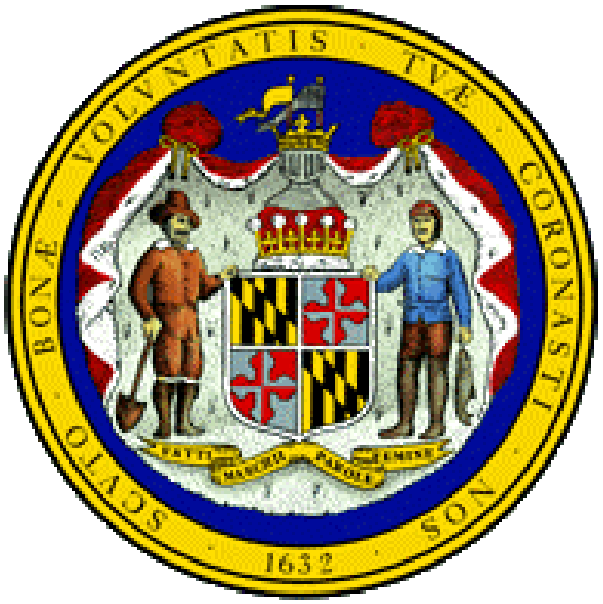
Advisory Committee on the Management and Protection of the State's Water Resources

Executive Summary

May 28, 2004

M. Gordon Wolman, Chairman



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EXECUTIVE SUMMARY

WATER, OUR MOST VALUABLE RESOURCE, is essential to our daily life. Protecting and managing our water resources is paramount to the continued economic vitality of the State of Maryland, the health of our residents, and the viability of our environment.

Although water resource indicators for Maryland suggest that there is an abundance of water to meet present and future needs, in recent years some communities have suffered serious water supply shortages. The 2002 drought experienced throughout Maryland ignited widespread concern for the adequacy of the State's water resources to meet the future demand. There was an alarming realization that unless and until adequate measures are taken, Maryland will have great difficulties in the future in meeting its growing water demand, which could lead to a water crisis of significant proportions. The drought was a powerful confirmation of the need for long term planning to support the management of Maryland's water resources.

In response to the drought, a letter endorsed by 72 legislators called attention to the decline of water levels in Southern Maryland ground water aquifers and recommended a statewide assessment of laws, regulations, and governmental resources available for the protection, conservation, and management of water resources. Governor Robert L. Ehrlich Jr. issued Executive Order 01.01.2003.08, which created the Advisory Committee on the Management and Protection of the State's Water Resources, and charged it with several responsibilities, principally to evaluate the sustained ability of the State to meet its projected water needs.

This report provides insight into the wide range of water resource issues identified by the Advisory Committee, and it concludes with recommendations that are of paramount importance to the vitality of Maryland's economy and to the well-being of its citizens. In submitting this report to Governor Ehrlich, the Advisory Committee strongly believes that implementation of these recommendations will enable the State to responsibly manage Maryland's water resources for the present and future generations.

PRINCIPAL FINDINGS

Population Growth and Water Demand in Maryland

Maryland's population grew by 1.374 million people from 1970 to 2000, a 35% increase. The State population is projected to increase another 1.066 million (20% increase) by 2030. Approximately 545,000 new households will be created to accommodate the increased population. While half of these households will be located in the "older" suburban counties (Montgomery, Prince Georges, Anne Arundel and Baltimore), 39% will be located in the "newer" suburban areas of Howard, Harford, Frederick, Carroll, Charles, Calvert and St. Mary's Counties.

The Maryland Department of Planning (MDP) reports that the percent of residential development constructed on large lots (0.5 acre or larger) has been increasing over the past 30 years and is

projected to continue growing. This decentralized growth pattern has resulted in forest and agricultural land being consumed for new homes and roads at an unprecedented rate. In relation to water supply management, the increase in low-density residential development can increase the demand for new infrastructure (water supply lines and water treatment facilities) and can increase the amount of non-point pollution, resulting in water quality degradation of the rivers and reservoirs used for water supply.

