeological sites, and historic sites must be considered and coordinated.

The Commission's water resource data collection, planning, monitoring, and management procedures must be closely coordinated. Multi-agency coordination committees, such as Chesapeake Bay Program, Water Resources Management Advisory Committee, Agricultural Water Use Advisory Committee, Nutrient Management Committee, Public Drinking Water Advisory Committee, Drought Task Force, Capital Region Water Board, Interstate Council on Water Policy, Flood Forecast and Warning Committee, and Nonpoint Source Workgroup can be helpful in this respect. Ultimately, however, coordination depends upon the vigilance of the Commission's Project Review Program to avoid conflicting actions between water resource agency permitting programs.

The approach to managing groundwater resources should be a cooperative one among involved regulatory agencies, and all efforts should be undertaken to insure effective communication. The Commission's Project Review Program should closely communicate with all appropriate agencies during the course of a project's review, and when possible, member state and federal water resource agency staff should be invited to meetings with project sponsors in order to insure essential coordination. In addition, appropriate agencies should be copied on correspondence

through electronic and traditional paper communication when appropriate. When questioning whether coordination on a specific issue is needed with another water resource agency, it is better to solicit agency input, rather than to act unilaterally based on program assumptions.

***Recommendation:*** The Commission's water resource data collection, planning, monitoring, and management procedures should be closely coordinated through multi-agency committees, and the Commission and all appropriate agencies should closely communicate on the Project Review Program to avoid conflicting actions.

## 3.2 Issue: Changes to Water Resource Utilization Over Time

Differing economics, land use, and growth conditions result in changes in the utilization of the basin's water resources. Additionally, new technology affords opportunities for more efficient evaluation and monitoring of the basin's water resources.

***Problem:*** *Water resource management programs can become less efficient with changes in technology and water use.*
The Commission must review and adapt its technical and management programs to effectively consider changing land use and growth, while fully utilizing new technology as it emerges. As part of the process of reformulating Commission policies and procedures to meet the basin's changing needs, a periodic update of the Groundwater Management Plan is required.

Experience has demonstrated that updates to the Groundwater Management Plan are needed at least every 10 years in order for the plan to maintain its continuing viability. As a part of these regular updates, the Commission should report on water resource utilization throughout the basin using the best available technology and make appropriate changes in its policies, procedures, and project review process, as necessary.

An assessment of the utilization of current water resources can best be accomplished through updated water budget analyses, preferably for watersheds at a scale of between 15 and 25 square miles. Updated water budget analyses need not be conducted basinwide, but should be focused on areas of the basin where the water resources are stressed or are likely to be stressed within the next decade. Criteria for prioritizing watersheds for analysis should be developed, and the analyses should be conducted on an ongoing basis.

Water use data for water budget updates should be the most current data available, taking full advantage of the latest water registration updates. In addition, for those users having projects approved by the Commission, the most recent water withdrawal and consumptive water use data from the project review database should be utilized. Where peak daily or peak monthly water use is required, data should be retrieved from the most recent drought year available in the database.

On the supply side, the water budget analyses should utilize current streamflow and base flow statistics updated with the additional daily streamflow records occurring since the last water budget update. This update of basin streamflow and base flow statistics should be conducted for all gauged watersheds having relatively unregulated streamflow records. Flow statistics requiring updates include mean and median flows (annual), low flow statistics such as Q7-10, and base flow separations using the local-minimum method or another accepted base flow separation method for recurrence intervals of 2, 10, 25, and 50 years. Additionally, average monthly depth to water percent exceedence statistics (for the observation well network) and streamflow percent exceedence statistics (“flow-duration curves”) for the gauged streamflow network need to be regenerated periodically for drought monitoring, utilizing the additional daily records.

***Recommendation*:** To effectively manage changes in the utilization of the basin's water resources, the Commission must assess water resources utilization periodically through updated water budget analyses, preferably for watersheds at a scale of between 15 and 25 square miles focusing on PSAs of the basin, and make appropriate changes in its policies, procedures, and project review process.

