

**REPORT OF THE**

**STATE WATER COMMISSION**

**TO THE GOVERNOR AND  
THE GENERAL ASSEMBLY OF VIRGINIA**



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**COMMONWEALTH OF VIRGINIA**

**RICHMOND**

**2018**

## **MEMBERS**

Delegate Thomas C. Wright, Jr., Chairman  
Senator Frank W. Wagner, Vice-Chairman

Senator Lynwood W. Lewis, Jr.  
Senator Frank M. Ruff, Jr.  
Senator William M. Stanley, Jr.  
Senator Richard H. Stuart

Delegate David L. Bulova  
Delegate T. Scott Garrett  
Delegate Barry D. Knight  
Delegate Daniel W. Marshall, III  
Delegate John M. O'Bannon, III  
Delegate Luke E. Torian  
Delegate R. Lee Ware, Jr.

Mr. Lamont W. Curtis, P.E.  
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## **STATE WATER COMMISSION EXECUTIVE SUMMARY**

The following executive summary serves as the 2018 Report of the State Water Commission. This report will be filed as a state document.

### **I. Background and 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 2017, the Commission met four times and devoted its time to receiving testimony regarding several topics, including the Sustainable Water Initiative for Tomorrow; hydraulic fracturing; the Virginia Flood Risk Information System; drought monitoring; groundwater management experiences in a variety of counties; the report of the Eastern Virginia Groundwater Management Advisory Committee; and three topics that were the subject of legislation introduced in the 2017 Session.

#### ***1. Meeting Proceedings, April 4, 2017***

The Commission held its first meeting of the interim in Richmond on April 4, 2017, Delegate Thomas Wright, chairman, presiding. Delegate Wright began the meeting by introducing the day's first speaker, Mr. Ted Henifin, General Manager of the Hampton Roads Sanitation District (HRSD). Mr. Henifin provided the Commission with an overview of HRSD's SWIFT (Sustainable Water Initiative for Tomorrow) project. SWIFT will take wastewater that would otherwise be discharged into a local river, treat it, and put it into the Potomac Aquifer.

Mr. Henifin covered a variety of topics related to the project, including efforts at outreach and the selection of a carbon filtering process for the treatment of the wastewater after comparison testing against a reverse osmosis process. The U.S. Geological Survey recently installed a new extensometer to measure subsidence, and Mr. Henifin noted the signing of trading agreements that will allow SWIFT to remove nutrients and sediment from the water on behalf of the City of Hampton, saving the city the cost of retrofit work that the city otherwise would be required to undertake. Mr. Henifin also expressed his hope that federal agencies will grant permission to modify an existing consent decree related to wet weather overflows. The expenses required for HRSD to comply with the decree are already built into a rate plan, and the modification that HRSD seeks would allow those rate increases to pay for SWIFT first before addressing the overflow problems that led to the decree.

Members addressed a number of questions and comments to Mr. Henifin. In answer to a question from Delegate Wright, Mr. Henifin stated that the 120 million gallons per day (mgd) that HRSD ultimately planned to treat and inject were expected to support the natural recharge of the aquifer and halt its decline. In response to questions from Delegate Marshall, Mr. Henifin stated that HRSD hoped to bring the seven plants into service gradually between 2022 and 2030 and that the injection would occur at numerous levels of the aquifer, from near the surface to a depth of 1,200 feet. Rather than adding water in one place so that it can be withdrawn from

another place, the project will add pressure to the aquifer, increasing the ability of withdrawers to take water from various parts of the aquifer. Delegate Garrett asked about the possibility of a wastewater pipeline to a large industrial user such as a paper plant, and Mr. Henifin explained that the project will use the aquifer itself as infrastructure, making the water available to anyone at any future date. Delegate O'Bannon asked for other examples of such injection, and Mr. Henifin referred to Orange County, California. Finally, Delegate Knight pointed out that land subsidence accounts for about half of sea level rise in the Tidewater region and noted the role of a state budget amendment in the installation of the extensometer; Mr. Henifin stated that the extensometer is independent of SWIFT and that the data it provides would be needed regardless.