While recognizing the important interrelationship of water quantity and water quality, this report focuses on the quantity of water available to meet Maryland's needs. The Advisory Committee was able to consider water quality only as it directly impacted water supply. However, to achieve fully integrated water management, the recommendations contained in this report must be considered in conjunction with existing water quality programs, such as the Source Water Assessment and Protection Programs, and with the work of several other committees concentrating on water quality issues. These include the State Advisory Council on Water Security and Sewerage Systems, and the Interagency Technical Assistance Committee on Waste Water Treatment Systems.

Water use (defined in this report as withdrawals from sources, not consumption) is analyzed using the following categories: public supply, commercial, industrial, domestic self-supplied, thermoelectric, mining, and agriculture (the latter is further categorized as livestock, aquaculture and irrigation). In the year 2000, an average of 1.45 billion gallons per day of fresh water was withdrawn from streams, reservoirs and aquifers in Maryland. The largest withdrawals in the year 2000 were for public water supply, which totaled 824 million gallons per day (mgd), or 57% of the State total, followed by water for thermoelectric generation totaling 379 mgd (26%). When comparing use in the four major regions of the State (Western, Central, Southern and Eastern), a considerable amount of variance is noted. In the Central and Southern regions, water use for public supplies dominated. In the Western region, thermoelectric (39%) and industrial (35%) uses were the largest ones. In the Eastern region, irrigation was the largest use with 36% of the regional total. Population and water use projections through 2030 are indicated in the following table.

Table ES-1. Population and Water Use Projections 2000-2030						
Area	Population			Fresh Water Use in MGD		
	Year 2000	Year 2030	% Change	Year 2000	Year 2030	% Change
Baltimore Metropolitan[1]	2,512,431	2,799,700	11.4%	371	397	7.0%
Washington Suburban[2]	1,870,133	2,382,400	27.4%	805	901	11.9%
Southern Maryland[3]	281,320	437,000	55.3%	32	45	40.6%
Western Maryland[4]	236,699	254,650	7.6%	140	137	-2.1%
Upper Eastern Shore[5]	209,295	263,700	26.0%	51	52	2.0%
Lower Eastern Shore[6]	186,608	224,650	20.4%	49	64	30.6%
Projected Statewide Irrigation Increase[7]					84	
Total	5,296,486	6,362,100	20.1%	1,447	1,680	16.1%

[1]Baltimore Metropolitan Area: City of Baltimore; and Anne Arundel, Baltimore, Carroll, Harford and Howard Counties.

[2]Washington Suburban Area: Frederick, Montgomery and Prince George's Counties.

[3]Southern Maryland: Calvert, Charles and St. Mary's Counties.

[4]Western Maryland: Allegany, Garrett, and Washington Counties.

[5]Upper Eastern Shore: Caroline, Cecil, Kent, Queen Anne's and Talbot Counties.

[6]Lower Eastern Shore Area: Dorchester, Somerset, Wicomico and Worcester Counties.

[7]Total includes the statewide irrigation projection for 2030 in an average precipitation year. Regional irrigation projections are not available.

Public Water Supply

Public water supply systems in Maryland serve 4.5 million people, 84% of the State's population. Of this amount, 3.19 million people (60% of the State's population) are served by the Baltimore Metropolitan System or the Washington Suburban Sanitary Commission (WSSC). Demand projections indicate that water used for public water supplies will increase from 824 mgd to 882 mgd in 2030. Over the past several decades, industrial water use provided by public systems has significantly declined. A more thorough examination of this change in use may result in a higher projection of per capita use of water and in turn, an increase in the total projected demand for public water supply due to population growth.

Domestic Self-Supplied
An estimated 847,000 Maryland residents (16% of the State population) use private wells for their water supply. From 1985 to 2000, domestic water use withdrawals increased by almost 22% from 63 to 77 mgd. Future demand for self-supplied water is expected to increase with population increases, to a demand of 94 mgd by 2030.