***Problem:*** *Water supply sustainability and stream low flow conditions can be adversely impacted by lack of the best and most efficient use of groundwater resources.*
Threatened water supply shortfalls can be addressed and limited water supplies can be stretched with adequate foresight and implementation of innovative water management strategies, including water conservation, water reuse, and conjunctive use of groundwater and surface water. These strategies would be particularly prudent in areas of rapid growth and limited water availability, such as PSAs.

Water conservation requirements, specified in the Commission Regulations, Part 804, Subpart B, §804.20-22, require that any project subject to Commission approval under Parts 803 or 804, proposing to withdraw water either directly or indirectly (through another user), shall institute appropriate water conservation measures. The regulations specify a number of requirements for public water suppliers (source and customer metering, unaccounted-for water to be less than 20 percent, an appropriate rate structure, etc.). However, for other types of projects, the regulation is silent on important conservation measures. Commission staff has recognized that these regulations should be strengthened.

Groundwater used by municipalities and industries, as well as AMD from many flooded underground coal mines, is typically treated and discharged to streams. The quality of treated water discharged from municipal, industrial, and mine treatment plants, while generally not meeting safe drinking water standards, is typically quite good and is potentially usable for many non-potable uses such as irrigation and non-contact cooling. The reuse of treated wastewater would decrease the amount of groundwater withdrawn by the amount of water that is reused.

The availability of groundwater and surface water resources frequently varies in a complementary manner during the year, such that one of them is relatively abundant while the other is relatively scarce. Water users can develop both groundwater and surface water sources and rely on each as it is "in season." A community, recreational facility, or industry may rely on surface water during periods of high flow, then switch over to groundwater when surface flows diminish during the late summer and early fall. Where only groundwater is available naturally, a surface water impoundment may be constructed to capture snowmelt, spring precipitation, and stormwater runoff. This stored water may be used when groundwater resources are stressed, or may be used to provide a passby flow during low flow periods.

***Recommendation*:** The Commission, in cooperation with member jurisdictions and other organizations, should strengthen requirements for water conservation and encourage reuse of treated wastewater and conjunctive use of groundwater and surface water.

## 3.3 Issue: Regulatory Duplication

Changes in legislation and promulgation of new regulations result in changes to water resource management programs and possible duplication of programs.

***Problem:*** *Change in the regulatory programs of the member jurisdictions may make some of the Commission's regulatory program redundant, inefficient, or inappropriate.*
Effective coordination is needed among the Commission, its member jurisdictions, and key agencies to ensure success of groundwater management actions, including those set forth in this plan. Close coordination needs to be maintained in order to implement the plan recommendations and share resources, information, and technology, while ensuring consistency of groundwater management actions. The coordination needs to consider the requirements of recent legislation and current agency programs, as well as their changes through time. To facilitate key coordination efforts, the following should be considered: (1) the process for the new Pennsylvania State Water Plan, initiated in 2003; (2) requirements of Section 15-1525 (certification of registration of well drillers and other groundwater provisions) of New York's Environmental Conservation Law's 1999 amendments; (3) requirements contained in COMAR, the Maryland Code of Regulations; and (4) programs of the USGS. Formal coordination arrangements, such as memoranda of understanding, should be considered to facilitate coordination, as appropriate.

If no or limited action on implementation of this plan's recommendations is taken, then coordination would continue on an as-needed, case-by-case basis, for groundwater issues with little to no program level coordination. A more effective approach involves both short- and long-term coordination on all major aspects of groundwater management, including both programmatic and project-specific issues.

***Recommendation*****:** Close and effective coordination, including the use of formal arrangements such as memorandum of understanding, should be maintained among the Commission, its member jurisdictions, and key agencies to ensure that implementation of this plan's recommendations is effective, current groundwater information and technology are shared, consistency is maintained, and redundancy is minimized.

