

Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

STATE OF PENNSYLVANIA
SUMMARY OF STATE WATER PLANNING

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

STATE OF PENNSYLVANIA

1. STATE/REGIONAL WATER PLANNING STATUS

The Water Resources Planning Act (Act 220) signed into law on December 16, 2002, amended the Pennsylvania Consolidated Statutes by adding Chapter 31—Water Resources Planning to Title 27, Part III. Chapter 31 directed the Department of Environmental Protection (DEP) and the Statewide Water Resources Committee, with assistance from six regional committees, to develop a new State Water Plan (§ 3114, PA Consolidated Statutes) to replace the previous plan developed in 1975 to 1983.

The final plan was adopted in February 2009. The plan consists of three parts: the State Water Atlas, the Water Analysis Screening Tool (WAST), and the State Water Plan Principles. The State Water Atlas is divided into seven sections, starting with the statewide section, followed by one for each of the state's six major watershed regions: Delaware Region, Upper/Middle Susquehanna Region, Lower Susquehanna Region, Potomac Region, Ohio Region and Great Lakes Region (Figure 1). The State Water Plan Principles is a guiding document that establishes policies and provides recommended actions in all areas of water resources, including: integrated water resources management, water supply, water quality, navigation, floodplains, and stormwater.

WAST is a GIS-based water balance model “that compares net water withdrawals (withdrawals minus discharges/returns) against designated criteria (percent of the low flow (7Q10)) to measure the influence of the net withdrawals on aquatic resources (DEP, Principles).” WAST was developed by DEP and the U.S. Geological Survey (USGS). Data for WAST was collected through a water withdrawal and use registration and reporting program. WAST was used in a statewide screening and data verification process in a collaborative effort between DEP and the USGS, the Delaware River Basin Commission (DRBC), the Susquehanna River Basin Commission (SRBC), and the Interstate Commission for the Potomac River Basin (ICPRB) in order to meet requirements of Act 220 to identify potential critical water planning areas (CWPA); areas where existing or future demands exceed or threaten to exceed the safe yield of available water sources. The Principles includes an in-depth description of WAST and the CWPA designation process.

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

Pennsylvania's Department of Environmental Protection (DEP) Office of Water Management (OWM) plans, directs and coordinates departmental programs associated with the management and protection of the water resources. John Hines is listed as both the director of OWM's Water Planning Office and as acting director of the Bureau of Watershed Management. There are two other OWM Bureaus: Water Standards and Facilities Regulation, and Waterways Engineering.

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Pennsylvania is a member of eight interstate organizations and shares river basins with fifteen other states. Among the eight interstate organizations that the state is involved in are the following commissions: the newly formed Great Lakes-St. Lawrence River Basin Water Resources Compact Council, the Interstate Commission on the Potomac River Basin, the Ohio River Valley Water Sanitation Commission, the Delaware River Basin Commission (DRBC), and the Susquehanna River Basin Commission (SRBC).

3. WATER MANAGEMENT VISION AND GOALS

The vision of the State Water Plan (from 2008 State Water Plan Update (DEP, March 21, 2008)) is:

Pennsylvania has abundant and magnificent water resources. These resources should provide the basis for an exceptional quality of life for Pennsylvania's residents, an opportunity for outdoor enthusiasts, an attraction for visitors, unparalleled natural beauty, thriving ecosystems, agriculture prominence, and economic prosperity throughout the Commonwealth. All those with an interest in Pennsylvania have a stake in the use, enhancement, and stewardship of the state's water resources. Indeed, the Pennsylvania Constitution vests a right to pure water and the values of the natural environment in all Pennsylvanians, and imposes a duty to conserve and to maintain public natural resources for this generation and generations yet to come.

In order to achieve this vision, the State Water Plan will offer tools and guidance for all those who make decisions that affect the Commonwealth's water resources or who make decisions based upon the availability of water of adequate quantity and quality. The Plan should be useful to those who wish to locate and to design their projects so that the

availability of water resources does not constrain them; those who wish to preserve high environmental quality where it exists and to achieve it where it does not; local governments with planning, conservation, and economic development responsibilities; and Commonwealth and interstate compact agencies. This Plan should serve their needs by providing a qualitative and quantitative description of water resources in Pennsylvania based upon accurate, transparent, and readily accessible data, and guidance on the use of that description and those data in the decisions that face the Plan's users. The Plan is a starting point for considering the opportunities available to Pennsylvanians for managing the state's water resources to achieve our vision for the Commonwealth.

