REPORT OF THE

STATE WATER COMMISSION

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

DOCUMENT NO. 141

COMMONWEALTH OF VIRGINIA
RICHMOND
2015

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EXECUTIVE SUMMARY

The State Water Commission met two times during 2014. At its initial meeting on June 23, 2014, the Commission received presentations on Virginia coal ash policies. Because of a discharge of coal ash into the Dan River on February from a broken stormwater pipe at a Duke Energy facility in North Carolina, the Commission requested a status report from state agency officials with responsibility for responding to the incident. Officials with the Department of Environmental Quality, the State Health Department, and the Department of Conservation and Recreation described their agency's role in mitigating the impact of the spill in the Virginia portion of the Dan River. Virginia's actions will include monthly monitoring of water quality and sediment in the river, the development of a long-term strategy for phasing out such coal ash impoundments located in Virginia, and the posting of health and fish consumption of advisories.

During the 2014 Session, legislation (SB 671) was introduced that required all electric generation stations seeking a Virginia Water Protection Permit to estimate the quantity of water that would be withdrawn and consumed for the life cycle of the fuel used by the proposed generating facility. Although the legislation failed in the Senate Committee on Agriculture, Conservation and Natural Resources, the Committee's chairman requested that the Commission review the bill. Proponents of the legislation appeared before the Commission and testified that it is sound public policy for utilities to fully report all water uses related to meeting the variety of energy needs and that such information should be an important factor in determining whether to approve the operation of an energy facility. They questioned whether the information currently required for the issuance of a permit is adequate in order for the Department of Environmental Quality (DEQ) to make a fully informed decision. The Department responded by noting that its role in managing water resources is to determine the individual and cumulative impact of existing and proposed water use through "cumulative impact analysis." David Paylor, Director of DEQ emphasized the information required by the Virginia Water Protection program is sufficient to make informed management decisions.

Over the last several years, the Commission has reviewed the ground water situation in Eastern Virginia. This year it examined strategies aimed at ensuring the long-term sustainability of the ground water resources in the region. The DEQ is implementing a short-term strategy that would require the largest users of ground water to significantly reduce the amount of ground water they withdraw, while developing longer-term strategies in cooperation with various stakeholder groups. The Department's reduction strategy has been criticized by many in the business and industrial sectors as a short-term strategy that doesn't adequately address the preservation of the resources and will result in negative impacts on the business community. They suggest the adoption of a longer-term policy that focuses on the long-term sustainability of ground water with an emphasis placed on regional cooperation.

The General Assembly, by appropriating a significant amount of general fund moneys, has made a commitment to restore the water quality of the Chesapeake Bay. The Commission received testimony from the author of a study analyzing the benefits of a clean Bay to the economy of Virginia and the other states in the Bay watershed. If the blueprint for cleaning up the Bay is fully implemented, Virginia will realize annual benefits to its economy of $8.3 billion.

While the Commission made no legislative recommendations, it will continue to examine the long-term policy options for ensuring the sustainability of the ground water in Eastern Virginia.

REPORT OF THE STATE WATER COMMISSION

I. Commission Deliberations

The State Water Commission (the Commission) is a 15-member legislative body established by statute that is charged with (i) studying all aspects of water supply and allocation problems in the Commonwealth, (ii) coordinating the legislative recommendations of all state entities that have responsibilities with respect to water supply and allocation issues, and (iii) annually reporting its findings and recommendations to the General Assembly and the Governor. In 2014, the Commission met twice and devoted its time to (a) a review Virginia's policies on the storage and containment of coal ash in light of the recent discharge of coal ash into the Dan River, (b) an analysis of the implications of SB 671, (c) a presentation on the economic benefits of restoring the Chesapeake Bay, (d) a description of the mission of the Virginia Water Resources Research Center, and (e) an examination of management of groundwater in Eastern Virginia.

Meeting Proceedings, June 23, 2014

A. Coal Ash Policies

On February 2, 2014, coal ash and contaminated water was discharged into the Dan River from a broken stormwater pipe at a Duke Energy facility near Eden, North Carolina. The broken pipe was located under a coal ash containment pond. The release of the ash was halted in early February and the removal of the ash continues.

In May 2014, an enforcement agreement was entered into by Duke Energy and the Environmental Protection Agency (EPA). The agreement required Duke Energy to, among other things:

- Perform a comprehensive assessment;
- Determine the location of coal ash deposits; and
- Remove the deposits located along the Dan River, as deemed appropriate.

An EPA ash survey of bottom sediment along the 70-mile length of the river has found no location exceeding 20 percent ash content.

A second agreement was signed in June 2014 by Duke Energy, the Virginia Department of Environmental Quality (DEQ), the North Carolina Department of Energy and Natural Resources, and the U.S. Fish and Wildlife Service authorizing the Natural Resource Damage Assessment and Restoration Program to evaluate the impact of the spill and to ultimately restore affected natural resources. There will be public participation in the planning of the restoration effort.

Virginia's actions will include monthly DEQ monitoring of water quality and sediment in the river. In coordination with the Dan River Association, DEQ will conduct additional testing at several locations. According to DEQ Director David Paylor, the information collected should be helpful in identifying the need for follow-up monitoring by DEQ. Fish tissue collection has begun at the first of eight sites, and Virginia's enforcement actions are being evaluated.

Mr. Paylor described Virginia's policies and regulatory structure with respect to coal ash. Coal ash is generated from the burning of coal. It is generally disposed of on-site or "beneficially reused." Ash consists mostly of various oxides and trace amounts of arsenic, selenium, mercury, and other metals. Its composition varies depending on the type of coal used, its origin, the burning regime, and the air pollution control equipment. The amount of coal ash generated has steadily increased over the last three years, with 2.73 million tons generated in 2013. There are three alternatives for managing the ash: (i) disposal in eight landfills; (ii) placement in 12 active surface impoundments (ponds) at seven facilities operated by Dominion, American Electric Power, Celanese LLC, and MeadWestvaco; and (iii) beneficial reuse as structural fill, concrete, or wallboard and in agricultural-related uses.

