

***THE WATER RESOURCES IMPACT
WORK GROUP***

**Report to the
Virginia Department of Environmental Quality (DEQ)**

November 19, 2002

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NOTE: Meeting Summaries and Reports Submitted to Water Resources Impact Work Group will be posted to website (www.deq.state.va.us/info/waterresources.html) for one year, then archived.

I. Executive Summary

The convergence of a multitude of new and proposed power plants in Virginia has engendered questions about the potential combined effects that these and other facilities might have on air quality and water quality and quantity. This *Report* by the Water Resources Impact Work Group identifies tools and options that may improve the Commonwealth's understanding and management of the combined impacts of these facilities on water supply and in-stream uses. These options are not prioritized and do not necessarily reflect a consensus position by all members of the Work Group. Throughout each section, cost or resource estimates are provided where possible as well as ideas for how these costs and other needs might be met.

The first set of options concerns potential improvements to the environmental impact review (EIR) process to ensure that full impacts on water resources are considered. Three options for improvements are offered for consideration:

- Option 1.1 Use DEQ expertise to improve consideration of environmental impacts for new facilities.*
- Option 1.2 Provide cumulative impact training to ensure that DEQ has sufficient qualified staff to participate in the EIR process.*

The next category of issues covers the tools used to assess these impacts, including both information needs and water resource planning. Options 2.1a through 2.1.c concern improvements to the Water Withdrawal Reporting Regulation (9 VAC 25-200-10-et. seq.) in order to ensure that reporting is comprehensive and reliable:

- Option 2.1.a Update the State Water Control Board's Water Withdrawal Reporting Regulation*
- Option 2.1.b Require QA/QC, periodic verification, compliance assistance, and enforcement of water withdrawal reporting and make the data available online.*
- Option 2.1.c Explore the best ways to close the potential coordination gap within DEQ concerning water reporting information.*

Within this same category of assessment tools, a second set of options addresses ground and surface water monitoring/study needs. Numerous gaps exist and it would take significant effort to close those gaps. Options 2.2a through 2.2.d follow:

- Option 2.2.a Establish/Reestablish stream monitoring stations.*
- Option 2.2.b Establish/Reestablish ground water monitoring stations.*
- Option 2.2.c Develop a long-term plan to evaluate the ground water flow systems in the fractured-rock and karst terrains.*
- Option 2.2.d Improve accessibility of all ground and surface water monitoring data.*

A third option in this category of assessment tools concerns updating old and incomplete state-wide water supply plans:

- Option 2.3 Initiate a new statewide water supply resource planning and management effort that includes both ground and surface water and require that the plans be updated every 5 years or some other appropriate interval. Ensure that state plans are coordinated with local water supply plans and integrated at the local level.*

Another assessment tool option addresses the need for state and local coordination of plans, and suggests encouraging or even requiring localities to include water supply planning in their comprehensive plans:

Option 2.4 Incorporate water supply planning in local comprehensive plans.

The final option in this category addresses a gap in understanding beneficial instream flows specific to each of Virginia's nine major river basins:

Option 2.5 Perform instream flow analyses in each major river basin.

The *Report* then describes options for tools to address these impacts, focusing on water resource permitting. The first option concerns the Surface Water Management Area (SWMA) and ways of meeting challenges to SWMA implementation:

Option 3.1 Implement one SWMA and use that as a template to implement others.

The priority for SWMAs should be on stream segments that have recently experienced low-flow conditions.

Like the Surface Water Management Area, the Ground Water Management Area (GWMA) can be a suitable tool to help manage the state's water resources. Option 3.2 identifies potential ways of improving the use of GWMA's:

Option 3.2.a Prioritize and expand the use of GWMA's as necessary.

This would be most useful to do in aquifers that have recently indicated low yield.

Option 3.2.b Permit or register all major withdrawals of ground water.

The third set of tools involves Virginia Water Protection (VWP) Permits and apparent gaps in coverage. Closing these gaps would provide the Commonwealth the ability to understand more fully the demands on its water resources and to make allocation decisions if necessary. Options 3.3.a through 3.3.f identify possible ways in which such gaps might be closed:

Option 3.3.a Certify "grandfathered" or otherwise unregulated withdrawals.

Option 3.3.b Remove "grandfathered" status for any existing intakes where maximum withdrawals exceed appropriate criteria and for abandoned existing intakes.

Option 3.3.c Require VWP Permits for temporary intakes that have the potential for adverse instream impacts.

Option 3.3.d DEQ could work with VMRC to promote its exercise of its authority over temporary intakes.

Option 3.3.e Address the problems caused by the inadequate water storage capacity of new facilities.

Option 3.3.f VWP basinwide review of combined impacts.

The fourth category of options includes ideas that Work Group members offered that do not fit within the earlier categories:

- Option 4.1* *Impose a moratorium on new water withdrawal permits until current gaps are addressed, a combined impacts assessment is completed, and tools are put into place to protect beneficial instream flow.*
- Option 4.2* *Clarify and use the full range of authority that may exist within the State Water Control Law.*
- Option 4.3* *Provide incentives to encourage conservation, and avoid disincentives that result in wasted resources.*
- Option 4.4* *Provide ongoing public education about planning and permitting processes used to assess and address combined impacts of new power plants and other proposed sources.*

Finally, Work Group members offered ideas for meeting the costs of these options. Besides searching for cost savings and for support from public entities (federal agencies and localities), two options were offered:

- Option 5.1* *Use permitting fees to cover the costs of assuring adequate protection of Virginia's water resources.*
- Option 5.2* *Establish a user fee or consumption fee on water.*

II. Introduction and Charge to the Work Group

Deregulation of the electric generation industry has spurred a multitude of new and proposed power plants in Virginia. These plants and other facilities can provide significant economic development benefits in the rural localities in which they are established, and Virginians want and appreciate affordable and reliable electrical power and other goods provided by these facilities. However, the number of new proposals has spurred questions about the potential combined impacts of these power plants and other facilities on air quality and water quantity and quality. Concerns have been expressed that the Commonwealth may be unable to adequately assess and understand the impact of increased air emissions on air quality or the effect of increased water usage on water supply, other economic uses, instream flow and associated water quality issues, ground water quality and quantity, and overall ecosystem health.