Agricultural Water Use
Increases in agricultural water use are projected to occur predominantly on the Eastern Shore and as a result, regional issues related to this trend will need to be addressed. Since 1980, the total agricultural fresh water use has averaged 3% to 5% of the State's fresh water use. Agricultural water use in Maryland is partitioned into three use categories: irrigation, livestock and aquaculture. Water use increases for livestock, aquaculture and horticultural irrigation are projected to be nominal due to increased management efficiencies. Expansion of irrigation systems is expected to be driven by a desire to reduce crop production risks. For purposes of managing water resources, agricultural irrigation demand estimates are based on highest demand years. However, projections indicate water use demand for agricultural irrigation by 2030 to vary between 60 mgd to as much as 225 mgd under drought conditions.

Accounting for all agricultural uses and managing for highest demand years results in a projected use of 285 mgd statewide for agriculture. Adequate planning and management of the State's water resources must balance agricultural water use with future competition for the resource caused by growth and land use change. Research needs include evaluation of appropriate irrigation technology, nutrient reduction/loss under irrigation, and how management changes influence the efficiencies and economics of irrigation.

Thermoelectric Generation
The production of thermoelectric power in Maryland will nearly double by the year 2030. During this period, many older "once through" cooled generation units will be retired while newer, more efficient, "closed loop" cooled generation units will be constructed. The new units (which utilize evaporative cooling) often require higher quality cooling water. Therefore, it is anticipated that the use of brackish water in thermoelectric production will decrease rapidly (70% decrease by 2030) while the use of fresh ground water (100% increase) and surface water (6% increase) will grow. The consumptive use of fresh water and better quality brackish water will double from roughly 50 mgd to over 100 mgd by 2030.

Commercial, Industrial, Mining
With inadequate data to make projections, 2030 use was assumed to be the same as 2000. It is noted that withdrawals for these uses have declined, which may reflect a decline in industrial activity, or could reflect the fact that public water systems have expanded to serve commercial and industrial sites that were previously self-supplied.

Water Conservation and Efficiency Technology
Water efficiency technologies and behavior modifications along with public education can have a significant influence on demand and may be a supplement as well as an attractive alternative to seeking new water sources. While conservation and drought management are not the same thing,

drought conditions experienced from 1999 to 2002 elevated the importance of considering this alternative by both public and private water utilities.

Approaches that communities throughout the country have used to reduce demand include: educational programs; residential water audits; rebate or other incentive programs; meter upgrades; revised rate structures; leak detection and repair; and reuse.

The potential for even greater savings may be achieved by providing further pricing incentives for consumers to conserve, such as a differential pricing structure that charges higher rates for higher water use. Government-sponsored programs to assist water utilities in implementing these programs, or regulations requiring utilities to meet certain demand reduction goals, may be needed to encourage water systems in the State to undertake these activities. Some have already done so.

Effects of Climate Change

While a number of climate change modeling studies have been undertaken, the study authors cite many reservations and difficulties inherent in the process of directly translating the output of these models into management. Nevertheless, changes in climate could impact both demand and availability, and require continuing evaluation.

Availability of Resources for Water Supply

Maryland is fortunate to have relatively abundant water resources, and historically has been able to meet its water needs. Shortages occur because of inadequate planning for extreme climatic conditions (drought); lack of adequate infrastructure; inadequate plans for growth; stricter drinking water regulations; and pollution of sources. However, increasing demands for water to support population and economic growth are expected to result in greater challenges to supplying adequate water of acceptable quality.

In very general terms, the State can be divided into two regions: the Coastal Plain, where ground water from confined aquifers serves as the main source of water supply; and the Piedmont/Ridge and Valley/Allegheny Plateau Region, where surface water is the primary source for the largest water users, and ground water from unconfined fractured-rock and carbonate aquifers is extensively used for small to mid-sized water users.

While the methodologies for determining availability from these various sources are different, all are dependent on data derived from networks of surface water stream gages, ground water monitoring wells, and rain gages maintained through the cooperative effort of the federal and State agencies. The networks are not adequate to provide the data necessary for proper management of the State's water supply sources.