Surface impoundments are constructed with a natural clay liner. Ash is transported with water to the impoundment. The solids settle, and the overflow water is discharged to surface water pursuant to a Virginia Pollutant Discharge Elimination System permit (VPDES). The permit limits and requires monitoring of pH and of such pollutants as oil and grease, total suspended solids, and metals. All discharges are tested for toxicity. Groundwater monitoring is also required. The inspection and oversight of the impoundment is the joint responsibility of DEQ, which regulates the discharge through the VPDES permit, and the Department of Conservation and Recreation (DCR), which regulates the berm under its dam safety program. Once an impoundment reaches its design capacity, it is closed by dewatering, the berm structure is breached, and a permanent cap or cover is installed. The DEQ is currently evaluating options for closure of these ponds, which involves a closure procedure similar to that for an industrial landfill that would include post-closure monitoring, maintenance, and institutional controls.

As a result of the 2008 Tennessee Valley Authority coal ash spill, in June 2010 the EPA proposed new regulations for the disposal of solid and hazardous wastes. According to Mr. Paylor, coal ash does not meet the criteria as hazardous waste. He indicated that two options are being considered, both of which allow the continued use of the impoundments. The first would give the facility five years to retrofit the impoundment with a liner system or close it. Retrofitting would be so expensive that closing the pond would be the only realistic alternative. The second option would be to allow the use of the impoundment until the design capacity is reached.

The DEQ is currently working with owners to develop a long-term strategy for phasing out these impoundments. The agency is also examining possible post-closure requirements, including groundwater assessments.

In 2013, the EPA and DEQ concluded a structural integrity assessment of the coal ash impoundments in Virginia. None received an unsatisfactory rating. The EPA raised a number of issues regarding the impoundments, and the owners provided responses to EPA concerns. Both the EPA and DEQ reviewed the companies' responses to the assessment. To date, there have been no known releases at these facilities, and owners have followed up on EPA recommendations.

Mr. Paylor noted that the only dredging that has occurred as a result of the Dan River spill is near the Schoolfield Dam on the river and that about 25 percent of the dredged material was ash. He noted that he would be surprised if any additional deposits are found that would justify dredging activity.

Mr. Clyde Cristman, Director of the Department of Conservation and Recreation (DCR), discussed his agency's role in regulating impoundments. Under the Dam Safety Act, DCR regulates

more than 2,000 impounding structures, including 13 coal combustion residue impoundments. An impoundment is a man-made structure that retains or stores water or other materials and is either (i) greater than 25 feet in height with a capacity greater than 15 acre-feet or (ii) greater than 6 feet in height with a capacity greater than 50 acre-feet. A dam owner is liable for damage to the property of others or injury to persons, including the loss of life resulting from the operation or failure of the dam. All DCR dams are considered to be high hazards unless otherwise noted.

The dam owner is required to submit to DCR the following information that is prepared by a professional engineer: (a) construction and alteration plans, (b) inspection reports, (c) a dam break inundation map and the associated study, (d) a hazard classification determination, and (e) emergency action plans.

Dr. Marissa J. Levine, State Health Commissioner, described the role of the Virginia Department of Health (VDH) and the Office of Drinking Water (ODW) in protecting drinking water at the site of the coal ash spill. The spill was detected on February 2, and ODW was notified of the event on February 3. Since then, the ODW has been working closely with the staff of the treatment plants in Danville, South Boston, and Clarksville. Dr. Levine assured the Commission members that the water treatment plants' filters have effectively removed the coal ash and protected the area's drinking water supply. The ODW continues to participate in weekly planning sessions, the review of data, and the monitoring of the removal of coal ash deposits. The finished drinking water quality is not exceeding maximum contaminant levels. The VDH recreational advisory for users of the Dan River is still in effect. Also still in effect are long-standing VDH and North Carolina Division of Public Health fish consumption advisories for certain species due to mercury and PCBs. Baseline testing of fish has already been done, and the review of this data indicates no need to change the existing advisory as a result of the spill. Both states' health agencies are working with their respective state environmental regulatory agency to review fish tissue data over time and update the advisories as needed. The Pittsylvania/Danville and Southside Health Districts have posted advisory notices at public entry points to the Dan River. Although "no ongoing health concerns" have been identified, VDH is developing a health consultation to further evaluate chemical results from EPA sediment water sampling at the Kerr Reservoir. Once drafted, the consultation will be reviewed and certified by the U.S. Agency for Toxic Substances and Disease Registry.

B. Legislation (SB 671) Referred to the Commission for Review

During the 2014 Session of the General Assembly, Senator Barbara Favola patroned SB 671 (see Appendix A). The bill required all electric generation stations seeking a Virginia Water Protection Permit to estimate the quantity of water that would be withdrawn and consumed for the life cycle of the fuel used by the proposed generating facility. The legislation was considered by the Senate Committee on Agriculture, Conservation and Natural Resources but failed to be reported out of committee. At the request of Senator Favola, Senator Phillip Puckett, Chairman of the Committee, wrote to Delegate Thomas Wright, Chairman of the State Water Commission, noting that as "the issue of water scarcity has become an important policy concern for the Commonwealth, the purpose of this legislation was to provide access to information and to raise public awareness of the nexus between energy consumption and water usage" (see Appendix B).

The State Water Commission invited Senator Favola to discuss the issues raised by her legislation. Unable to attend the June 23 Commission meeting, Senator Favola designated Mr. Dawone Robinson, Virginia Policy Director for the Chesapeake Climate Action Network (CCAN), to speak in support of the legislation. The CCAN is a § 501(c)(3) nonprofit organization dedicated to

studying the impacts of climate change in the Chesapeake Bay region. Mr. Robinson noted that one of the impacts of a changing climate is reduced water resources for domestic and industrial uses. He characterized the legislation as "a first step towards a renewed interest in studying water scarcity in the Commonwealth and the impact on citizens." According to Mr. Robinson, a 2005 study by the U.S. Geological Survey reported that 41 percent of all freshwater withdrawals nationally were for the purpose of operating a thermoelectric power facility. His organization takes the position that it is sound public policy for utilities to fully report all water uses related to satisfying the variety of energy needs, and he stated that such information should be one of the factors in the determination of whether to approve the operation of energy facilities. He emphasized that the relationship between energy consumption and water availability is a crucial policy matter.