This *Report* reflects the direction offered by the Department of Environmental Quality (DEQ) Director Bob Burnley in his February 1, 2002 letter to Senator Mary Margaret Whipple concerning impacts on Virginia's air and water resources. In that letter Director Burnley offered the following objectives related to water for the Water Resources Impact Work Group:

It is essential that Virginia have a clear and accurate understanding of its... water quality and the activities that may impact those resources. ... (The Work Group) will undertake the following:

- *Develop an approach to ensure that the full impacts on water resources and supplies are considered during the environmental impact review process.*
- *Identify the appropriate tools that are available to assess these impacts, including development or refinement of models.*
- *Identify the appropriate tools that could be used to address these impacts once identified.*
- *Develop cost estimates for implementation of each of these and identify any non-state funds that may be available for these purposes, including federal funds and private funds.*

The Water Resources Impact Work Group was convened on June 18, 2002 and met five times through October 2002. The 14 members of the Work Group were selected for their professional expertise as well as their representation of diverse interests. The process for Committee work is described in the Appendix, along with a matrix of water permitting developed specifically to help the Committee identify gaps in coverage.

With extensive assistance from staff of the DEQ, the Work Group prepared this *Report* as a step toward clarifying the tools and options that may improve the understanding and management of the combined impacts of proposed new power plants and other users of water resources. The *Report* begins by identifying potential improvements to the environmental impact review (EIR) process to ensure that full impacts on water resources are considered. It then identifies options for tools to assess these impacts, including enhanced information collection and water resource planning. The *Report* then describes options for impact assessment tools,

focusing on water resource permitting. Throughout each section, cost or resource estimates are provided where possible as well as options for meeting these costs and other needs. A final section includes other options that Work Group members offered that do not fit within these categories.

The Work Group focused primarily on resource issues and, as a result, did not fully evaluate other federal and state water quality programs that may affect water resource planning and management. For example, the Work Group did not evaluate developments under EPA's §316(b) (Clean Water Act) program, which requires EPA to ensure that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact and which may indirectly improve water resource management decisions. Work Group members were not asked to reach agreement or to prioritize these options. Rather, they were asked to consider all feasible options and offer their judgment about potential benefits, concerns, costs, and other implications of these options. *Thus, inclusion of any option does not imply endorsement of that option by all members or any given member of the Work Group.*

III. Options and Costs

Objective 1: Ensuring That Full Impacts Are Considered During the Environmental Impact Review (EIR) Process

DEQ staff coordinates the Commonwealth's review of environmental impacts of all projects for which a review is required. Prior to July 1, 2002, the DEQ reviews of proposed power plants were performed under a Memorandum of Agreement (MOA) between the State Air Pollution Control Board and the State Corporation Commission (SCC). SB 554, which went into effect on July 1, 2002, required a new MOA between DEQ and the SCC. SB 554 allows the SCC to address environmental impacts not addressed in permit reviews. After it was drafted and revised to reflect public comment, the new MOA was signed into effect on August 14, 2002.

Historically, during the environmental impact review process, DEQ's Water Division has limited its comments to those issues requiring DEQ permits or approvals. Concerns, for example, with major new water withdrawals via grandfathered intakes or unregulated ground water withdrawals outside of a Ground Water Management Area (GWMA) were not addressed in reviews due to a lack of information in some instances and in other instances a perception that the staff was overstepping its authority. DEQ and the agencies with which it coordinates environmental impact reviews have substantial knowledge and expertise and can contribute to the SCC's understanding of a facility's full impacts. The new MOA (*see* www.state.va.us/scc/caseinfo/pue/e020315.htm for the complete MOA) requires DEQ to identify:

(a) for each governmental entity that grants an environmental permit or approval, a listing of environmental issues identified during the review process, which (1) are not governed by the environmental permit or approval, or (2) are not within the authority of, and not considered by, the governmental entity in issuing such permit or approval;

The MOA also provides that DEQ can draw upon expertise of other agencies:

6. In accordance with § 10.1-1186.2:1 C of the Code, the Department may request assistance from agencies of the Commonwealth as needed to complete reviews of the environmental impacts of proposed electric generating plants and associated facilities.

Because it is still too early to know how the new MOA will be interpreted or applied, the Work Group identified a potential gap where DEQ staff could be prevented from identifying significant environmental issues in cases where no DEQ permit or approval is required.

Option 1.1 *Use DEQ expertise to improve consideration of environmental impacts for new facilities.* An option to fill this gap is that the DEQ could either be required, encouraged or allowed to comment on all substantive issues within its expertise during the EIR process, regardless of whether these issues are within its permitting authority. This could result in better informed decisions, more public accountability and confidence in siting decisions, and consistency with the environmental impact review law. Because staff currently goes through informal

reviews already, any additional staff time is expected to be minimal and there are no anticipated additional costs associated with the option.

Option 1.2 *Provide cumulative impact training to ensure that DEQ has sufficient qualified staff to participate in the EIR process.* One such training session was recently offered at a cost of \$7,000 (plus staff travel arrangements) to the agency. Additional training sessions could be offered until all EIR staff statewide have been trained.

Objective 2: Appropriate Tools for Assessing Combined Impacts

Water Resource Informational Needs

Many informational needs must be addressed in order for DEQ to perform water resource planning, management and permitting functions effectively. Some of the needs may be met simply by updating reporting requirements. Others will require substantial investments in areas such as stream and ground water gaging stations and hydrologic investigations. The U. S. Geological Survey (USGS) could be an important partner in this effort. The USGS cooperative funding program and direct financial support from localities, whose water supply planning would be enhanced, may play a role in funding any new initiatives. USGS funding varies with each year's appropriation and is limited, as is the case with localities as well.

2.1 Water Withdrawal Reporting Regulation (9 VAC 25-200-10-et. seq.)

The State Water Control Board's Water Withdrawal Reporting Regulation requires yearly reporting of any ground or surface water withdrawals exceeding an average of 10,000 gallons per day (gpd) or 300,000 gpd in any one month. The regulation does not require any information on the use (e.g., municipal water supply, irrigation) or final disposition of the water (e.g., 80% of volume treated and discharged, irrigation, industrial evaporative losses). Without an indication of whether the use is consumptive, or where interbasin transfers occur, the data is of limited value.

Existing Quality Assurance/Quality Control (QA/QC) over withdrawal reports is inconsistent. There are several apparent issues with the reporting function: lack of knowledge and understanding within some segments of the regulated community of the requirement to report; lack of compliance within some segments of the regulated community with the requirement to report; lack of enforcement by DEQ of the reporting requirement due to limited resources; and lack of analysis by DEQ of data that is collected, also due to limited resources. These issues raise the concern that the current regulation is ineffective in practice and could be substantially improved by enhancements or new approaches.

An additional issue is that new uses are permitted within DEQ by the VWP and ground water withdrawal permitting staff while water withdrawal reporting is managed by the Assessment staff. Lack of effective coordination between staff in those separate groups could undermine DEQ's understanding and management of water resource needs and impacts.

Option 2.1.a Update the State Water Control Board's Water Withdrawal Reporting Regulation. The regulation could be updated to provide more useful information such as a breakdown of municipal water supply uses (e.g., residential, commercial, industrial) and the disposition of the water (e.g., 80% returned to stream, irrigation, evaporative cooling losses). Besides providing general planning help, this would allow the Commonwealth to plan more strategically how to reduce non-essential uses in low supply conditions.