An immediate concern is the absence of funding in the budget of the Department of Natural Resources to continue operation of the Maryland ground water monitoring network outside Southern Maryland, and to adequately fund the stream gage network after July 2004. The Maryland ground water network includes the Central Maryland area (Piedmont/Ridge and Valley/Allegany Plateau) where many small towns depend on ground water as their source of water supply. The area is particularly vulnerable to the impact of drought, and monitoring data is paramount to proper management of water supply. Funding for these ground water monitoring

stations is needed immediately in order to maintain the continuity of ground water level data. To maintain the stream-gage network at its 2004 level, State funding is also needed to retain the 12 stream gages that will be lost in the 2005 budget.

One of the most vexing and complex water resource issues in the State of Maryland is the decline of ground water levels in the seven major confined Coastal Plain aquifers. All seven aquifers are inter-related and are affected by what happens in their distant outcrop areas. A comprehensive approach is needed that assesses all the aquifers of the Maryland Coastal Plain as a whole. Critical to this task is the development of an accurate model representation of the hydrogeologic framework of the aquifer system.

Water availability is considered in the context of several planning or regulatory activities. Water and sewer plans are prepared by county and local governments to assure the orderly development of community water systems. While the plans describe the planned infrastructure needed to withdraw, treat and distribute potable water, these plans do not address whether the water sources will be adequate to meet expected demands. In addition, adequate drought management plans have been developed for only a few communities in Maryland.

Through the State water appropriation permit process, specific proposed water uses are reviewed to determine if the resource is adequate, and whether the impacts of a withdrawal are reasonable. It is a reactive process addressing a specific request and does not assess the availability of water for future, projected uses, or plan for their development. A separate process is needed to plan for the orderly development of available water resources and to assure that growth and development plans are commensurate with available resources.

County and local governments also have responsibilities related to assessing water availability. State law requires local or county authorities to ensure that adequate water is available before approving a building permit, and to ensure that adequate capacity will be available in time to serve a proposed development before approving a subdivision plat. How these authorities are carried out varies among jurisdictions, and is the subject of a review being conducted by the Maryland Department of the Environment (MDE) in cooperation with County Environmental Health Directors.

Water Supply and Demand Pilot Studies

The determination of water adequacy requires analysis of availability for the particular area of concern. For this reason, the Advisory Committee embarked upon two pilot projects to establish an approach toward determining water adequacy in all watersheds and aquifers that are or could be significant water sources. The pilot studies were conducted in rapidly growing regions of the State to examine the relationship between the demand for water and the available supply. The Monocacy River Watershed, which is partly in Frederick, Carroll and Montgomery Counties as well as in Pennsylvania, was chosen for one pilot study. This study considered water supply issues in an area that relies on both ground water and surface water in a hydrologic system that is directly influenced by annual precipitation. The Southern Maryland Counties (Anne Arundel, Prince George's, Calvert, Charles and St. Mary's) were chosen as a second pilot study area to demonstrate the very different water supply issues encountered in an area that relies almost solely on ground water from

deep aquifers that are more sensitive to changes in water use than to variations in annual precipitation.

While there was some effort to compare projected demand with available water, the principal goal was to demonstrate the information needed and potential approaches to use in such an analysis. In the process of completing the pilot studies, several shortcomings were recognized such as the shortage of available monitoring data, the lack of information on the adequacy of the water supply, and insufficient analytical tools.

Monocacy Watershed Pilot Study

The Monocacy Watershed drains an area of approximately 969 square miles and includes significant portions of Frederick and Carroll Counties in Maryland and Adams County in Pennsylvania. Water demand in the Maryland portion of the watershed is expected to increase from 48 mgd in 2000 to 61 mgd in 2030, equally divided between surface and ground water sources. The assumption that the proportion of ground water and surface water uses will remain constant needs to be confirmed or revised by comparing information from water and sewer planning with the projected growth.