## 3.4 Issue: Increased Knowledge About Groundwater as a Resource

Groundwater is a hidden resource, and there are many misconceptions about its occurrence, availability, and potential impacts related to its development. Further, groundwater managers, planners, and decision-makers often do not have ready access to fundamental information on groundwater.

***Problem:*** *Useful information about groundwater occurrence, availability, transmissivity, and yield is collected by various government permitting agencies and others, but is not compiled and shared among agencies nor disseminated to the professional community, developers of policy, or local decision-makers.*
The Commission's water resource data collection, monitoring and management procedures are closely coordinated to avoid conflicting actions among water resource agency permitting programs. However, much of the data itself has not been compiled and shared among agencies.

From the Commission's perspective, it would be useful to review the Commission's files and compile all the pumping test data submitted in support of groundwater withdrawal applications into a single aquifer test database, linked to a GIS system. Under Pennsylvania's Act 220 Program, the Commission has proposed an effort to provide these groundwater data to PADEP. This effort should be expanded to cover the entire Susquehanna River Basin. Other agencies probably have similar types of data that should be reviewed, compiled, and made available to decision-makers.

A compilation of pumping test data would help establish the probable range of transmissivity, by aquifer, weighted to the higher end of the range as most supply wells are selectively developed in high permeability zones as opposed to randomly sited wells. Further, the database would allow, for example, the aquifer transmissivity values to be sorted by formation, physiographic province, county, etc. A compilation of all the pumping test data would form the basis for future management efforts, special studies, or regional modeling efforts.

***Recommendation:*** Capture and compile groundwater data submitted to the Commission by project sponsors to allow its use by the Commission and others.

***Problem*****:** *Lack of fundamental knowledge of groundwater resources by many policy/decision-makers at the local, municipality level and by their constituents, and at the corporate level of private businesses, has hindered the understanding of sound groundwater management practices.*
Decision-makers on groundwater management issues need to have supporting knowledge to evaluate alternatives provided by consultants and other professionals in order to make sound groundwater management decisions. One example includes the development of hydrogeologic maps for the entire New York portion of the basin. There is the need to develop this type of information for such management decisions, and make it available in user-friendly formats through such media as the internet. This knowledge also will make possible the more efficient use of existing federal, state, and Commission programs and assistance.

***Recommendation*****:** Identify the various constituents that would benefit from a multifaceted outreach and educational program, including local governments; regulated community and related associations; consultants; environmental, conservation and citizen organizations; and possibly colleges and high schools. Develop tools these groups can use to make informed decisions.

***Problem*****:** *Lack of consideration of factors important to groundwater protection and sustainability within the municipal planning process, resulting from limited knowledge of groundwater resources, has hindered the implementation of sound groundwater management practices.*
In following with the previous issue, education can lead to improved management of groundwater resources. However, there must be some assistance provided to implement the required actions after a management plan is developed. Municipal planners, and the public, need to know what tools they can use to implement actions such as land use controls for wellhead protection or protection of a critical aquifer recharge area. Many times the problems associated with a groundwater source are known; however, the means to address the problem are not.

***Recommendation*****:** Encourage and assist local governments to include groundwater management concepts in planning and land-use control. Use the various tools identified below, including video, information sheets, informational meetings, etc.

***Problem*****:** *There is the absence of an educational framework needed to present groundwater concepts and issues to a variety of audiences through several forms of media.*
In order to provide education to a wide audience, a program must be targeted to specific audiences and be versatile in its outreach and delivery methods. While printed literature is an excellent way to distribute educational materials, providing staff time for making presentations on selected groundwater topics is important for creating a forum for discussion. This method allows for interaction with the audience, answers specific questions, and provides clarifications. Multimedia formats are becoming increasingly useful for reaching a wide variety of audiences. The Internet, in particular, is a low-cost means for presenting information to a large audience. The use of websites and bulletin boards provides a convenient means for accessing and

exchanging information. The use of all the aforementioned methods can be used to provide a complete outreach and educational program for many of the groundwater management topics presented in this plan. Any education program must be evaluated periodically to assess its effectiveness.