This option is predicted to require a one-time investment of three months work by one "Full-time Equivalent" (FTE), or the equivalent of one staff person working full time. Concerns were expressed with the possibility of additional burdens and costs to the regulated community associated with gathering and compiling the additional information. Any new information necessary to estimate water quantities by use and disposition of the water is expected to be minimal.

Option 2.1.b Require QA/QC, periodic verification, compliance assistance, and enforcement of water withdrawal reporting and make the data available online. In order to build a more reliable database QA/QC procedures could be developed and implemented. Additional resources would be needed for consistent compliance assistance and enforcement. Making the data available online also would enable its use by other interested parties.

This option is expected to require one person-month for each region, and would potentially impact water users that are subject to reporting requirement under this regulation.

Option 2.1.c Explore the best ways to close the potential coordination gap within DEQ concerning water reporting information. DEQ could explore ways that the VWP staff and the Assessment staff can better collect, coordinate, and utilize water reporting information.

2.2 Ground and Surface Water Monitoring/Study Needs

DEQ and the U. S. Geological Survey (USGS) operate a cooperative network of ground and surface water monitoring stations. Numerous gaps in the monitoring network prevent a clear characterization of the state's ground and surface water resources, thus limiting the degree to which the resources can be managed and/or permitted. The situation has worsened in recent years as budget cutbacks have resulted in many stations being decommissioned or even removed. The number of monitoring stations in mid-sized watersheds has greatly declined, limiting the understanding of these systems during the current drought.

The vast majority of ground water monitoring performed in Virginia takes place in the Coastal Plain. The USGS has been studying the ground water aquifers of eastern Virginia since the 1930's and has only developed a full understanding of the system within the past decade. There is no comprehensive understanding of ground water flow in the fractured rock and karst

terrains of western Virginia. Similarly, there is very little understanding of the interactions between ground and surface water flows throughout the state. The accessibility of all ground and surface water data also needs to be addressed.

Option 2.2.a *Establish/Reestablish stream monitoring stations.* A protocol for locating new stations or reestablishing decommissioned stations could be developed according to a priority list. These stations could be operated by either DEQ or USGS.

Current costs are \$12,000 to install a new stream gage and \$10,100/year to operate it. However, DEQ is unable to operate significant numbers of new gages at present staffing levels. It is estimated that each FTE added to the agency's Charlottesville office could operate 10 to 12 additional gages once installation has been completed. The USGS, local jurisdictions in need of the data, special state funds, and water user fees are all possible funding sources. Also, a permittee could be required to fund the installation of a gage with the understanding that the gage may not be located directly adjacent to the facility. Additional statutory or regulatory authority may be needed in order to require permittee funding of additional gages.

Option 2.2.b *Establish/Reestablish ground water monitoring stations.* A protocol for locating new ground water monitoring stations could also be developed. Again, these could be established and operated by either DEQ or USGS.

Costs associated with the establishment of ground water monitoring stations are highly variable. Based on a recent analysis of costs associated with developing research stations in the Virginia Coastal Plain, it would require \$550,000 to \$725,000 to construct a research station with wells in each aquifer at the site, production of a continuous core of data to describe the hydrogeologic framework, and utilization of private contractual services.

This same service could be supplied by re-establishing an in-house ground water research drilling function (purchasing necessary equipment, hiring three additional staff members) for approximately \$400,000 per station for the first two years of the project. These costs would decrease significantly after the first two years due to one-time equipment purchases, and it is estimated that after the initial two year period, research stations could be completed for approximately \$160,000 per station using in-house services.

Similar stations outside of the Virginia Coastal Plain would likely be less expensive to develop because a smaller number of wells would be required at each site. It is possible, although recent experience indicates not highly probable, to utilize existing wells that are out of service as ground water monitoring stations at much reduced costs. A recent effort to utilize this method to develop ground water monitoring sites in the Northern Neck was largely unsuccessful due to the lack of appropriate wells. Cost associated with this type of effort is generally

limited to staff time required to research and identify existing out-of-service wells.

Monitoring costs associated with newly established ground water monitoring sites are also variable depending on the number of wells at the site and the frequency of monitoring. A multiple well site in the Virginia Coastal Plain that includes at least one continuous water level recorder costs about \$5,000 per year to operate. A single well monitoring site with hand taped readings every four to six weeks costs less than \$1,000 per year to operate.

Option 2.2.c. *Develop a long-term plan to evaluate the ground water flow systems in the fractured-rock and karst terrains.* Tools to characterize ground water flow in fractured rock and karst terrains cannot be identified at this time because so little is known about these systems. Basic research by DEQ, USGS, state universities, and others is needed to be able to characterize ground water resources in the area of the state west of I-95. Because ground water flow patterns vary so much within small areas in these terrains, research may center around the largest withdrawals or areas where pollution threats due to surface interactions are most severe.

Costs for such work are for the most part open-ended, but some funding mechanism to begin study of these systems is necessary for proper planning. Again, the USGS, local jurisdictions in need of the data, special state funds, and water user fees are all possible funding sources.

Option 2.2.d. *Improve accessibility of all ground and surface water monitoring data.* Steps could be taken to ensure that all stream flow, lake elevation, and ground water elevation data collected throughout the state are made available on-line. Currently most USGS and some DEQ surface water monitoring data are available online in close to real time. This data is very useful in making management decisions during drought conditions. Access to nearly real-time data for surface water elevations on major reservoirs would have to be coordinated with local governments, power companies, the U. S. Corps of Engineers, and others.

DEQ currently has 32 of 67 stream gage stations equipped with real-time reporting equipment. Converting the DEQ's remaining 35 stations would cost approximately \$35,000 up front plus \$35,000 per year in additional operating costs for continued equipment leasing. A small amount of additional staff time would be needed as well. The USGS, local jurisdictions in need of the data, special state funds, and water user fees are all possible funding sources.

Water Resource Planning

Comprehensive water supply planning does not take place at the state level in Virginia. There are several different components to this issue, all of which directly hinder the state's ability to evaluate and therefore mitigate the impact of currently proposed and future projects on the Commonwealth's future water supplies.

2.3 Statewide Water Supply Plans

Virginia's Water Supply Plans, required by §62.1-44.38, were drafted in the mid-1980's and have not been updated since. The plans deal with community public water supplies only and do not address competing instream beneficial uses, agricultural uses, industry uses, power generation, and so forth. The plans are also technically flawed in that they generally consider ground water to be an inexhaustible resource. The technical flaws, limited scope and outdated information in the plans severely limit their value in evaluating new water withdrawal proposals and in protecting beneficial instream uses.