Ground water in the watershed comes from shallow aquifers that are recharged by precipitation and discharged to the streams in the watershed. Ground water availability can be estimated through a water balance approach that considers recharge and demand. This approach is extremely simplified considering the complexity of the fractured-rock aquifers. A general assessment that ground water is available in a watershed does not guarantee that it will be readily available in adequate amounts at any given location in that watershed. The pilot study supports the need for additional observation wells and stream gages discussed in Section 5.1 of this report.

Streams are an important source of water in the Monocacy watershed. However, if minimum stream flows are to be protected, then users of streams without reservoirs or other storage will not be able to meet their needs at all times. Provision for storage or alternative sources is fundamental to the reliable use of surface water. More refined analysis is necessary to fully evaluate the reliability of the surface water supply. The analysis did indicate that the water needs of the City of Frederick could be met during an average year using a combination of water purchased from Frederick County along with the City's existing resources. More detailed analysis is needed to determine how well the City's needs would be met during a drought.

Southern Maryland Pilot Study

The Southern Maryland region is dependent almost entirely on ground water for its water supply. The aquifers that underlie the region generally provide an abundant supply of good quality water, however these aquifers are vulnerable to overuse and a thorough understanding of the ground water system is necessary to ensure a reliable supply in the future.

Water levels in the confined aquifers have declined in the last 50 years due to the increasing use of these resources. MDE regulates ground water withdrawals for major water users and manages these aquifers to maintain acceptable water levels. Water levels in some aquifers in several areas in Southern Maryland are approaching the minimum sustainable management level. Existing modeling studies indicate that the major aquifers have the potential to handle future demands in the localized areas in which they were examined. However, significant management measures are

needed to ensure that sustainable water levels are maintained throughout the region. A multi - aquifer ground water flow model is essential to address management issues associated with increased water usage and regional stresses.

Program Management

Monitoring and Modeling

Water supply management depends on data provided by the surface water gaging and the ground water monitoring networks. The existing networks are not adequate to meet management needs. A Sub-Committee of this Advisory Committee recommended an increase in stream gages from 115 to 157 gages. The Sub-Committee also recommended that the Maryland network of observation wells be increased from 141 to 240 wells. An immediate and critical need is the restoration of funding for existing observation wells in the Piedmont/Ridge and Valley area of Central Maryland.

A major water issue is the declining ground water levels in the seven major confined Coastal Plain aquifers. Because of their variability and the complex interrelationships among recharge, discharge, leakage, and pumpage, there is no simple way to evaluate the water supply potential of these confined aquifers. A more comprehensive approach is needed to analyze cumulative effects on all the aquifers of the Maryland Coastal Plain as a whole, as opposed to the individual aquifer studies conducted to date.

Water Resource Planning

The State is responsible by statute for developing a comprehensive statewide water resource program "which contemplates proper conservation and development of the waters of the state...on a watershed or aquifer basis…" (Environment Article §5-203). This mandated function has not been fully developed, resulting in serious consequences for the management programs. MDE has recently established a unit to begin addressing this mandate. However, it will need resources to act on the recommendations of the Advisory Committee. High priority should be placed on completion of the assessment of the State's water resources by preparing water demand/supply studies for each watershed or aquifer that is a significant water source. Further, a procedure for updating these assessments with new demand data should be established.

Water and Sewer Planning

Under State law, counties and Baltimore City are required to prepare and maintain Water and Sewer Plans to ensure the orderly development of community water and sewer systems in accord with local comprehensive plans. These Plans provide the nexus between land use planning, source water protection, and water supply planning. However, some counties are struggling to meet the State mandate to keep these Plans up to date and effective. There is a need to provide technical and financial support to some jurisdictions to assist these jurisdictions in preparing current, effective Water and Sewer Plans.