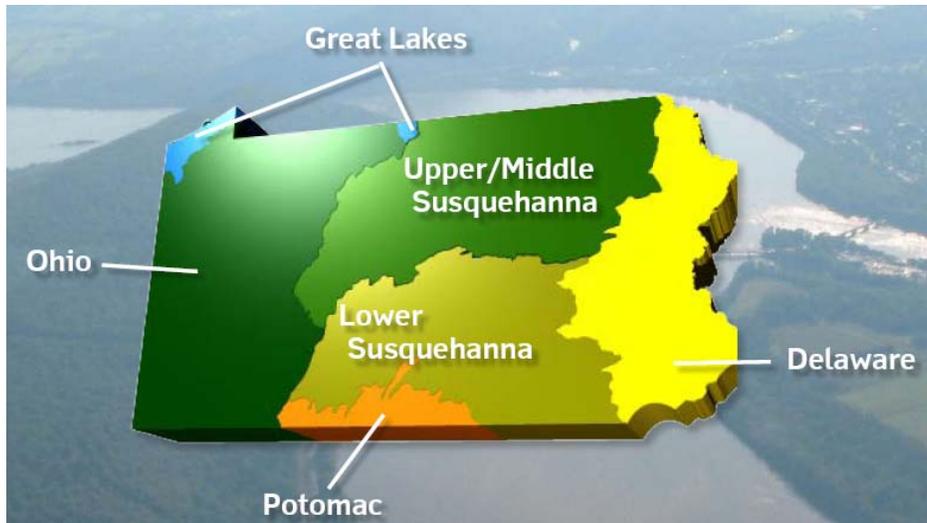


Figure 1. Location map of PAWP regional committees (DEP, Aug. 27, 2008a).

The state would like to have an integrated water resources management approach effectively implemented to ensure clean and abundant water supplies for multiple uses. It also seeks to be a leader and exporter of water resource innovations.

The PAWP has goals and objectives in three priority areas:

1. Data collection—*Sound water resource management decisions cannot be made without ready access to reliable and current data.*
2. Water Conservation and water resource innovation—*The Commonwealth should adopt policies that encourage technological advances designed to conserve and enhance water resources. Those new technologies could then be marketed to position Pennsylvania as a leader and exporter of water resource innovations.*
3. Integrated water resources management—*An integrated approach to managing water resources should be encouraged and sustained.*

The water resource goals and objectives of the various regional committees can be found in their respective sections of the Water Atlas. The first two goals are identified as top priorities in the Water Plan Principles.

Delaware Region Goals and Objectives

- *Link land use decisions and water resources management to sustain and enhance the quality of life in the Delaware River Basin.*
- *Improve management of water resources (including stormwater and wastewater) and waterway corridors to reduce damages from extreme conditions (floods and droughts).*
- *Identify in-stream flow needs and protect and restore in-stream flows.*
- *Identify, protect and restore ecologically sensitive areas, including trout streams Class A, B and C and 303d impaired streams.*
- *Institute operational practices that would help to ensure an adequate supply of potable water for public/private water supplies and suitable water for commercial, industrial, agricultural and power generation needs.*
- *Encourage local/county/regional plans consistent with the State Water Plan.*
- *To make state infrastructure investments consistent with the State Water Plan. Promote sustainable use and supply of water resources.*
- *Promote use of DEP tools and principles of sustainable use and supply among the general public, students, developers, engineers, planners, businesses and industries within the Delaware Basin.*
- *Control nonpoint source pollution from agriculture, mining, quarrying and abandoned mines, and forestry.*
- *Reduce point source discharges of toxics and wastewater and promote land application and appropriately scaled wastewater treatment systems.*
- *Encourage the alignment of public infrastructure investments and private development activities with water resource planning.*
- *Identify opportunities to improve the Municipalities Planning Code relative to local government authority over and responsibilities for matters relating to water resource management.*
- *Coordinate with and help define the roles of DRBC, DEP, PUC, DCED, PEMA, CCD and PennDOT in water resource planning.*
- *Enhance appropriate water-based recreation in and along the Delaware River and its tributaries.*