Option 2.3 Initiate a new statewide water resource planning and management effort that includes both ground and surface water and require that the plans be updated every 5 years or some other appropriate interval. Ensure that state plans are coordinated with local water supply plans and integrated at the local level. The original Water Supply Planning effort used approximately 22.5 person-years to complete. (A "person-year" is the equivalent of one person working full time for one year.) Updating the plans to include all water uses and realistic expectations of ground water withdrawal potential would probably take at least twice the previous effort or a minimum of 45 person-years to complete. Following the completion of the plans, updates would need to be conducted periodically. Possible funding sources include local governments, special state funds, and water permit or consumption fees. If permits were required for all major water withdrawals, then permit fees could be used to fund a portion of the same staff performing planning and permitting functions.

2.4 Local Comprehensive Plans

State law requires that localities create comprehensive plans and update those plans on a 5-year cycle. The code currently authorizes (but does not require) local governments to include water supply planning as a part of that process, but the degree to which that occurs varies greatly.

Option 2.4 Incorporate water supply planning in local comprehensive plans. This option would require that localities include water supply planning in their 5-year comprehensive plan updates and coordinate those updates with DEQ to ensure that they are consistent with the state plans. Local-level planning would facilitate updates of DEQ Water Supply Plans. It would also help localities address water supply issues and prepare for the type of water supply emergencies that have occurred this past year. Some localities rely on Water Service Authorities, but they

should still address water needs and planning in their local plans. Implementation of this option could be accomplished in one of two ways: 1) *require* localities to include water supply planning, which would need legislative action; 2) *encourage* localities to include water supply planning, which would not need legislative action.

There would be little cost to the state for this function. Some local governments may see an appreciable increase in cost in updating their comprehensive land use plans, depending on the degree to which they are currently addressing these issues.

2.5 Beneficial Flow Analysis

Another component of comprehensive planning that is lacking is the establishment of beneficial instream flows specific to each of Virginia's rivers. Unique flow regimes and resulting ecosystems exist in every river. A single approach for determining stream flows that are protective of instream uses cannot be applied across the Commonwealth. Independent flow analyses and studies of impacts on all instream beneficial uses (based on historical uses and current actual uses such as fisheries, recreation, etc.) need to be conducted for all major rivers and streams. To date, this kind of analysis has been conducted on only three river segments – the 10-mile section of the James River immediately above the fall line in Richmond, the North Fork of the Shenandoah River where the study is ongoing, and a portion of the Upper James. The beneficial flow analysis is a critical component of any water supply planning effort as well as any permitting effort to protect instream uses.

Option 2.5 *Perform instream flow analyses in each major river basin.* Beneficial flow analyses could be performed in several segments of each of Virginia's nine major river basins to establish the knowledge base needed to identify acceptable instream conditions. It is estimated that approximately 40 such studies should be performed statewide. Criteria would need to be established for where to begin and how to prioritize the studies, such as those most threatened by overuse, under the most pressure, and the largest.

The first such analysis in the state was performed on the 10-mile segment of the James River immediately above the fall line at a cost of approximately \$1,200,000 and was paid for by the major water users in that segment, Henrico County and the City of Richmond. A second study costing approximately \$900,000 is underway on the North Fork of the Shenandoah River and is being paid for by state and local funds that are matched by USGS.

Possible funding sources include local governments, special state funds and water user or consumption fees. In the normal process of permitting or repermitting major facilities, the costs of some of these studies could be borne by the permittee, which could impact economic development.

Objective 3: Appropriate Tools for Addressing Combined Impacts

In the absence of comprehensive planning, permitting in Virginia is done on a first-come first-serve basis without consistent regard to combined or long-range impacts. To change this system, not only could the state undertake comprehensive planning, but it could also create clear linkages between the planning and permitting processes. The plans are of little value if they are not incorporated into a permit program. The state currently has three different permit programs that potentially can be used to regulate water withdrawals – Surface Water Management Area (SWMA) Permits, Ground Water Management Area (GWMA) Permits, and Virginia Water Protection (VWP) Permits. The application of each permit program has been limited to date.

3.1 Surface Water Management Area Permits

The Surface Water Management Area (SWMA), enabled by legislation enacted in 1989, could be a useful tool for watershed management, particularly during periods of low flows. But thus far no SWMAs have been established. DEQ staff is currently developing the first SWMA designation in the state – a 30-mile stretch of the James River in and above the City of Richmond. Barriers to implementation of SWMAs have included a reluctance by localities to agree to be regulated, a perceived need by the Soil and Water Control Board (SWCB) for the decision to adopt a SWMA to be unanimous among all affected localities, and reluctance to incur the costs and demands on staffing for permitting that would result from a SWMA.

Option 3.1 *Implement one SWMA and use that as a template to implement others.* The SWMA is a powerful tool that needs to be used, but in order to do so the barriers to implementation need to be removed. One way this might be accomplished is for the DEQ and SWCB to make this a priority issue now by identifying and scheduling SWMAs on stream segments that have recently experienced low-flow conditions. As a first step, it would be helpful if the DEQ and SWCB were to complete one SWMA as a "model" to help others understand and support the process. Should the James River SWMA be established as anticipated it could serve as this model.

DEQ and the SWCB could establish a measure of what constitutes a critical shortage and consider establishing SWMAs in every basin where critical shortages existed this summer. This summer's critical shortages could be used as the landmark. Possible rivers include the James (a portion of which is currently proposed), Roanoke, Appomattox, Pamunkey and its tributaries, Rapidan and the North Fork of the Shenandoah Rivers.

Costs are dependent upon the number of river segments designated for SWMAs as well as the schedule of the designation. It is estimated that establishing a new SWMA will have a one time cost of approximately one person-year. Permitting may possibly be done by existing regional office staff, depending on the size of the SWMA and number of users. Once designated, every major water user in the SWMA would have to be permitted. Costs would include direct impacts on the regulated community in terms of new regulatory compliance obligations. Possible

funding sources include SWMA permit fees and possible water user or consumption fees.

Note: If Options 3.3.a – c. are implemented with regard to VWP Permits, this option may not be needed.

3.2 Ground Water Management Area Permits

Like the Surface Water Management Area, the Ground Water Management Area (GWMA) can be a suitable tool to assist managing the state's water resources. Two GWMA's have been established and permits have been issued in portions of the Virginia Coastal Plain – the Eastern Shore and an area bounded by I-95 to the west, and the Mattaponi and York Rivers to the north. Ground Water Withdrawal Permits are issued only for withdrawals in GWMA's; hence most ground water withdrawals in the state are not permitted. Additional GWMA's have not been established on the Middle Peninsula and Northern Neck due to a lack of resources necessary to expand the existing program. GWMA's have not been established west of I-95, in part due to a lack of perceived pressure on the resource but, more importantly, due to a lack of technical understanding of ground water systems in fractured rock and karst terrain (see Section 2.2).