Non-Tidal Potomac River Basin

Managing the water supply needs for the Potomac Basin will be particularly challenging because it is shared with other jurisdictions and also because significant growth is projected in the Washington Metropolitan Area. While Maryland has traditionally taken the lead in addressing the water management issues in the Potomac, the situation has dramatically changed with the

December 2003 Supreme Court ruling that citizens of Virginia need not obtain regulatory approval from Maryland for construction of water intake structures and withdrawals from the Potomac. With both jurisdictions now able to make independent water use decisions and issue permits, a coordinated review process is needed. Once that process is established, attention should be focused on water use and drought management, issues that will become more significant with increased use of the River and reduced flows due to consumptive losses. As water demand continues to grow, the jurisdictions will also need to consider additional water supply sources for the Washington Metropolitan Area.

Source Water Assessment and Protection

As required by federal law, a source water assessment must be completed by MDE for every public water system, which is to include an inventory of potential contaminants in the assessment area and an analysis of the susceptibility of the drinking water source to contamination. One purpose of the assessment process is to provide recommendations on appropriate strategies to protect the wide variety of water supply sources across the State. The development and implementation of source water protection programs for communities is a labor-intensive process not funded by the federal government. It is important that local governments incorporate source water protection measures into their respective comprehensive plans. Because water supply sources are part of hydrologic systems that cross political boundaries, it is also imperative for planning agencies to take into account how land use upstream of large regional water supplies will impact drinking water sources that serve residents outside of their jurisdiction. This is especially important to the communities served by the Baltimore Metropolitan and WSSC water supplies, which are experiencing water quality problems related to non-point source pollution originating from urbanization and other sources. Local planners must coordinate with neighboring jurisdictions and stakeholders and commit to water quality goals.

Outreach

An educational outreach effort must be developed to enlighten both public officials and citizens about the State's water supply resources and its management program. None currently exists. Some additional, minimal staffing effort would be required, and the effort should develop appropriate educational material for use across the State.

Regulation

Public Drinking Water Supplies

Regulated public drinking water systems in Maryland fall into three categories: community (year-round residents) of which there are 501; non-transient, non-community (serving regular customers everyday such as schools with their own individual wells) of which there are 570; and transient, non-community (serving different customers each day such as rest areas or gas stations) of which there are 2,676.

Inspection and monitoring of these facilities by MDE generates a significant amount of laboratory work, which is partially performed by the Department of Health and Mental Hygiene. Public water systems are required to sample for up to 91 regulated contaminants, an increase from 21 in 1976 and 35 in 1989. In addition to routine testing, the laboratories test for other contaminants based on localized water quality problems identified by MDE such as radium in Anne Arundel County and

arsenic in Dorchester, Calvert, St. Mary's, Talbot and Queen Anne's Counties. In spite of partial funding by MDE, existing DHMH facilities are inadequate to handle all of this workload. DHMH is in the process of evaluating its laboratory needs to support the public health activities of MDE and the county health departments.

Appropriation Permits
In 2002, 1,621 appropriation permits (including new permits and renewals) were issued. Review of the permit data indicates 85% of permits for ground water use are issued for about 5% of the total withdrawals. A similar situation exists for surface water withdrawals. Because these small withdrawals have little collective impact on the source waters at the present time, these withdrawals should be exempted from permit requirements, and the resources used to review and track these withdrawals should be re-directed to uses with potentially greater impact. A regulatory exemption of 5,000 gpd is recommended.

Compliance and Enforcement
Enforcing permit conditions is a serious challenge. At present, MDE must first take a permit violator to court and secure a conviction. It is a lengthy and litigious process that has resulted in no fines being assessed for violations of the water appropriation laws during the past 20 years. MDE should be granted legal authority to issue administrative penalties in order to improve the effectiveness and efficiency of enforcement actions.

SUMMARY OF RECOMMENDATIONS

The Advisory Committee was charged with recommending the actions necessary to ensure that the management of the State's water resources will provide for their long-term sustainable use and protection. While time constraints did not allow a thorough review of each subject in the Executive Order, the Advisory Committee was able to identify the programmatic needs for monitoring, comprehensive planning, and enforcement that are necessary to meet the projected demands on the water resources of the State. These needs provide the basis for the following recommendations. Each major recommendation is followed by a brief explanation and the specific actions required for implementation.