Ohio Region Goals and Objectives

- *Reclaim water resources impaired by abandoned mines.*
- *Identify water resources needed to promote and facilitate economic development, and provide job opportunities, while maintaining watershed integrity and recreational benefits.*
- *Reduce and avoid impacts that may lead to contamination of groundwater and surface water sources available for residential water use.*
- *Control stormwater runoff and promote groundwater infiltration.*
- *Resolve problems associated with aging infrastructure and malfunctioning sewage systems that may lead to water pollution.*
- *Develop plans for water resources during periods of drought or other water shortage emergencies.*
- *Protect and restore water resources such as critical groundwater recharge areas, ecologically sensitive watersheds, aquifers, wellheads, lakes, wetlands and floodplains.*

- *Develop and encourage the use of appropriate, applied technology to ensure clean and healthy water resources and encourage water conservation practices.*
- *Identify water resources needed for economic development that address needs to maintain and enhance job base and maintain watershed integrity.*
- *Distinguish the Ohio River Basin as a region that is different from other basins in the state while conducting public education and outreach on the importance of our water sources.*

Great Lakes Region Goals and Objectives

- *Support legislation and other measures that will protect the quantity and quality of water in Lake Erie.*
- *Maintain the hydrologic integrity of the region by evaluating and addressing land use changes and their effects on point and nonpoint source pollution, recharge, flow and the surface and groundwater regimes, and establishing the capacity to do so.*
- *Manage stormwater resources appropriately by enforcing Stormwater Management Plans (Act 167) and encouraging municipalities to enact appropriate zoning ordinances that are consistent with the Stormwater Management Plan.*
- *Upgrade aging infrastructure and make plans for future infrastructure improvements.*
- *Prevent degradation and contamination of groundwater resources from improper well abandonment.*
- *Prevent degradation and contamination of surface water resources from improper stormwater and wastewater management.*
- *Prevent or minimize nonpoint source pollution by correlating water resource protection with land use decisions and by educating the public about the ways to reduce/prevent pollution*
- *Encourage recycling and conservation. One such way to encourage recycling and reduce pollution is to conduct more Household Hazardous Waste collection events.*
- *Identify and repair failing septic systems.*
- *Establish current water quality benchmarks for protection and/or restoration.*
- *Provide continuing water conservation education programming.*
- *Protect and restore floodplains and lake bluffs.*
- *Improve consistency between municipal, sewer and water planning.*
- *Communicate water resources planning goals to the public and collaborate with Great Lakes states and provinces.*

Potomac Region Goals and Objectives

- *Address land use planning by developing a strategy that allows growth and development while maintaining adequate water quantity and quality.*
- *Develop land use programs that protect water quality and quantity and preserve the ecological integrity of groundwater and surface water, including springs, streams, lakes and wetlands.*
- *Support a statewide inventory of waters to identify sources and quantity of quality water to meet human and ecological needs and encourage local municipal governments to do an inventory.*
- *Develop, maintain and protect recreational water use and assess the instream and groundwater flow needs to support recreational water use.*

- *Protect existing commercial agribusiness and industrial uses of water and allow opportunities for growth.*
- *Protect stream habitat and groundwater recharge areas from the loss of native trees, shrubs and other vegetation along stream banks.*
- *Increase compliance with existing regulations that minimize pollution and reduce erosion of stream banks and channels, and prevent impairment of groundwater recharge areas.*
- *Promote nitrogen, phosphorus, etc. removal technologies and strategies at all effluent discharge points.*
- *Minimize nutrient loading in water resources caused by nonpoint source pollution, such as seepage applications and improper agricultural practices on agricultural fields.*
- *Develop educational programs for the general public and elected officials to present the tools and information that support informed decisions about policies and actions for water resource and land use management.*
- *Implement programs to train local elected and appointed officials on the use of comprehensive water conservation plans as a means to ensure adequate water resources for present and future needs.*
- *Establish regulatory authority in the Potomac River Basin for reviewing and approving significant water withdrawals, i.e. 10,000 gallons per day (gpd) (similar to SRBC and DRBC requirements), including groundwater.*