Delegate Wright then introduced the second speaker of the day, Ms. Angela Navarro, Deputy Secretary of Natural Resources, who presented an update on hydraulic fracturing ("fracking") in Virginia. Ms. Navarro spoke on the basics of fracking, the relevant geology of Virginia, the regulatory process, and special considerations in the Tidewater region.

Ms. Navarro began with an overview of the fracking process, explaining that liquids or gases are pumped into a well under pressure in order to fracture rock formations containing oil or gas. Fracking is used in three main areas in the state: Southwest Virginia, where coalbed methane is the hydrocarbon typically extracted; the Marcellus Shale, or Marcellus Formation; and the Taylorsville Basin. She also explained the legal structure that governs fracking, including the U.S. Safe Drinking Water Act and the Virginia Gas and Oil Act (§ 45.1-361.1 et seq.) and its regulations. Ms. Navarro also noted that in Tidewater, § 62.1-195.1 of the Code of Virginia and attendant regulations apply. Because most of the Taylorsville Basin is located in Tidewater, and any drilling there is likely to pass through the Potomac Aquifer, an extra environmental impact assessment is required by state regulations.

Delegate Wright asked whether the state has the proper regulations in place to protect water resources. Ms. Navarro stated that the Virginia Department of Mines, Minerals and Energy (DMME) had recently conducted a review of its regulations and is making significant modifications to groundwater monitoring. She added that local governments also have authority on fracking, especially on the coastal plain, and they have taken a hard look at the process. Delegate Marshall asked about the extent of such local authority, and Ms. Navarro noted that localities can already zone for natural resources extraction and that an Attorney General's opinion on the topic provides more information.

Delegate Garrett asked about the possibility of combining fracking with the HRSD injection project in a single pipe, but Ms. Navarro explained that such a combination would not be possible. Delegate O'Bannon asked whether it is common in the United States to conduct fracking through an aquifer; Ms. Navarro answered that wells are drilled through water sources in different parts of the country but that a request for more detailed information should be directed to the Department of Environmental Quality.

Finally, Delegate Wright introduced Ms. Marcia Berman of the Virginia Institute of Marine Science (VIMS) and Ms. Gina DiCicco of the Department of Conservation and Recreation (DCR). The two spoke on the new Virginia Flood Risk Information System (VFRIS), an online tool designed to help users discern the flood risk of any individual property in the state.

Ms. Berman provided a background on the partnership between the Center for Coastal Resources Management at VIMS and the Division of Dam Safety and Floodplain Management of DCR. Ms. DiCicco then demonstrated the VFRIS web interface, which pulls information from

the Federal Emergency Management Agency (FEMA). Selecting a particular location in Richmond brought up Flood Insurance Rate Map panels and Flood Hazard Zone information. Selecting a location in Eastern Virginia brought up Coastal Barrier Resources System information. For coastal Virginia, VFRIS also has an information element that FEMA lacks: a hundred-year flood depth grid, showing how deep the flooding will be during such an event. The agencies are planning to incorporate more features into VFRIS in the future.

Questions from members followed. In response to a question from Senator Stanley, Ms. DiCicco stated that DCR is marketing VFRIS to professionals involved in land use, as well as citizens, and that VFRIS is one of the most popular parts of the DCR website.

## ***2. Meeting Proceedings, August 25, 2017***

At the Commission's second meeting of the interim on August 25, 2017, Delegate Wright began the meeting by asking the day's first speaker, David Paylor, Director of the Virginia Department of Environmental Quality (DEQ), to provide the Commission with an overview of drought monitoring in Virginia.

Mr. Paylor noted that October is the beginning of the hydrologic year and that the factors affecting the existence of a drought include leaf fall, which affects runoff; rainfall; and temperature, which affects evaporation.

Mr. Paylor covered the Virginia Drought Assessment and Response Plan, which was created as a response to the drought of 2002. The state's Drought Monitoring Task Force meets monthly or more often, as needed, and evaluates conditions in the state. A statewide drought status map displays a color-coded indicator for four different drought characteristics in each of the state's 13 regions.