1. Continue the Comprehensive Evaluation of Watersheds and Aquifers that are Significant Sources of Water Supply. Continue an Advisory Committee to Provide Guidance in Implementing the Recommendations.

Executive Order 01.01.2003.08 recognizes the importance of assessing the adequacy of the quantity and quality of the State's water supply resources to meet projected needs. Our understanding of the ability of available water resources to meet expected water needs is constantly changing as future water demand projections are updated and the analysis of water availability is refined. Therefore, it is most important to complete the evaluation process and to provide for updating the assessments on a routine basis. The Advisory Committee's specific recommendations include directing and enabling the Department of the Environment to:

- Continue conducting, in cooperation with the other participating agencies (Agriculture, Health and Mental Hygiene, Planning, and Natural Resources), the statewide evaluation of water supply sources, and repeat the evaluations at regular intervals to ensure consistency with changing demographics and resource conditions.
- Develop a comprehensive multi-aquifer model for the Coastal Plain to be used for ground water management purposes such as issuing permits for wells and developing appropriate County Water and Sewerage Plans.
- Establish an Advisory Committee to provide periodic evaluation of implementation of the recommendations.

2. Restore Funding for Existing Observation Wells and Stream Gages Deleted from the FY2005 Budget; Expand Monitoring Networks as Funding Becomes Available.

As the State's water supply sources experience heavier demands, monitoring their availability to meet projected needs will become increasingly important. The primary monitoring tools are statewide networks of stream gages to measure surface water flow and of ground water observation wells to monitor ground water levels. The collection of this most basic water resource information is indispensable to the ability of water resource managers to make sound decisions. Without adequate water resource data, it will become difficult or impossible to determine the availability of surface water or ground water, to assess and react to droughts, to determine the potential interference of competing water users, and to assess the impacts of water use on the State's aquifers and streams, while maintaining minimum stream flows. The required expansion of stream and ground water monitoring networks is outlined in the report. At this time, no funds have been allocated to continue operation of the existing Maryland ground water monitoring network and for the stream flow monitoring network in the FY 2005 State budget.

- Promptly restore funding for the statewide stream flow and ground water monitoring networks so that there is no interruption in the essential continuity of the data collection.
- Prioritize expansion of the two monitoring networks and phase in new monitoring stations as funding becomes available.

3. Improve Coordination Between Maryland and Virginia Regarding Water Allocations from the Potomac River.

Managing water resources in the Potomac Basin will be particularly challenging because the watershed is shared with other jurisdictions (Virginia, West Virginia, Pennsylvania and the District of Columbia) and because of the significant growth projected for the Washington Metropolitan Area. Another factor adding to the complexity of management in the watershed resulted from the recent Supreme Court decision in the case of Virginia v. Maryland, 540 U.S. ____(2003). The Court decision removed Virginia from the regulatory management authority of Maryland. With two states exercising authority over the same waters, there is an obvious need for a coordinated review process that will provide consistency in the issuance of permits.

- Initiate discussions with Virginia to establish a coordinated permit review process.
- Coordinate with Virginia to update drought management procedures relative to the Potomac River Basin.

4. Support Water and Sewer Planning at the State and Local Government Levels.

The significant role played by local governments in water supply management is derived primarily from State agency delegations. State support for these activities, both in grants and in technical assistance, has been significantly reduced over time, making it extremely difficult for local jurisdictions to meet the expectations of the State agencies providing oversight of these programs.

As an example of the reduced State support, MDE had at one time a staff of nine and MDP had a staff of four providing assistance to local jurisdictions in preparing the State-mandated Water and Sewer Plans. To maximize the benefit of these Plans to the public and to the water suppliers who rely on them, the Plans must be made in concert with local comprehensive plans, consistent with the water supply and water use data generated from the monitoring networks and the watershed/aquifer studies. These Plans are intended to provide for the orderly development and extension of community water supply and sewer systems. State staffing has been reduced to one position each at MDE and MDP, which is woefully inadequate for the work required. Because the capacity for comprehensive planning varies among the counties, the State had previously provided partial funding to those counties in need of assistance in preparing the Water and Sewer Plans. This funding is no longer available to the counties.