Mr. Robinson noted that after several meetings with Senator Favola, officials of DEQ, and representatives of the utility industry, the following three issues emerged:

- Although power plants are the largest source of water withdrawals in the United States, water withdrawn for irrigation represents nearly one-third of the water supply consumed and should be closely scrutinized when determining water availability in the Commonwealth;
- Any study of SB 671 should include other entities in addition to the power industry. Because most of the water withdrawn for an onsite plant is used for cooling and returned to nearby water bodies, other industries that consume large amounts of water should be part of any analysis; and
- Such information is not easily accessible to the public.

Mr. Robinson asked the Commission to study whether the information that is required when applying for a Virginia Water Protection Permit is "comprehensive and adequate in order for DEQ to make a fully informed decision whether to issue the permit." Specifically, he requested that the study determine whether the estimates of water withdrawal and consumption provided by large entities, including electric generating facilities, are sufficient to make an informed public policy decision. He stressed that it is important when examining water scarcity and consumption that the public have access to this type of information.

Mr. Scott Kudlas, Director of the Office of Water Supply at the Department of Environmental Quality (DEQ), responded to Mr. Robinson's concerns by providing an overview of the management of water use in Virginia. He described the programs the state uses to manage its water resources, both surface and groundwater, which include: the Virginia Water Protection Permit to regulate the amount of surface waters withdrawn; the Ground Water Withdrawal Permit to regulate groundwater withdrawals in areas of depleted aquifers; water withdrawal reporting; and water supply planning. These tools are essential in (i) protecting in-stream flow for both in-stream and off-stream beneficial uses, (ii) ensuring aquifer availability and productivity, and (iii) maintaining water levels sufficient for aquifer users. The goal is to "make sure what is going out doesn't exceed what is coming in." This is accomplished by conducting a cumulative impact analysis. The analysis involves (a) maintaining a "water budget" for every stream in the state and (b) using modeling to determine the impact of each surface water and ground water withdrawal. The DEQ staff also works cooperatively with other states to evaluate and manage proposed uses in shared watersheds. In modeling cumulative impacts, the agency examines such factors as precipitation, evaporation, transpiration, runoff, inflow and outflow, and percolation over time, as well as the impact of changes on land use.

Mr. Kudlas stated that DEQ does have a history of dealing with power plants and has developed models for simulating water use. One of the most significant factors in DEQ evaluations of

withdrawal permits is the level of water evaporation. Because the current laws require that DEQ maintain a certain level of in-stream flow to support a number of in-stream and off-stream uses, DEQ has been engaged in both short-term and medium-term water budgeting. A budgeting approach involves the use of such tools as the VWP permit, which sets limits on the level of water withdrawn over the 15-year term of a permit, and water conservation measures during drought conditions in order to ensure adequate in-stream and off-stream flow. Because of the mandate for water supply planning over the next 30 years, DEQ has also developed a long-term water budgeting model that incorporates projected water demands through 2040. Information generated from local/regional water supplies indicates that there will be an increasing demand for water clustered along the I-95/I-64 corridor, the Shenandoah area, and the Roanoke/Smith Mountain Lake area.

Mr. Kudlas maintained that DEQ has been and is currently evaluating impacts from water users, including power generators, over various time scales. With respect to making such information available to the public, he indicated that DEQ permits are available to the public during the permit review process, as are summary annual reports of water use and permit data. He assured the Commission that DEQ was collecting enough information, especially data on the use of water for power generators, to make informed decisions. The only area in which data is underreported involves the amount of water used for irrigation; however, each year, reporting of this type of information is increasing. He emphasized that the information that is missing is a relatively small component of the overall water supply plan. Upon the conclusion of Mr. Kudlas's presentation, Chairman Wright informed members of the Commission that he had discussed with Mr. Paylor the need for a more comprehensive response to the issues raised in Senator Puckett's letter regarding SB 671 and that DEQ will provide such a report to the Commission at a subsequent meeting.

In correspondence to Chairman Wright on August 21, 2014 (see Appendix C), Mr. Paylor provided his response to the issues raised in Senator Puckett's letter. Mr. Paylor stated that "DEQ's role in managing water resources is to ensure that the amount of water being taken out of the system does not exceed what is coming into the system. DEQ evaluates the individual and cumulative impact of existing and proposed water use through cumulative impact analysis." He further noted that DEQ evaluates impacts from water users, including power generation, and that the information required by the Virginia Water Protection program is sufficient to make informed management decisions.

C. Virginia Water Resources Research Center

Dr. Stephen Schoenholtz, Director of the Virginia Water Resources Research Center (VWRRC), provided a brief overview of the history of the Water Center. In 1964, Congress passed the Federal Water Resources Research Act with the goal of promoting water research and education. A year later the VWRRC was established at VPI-SU. Its mission is to (i) provide research and educational opportunities to future water scientists, (ii) encourage studies of practical solutions to water resource problems, and (iii) facilitate the transfer of water resources information to policy and decision makers. In 1982, the General Assembly enacted legislation that established the VWRRC and tasked it with facilitating and stimulating research that:

1. Deals with policy issues facing the General Assembly;
2. Supports the state water resources agencies; and
3. Provides water planning and management organizations with tools to increase efficiency and effectiveness of water planning and management (§ 23-135.7:9 of the Code of Virginia).