Mr. Paylor stated that the winter of 2016-2017 was dry and that during March 2017 several areas were moving toward a severe drought. Current conditions, however, indicate that for most of the state streamflow is normal; only in the central part of the state are conditions abnormally dry. For the rest of 2017, there is an equal chance of above-normal and below-normal precipitation.

Delegate Wright commented on the recent dry spell and its effects on farmers. In answer to a question from Delegate David Bulova, Mr. Paylor stated that enforcement of water restrictions is based on local ordinances and varies by locality. The state does not have a general authority to enforce local water restrictions; state restrictions in an emergency require an executive order.

Delegate Wright then introduced the second speaker of the day, Kimberle Fogle, the Director of Community Development for Fauquier County, who presented an update on groundwater experiences in Fauquier County. Ms. Fogle began with an overview of the county's history of service districts and its dependence on groundwater pulled from a highly variable fractured rock system. Ms. Fogle noted that the 2011 earthquake centered in Mineral, Virginia, had raised water levels in wells in Bealeton but had also brought contamination, mainly *E. coli*, probably from contamination on the ground surface. Ms. Fogle also described an ongoing five-year U.S. Geological Survey (USGS) project to help the county understand its groundwater conditions.

Members addressed a variety of questions to Ms. Fogle. In response to a question from Delegate Bulova, Ms. Fogle stated that the county is regularly reviewing the boundaries of its service districts as part of its comprehensive planning process. Senator Frank Wagner suggested that it was time for the state to begin considering building more reservoirs, and Commission member Bud Curtis commented that other states have reservoir identification programs. Ms. Fogle responded that the county has been exploring the possibility of using quarries along Interstate 66 as reservoir sites.

Next, Delegate Wright introduced Alison Teeter, the Natural Resource Planner for Clarke County, who spoke on the use by local governments of Shenandoah River instream flow studies. She reported that the county had started to look at flow levels in the Shenandoah River during the mid-1990s as a way of protecting both aquatic ecosystems and industry. Several localities are using the data gained from 18 years of study to update their drought response plans, while the state is using the information in its water withdrawal permitting process. Regional planners are using the data collected to anticipate future needs for offsite water storage.

Questions and comments from Commission members began with Mr. Curtis, who noted the need of the state to have a reservoir protection program involving long-term planning for reservoirs. In response to a question from Senator Wagner, Mr. Paylor stated that DEQ could identify and reserve reservoir locations if it received direction from the legislature authorizing it to do so.

Finally, Delegate Wright introduced Bradley White of DEQ. He spoke on a groundwater resource assessment for Bedford County, Virginia, that began in 2007. Development demands, especially around Smith Mountain Lake and the eastern part of the county, are placing increasing demands on water resources, which are located within fractured rock formations. The county and the USGS agreed to monitor wells and streams, develop a county-wide water budget, develop a hydrogeologic framework, and analyze the sustainability of the system.

### ***3. Meeting Proceedings, October 24, 2017***

At the Commission's third meeting of the interim on October 24, 2017, Delegate Wright began by introducing the day's first speaker, Mark Rubin, of the Virginia Center for Consensus Building at Virginia Commonwealth University. Mr. Rubin presented the report of the Eastern Virginia Groundwater Management Advisory Committee (the EVGMAC).

The EVGMAC was established by Chapters 262 (Senate Bill 1341) and 613 (House Bill 1924) of the 2015 Session of the General Assembly. The two acts directed the director of the Department of Environmental Quality (DEQ) to appoint the EVGMAC to assist DEQ and the Commission "in developing, revising, and implementing a management strategy for ground water in the Eastern Virginia Groundwater Management Area." The acts required a report to the Commission and a response by the director of DEQ during the fall of 2017.

Mr. Rubin detailed the process of creating the EVGMAC report, including the formation of several working groups. Each of the groups held a number of meetings.

All members of the EVGMAC agreed that existing groundwater supplies were insufficient to meet the region's needs. Mr. Rubin stated that the report's first recommendation was to support water storage and aquifer recharge projects, such as the SWIFT project of the Hampton Roads Sanitation District. Members of the Commission discussed SWIFT and water banking, and Mr. Rubin noted that recommendation 10 is to establish a framework for the

creation of a trading program. In response to a question from Delegate Wright, Mr. Rubin stated that creating such a program would be complex and difficult and that the challenges of accounting for unpermitted users would remain a wild card.