Option 3.2.a. Prioritize and expand the use of GWMA's as necessary. This would be most useful to do in aquifers that have indicated low yield recently. GWMA's could be expanded to the Middle Peninsula and Northern Neck areas at this time; however the tools available to evaluate these systems will be limited without further study (see Options 2.2.b and 2.2.c). No predictive tools or ground water models currently exist to evaluate ground water withdrawals in the fractured rock and karst terrain in the western portion of the state.

It is estimated that a one time cost of approximately one person-year would be required to incorporate the Middle Peninsula and Northern Neck into a GWMA. One FTE would be required to write permits for that area. Expansion of the GWMA into western portions of the state would require a minimum of one person year to develop the regulation, significant additional funding for the development of predictive tools and approximately five FTE's for permit writers. Any expansion of the scope of GWMA's would have direct impacts on the regulated community in terms of new regulatory compliance obligations.

Option 3.2.b Permit or register all major withdrawals of ground water. DEQ could establish the amount of water that can be withdrawn without a permit throughout the state (e.g. less than 10,000 gpd), and above that level, require a permit. DEQ could require that all existing users register withdrawals that exceed the threshold, or, if they fail to register within a specified time period, DEQ could require them to apply for a permit. This would necessitate either designation of the entire state as a GWMA or the development of a different permitting program and would have direct impacts on the regulated community in terms of new regulatory compliance obligations.

Expansion of the GWMA to the entire state would require a minimum of one person year to develop the regulation, significant additional funding for the development of predictive tools, and approximately five FTE's for permit writers. Development of regulatory permit program other than the GWMA would probably require two person years to complete.

Note that there is a difference between ground water withdrawals that are made for consumptive purposes and those that are not. For example, some ground water withdrawals are associated with ongoing remediation activities. Those activities should not be complicated by a separate withdrawal permitting requirement.

3.3 Virginia Water Protection (VWP) Permits

VWP Permits are issued for the construction of any new or expanded permanent surface water supply intakes. In the absence of SWMA permits, VWP permits have been used, where appropriate, to restrict water withdrawals during periods of low flow. The effectiveness of the VWP program is limited by the practice of "grandfathering" of existing intakes and the lack of regulatory controls over "temporary" water intakes. Several of the proposed new facilities in Virginia in recent years have relied upon existing intake structures in an effort to avoid any regulatory controls. Likewise, existing intakes are currently free to simply increase the size of their intake pumps (provided they do not change the size or configuration of the intake structure itself) to withdraw larger amounts of water with no regulatory oversight.

On some of the state's smaller rivers, agricultural users may make up the bulk of the use during drought conditions when instream impacts are most severe. These agricultural intakes are typically not permitted due to the temporary nature of the intake structures. The Virginia Marine Resource Commission (VMRC) has authority over temporary intakes and is authorized to take action if the stream is adversely affected; however, this authority is rarely exercised by VMRC.

Lastly, another concern is that new facilities are not required as a condition of obtaining a permit to build a storage reservoir sufficient to ensure continued operation during low flow conditions, during which time the facility will not be permitted to continue withdrawals. While the DEQ may advise the new facility on the recommended size for a storage reservoir, historically the ultimate decision on storage capacity has been considered a "business decision" to be made by the facility management. Because of the cost, facilities often do not build storage capacity sufficient for drought periods and, when their water reservoirs are depleted, request a permit exemption from the state in order to avoid shutting the facility down. Historically, such exemptions or other relief have been granted by the state. In effect, this renders the permit limits on water withdrawals ineffective at the very time when instream beneficial flows are least able to afford continued withdrawals, and when the facility had originally agreed it would not be withdrawing water. This practice undermines both public confidence in the water permitting process and the ability of the state to protect beneficial instream flow.

Option 3.3.a. *Certify grandfathered or otherwise unregulated withdrawals.* This certification process could be similar to the process used to phase in the GWMA. If users failed to register those withdrawals within a certain period of time, then they would lose any grandfathered right to the water use and be subject to new VWP permitting requirements. Existing withdrawals would be certified at previously documented withdrawal levels plus a factor for growth. The VWP permits could be individual permits or more preferably, amendable general permits. Certifications would last for a set number of years (e.g. 10 years), at which time the user would be subject to the normal permitting process. This option would enable the state to derive better withdrawal information during the term of the initial certificate, and it would create an incentive to ensure compliance. One disadvantage of adopting Option 3.3.a without Options 3.3.b and 3.3.c is that during the term of the initial certificate, existing withdrawals that may be causing adverse affects on other beneficial uses would not be addressed.

DEQ would require another one to two FTE's if the method of determining the amount of water to be certified is clearly defined by regulation or statute. Modifying the regulation would take one person year. This effort would be absorbed by existing staff.

Option 3.3.b. *Remove "grandfathered" status for any existing intakes where maximum withdrawals exceed appropriate criteria and for abandoned existing intakes.* By removing grandfathered status for abandoned existing intakes, DEQ would eliminate the opportunity in the current permitting system for new facilities to avoid regulation by reactivating abandoned intakes. As the pressures on Virginia's waters mount, and the need to take a comprehensive approach to water management becomes critical, the grandfathered status for certain existing withdrawal structures may no longer be appropriate. For consistency's sake, the criteria for removing grandfathered status should be established by regulation at a level where instream beneficial uses are generally adversely impacted. Option 3.3.b could be adopted by itself in order to only address the withdrawals of greatest concern or in conjunction with Option 3.3.a.

Option 3.3.c. *Require VWP Permits for new temporary intakes that have the potential for adverse instream impacts.* The recent drought appears to have resulted in an increased use of or reliance upon temporary intakes at a time when the resource is least able to sustain additional demands. This option would address new temporary intakes of concern whereas any existing temporary intakes of concern would be addressed under Option 3.3.b above. As in Option 3.3.b, the criteria for determining the potential for adverse instream impacts should be established by regulation at a level that instream beneficial uses are generally adversely impacted.

Any modification to the VWP regulation will take a minimum of one person year to complete. This effort would be absorbed by existing staff. There are between 400 and 500 unpermitted surface water withdrawers in the Water Withdrawal

Regulation database. Issuing certificates under Option 3.3.a. would require another one to two FTE's if the method for determining the amount of water to be certified is clearly defined by regulation or statute. Issuing individual VWP permits or amendable general permits to the more problematic withdrawers (estimated at 20%) under Options 3.3.b and 3.3.c would require four additional FTE's. The regulated community would experience impacts due to additional permitting and compliance obligations.

Option 3.3.d. DEQ could work with VMRC to promote its exercise of authority over temporary intakes. The VMRC may not be aware of the extent of the impacts of temporary intakes on beneficial instream flow, and the DEQ could explore ways to assist the VMRC in identifying situations where its authority should be exercised.