***Recommendation*:** Incorporate the following methods into the multifaceted outreach and education program:

Publications: Periodically publish articles in the Commission quarterly newsletter; draft and submit articles to be published in the various constituents' publications; produce related information sheets, etc.

Conferences, workshops, and informational meetings: Identify the various constituents' conferences and determine their schedules; create new exhibits/displays on the topic; exhibit and/or speak at the conferences, workshops and information meetings; conduct Commission-sponsored conferences, workshops, and informational meetings, as the need arises.

Speakers' Bureau: Update and enhance the Commission's existing groundwater management presentation and publicize its availability.

Web Site: Establish a new link and announce the availability of the plan on CD-Rom, any related information sheets or related links, and short video clips (see below).

Video: Obtain funds to produce a video targeted particularly to local governments (short clips of the video can be included in the web site).

Media Relations: Issue a press release on the new plan, pointing out key benefits and uses; periodically submit articles on the benefits of groundwater planning and management; and periodically participate in radio and television talk shows.

## 3.5 Issue: Plan Performance and Accountability

Subsequent to the Commission adopting the Groundwater Management Plan, the Commission and its member jurisdictions need to ensure that the plan is being carried out, and that the goals of the plan are being met. The Commission needs to track the performance of plan implementation and the effectiveness of the plan's recommendations.

***Problem:*** *The management plan will not be productive unless the tasks identified are performed and accountability for accomplishing the tasks is established.*
Following adoption of this plan, it is in the interest of all member jurisdictions to ensure that the responsible parties implement the plan's recommendations. A periodic progress report on actions taken in line with the management plan is desirable. Implementation of the plan's recommendations and new issues that arise after the plan is completed are of particular interest. The progress report should be made to Water Resources Management Advisory Committee by Commission staff. An implementation schedule should be established and followed by lead agencies, and the Commission should review progress periodically. Any issues related to plan implementation should be identified and resolved on an ongoing basis.

***Recommendation*:** Periodic reporting on implementation of the plan's recommendations by the accountable agencies and groups and any new and significant groundwater management issues should be made by Commission staff to WRMAC.

## 3.6 Issue: Review and Update of the Plan

It is recognized that changed conditions, new legislation, improved technology, etc., could impact the effectiveness of some aspects of this management plan.

***Problem:*** *This management plan needs to be reviewed and updated on a recurring basis in order to be current and of continuing value.*
While continued planning will allow modifications within the framework of the plan, it is prudent to complete a comprehensive review and revision of the plan periodically. Experience with the past plan has demonstrated the need to revisit the management plan to ensure continuing relevancy of the document. This current revision is taking place 12 years after the management plan was adopted. While there may be significant points at which review is critical, for example, if the Commission's regulations are revised, a periodic comprehensive review should also be accomplished. No action implies that this plan would remain in effect indefinitely with no revisions. It is important that a long-term action result in a periodic comprehensive review and revision of the plan.

***Recommendation*:** While the overall planning process should be continuous, a more comprehensive review and revision of this plan by WRMAC should occur at intervals not to exceed 10 years.

## 3.7 Issue: Funding to Implement the Plan

The benefit of good planning is only realized to the degree that the recommended actions are taken.

***Problem:*** *Adequate long-term funding needs to be made available to implement the actions recommended in the plan.*
The plan lays out the broad range of issues and concerns regarding groundwater conditions across the basin, and prioritizes problems and recommendations. Adequate funding at all levels will be paramount in implementing the plan. It is believed that a prioritized and phased approach can be taken to use existing funding sources beneficially and to support increased funding levels. Significant delays in having adequate funding available will exacerbate groundwater issues and problems. See Section 6.3 for additional information on implementation costs.

***Recommendation:*** Funding to implement the plan's recommended actions should be made available and/or proactively sought by the lead jurisdiction(s) for each action.

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