In response to questions from Delegate David Bulova, Mr. Rubin explained recommendation three, which is to lengthen the maximum term of the water withdrawal permit from 10 years to 15 years. Such a move would encourage economic development by preventing the stranding of assets.

Mr. Rubin also explained that recommendation seven would encourage the use of stormwater ponds in agricultural irrigation and the reduction of regulatory barriers to the development of new irrigation ponds. Commission members asked David Paylor, the director of DEQ, about these regulatory barriers, and he suggested that they might not be quite as high as some think. One such barrier, Mr. Paylor stated, can be wetlands permitting, because it is difficult to build a pond in a wetland.

Mr. Rubin described recommendation 11, which recognizes that DEQ does not have the tools it needs to obtain enough data to ensure a robust groundwater program. He also noted that DEQ declines to regulate unpermitted withdrawals, although doing so would bring in more information.

Recommendation 12 asks the General Assembly to fund the management of groundwater by DEQ, and it proposes that if general funds are not provided, a flat fee should be levied for all homes and businesses. There was discussion among the members regarding this recommendation, and Delegate Wright stated that it is important to have local buy-in for groundwater management.

Senator Richard Stuart asked whether the report places any emphasis on drinking water. Mr. Rubin stated that the current law already addresses the question of priority by emphasizing human consumption but that the group did not provide a specific recommendation related to drinking water. Senator Stuart suggested that in the effort to reduce withdrawals, it might be better to get businesses to stop using groundwater than to get residents to stop using wells.

Mr. Rubin concluded by discussing recommendation eight, which recommends that an annual "State of the Water Resources" forum be held. Next, Delegate Wright introduced Director David Paylor of DEQ. Mr. Paylor provided a summary of the water withdrawal permitting process, the agency's response to the EVGMAC report, and a drought update.

Beginning with the permitting process, Mr. Paylor spoke about the question of allocating groundwater resources in the Coastal Aquifer. The permit system is based on a first-come, first-served model. Mr. Paylor stated that DEQ cannot say no to an industrial applicant as long as water is still available and that it is difficult to figure out how to operationalize the preference in the law for human consumption.

Delegate Bulova asked whether DEQ has enough information to anticipate how much future demand for human drinking water will need to be accounted for when such an industrial permit is granted. Mr. Paylor responded that the question is part of the regional water supply planning process and that the planning does separate human and industrial consumption, although a public utility is really providing both.

Mr. Paylor continued by pointing out that, in recent years, the hydrologic head has been dropping by a couple of feet per year. DEQ looked at what could be done in the permit process to



stabilize the head loss. There are about 250 permits in existence, but because the users of just 14 permits account for almost 90 percent of the permitted withdrawals, DEQ focused on those 14 permit holders. One permit is still in discussion, and the other 13 have been reissued, taking withdrawals of 146 mgd, including some potential withdrawals that were not actually being used, down to 69 mgd. The DEQ models say that this action will stop head loss by 2030.

Several Commission members had questions. Senator Frank Ruff asked about efforts by neighboring states. Delegate Wright asked what would happen if the EVGMAC recommendations were instituted in addition to the permit reductions negotiated by DEQ; Mr. Paylor answered that the situation would improve and that it would likely improve even more if the SWIFT project is completed.

Mr. Paylor then presented the response of DEQ to the EVGMAC report, beginning with the comment that the deep bed drilling idea, while expensive and requiring caution, is worth exploring.

Mr. Paylor stated that DEQ has no problem with the proposal to lengthen permit terms from 10 years to 15 years. Doing so would provide certainty for those investing in projects, not just industry investors but also local water suppliers. All of the EVGMAC members who represented permittees desired the longer term. In response to a question from Delegate Bulova, Mr. Paylor said that the ability to offer an increase in the permit term as an incentive to reduce withdrawals would require additional legislative authority.