Option 3.3.e. Address the problems caused by the inadequate water storage capacity of new facilities. One option is for the state to require – as a condition of permitting – that all new facilities build water storage capacity sufficient to ensure continued operation for a specified low flow event (e.g., the 25-year, 50-year or 100-year drought). An alternate method of accomplishing the same objective is to disallow piecemeal permits, i.e., one permit for storage and one permit for intakes. DEQ could limit the maximum withdrawal from the river to an amount that could be safely continued during the drought of record. This is similar to the way the Health Department licenses public water supply systems. The benefits of this option are that all new facilities will be held to the same standard and instream beneficial flow would be further protected. Some concern was expressed that there could be circumstances where additional storage capacity may not provide an environmental benefit and may conflict with efforts to encourage recycling and reuse over additional storage or containment.

There is no cost to DEQ. The cost of storage would be borne by the owners of the facility and the amount would vary. It would likely be less expensive west of the fall line.

Option 3.3.f. VWP basinwide review of combined impacts. As part of the VWP permitting process, DEQ could require or perform a review of the combined impacts of each proposed water withdrawal in conjunction with existing water withdrawals on the entire stream or river to determine the impacts of a new permit on instream uses, particularly during low-flow conditions.

This option would provide the opportunity to examine each proposed withdrawal within the context of each existing or other proposed withdrawal (where a permit application has been submitted) on the entire watershed rather than stream segment. DEQ staff currently identify a segment of impact depending upon the size of the proposed withdrawal and the proximity and size of both competing withdrawals and intervening tributary flows. Another alternative would be to perform periodic basinwide reviews.

The costs would be the additional review time for DEQ staff. Other costs could include impacts upon the regulated community, although in low flow circumstances there could also be benefits to those already having permits. The amount of costs would be a function of the rigor with which the analysis is conducted and the reach of the watershed analyzed. For example, in the extreme, a small withdrawal in the upper James watershed could generate an analysis that includes all withdrawals contained within an area equal to one-fifth of the state's land mass.

Objective 4: Other Important Options For Addressing Combined Impacts

The Work Group identified several options that did not fall directly into one of the categories outlined above.

Option 4.1 ***Impose a moratorium on new water withdrawal permits until current gaps are addressed, a combined impacts assessment is completed, and tools are put into place to protect beneficial instream flow.*** A statewide moratorium could be imposed on water withdrawal permits until some of the tools discussed in other sections of this report are put into place. A moratorium may be an effective step to address the influx of new facilities as well as the current drought.

A variation on this option is for a stream-specific moratorium to be triggered when the minimum beneficial instream flow (which is currently undefined - see Option 2.5) is reached.

A decision to impose a moratorium is a policy decision that would need to be applied evenhandedly so that the state is not seen as favoring one use over another.

Several Work Group members expressed opposition to a moratorium. One concern is that the time needed to close the gaps in water permitting would be too long and therefore prohibitive of further development. On the other hand, a potential advantage to this approach is that, a relatively short-term moratorium could provide the state with time needed to plug the biggest gaps while protecting beneficial instream flow. Benefits to the environment could include protection of water supply and water quality, riparian ecosystems, instream uses, and long-term uses.

Any sort of moratorium, however brief, would be controversial and would engender considerable opposition. Costs of a moratorium could arise from legal action, depending on the nature of and asserted authority for the moratorium. A moratorium would also significantly impact economic and social development. The absence of any permit fees generated during the moratorium could undermine the development and implementation of new tools to the extent that the costs of

those tools are covered (at least in part) by permit fees. Conversely, a moratorium could provide economic benefits to industry dependent on beneficial instream flows, such as fisheries, waste water management, and tourism.

Option 4.2 *Clarify and use the full range of authority that may exist within the State Water Control Law.* The Commonwealth may enjoy authority within existing legislation, regulations and policies that, although not currently used, may provide additional protection for water resources. The Attorney General's office could be asked to clarify the scope of that authority within existing State Water Control Board law to cover all uses, e.g., water resources policy, anti-degradation policy, special orders, and Surface and Ground Water Management Areas. [See Appendix for Sections 1 and 2 of Article XI of Virginia's Constitution.]

Option 4.3 *Provide incentives to encourage conservation, and avoid disincentives that result in wasted resources.* Existing permitting mechanisms typically do not mandate the use of specific technologies designed to conserve water. In many cases, best available technology for water use has not yet been identified at the national level. Absent that technology or technology-forcing requirements for water conservation, DEQ could establish conservation incentives, including incentives promoting the use of dry condenser technology to significantly reduce a power plant's water use. Plants also could be encouraged to consider alternatives such as geo-thermal or air-cooled units instead of water-cooled units. DEQ could require that this information be included in a water use analysis. Other incentive mechanisms could include some form of trading (which has been the focus of new policy development at the national level) and tax rebates or exemptions for proven water conservation efforts (which already exist in some form for environmentally beneficial technologies and equipment). Irrespective of the types of incentives, this option should be evaluated in the context of DEQ's existing pollution prevention programs. There are inherent synergies between pollution prevention and conservation that, if considered together, have the potential to produce combined benefits.

NOTE: There may be a trade-off between impacts on water and those on air. For example, a low-water technology may use more natural gas, which could increase the air impacts while lowering the water impacts. Available resources may dictate what technology is used.

Costs are expected to include additional staff time for developing policy or regulations as well as costs to rate payers and permit applicants. It could be helpful to find ways of rewarding plants that install equipment/controls that exceed the normal minimal technology requirements.

Option 4.4 *Provide ongoing public education about planning and permitting processes used to assess and address combined impacts of new power plants and other proposed sources.* The DEQ plays a major role in educating the public, along with other parties such as industry and non-governmental organizations. The issues relating to combined impacts are complex and technical, and public feedback suggests a lack of confidence in the state's ability to adequately assess and address combined impacts. This option would enable the DEQ to become more proactive in its education role, providing user-friendly information to localities and the public through the web, newspapers, media packages, and at meetings.

In addition, the DEQ could develop communication skills and strategies to become more effective in providing information to localities through public briefings and hearings. Several such strategies are for the DEQ to clearly indicate how the public can be involved in different stages of the permitting process, to separate the public information and public comment sessions, and to post permit-specific information on the web so that it is readily available to the public. A proactive and strategic approach would enable local decision-makers to be better informed about combined impacts, enable citizens to participate in the permitting process in a more meaningful way, and build public confidence that combined impacts are being addressed by the state.

Objective 5: Funding Options

Opportunities for Cost Savings

It is possible that proactive public relations and public education by the state could result in cost savings by reducing the amount of resources needed to respond to public concern about proposed facilities. In other words, the state could avoid the need to divert scarce technical resources to issues that are better and more cost-effectively addressed through staff training and public education. Costs might be reduced by cost sharing with localities, although this method clearly presents other problems with respect to competing demands on resources.