Upper/Middle Susquehanna Region Goals and Objectives

- *Protect important headwater habitats and recharge areas of the Upper/Middle Susquehanna basin.*
- *Address the consequences of acidic drainages on receiving streams to improve and protect water quality, aquatic ecosystems and enhance the availability and utilization of water*
- *Provide guidance for the protection, preservation and development of existing and planned water supplies sources: Protect the quality and quantity of existing and planned water supply systems and improve the groundwater availability planning process to ensure continued development does not overtax, supply or unnecessarily hinder development.*
- *Promote integrated policies and programs to ensure a comprehensive approach to water resource management.*
- *Reduce nonpoint source pollution through stormwater control and by promoting and utilizing land-based best management practices.*
- *Promote the protection and conservation of our water resources to ensure sustainable supply of quality water for present and future human and ecological needs by protecting streamside/riverside corridors for recreation and water resource protection and by promoting regional economic development consistent with regional preservation and conservation objective.*

Lower Susquehanna Region Goals and Objectives

- *Evaluate water supply and demand.*
- *Protect at risk water resources and reduce or prevent point and nonpoint source pollution with a focus on impaired streams.*

- *Promote more uniformity, communication and interrelationships among water resources stakeholders for consistency and joint advancement of mutually beneficial initiatives. This includes planning by regions and watersheds, sharing water resources data, promoting integrated water resources planning initiatives and planning across disciplines.*
- *Recognize land use interrelationships that affect our water resources and develop strategies to reduce watershed and ecological impacts.*
- *Promote the protection and conservation of our water resources to ensure a reliable supply of quality water for meeting human and ecological needs by supporting healthy watershed activities and initiatives to enhance source water protection and by promoting water conservation practices, including water recycling and reuse.*

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

The PAWP focuses on providing background information, developing policies, and listing potential solutions related to water supply, water quality, and flooding. The plan also includes non-withdrawal uses, such as navigation, instream uses, hydropower production, recreation, fish and wildlife habitat and the aquatic environment, as well as increasing raw water storage for flood control, drought control, and recreation uses. Highly recommended is the development of an integrated water resources policy, supported by the various state agencies, regional commissions, local governments, and the federal government.

In the PAWP, the state is divided into six regional areas based on drainage divides. Within those regional planning areas, potential CWPAs were identified by regional committees with the assistance of the Critical Water Planning Area Subcommittee. The Water Resources Planning Act established the process to designate CWPAs and provided the authority to DEP to develop a Critical Area Resource Plan (CARP) in any watershed or watersheds within a CWPA. Currently, there are 32 watersheds that are undergoing further investigation and data verification to determine whether they meet the criteria for designation as a CWPA. At this time, no watersheds have officially been designated by DEP and the Statewide Water Resources Committee.

DEP may prepare a CARP for any watershed or watersheds within an area designated as a CWPA under Act 220. DEP's Guidelines for Identification of Critical Water Planning Areas, given as Appendix E in the PAWP, describe the statutory basis, the criteria and process for identifying CWPAs, and the 5-stage process of nominating, reviewing, recommending, and designating CWPAs. These 5-stages are:

1. Nomination—Potential CWPAs may be nominated by a regional committee, a committee member, or any other person or entity, or initiated by DEP.
2. Initial screening and prioritization.
3. Data verification, development and review.
4. Review and recommendations by regional committees.
5. Review and designation by Statewide committee and DEP Secretary.

CARPs will address key problems identified during the CWPA designation process. CARPs will consist of a detailed investigation of water availability and current and future demands for water

in the designated CWPA as well as assessments of water quality, stormwater and floodplain management problems, and current or potential water use conflicts among water users. Regional committees will establish a Critical Area Advisory Committee to guide DEP in developing each CARP. Once adopted, CARPs will become a component of the PAWP.

Governor's Sustainable Infrastructure Task Force Report published in November 2008 emphasizes asset management. The report states that, A key to the sustainability of either a publicly or privately owned treatment facility is understanding the condition of existing assets and ensuring adequate maintenance. Systems must also identify when assets need to be rehabilitated or replaced, and provide an estimate of costs. The idea of asset management works both at large facilities and in small facilities. Understanding the needs of the system, the potential problems that could arise and incorporating business practices that provides resources for future needs and, when possible, parts and equipment necessary to address those needs in a timely manner are keys to successfully managing a system and ensuring its long-term sustainability.