Mr. Paylor pointed out that unpermitted withdrawals continue to increase by approximately one mgd per year, potentially nullifying the gains made elsewhere. He addressed the interest in establishing a system of banking and trading, cautioning that pumping one million gallons into the ground does not make one million gallons available to whoever wants it; the relationship is not one-to-one, and it varies from place to place.

Mr. Paylor thanked the participants in the committee and addressed questions from the members of the Commission. Senator Stuart expressed concerns about the possibility that business or residential growth will be hindered by the inability to obtain water. Senator Stuart also asked what could be done to ease the federal process of establishing surface impoundments for irrigation, which most people would prefer to using groundwater. Mr. Paylor stated his thought that the farming community is unduly afraid of the federal permitting process, noting that DEQ can help, and staff want to be problem solvers. Further discussions involved rainwater harvesting as an alternative water source.

Mr. Paylor concluded by providing an update on the drought status in the Commonwealth. He noted that Virginia is divided into 13 areas for drought-monitoring purposes and that four of those areas are currently watch areas. Mr. Scott Kudlas, the director of the Office of Water Supply, oversees the drought monitoring task force and stated that the current drought is occurring unusually late in the year. Mr. Kudlas provided an update on each region.

#### **4. Meeting of December 4, 2017**

The Commission held its final meeting of the interim on December 4, 2017. The Commission heard reports on three topics that had been the subject of legislation introduced in the 2017 Session: the Dominion Energy Coal Ash Assessment (SB 1398), the City of Alexandria combined sewer overflow outfalls (HB 2383 and SB 898), and the rural Tidewater stormwater workgroup created by HB 1774.

## SB 1398: Dominion Energy Coal Ash Assessment

Delegate Wright began the meeting by introducing Joshua Bennett and Pamela Faggert, both of Dominion Energy. Mr. Bennett and Ms. Faggert presented an overview of the Coal Ash Assessment (the Assessment) required by SB 1398. The company commissioned Aecom to produce the Assessment; the entire 800-page document is available at [dominionenergy.com/coalash](http://dominionenergy.com/coalash).

The speakers noted that Dominion maintains 11 coal ash ponds at four locations. The company either is in the process of removing the ash or has finished removing the ash from seven of those ponds, and the company intends to close all 11 ponds. The Assessment sets out various options for the closure of each of the ponds.

One option is closure by recycling. The speakers noted that ash that has been contained in a pond for some time is more difficult to recycle than is new ash. A study of the concrete market suggests that recycling the existing ash will take longer than the maximum period of 15 years allowed for the closure of the ponds.

The second option that the Assessment analyzed is the placement of the ash in an offsite landfill. This option would involve a great deal of trucking that would affect the local community. The third option is closure in place, a method that, the speakers noted, is popular across the country. Closure in place involves removing the water from the pond and covering the ash with a liner and then two feet of dirt. The effects on the local water supply are a concern with this method.

Ms. Faggert and Mr. Bennett then addressed specific ponds and the options available for each one. The speakers noted that only those options that are deemed safe and protective of human health were considered and that the factors examined in the Assessment included cost, practicality, effects on communities, and compliance with time limits. Closure in place was the option recommended most often.

Questions from members followed. In response to a question about the preference for closure in place, Mr. Bennett explained that that method avoids deferring closure and prevents the pond from remaining open to the elements during the closure process.

In response to questions about recycling, the speakers replied that coal ash varies from location to location and that ash often requires treatment before it can be recycled. Recycling is chosen on the basis of market factors; if recycling were cost-effective in every case, it would be used more often. Hybrid solutions involving some recycling and some removal to a landfill are also options.

Ms. Faggert stated that the Assessment did not consider options that were not expected to work. While groundwater remediation costs are included, the cost estimates do not reflect the risk that a particular closure method will not work and that closure will need to be redone. The costs of closure were not factored into the costs of the ponds when they were first built.

Finally, the speakers noted that Dominion Energy has extensive groundwater data and has the responsibility to correct the groundwater on the whole of each site, not just for individual ponds.