Ways To Meet The Costs

A number of ideas were suggested by Work Group members to pay for new or enhanced programs. The state could explore federal and private foundation sources of seed money. Lastly, DEQ might consider shifting its internal priorities so that resources would be reallocated to these initiatives.

Option 5.1 *Use permitting fees to cover the costs of assuring adequate protection of Virginia's water resources.* One way of covering costs would be to raise the permitting fees to cover the costs of comprehensive planning and permitting. This approach is based on the principle often followed in regulatory programs that the user should pay for costs associated with protecting the resource. Historically, Virginia's permit fees have only supported 10% to 15% of actual costs of the permitting program. Most water permit fees were tripled by an Act of the 2002

General Assembly, so it may be impractical or inappropriate to raise them again now.

Option 5.2 *Establish a user fee or consumption fee on water.* A user or consumption fee could raise significant funds to cover the costs of water resources planning. The advantage of this approach is that it provides an incentive for water conservation at the same time it provides an equitable approach to taxing users of a limited natural resource. A consumption fee charges only for water that is not returned to a waterway within the same basin, while a user fee charges for all water withdrawn.

Based on 1999 data, a 1¢ user fee on every 1000 gallons of water purchased from a public water supply would generate \$2.8 million per year in revenue. The individual homeowner's water bill would increase slightly under 3¢ per person monthly (based on 86 gpd average per capita use). The impact to commercial and industrial users of public water supplies would vary with water use. Such a fee would impact those purchasing water from a public water supply but not those directly withdrawing water. Extending the fee to all commercial and manufacturing users currently reporting withdrawals under the State Water Control Board's Water Withdrawal Reporting Regulation (power production, mining, and agriculture excluded) would raise the revenue generated to approximately \$4.9 million per year. Other rate structures (e.g. charging different rates for different uses or basing industrial rates on consumptive uses only) could be developed to distribute the costs more equitably. The imposition of such fees would likely be controversial and may be viewed by some as a tax on public resources. Also, absent any evidence of comparable fee programs in other states, the imposition of such fees in Virginia could have an adverse impact on economic development, especially in the context of out-of-state companies that use large amounts of water and are considering relocation or development in Virginia. Conversely, rates may be structured in any fashion necessary to equitably distribute the program costs. DEQ's Underground Storage Tank and Waste Tire Management Programs have also successfully made use of relatively small user fees to fund what were seemingly insurmountable program costs.

IV. Appendix

Water Resources Impact Work Group Members

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MeadWestvaco Corporation

Jeffrey Scott
National Committee for the New River

Jane Cain
VA Well Water Association

Kurt Stephenson
Virginia Tech

Frank Harksen
Hanover County Public Utilities

Brooks Smith
Virginia Manufacturers Association

Tim Hayes
Hunton & Williams

Jud White
Dominion Resources

Patti Jackson
James River Association

Allan Brockenbrough
Joe Hassell

John Kauffman
Tom Wilcox, alternate
Dept. of Game and Inland Fisheries

Ellie Irons
Mike Scanlan
Terry Wagner
Dept. of Environmental Quality

Starla Lacy
Dynegy, Inc.

Tanya Denckla
Frank Dukes
Bruce Dotson

Marc Tufaro
State Corporation Commission

Institute for Environmental Negotiation (facilitators)

David Nelms
United States Geological Survey

Nikki Rovner
The Nature Conservancy of Virginia

Water Work Group Process

The Water Resources Impact Work Group was convened on June 18, 2002 and met five times through October 2002.

The DEQ convened the Work Group by selecting 14 people from a large pool of interested applicants chosen for their technical and professional expertise as well as their representation of diverse interests. The DEQ established dates for five meetings and then contracted with the University of Virginia's Institute for Environmental Negotiation to facilitate the meetings and prepare the Work Group's final report.

The Work Group held its first meeting jointly with the Air Work Group on June 18, 2002, at which time both Committees reviewed their charge, which was derived directly from the letter from Director Bob Burnley to Senator Whipple. Director Burnley specified that the Work Groups were not being asked to develop consensus recommendations, but rather to develop the full range of options for consideration by the DEQ.

At this first meeting, the Work Group also reviewed its proposed work schedule, developed guidelines for discussion, identified information needs and began to identify key issues that would need to be addressed.

At its second meeting on July 16, the Work Group heard presentations on impacts considered in the VWP permitting process and on DEQ's environmental review responsibilities. The Work Group also discussed their homework assignment from the first meeting, which was to provide lists of (1) impacts of water withdrawals which DEQ should be considering in the water permitting and environmental review processes, (2) tools to evaluate those impacts and (3) potential uses of the information if it was available. In trying to identify items not included on the first list, two issues were mentioned – (a) the complete lack of ground water information outside of the ground water management areas (including connectivity to surface water) and (b) DEQ not commenting during the EIR review process on important environmental issues if the issues are not subject to DEQ permitting authority.

At the third meeting on August 6, the Work Group reviewed the materials distributed prior to the meeting. Included were Marc Tufaro's spreadsheet on the status of SCC power plant applications, Kurt Stephenson's conceptual diagram on consequences of water withdrawals, John Kauffman's instream flow write-up and Joe Hassell's summary of water usage at the various existing and proposed power plants. Mike Scanlan presented a summary of DEQ's "Regulation 11" water withdrawal reporting program, identifying gaps in coverage. Kenneth Chandler, Director of Public Utilities of the City of Richmond, explained Richmond's interest in water rights and their investment in the riverfront, which was followed by consultant Ron Bizzarri's presentation on the Falls of the James River Management Plan (RMP). The RMP was prepared in support of Henrico County's application for a water withdrawal permit for its new water treatment plant. Mike Scanlan led discussion of a matrix prepared after the last meeting addressing regulatory review for various ground and surface water withdrawal scenarios. The matrix also indicates when the various beneficial instream uses are considered in the regulatory review process.

IEN then asked Work Group members to submit proposed options before the next meeting in a format mirroring the charge given to the group by DEQ Director Bob Burnley. The table consisted of 4 boxes – (1) the problem or concern to be addressed; (2) the proposed remedy or remedies (the methods or tools for measuring or predicting impacts, and options for how best to use the information generated) for the problem; (3) the anticipated benefits of the proposed remedy or remedies; and (4) the anticipated costs of the proposed remedy or remedies and options for meeting those costs.

At the fourth meeting on September 12, Allan Brockenbrough of DEQ reviewed revisions to the regulatory review chart made following the August meeting. Additional information concerning broader regulatory authorities and Regulation 11 reporting was added to the footnotes. The Work Group reviewed and refined the compiled issues and the options proposed by committee members. Additional options were also identified at this time. Lastly, an outline for the final report was developed.