To see immediate success, the task force recommends that the state:

- Establish an asset management steering committee as a forum for defining best practice standards for asset management.
- Develop guidelines to encourage continuing improvement in performance and identify criteria for best practice management of water and wastewater utilities.
- Focus on enhancing training efforts by encouraging training entities to upgrade instruction they deliver to include asset management practices, processes, tools and techniques; adding questions on asset management to the Operator Certification general and standalone distribution system, collection system and small drinking water examinations targeting training to mid- to upper-management using Department of Environmental Protection-approved training courses.

The report also makes recommendations to ensure long-term improvement:

- Require asset management—Require all water and wastewater systems to prepare long-term (minimum 10 year) estimated plans/budget supported by analyses of all major assets.
- Require the creation of a repair and replacement fund.

The Task Force Report was in-progress at the time of the PAWP's publication. However, the PAWP cites the Task Force Report and states, with due process and at an appropriate time after issuance of the report and completion of the objectives outlined in the Executive Order, the Statewide Water Resources Committee may make specific recommendations related to ensuring the long term sustainability of the Commonwealth's water infrastructure.

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

Through its involvement in various interstate organizations, Pennsylvania cooperates with Minnesota, Michigan, Wisconsin, New York, Delaware, Maryland, New Jersey, Virginia, West Virginia, Ohio, Illinois, Indiana, Kentucky, the District of Columbia, and the two Canadian Provinces adjoining the Great Lakes, Ontario and Quebec. Within the state, DEP works closely

with the Department of Conservation and Natural Resources, the Fish and Boat Commission, the Department of Agriculture, and the Pennsylvania Game Commission.

Prior to the passage of the Water Resources Planning Act, DEP conducted a series of 16 water forums in the spring of 2001 that enabled people from all corners of the Commonwealth to discuss water resource needs and priorities. The forums not only helped DEP set its strategic water resources management agenda, but they also generated grass roots support for legislation to require adoption a new State Water Plan.

Throughout the State Water Plan development process, public involvement was highly encouraged. Meeting times and locations as well as public comments and testimonies were posted on the DEP website. Public review will also be solicited in the designation of CWPAs and development of CARPs.

6. PLAN IMPLEMENTATION STRATEGY

In December 2008, the Statewide Water Resources Committee identified nine potential legislative initiatives that would help DEP implement the Water Plan. They are (DEP, 2008):

1. Enact legislation to require proficiency-based licensing and certification of water well drillers, and to establish statewide private water well construction standards.
2. Based on pilot plan assessments, enact new or amended legislation that would encourage the development and implementation of Integrated Water Resources Plans.
3. Enact new or amended legislation to link local land use decisions with water resources planning and management, and to provide adequate funding for developing information necessary for making sound decisions.
4. Amend the Pennsylvania Flood Control Act to:
 - a. Provide DEP with general authority to indemnify federal agencies for water resources projects.
 - b. Amend the Pennsylvania Flood Control Act to provide authority to consider and implement all potential flood control solutions, including nonstructural alternatives and preventive approaches to reduce the risk of flooding; allow all types of flood control solutions to be funded through the capital budget process.
5. Evaluate Section 301(a) of the Flood Plain Management Act to consider expanding the list of floodplain obstructions that have been determined to present a special hazard to public health and safety, may cause significant pollution, or may endanger life and property.
6. Through appropriate legislation, regulation, and administrative changes, integrate and leverage existing state and federal stormwater management regulations, policies and

requirements (e.g. Storm Water Management Act, Sewage Facilities Act, Municipalities Planning Code, Chapters 102 and 105, NPDES, MS4, TMDLs) to provide an effective, straightforward, seamless stormwater management program that is blind to regulatory origin.