### HB 2383 and SB 898: City of Alexandria Combined Sewer Overflow Outfalls

Next, Delegate Wright introduced Emily Baker, Deputy City Manager of the City of Alexandria, and Karen Pallansch, Chief Executive Officer of Alexandria Renew Enterprises. Ms. Baker and Ms. Pallansch presented information on the City's combined sewer overflow (CSO) outfalls. Both HB 2383 and SB 898 required the City to bring its CSO outfalls into compliance with applicable laws by 2025 and to make annual progress reports in the meantime.

Ms. Baker explained that a CSO system is one that allows sewage along with stormwater to be discharged into a waterway during a rain event. There are 772 cities across the country with combined systems, including Washington, D.C., Richmond, and Lynchburg. Alexandria's is the smallest combined sewer system in Virginia, with four outfalls in total. Only six percent of the City is served by the combined system. The system overflows with relatively minor rain events, about 40 times per year. The City has permits from the Department of Environmental Quality (DEQ) for its outfalls and is in compliance with its permits.

The City has a long-term plan to fix its outfalls and is accelerating this \$400 million project to meet the requirements of HB 2383 and SB 898. Rather than looking at green infrastructure and a wide variety of long-term projects, the City is now looking at megaprojects, which can be completed more quickly.

Ms. Pallansch spoke about Alexandria Renew Enterprises, a political subdivision of the Commonwealth that pumps and treats wastewater for most of the City. The company does not have the land it would need to expand its treatment infrastructure, and it expects to be required to store the overflow, likely in a tunnel or an underground tank below a parking lot, before sending it to the existing treatment plant.

Ms. Baker said that by July 2018 DEQ will approve an approach for the City. City Council has approved a rate increase and will request state funding, as Lynchburg and Richmond did for their CSO systems.

Ms. Baker stated that the City is in frequent contact with Richmond and Lynchburg. Delegate Wright invited representatives from those cities to introduce themselves. Tim Mitchell, Director of Water Resources for the City of Lynchburg, stated that Lynchburg had 132 outflow points and initially set out to separate all of them. Over time, Lynchburg switched to a system more like Alexandria's, involving treatment of all of the water flowing through the system; Lynchburg has eliminated 114 outfalls and reduced overflows by about 90 percent. Robert Steidel, the Director of the Department of Public Utilities for the City of Richmond, stated that Richmond has 35 outfalls left and is aiming to reduce the number to four, probably by 2070.

### HB 1774: Rural Tidewater Stormwater Workgroup

Next, Delegate Wright introduced the final speaker of the meeting, Elizabeth Andrews of the Virginia Coastal Policy Center at William & Mary Law School (VCPC). Ms. Andrews presented the report of the stormwater workgroup created by HB 1774. The workgroup, convened by the Commonwealth Center for Recurrent Flooding Resiliency and facilitated by VCPC, was directed to consider several topics related to stormwater management in rural Tidewater localities.

The workgroup divided into two subcommittees. One subcommittee focused on the possibility of creating a volume credit trading program and the reduction of pollutants in stormwater in highway ditches.

The volume credit trading program was not found to be promising, because no market exists. Ditchwater pollution reduction, while not found to be useful on a large scale, might work if targeted at agricultural pollution. The group identified several possibilities to examine in the future if the Bay Program approves ditch maintenance as a stormwater management practice. Some of the funding possibilities identified include public-private partnerships, the establishment of service districts, and the treatment of a ditch as a linear best management practice.

The second subcommittee looked at alternative methods for rural localities to manage stormwater, focusing on methods that are no less protective of water quality but are easier to administer than current methods, considering the lack of staffing. The subcommittee recommended adopting a tiered approach to the water quantity requirements of stormwater management: The tiered approach would be based on the proportion of impervious cover in a given watershed. The tier with the lowest percentage of impervious cover would be allowed to use a less-stringent water quantity standard. The subcommittee also recommended that the existing concept of an agreement in lieu of a plan be expanded to cover all sites of less than one acre and that rural Tidewater localities be authorized to accept sealed plans from a professional in lieu of local plan review. Questions from members followed.

### **Conclusion**

The Commission did not make a formal recommendation to the General Assembly.

Additional information about the State Water Commission's activities is available through its website at <http://dls.virginia.gov/commissions/swc.htm>.

Respectfully submitted,

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