Dr. Schoenholtz described some of the water-related challenges facing the state, including (i) the nexus between energy, food, and water; (ii) climate change; (iii) drought, flooding, and storms; (iv) aging water infrastructure; (v) stormwater management; (vi) restoration of the Chesapeake Bay; (vii) water supply planning; and (viii) groundwater quantity and quality. The Water Center is poised to provide the technical expertise, with its vast array of university faculty throughout Virginia, to the General Assembly and state agencies. He provided several past and current examples in which faculty members have worked with state agencies to address a range of water-related issues. He informed the Commission that VPI-SU was in the process of establishing a new undergraduate B.S. degree in Water Resources Policy and Management. This degree is the first of its kind not only in Virginia but in the entire United States. He believes that this will establish VPI-SU and Virginia "as leaders in education for a rapidly emerging field vital to everyone." The planned launch of the degree is January 2015.

Meeting Proceedings, December 15, 2014

A. Groundwater Management in Eastern Virginia

The Commission received testimony focusing on strategies for addressing previously identified groundwater issues including saltwater intrusion, subsidence, and the long-term sustainability of the groundwater resource in Eastern Virginia. The Ground Water Management Act established the criteria for the issuance of a permit by the State Water Control Board (the Board). In no case can a permit be issued for more groundwater than can be applied to the proposed beneficial use. In evaluating permit applications, the Board is to ensure that the maximum possible safe supply of groundwater will be preserved and protected for all other beneficial uses. DEQ Director David Paylor stated the goal of the program is to protect the aquifer and provide for the current and future water needs to the public. He noted that there are a number of different layered aquifers, with the Potomac Aquifer being the largest. Since the Commission's last meeting in June, DEQ has taken a number of actions necessary in order to develop an overall strategy for managing groundwater, including (i) conducting a groundwater optimization evaluation, (ii) conducting a Virginia Coastal Plain Ground Water Initiative meeting with the 14 largest users, and (iii) investigating the economic impacts of coastal plain aquifer depletion and actions that may be needed to maintain long-term availability and productivity.

Currently approximately 90 million gallons of groundwater is withdrawn daily (mgd), of which 40 mgd can be withdrawn without being subject to a permit. Almost 90 percent of the permitted withdrawals are attributable to 14 facilities, with the two largest being two paper mill companies. The agency has identified a number of strategies to reduce the stress on the aquifers. Mr. Paylor indicated that one such strategy is the reduction in the current amount of permitted use of groundwater. According to Mr. Paylor, a 57 percent reduction in the amount of groundwater withdrawn by these 14 withdrawers would result in a stable aquifer. Individual reduction targets have been discussed with each permittee, and each permittee has been requested to provide DEQ with a 10-year reduction plan detailing what it can achieve over that period. The goal is to have all remaining issued permits reflect reasonable reductions by the end of 2015. (The proposed reductions appear on Appendix D.)

Mr. Paylor emphasized that the aquifer system cannot be stabilized without the implementation of a reduction strategy. The reductions will slow the decline in the aquifer system and lay the groundwork for long-term solutions. During this period, the development of a comprehensive strategy is needed that includes such elements as conservation, reuse, and

desalination. Though a 10-year reduction strategy is needed, there is capacity available in the upper aquifers and in the northeastern portion of the Coastal Plain. He cautioned that the gains from the reductions will be lost without addressing expected growth in the unregulated sector.

Mr. Paylor anticipates that the administration will propose legislation aimed at providing data that will define and evaluate the nonregulated withdrawers who are not required to obtain a groundwater withdrawal permit. The legislation would eliminate loopholes in the management program related to private wells constructed as part of newly constructed subdivisions. Currently, any entity withdrawing 300,000 gallons per month has to obtain a withdrawal permit. However, if the subdivision contains a number of wells the threshold standard is applied to the individual well and not to the total amount of groundwater withdrawn by the homes in the subdivision. The new legislation would require a permit if the total withdrawals, regardless of the number of wells, exceeds 300,000 gallons. Another measure is to require registration of all new private wells. Obtaining this information is essential if the state is to be able to develop reliable models that will provide a more accurate picture of what is currently happening to the resource and what may be expected in the future. With the incorporation of this additional data, DEQ will be able to develop specific strategies for ensuring the sustainability of the groundwater in Eastern Virginia.

Ms. Andrea Wortzel, representing Mission H2O, responded to the current groundwater situation and DEQ's proposed strategies for management of the resource in Eastern Virginia. The membership of Mission H2O consists of 13 of the 14 largest permittees, municipal and industrial water withdrawers, agricultural interests, and water supply professionals. Ms. Wortzel criticized DEQ's water reduction strategy as failing to address the goal of long-term sustainability. The members of her group expected a continuing dialogue with DEQ regarding a long-term strategy. Instead DEQ has told the largest withdrawers that they will have to reduce their permitted withdrawals by more than one-half. Yet, according to Ms. Wortzel, DEQ has failed to develop a long-term solution. Further, DEQ's approach would create financial hardship for municipalities and could result in the shutdown of industrial operations. To support these concerns, Ms. Wortzel, referring to the findings of a DEQ-contracted economic study, "An Investigation of the Economic Impact of Coastal Aquifer depletion and Actions That May Be Needed to Maintain Long-Term Availability and Productivity," suggested that the cost of the development of alternative water supply could be postponed with increased regional coordination and water-sharing among utilities. She stated that the study highlights the consequences of pursuing permit reductions, including (i) stranded assets (ii) inability to meet contract obligations, (iii) potential reductions in production or the shutdown of facilities, and (iv) millions of dollars in cost on isolated solutions. She cautioned that DEQ's reduction strategy could have an impact on future economic development and create competition instead of cooperation among users. She concluded by reiterating that the current policy is not a long-term solution. Noting that DEQ's presentation at the Commission's June meeting indicated we are not in a crisis situation and there is time to develop other options.