7. Clearly authorize by legislation, regulation, or policy the creation and operation of local Authorities, Utilities or Management Districts, and/or other sustainable funding sources that would enable entities to collect fees and generate revenues dedicated to planning, constructing, monitoring, maintaining, improving, expanding, operating, inspecting and repairing public and private stormwater management infrastructure.
8. As further information concerning Pennsylvania’s water use trends and challenges are developed over the next five years, concerted efforts should be undertaken to evaluate and evolve Pennsylvania’s water rights and water withdrawal arrangements to a more consistent, secure and holistic approach that:
 - a. Offers water users well-defined, stable and predictable water rights.
 - b. Promotes siting and development of uses requiring withdrawals in ways that assure adequate and sustainable supplies both in normal and drought periods, without causing unacceptable impacts on instream uses and environmental resources.
 - c. Is administratively efficient and avoids unnecessary duplication between agencies and programs.
9. The Statewide Committee also concludes that, Focus should be placed on considering and evaluating the options and issues described on [pages 48 to 49) of the Water Plan Principles, evaluating programs that are used in other states, utilizing a process which includes the Department, the Statewide committee, and other major stakeholders. Based on that process, a report on the relative merits of the identified options should be developed, and appropriate recommendations should be made to the General Assembly as to whether and how Pennsylvania’s water rights system might be improved and made more efficient, effective, predicable and secure (DEP, 2008).

As part of the Water Plan, DEP will develop CARPs for CWPAAs (areas where existing or future water supply is deemed insufficient). Implementation of the CARPs will be voluntary.

In the PAWP, one of the major mechanisms for plan implementation is better coordination (or integrated water resources planning) between local, state, regional, and federal programs. The Water Plan Principles contains a section entitled, Recommendations for Action, which includes recommendations made by the statewide committee to further improve water resources management in the state. Although regional committees helped identify regional water resources priorities, it is unclear if those committees will engage in more detailed regional planning. Some regions are considered under DRBC’s Water Resources Plan for the Delaware River Basin and SRBC’s Comprehensive Plan for the Water Resources of the Susquehanna River Basin.

Act 220 established a water use registration requirement to assist in gathering data to prepare the state water plan. In 2008, DEP finalized a registration, record keeping and reporting rulemaking (25 Pa. Code Chp 110).

Pennsylvania has already obtained crucial funding for water infrastructure improvements. On November 4, 2008, voters approved the Governor's Clean Water Referendum that provides the Pennsylvania Infrastructure Investment Authority, or PENNVEST, \$400 million for grants and loans. These grants and loans will be available communities to upgrade their aging water and sewer systems, including 183 publicly owned water systems that are under federal mandates to reduce nutrient loads in the Susquehanna and Potomac River Basins, and to the Chesapeake Bay.

7. NEEDS, CHALLENGES AND CRITICAL PRIORITIES - INTERVIEW INSIGHTS

The key water resources issues/needs in the State of Pennsylvania are:

- Developing groundwater/well drilling standards.
- Replacing or retrofitting aging water infrastructure.
- Managing land use decisions related to population and economic growth.
- Educating 2600+ municipalities with authority for regulating land use decisions in order to implement water-related municipal, multi-municipal, county, or watershed plans such as stormwater.
- Implementing the Tributary Strategies to minimize non-point source pollution in the Chesapeake Bay.
- Managing acid mine drainage, and water allocation and regulation.
- Monitoring growing water demand and potential water quality impacts related to natural gas drilling in the Marcellus Shale.

Since the 2009 edition was Pennsylvania's first update to the State Water Plan in 20 years, much of DEP's time and budget was spent framing issues and developing policies, leaving few resources dedicated to plan implementation. Act 220 authorizes DEP to develop CARPs for each designated CWPA. DEP estimates that each CARP will cost \$250,000 to \$500,000 to develop, even for small watersheds. The Statewide Water Resources Committee plans to prioritize the designation of CWPA's and development of CARPs. Effective implementation of the State Water Plan will require additional funding sources beyond the state budget.

In addition, Pennsylvania must form collaborative partnerships across the state, especially at the municipal level. Currently, the 2600+ municipalities have jurisdiction over land use. To be effective, policies of the State Water Plan must be reflected in local plans and ordinances, and implemented on a local scale across the state.

The Water Resources Planning Act and the PAWP do not contain performance measures or a rubric to grade the state's performance on implementing the PAWP. The PAWP states that:

- As a functional planning tool, this updated water plan provides Pennsylvanians with a vision, goals and recommendations for meeting the challenges of sustainable water use over a 15 year planning horizon.

- A planning horizon of 15 years has been selected because the State Water Plan will be updated at five-year intervals, and the accuracy of water resource need projections beyond 15 years leads to considerable uncertainty.

8. REFERENCES

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