After the fourth meeting, the IEN developed a draft report based on the issues and options developed by Committee members. The IEN worked closely with DEQ during this phase in developing a detailed structure for the report and obtaining technical information for the report.

At its last meeting on October 10, the Work Group reviewed the draft report and proposed changes to its structure and refinements to the issues and options. The IEN completed changes to the draft report and emailed the draft to Committee members for their review. Based on the comments received from the Committee members, a final optional meeting or conference call was not needed. The IEN made final changes and provided the final report to DEQ in November 2002.

Lessons from Other States

In support of this Work Group initiative, the Institute for Environmental Negotiation examined the policies of adjacent states and other states whose experiences appeared similar to that of Virginia. Because the energy situation and the political climate change so rapidly, and several states were undergoing transitions in their approaches to assessing (and regulating) combined impacts of power plants and other facilities at the time of this research, it would be misleading to report detailed current circumstances for these states.

However, we are able to report a sample of experiences that other states have had in addressing these issues. Some states report few such applications and no changes. Other states, including Georgia, Tennessee, and Kentucky, have imposed moratoriums ranging from brief temporary suspension of power plant applications to longer periods during which comprehensive studies have been conducted. Kentucky produced a lengthy report detailing air, water, land, and secondary impacts of the new power plants.

Some states are imposing new requirements. Tennessee requires that new plants serve state residents and reduce service to state users last in the event of blackouts. Kentucky has a new state review board. Georgia has a new requirement, where technically feasible, that combined cycle plants make use of graywater.

A number of states noted the attention to combined impacts offered by the Bonneville Power Authority (BPA). The BPA serves portions of Oregon, Idaho, Washington and is undergoing a cumulative impacts study for air quality. BPA is also developing a "Cumulative Impacts Protocol" for a water impact study.

Resources

Resources identified during the Work Group process follow:

Tennessee: Governor's Interagency Energy Policy Work Group.

<http://www.state.tn.us/environment/epo/hotlist.htm#merchant>

http://www.state.tn.us/ece/energy_policy.htm

Kentucky

<http://www.nr.state.ky.us/nrepc/power>

<http://gov.state.ky.us/pressreleases/2002/energymoratorium.htm>

<http://www.ekpc.com/news.html#LIFTED>

Maryland

<http://www.mde.state.md.us/>

<http://www.esm.versar.com/pprp/ceir11/intro.htm>

- “What Are Cumulative Impacts?” from <http://www.epa.gov>
- **Center for Ground water Research**, <http://www.rcgrd.uvm.edu/> for technical articles
- **National Water Resources Association**, <http://www.nwra.org/>
- **Piedmont Environmental Council**, <http://www.pecva.org/powerplants/powerplants.asp>
- **Dr. J. Reese Voshell, Jr., Department of Entomology at Virginia Tech** (rvoshell@vt.edu), "A Guide to Common Freshwater Invertebrates of North America."

CONSTITUTION OF VIRGINIA - ARTICLE XI Conservation

Section 1. Natural resources and historical sites of the Commonwealth.

To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources, its public lands, and its historical sites and buildings. Further, it shall be the Commonwealth's policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth.

Section 2. Conservation and development of natural resources and historical sites.

In the furtherance of such policy, the General Assembly may undertake the conservation, development, or utilization of lands or natural resources of the Commonwealth, the acquisition and protection of historical sites and buildings, and the protection of its atmosphere, lands, and waters from pollution, impairment, or destruction, by agencies of the Commonwealth or by the creation of public authorities, or by leases or other contracts with agencies of the United States, with other states, with units of government in the Commonwealth, or with private persons or corporations. Notwithstanding the time limitations of the provisions of Article X, Section 7, of this Constitution, the Commonwealth may participate for any period of years in the cost of projects which shall be the subject of a joint undertaking between the Commonwealth and any agency of the United States or of other states.

DEQ Consideration of Beneficial Uses for Water Withdrawals

		Regulatory Program			
		EI Review ¹ (Ground and Surface Water)	VWP Permits ² (Surface Water)	SWMA Permits ³ (Surface Water)	GWMA Permits ⁴ (Ground Water)
Beneficial Use	Domestic water supply	Not addressed by DEQ prior to SB 554 unless permit was required. SB 554 expanded DEQ review to address when appropriate.	Existing water withdrawals protected	Class I priority under SWMA permitting. Permitting procedures under development.	Existing ground water supplies and withdrawals protected
	Fish & wildlife habitat	Water quality standards protected by DEQ. DGIF comments on impacts to fishery resources.	Water quality standards protected by DEQ. DGIF comments on any impacts to fishery resources.	Class II priority under SWMA permitting. Permitting procedures under development	Connections between ground and surface water not addressed.
	Agriculture	VDACS Review	VDACS Review	Class II priority under SWMA permitting. Permitting procedures under development	Existing ground water uses protected
	Electric power supply	Not addressed by DEQ prior to SB 554 unless permit was required. SB 554 expanded DEQ review to address when appropriate.	Existing uses protected	Class II priority under SWMA permitting. Permitting procedures under development	Existing ground water uses protected
	Commercial & industrial uses	Not addressed by DEQ prior to SB 554 unless permit was required. SB 554 expanded DEQ review to address when appropriate.	Existing uses protected	Class II priority under SWMA permitting. Permitting procedures under development	Existing ground water uses protected
	Waste assimilation	Not addressed by DEQ prior to SB 554 unless permit was required. SB 554 expanded DEQ review to address when appropriate.	Usually protected because MIF > 7Q10	Class II priority under SWMA permitting. Permitting procedures under development	N/A
	Recreation (swimming, boating, etc.)	Water quality standard for Fecal Coliform protected, where appropriate, by DEQ. DGIF comments on impacts to recreational boating uses.	Water quality standard for Fecal Coliform protected, where appropriate, by DEQ. DGIF comments on impacts to recreational boating uses.	Class III priority under SWMA permitting. Permitting procedures under development.	Connections between ground and surface water not addressed.
	Commercial Navigation	If project includes a new structure in the stream, USACOE addresses via Section 10. Otherwise - not addressed.	USACOE Review	Class III priority under SWMA permitting. Permitting procedures under development.	N/A
	Cultural & aesthetic values	Not explicitly addressed. Potential for comments through DHR review.	Not explicitly addressed.	Class III priority under SWMA permitting. Permitting procedures under development.	Not addressed

Notes:

¹ EI Reviews performed for NEPA projects (federal projects, federally funded projects and projects requiring federal permits or approvals), state EIR projects (any state project costing > \$100,000), and review of SCC applications for power facilities, airports, etc.

² Virginia Water Protection Permits

³ Surface Water Management Area Permits (**note: although authorized by state law, no SWMA designations have been established by DEQ**)

⁴ Ground Water Management Area Permits