In order to find a solution, Ms. Wortzel recommended that DEQ adopt a planning process that pursues a regional approach and focuses on long-term solutions rather than short-term reductions. She suggested that the vehicle for developing a long-term solution is the statutorily created groundwater advisory committee, similar to the State Water Supply Plan Advisory Committee, which should be provided with clear objectives to accomplish in a two-year time frame.

B. Economic Benefits of Cleaning Up the Chesapeake Bay

Noting the General Assembly's significant financial investments in cleaning up the Chesapeake Bay, Ms. Ann Jennings, Virginia Director of the Chesapeake Bay Foundation (CBF), cautioned that the public and policy makers need a better understanding of the economic benefits of a restored Chesapeake Bay to Virginia's economy. In an attempt to determine the economic impact provided by the 64,000 square miles Chesapeake Bay watershed, CBF contracted with Dr. Spencer Phillips, founder of Key-Log Economics, LLC, to conduct such an analysis. His peer-reviewed study, "The Economic Benefits of Cleaning Up the Chesapeake," examines the impact that implementation of the Chesapeake Clean Water Blueprint (the Blueprint), which includes the federally mandated TMDL and state specific plans, will have on the economies of the states located in the Bay watershed. To establish a baseline, Dr. Phillips and his team attempted to quantify the natural benefits that lands and waters of the Bay drainage basin provided in 2009, prior to initiation of the Blueprint. The natural benefits include flood protection, water supply and filtration, food production, waste treatment, climate stability, recreation, and aesthetic value. The study calculated these benefits at $107.2 billion per year in 2013 dollars. The study found that if the Blueprint is fully implemented and effective, the benefits to the watershed would approach $130 billion (in 2013 dollars) or an increase of $22 billion in additional annual benefits when compared to the 2009 baseline. Without the Blueprint, or as the study characterizes it, adopting a "business as usual approach," benefits would decline to $101.5 billion annually, a loss of $5.6 billion compared to the baseline figure. The study points out that the scenario of not fully implementing the Blueprint does include many prescribed practices that were underway as of 2014 and that will continue to be implemented such as the upgrading of sewage treatment plants and reducing some urban and suburban pollution runoff. However, this reduction in value will get larger as the region's population grows and the associated pollution increases.

The study found that the majority of the benefits of implementing the Blueprint will be generated by upstream land uses rather than by the open water land use of the Chesapeake Bay and tidal portion of its tributaries. Virginia will see annual benefits of more than $8.3 billion. For all states in the region, forests will generate the largest benefits because 55 percent of the watershed is forested, and, according to the report, "because the benefits related to forestland—filtering drinking water, reducing flooding, providing recreation and beauty—are highly valued."

The study only addresses benefits and provides no analysis of costs but suggests that since the report of the Chesapeake Bay Watershed Blue Ribbon Finance Panel in 2004, considering federal, state, and local investments over the last decade, the cost will be close to $5 billion annually. However, once capital investments are made the researchers believe the long-term annual operations and maintenance "will be much lower." The report indicates that the implementation of the Blueprint will result in benefits to the watershed each year at a rate of more than four times the cost of the clean-up plan.

II. Findings and Conclusions

The Commission recognizes that while the groundwater situation in Eastern Virginia has not reached the crisis stage, effective policies and strategies need to be developed and implemented to ensure the sustainability of the resource in the region. During the course of its deliberations over the last several years, the Commission has received testimony regarding various approaches to protecting groundwater supplies threatened by (i) overuse that may result in a collapsing aquifer and land subsidence and (ii) saltwater intrusion. The management policies that are being considered should

take into account both the drinking water needs of the region's population and the continued growth of the business, agricultural, and industrial sectors.

The DEQ has adopted a short-term policy that will require significant reductions in the level of withdrawals by the largest users of groundwater. Representatives of the business and development communities have been critical of this policy, suggesting that a longer-range, more comprehensive water management policy must be developed with the involvement of representatives of the various stakeholder groups. DEQ Director David Paylor has indicated in his testimony to the Commission his willingness to engage in a collaborative effort with affected parties but emphasized that an essential element of any such strategy must be the reduction in the amount of groundwater withdrawals by the top 14 users.

Several years ago, the Commission supported legislation that provided a model for bringing together interested parties in an attempt to reach a consensus. The State Water Supply Plan Advisory Committee was established and charged with assisting DEQ in developing the critical elements of a statewide water supply plan. After two years of collaborative effort with DEQ, a number of the Advisory Committee's recommendations were incorporated in the provisions of the water supply plan.

The Commission encourages DEQ and interested parties to work together to develop long-term strategies and policies to preserve the Commonwealth's groundwater resources. The goal should be to develop a wide range of options that will ensure the sustainability of the resource. One strategy adopted by several states focuses on groundwater sustainability by maintaining recharge areas to replenish groundwater. Referred to as aquifer storage and recovery, it is a specific type of aquifer recharge practice that augments groundwater resources and recovers water for future use. This approach allows the pumping of groundwater to continue while protecting against saltwater intrusion. Another option includes a greater application of water reclamation and reuse practices for industrial processes. This represents an opportunity to conserve groundwater for potable uses while at the same time providing the business and industrial sectors with an additional source of water supply. Ideally, the adoption of any long-term groundwater management policy should reflect allocation levels based on the needs of the various sectors while remaining protective of the resource.

Respectfully Submitted,

Delegate Thomas C. Wright, Jr., Chairman
Senator Creigh R. Deeds
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Mr. Lamont W. Curtis, P.E.
Mr. Richard A. Street

2014 SESSION

INTRODUCED

14104068D

SENATE BILL NO. 671

Offered January 21, 2014

A BILL to amend and reenact §§ 62.1-44.3 and 62.1-44.15:20 of the Code of Virginia, relating to the reporting of water use.

Patron—Favola

Unanimous consent to introduce

Referred to Committee on Agriculture, Conservation and Natural Resources

Be it enacted by the General Assembly of Virginia:

1. That §§ 62.1-44.3 and 62.1-44.15:20 of the Code of Virginia are amended and reenacted as follows:

§ 62.1-44.3. Definitions.