- Restore staff support at the State level to provide technical assistance for development of Water and Sewer Plans at the local level.
- Restore financial assistance where needed for counties to prepare the Water and Sewer Plans.
- Consider changes to enhance the utility of the water and sewer planning process, such as incorporation of source protection plans and assessments of available water resource.

5. Implement a Comprehensive Outreach Program to Educate Maryland Citizens and Create Partnerships for Stewardship of the State's Water Resources.

Too often, citizens are not fully aware of the issues related to the water they use. In order to ensure that the importance of efforts to manage water resources is recognized and supported, an educational outreach effort must be developed to enlighten both officials and the public about the water resource challenges facing the State, and the management options that are available. Outreach efforts can be initiated at the State level as was practiced in the past within the Water Supply Program. Waiting "until the well goes dry" means crisis management, engendering a reactive stance to urgent problems. Educational outreach and the support of the public is needed to ensure proper attention to water resource issues in a timely manner. Restoring staffing in the Water Supply Program would be necessary to continue this important effort.

In addition, water conservation and water use efficiency technologies are not used extensively in Maryland, due to the relative abundance of water resources in Maryland, coupled with the desire to maintain a comparatively low cost for drinking water. Encouraging an efficient level of conservation may be economical and lessen the likelihood of a water supply crisis.

- Include outreach as one of the responsibilities for additional State staffing.

- Encourage water utilities to employ water conservation and efficient water use technologies to meet their resource needs.
- Encourage water utilities to conduct routine water audits, identify unaccounted losses, and pursue leak detection and repair programs.

6. Exempt Withdrawals below a Minimum Threshold in the Appropriation Permit Law.

A review of the appropriation permit data indicates that a significantly large number of permits are issued for very small withdrawals, so small that even their cumulative impact on water sources is minimal at the present time. Exempting these smaller permits (less than 5,000 gpd) could remove an unnecessary regulatory burden from the business community. Exempting smaller permits would also allow staff to focus their attention on the review of large permits with potentially more serious impacts, to address compliance issues more effectively, and to review and issue permits in a more timely manner. The Advisory Committee recommends exempting permits less than 5,000 gpd.

- Modify State statutes and regulations.

7. Review Laws, Regulations, Funding Resources, and State Laboratory Capacity Relative to Comprehensive Management of the State's Water Resources.

Time constraints have not permitted a comprehensive review of existing laws, regulations, and funding resources pertinent to water supply management. Several other issues have been raised that could not be adequately addressed in this report. For example, HB 113, which proposed to modify the 1-gallon per minute minimum test standard for new wells, was introduced during the 2004 legislative session. The bill was later withdrawn with the understanding that while MDE was reviewing the existing requirement for possible modification, the Department would keep the bill sponsor advised on the status of the review.

In addition, it has been well documented that laboratory capability for drinking water analysis has not adequately expanded to meet statewide needs as mandated by the federal government. In 1990, only 35 contaminants were regulated for drinking water. Public water systems are now required to test for up to 91 different contaminants in addition to special monitoring for emergency and security related testing. No provision for the increased workload has been provided.

Funding the recommendations will be a major challenge. As one possibility, the Advisory Committee suggests legislation be considered that would establish fees related to water appropriation permit applications and on annual withdrawals.

Other topics identified for further study include:

- Establish a process to ensure that local governments approve new developments based on the adequacy of the water supply for the new developments.
- Establish administrative penalties to ensure compliance with water appropriation permits.
- Encourage consistency among jurisdictions in the implementation of the water and sewer planning process.

- Incorporate source water protection measures into the comprehensive plans developed by each county.
- Establish a process to ensure that abandoned wells are properly sealed.
- Review the well constructions standard and modify if necessary in order to enhance protection of the quality and quantity of ground water.
- Provide sufficient laboratory capability for drinking water analysis to accommodate the additional workload.