Unless a different meaning is required by the context, the following terms as used in this chapter shall have the meanings hereinafter respectively ascribed to them:

"Beneficial use" means both instream and offstream uses. Instream beneficial uses include, but are not limited to, the protection of fish and wildlife resources and habitat, maintenance of waste assimilation, recreation, navigation, and cultural and aesthetic values. The preservation of instream flows for purposes of the protection of navigation, maintenance of waste assimilation capacity, the protection of fish and wildlife resources and habitat, recreation, cultural and aesthetic values is an instream beneficial use of Virginia's waters. Offstream beneficial uses include, but are not limited to, domestic (including public water supply), agricultural uses, electric power generation, commercial, and industrial uses.

"Board" means the State Water Control Board.

"Certificate" means any certificate issued by the Board.

"Establishment" means any industrial establishment, mill, factory, tannery, paper or pulp mill, mine, coal mine, colliery, breaker or coal-processing operations, quarry, oil refinery, boat, vessel, and every other industry or plant or works the operation of which produces industrial wastes or other wastes or which may otherwise alter the physical, chemical or biological properties of any state waters.

"Excavate" or "excavation" means ditching, dredging, or mechanized removal of earth, soil or rock.

"Industrial wastes" means liquid or other wastes resulting from any process of industry, manufacture, trade, or business or from the development of any natural resources.

"The law" or "this law" means the law contained in this chapter as now existing or hereafter amended.

"Lifecycle" means onsite water usage during the following stages of fuel acquisition and consumption, to include at a minimum: fuel acquisition, fuel processing, fuel transportation, power plant construction, and power plant operation, including environmental controls and spent fuel disposal.

"Member" means a member of the Board.

"Normal agricultural activities" means those activities defined as an agricultural operation in § 3.2-300 and any activity that is conducted as part of or in furtherance of such agricultural operation but shall not include any activity for which a permit would have been required as of January 1, 1997, under 33 U.S.C. § 1344 or any regulations promulgated pursuant thereto.

"Normal silvicultural activities" means any silvicultural activity as defined in § 10.1-1181.1 and any activity that is conducted as part of or in furtherance of such silvicultural activity but shall not include any activity for which a permit would have been required as of January 1, 1997, under 33 U.S.C. § 1344 or any regulations promulgated pursuant thereto.

"Other wastes" means decayed wood, sawdust, shavings, bark, lime, garbage, refuse, ashes, offal, tar, oil, chemicals, and all other substances except industrial wastes and sewage which may cause pollution in any state waters.

"Owner" means the Commonwealth or any of its political subdivisions, including but not limited to sanitation district commissions and authorities and any public or private institution, corporation, association, firm, or company organized or existing under the laws of this or any other state or country, or any officer or agency of the United States, or any person or group of persons acting individually or as a group that owns, operates, charters, rents, or otherwise exercises control over or is responsible for any actual or potential discharge of sewage, industrial wastes, or other wastes to state waters, or any facility or operation that has the capability to alter the physical, chemical, or biological properties of state waters in contravention of § 62.1-44.5.

"Person" means an individual, corporation, partnership, association, governmental body, municipal corporation, or any other legal entity.

"Policies" means policies established under subdivisions (3a) and (3b) of § 62.1-44.15.

"Pollution" means such alteration of the physical, chemical, or biological properties of any state waters as will or is likely to create a nuisance or render such waters (a) harmful or detrimental or injurious to the public health, safety, or welfare or to the health of animals, fish, or aquatic life; (b) unsuitable with reasonable treatment for use as present or possible future sources of public water supply; or (c) unsuitable for recreational, commercial, industrial, agricultural, or other reasonable uses, provided that (i) an alteration of the physical, chemical, or biological property of state waters or a discharge or deposit of sewage, industrial wastes or other wastes to state waters by any owner which by itself is not sufficient to cause pollution but which, in combination with such alteration of or discharge or deposit to state waters by other owners, is sufficient to cause pollution; (ii) the discharge of untreated sewage by any owner into state waters; and (iii) contributing to the contravention of standards of water quality duly established by the Board, are "pollution" for the terms and purposes of this chapter.

"Pretreatment requirements" means any requirements arising under the Board's pretreatment regulations including the duty to allow or carry out inspections, entry, or monitoring activities; any rules, regulations, or orders issued by the owner of a publicly owned treatment works; or any reporting requirements imposed by the owner of a publicly owned treatment works or by the regulations of the Board.

"Pretreatment standards" means any standards of performance or other requirements imposed by regulation of the Board upon an industrial user of a publicly owned treatment works.

"Reclaimed water" means water resulting from the treatment of domestic, municipal, or industrial wastewater that is suitable for a direct beneficial or controlled use that would not otherwise occur. Specifically excluded from this definition is "gray water."

"Reclamation" means the treatment of domestic, municipal, or industrial wastewater or sewage to produce reclaimed water for a direct beneficial or controlled use that would not otherwise occur.

"Regulation" means a regulation issued under § 62.1-44.15 (10).

"Reuse" means the use of reclaimed water for a direct beneficial use or a controlled use that is in accordance with the requirements of the Board.

"Rule" means a rule adopted by the Board to regulate the procedure of the Board pursuant to § 62.1-44.15 (7).

"Ruling" means a ruling issued under § 62.1-44.15 (9).

"Sewage" means the water-carried human wastes from residences, buildings, industrial establishments or other places together with such industrial wastes and underground, surface, storm, or other water as may be present.

"Sewage treatment works" or "treatment works" means any device or system used in the storage, treatment, disposal, or reclamation of sewage or combinations of sewage and industrial wastes, including but not limited to pumping, power, and other equipment, and appurtenances, and any works, including land, that are or will be (i) an integral part of the treatment process or (ii) used for the ultimate disposal of residues or effluent resulting from such treatment. These terms shall not include onsite sewage systems or alternative discharging sewage systems.

"Sewerage system" means pipelines or conduits, pumping stations, and force mains, and all other construction, devices, and appliances appurtenant thereto, used for conducting sewage or industrial wastes or other wastes to a point of ultimate disposal.

"Special order" means a special order issued under subdivisions (8a), (8b), and (8c) of § 62.1-44.15.

"Standards" means standards established under subdivisions (3a) and (3b) of § 62.1-44.15.

"State waters" means all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands.

"Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

§ 62.1-44.15:20. Virginia Water Protection Permit.

A. Except in compliance with an individual or general Virginia Water Protection Permit issued in accordance with this article, it shall be unlawful to:

1. Excavate in a wetland;

2. On or after October 1, 2001, conduct the following in a wetland:

a. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions;

b. Filling or dumping;

c. Permanent flooding or impounding; or

d. New activities that cause significant alteration or degradation of existing wetland acreage or

functions; or

3. Alter the physical, chemical, or biological properties of state waters and make them detrimental to the public health, animal or aquatic life, or to the uses of such waters for domestic or industrial consumption, or for recreation, or for other uses unless authorized by a certificate issued by the Board.

B. The Board shall, after providing an opportunity for public comment, issue a Virginia Water Protection Permit if it has determined that the proposed activity is consistent with the provisions of the Clean Water Act and the State Water Control Law and will protect instream beneficial uses.

C. Prior to the issuance of a Virginia Water Protection Permit, the Board shall consult with and give full consideration to any relevant information contained in the state water supply plan described in subsection A of § 62.1-44.38:1 as well as to the written recommendations of the following agencies: the Department of Game and Inland Fisheries, the Department of Conservation and Recreation, the Virginia Marine Resources Commission, the Department of Health, the Department of Agriculture and Consumer Services, and any other interested and affected agencies. *Proposed electric generating stations seeking a Virginia Water Protection Permit shall submit an estimate of the amount of water that will be withdrawn and consumed for the lifecycle of the fuel used by the proposed generating station.* When considering the state water supply plan, nothing shall be construed to limit the operation or expansion of an electric generation facility located on a man-made lake or impoundment built for the purpose of providing cooling water to such facility. Such consultation shall include the need for balancing instream uses with offstream uses. Agencies may submit written comments on proposed permits within 45 days after notification by the Board. If written comments are not submitted by an agency within this time period, the Board shall assume that the agency has no comments on the proposed permit and deem that the agency has waived its right to comment. After the expiration of the 45-day period, any such agency shall have no further opportunity to comment.

D. Issuance of a Virginia Water Protection Permit shall constitute the certification required under § 401 of the Clean Water Act.

E. No locality may impose wetlands permit requirements duplicating state or federal wetlands permit requirements. In addition, no locality shall impose or establish by ordinance, policy, plan, or any other means provisions related to the location of wetlands or stream mitigation in satisfaction of aquatic resource impacts regulated under a Virginia Water Protection Permit or under a permit issued by the U.S. Army Corps of Engineers pursuant to § 404 of the Clean Water Act. However, a locality's determination of allowed uses within zoning classifications or its approval of the siting or construction of wetlands or stream mitigation banks or other mitigation projects shall not be affected by the provisions of this subsection.

F. The Board shall assess compensation implementation, inventory permitted wetland impacts, and work to prevent unpermitted impacts to wetlands.

Appendix B

SENATE OF VIRGINIA

PHILLIP P. PUCKETT
38TH SENATORIAL DISTRICT
ALL OF BLAND, BUCHANAN, DICKENSON,
PULASKI, RUSSELL, AND TAZEWELL COUNTIES;
ALL OF THE CITIES OF NORTON AND RADFORD;
AND PART OF MONTGOMERY, SMYTH, AND WISE COUNTIES
POST OFFICE BOX 924
TAZEWELL, VIRGINIA 24651
(804) 698-7538 RICHMOND
(276) 979-8181 TAZEWELL
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(276) 889-5736 HOME

COMMITTEE ASSIGNMENTS:
AGRICULTURE, CONSERVATION AND NATURAL RESOURCES
COMMERCE AND LABOR
TRANSPORTATION

March 5, 2014

Delegate Thomas Wright, Jr.
Chair, State Water Commission
General Assembly Building
201 N. 9th St., 2nd floor
Richmond, VA 23219

I write this letter to request that the Virginia State Water Commission conduct a comprehensive study of the availability of information regarding water scarcity in the Commonwealth. The impetus for this request came from legislation referred to the Senate Agriculture, Conservation, and Natural Resources committee during the 2014 legislative session.

In its original form, SB 671 (Senator Favola) would have required all electric generating stations seeking a Virginia Water Protection Permit to submit an estimate of the amount of water withdrawn and consumed for the lifecycle of the fuel used by the generating station. Because the issue of water scarcity has become an important policy concern for the Commonwealth, the purpose of this legislation was to provide access to information and to raise public awareness of the nexus between energy consumption and water usage.

However, although the power industry is a large user of the state's water, it is by no means the only source of large withdrawals and consumption. Thus, after several meetings with representatives from the utility industry, the environmental community, and the Department of Environmental Quality, all parties interested in SB 671 have agreed that the best approach is to broaden the scope, yet narrow the focus, of studying the issue of water scarcity in Virginia and the availability of associated information to the public.

Specifically, I ask the Commission to respond to the following topics and report to the Agriculture, Conservation and Natural Resources Committee by November 15, 2014.

- Study whether the information required for applications for all new Virginia Water Protection (VWP) permits, including electric generating facilities, regarding water withdrawals, consumption and return flows is sufficient to make an informed decision.

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NOT PRINTED AT STATE EXPENSE

- Coordinate with DEQ to establish a method to make water supply information available and easily accessible to the public. DEQ has agreed to synthesize and publicly release information in a manner that furthers the goal of educating Virginians on the larger issues of water scarcity. Specifically, I request that the Commission evaluate how to make the following sources of information easily accessible to the public:

    - Local water supply plans: all localities have completed the first round of water supply plans and these have a large amount of useful information on water use from community systems, agricultural users and industrial users. These plans are currently not easily accessible online.

    - Annual water withdrawal reporting: DEQ maintains a database of the monthly withdrawal for all water withdrawals over thresholds specified in Virginia's Water Withdrawal Reporting Regulation. While this information is summarized in Virginia's Annual Water Resources Report, specific information on water withdrawals for specific areas is not currently easily accessible.

    - Virginia Water Protection (VWP) Withdrawal permits: Copies of existing VWP permits, associated conditions and withdrawal limitations and DEQ's analysis of the permitted withdrawal are only currently available through a direct request to DEQ. Information regarding specific permits is not currently available online.

From 1999 – 2002, the Commonwealth experienced a punishing drought – the worst spell since the legendary drought of 1930. In 2003, the General Assembly took action by passing SB 1221 which led to the creation of a state Water Supply Planning process, projecting water demand and access for 30-50 years. Since then, availability and access to fresh drinking water has continued to be a major public policy issue for many Virginians. By 2040, Virginia will add more than 2 million new residents, increasing strain on energy, farming and agriculture, and many other sectors vital to Virginia's sustainability.

The requested information would provide a tremendous public benefit for the Commonwealth. I thank the Commission in advance for its attention to this important matter.

Sincerely,

Phillip P. Puckett
Chair
Agriculture, Conservation & Natural Resources

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

August 21, 2014

The Honorable Thomas Wright, Jr.
Chair, State Water Commission
General Assembly Building
201 N. 9th Street, 2nd floor
Richmond, Virginia 23219

Dear Mr. Wright:

This letter is a follow-up to the presentation made by the Department of Environmental Quality (DEQ) to the State Water Commission (Commission) on June 23, 2014. The presentation made by DEQ provided the Commission with information addressing water resources management issues associated with the referral of SB 671 to the Commission for study. This information is being provided to aid the Commission in its study of SB 671.

In our presentation, we identified DEQ planning and permitting programs used in the management of the Commonwealth's water resources, including the Virginia Water Protection Permit (VWP) Program, the Groundwater Withdrawal Permit Program (GWP), the Water Withdrawal Reporting Program, and the Local and Regional Water Supply Planning Program. In addition, the information highlighted the statutory and regulatory purposes of these programs.

DEQ's role in managing water resources is to ensure that the amount of water being taken out of the system does not exceed what is coming into the system. DEQ evaluates the individual and cumulative impact of existing and proposed water uses through cumulative impact analysis. These analyses are conducted with surface water hydrology and groundwater flow models using water budgets of inputs and outputs derived from a number of data sources such as precipitation, streamflow and groundwater monitoring, and reported withdrawals.

Information was provided to the Commission on an example of a water budget for a power plant surface water withdrawal. While power plant water use can be significant, it was demonstrated that surface evaporation from impoundments and streams during June through September generally exceeds consumptive water use by the plants and is the largest source of water loss from surface water resources in the Commonwealth during the summer and fall.

DEQ presented information that showed the short, medium, and long term water budgets the agency uses to evaluate impacts and manage water use. Typically permits are issued for short to medium term use. A VWP water withdrawal permit is issued for a 15 year period and

limits the volume and rate of water withdrawn to ensure a specified flow-by past the intake. This flow-by is designed to protect the beneficial uses of water resources identified by the statute. These permits assign a "safe yield" for the water withdrawal system and specify water conservation measures to be implemented during drought. The analysis of impacts includes those impacts from upstream as well as downstream users and usually includes a long term analysis in conjunction with water supply plans.

DEQ also provided information on long term water budgeting using the information supplied in local and regional water supply plans. This information included a series of maps that showed the geo-spatial distribution of future surface water needs and small sub-watersheds that exceed one or more of four critical beneficial use indicators. The analysis depicted in these maps indicates the need to address future challenges for managing water resources as they are concentrated in a small number of localized watersheds.

As described during the June 23, 2014, presentation, Virginia's water resource management programs are designed to preserve sufficient instream flow to protect existing beneficial uses of a surface water body. Pursuant to these existing programs, DEQ already evaluates impacts from water users, including power generation, at multiple short, medium, and long term time scales. We believe that the information required in the VWP program is sufficient to make informed management decisions. In addressing the issue of accessibility of this information, DEQ permits are available to the public during the review process and on request as are local and regional water supply plans. In addition, DEQ issues annual summary reports of water withdrawals and permit data, and these are available on our website. The development of an on-line searchable database and maintaining all permits, plans, and reports, on-line would require changes in our website, expansion of data volume limitations, and staffing dedicated to maintenance. All of these actions have resource implications for DEQ that would need to be addressed.

A copy of the June 23, 2014, presentation is enclosed. Please let me know if DEQ can provide any additional information for your consideration.

Sincerely,

David K. Paylor

DKP:ewf
Enclosure

Facility Reductions

FACILITY	PERMITTED (MGD	CURRENT USE (MGD)	DEQ REQUESTED TARGET/RANGE
RockTenn-West Point Mill	23.03	20.09	9.0-10.0
International Paper-Franklin Mill	20.61	9.08	10.0-12.0
JCSA-Central System	8.83	5.41	3.8-4.0
Western Tidewater Water Authority	8.34	3.51	3.5-3.9
Chesapeake Northwest River/Western Branch Systems	11.00	3.50	3.5
City of Portsmouth	15.42	2.91	3.49
Hercules Incorporated	6.67	2.74	3.0
Smithfield Packing Company, Inc.	2.60	1.65	0
Newport News City of Waterworks Lee Hall	3.44	1.53	1.53
Town of Franklin Water System	2.88	0.93	.093-1.3
Colonial Williamsburg	1.84	1.40	1.2
Smithfield Town of	1.27	0.86	0
Portsmouth Genco	2.60	0.18	1.0-1.2
Norfolk City of Utilities Four Suffolk Wells	3.74	0.06	0