Board of Directors Meeting

July 23, 2019

2:15pm

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

BOARD OF DIRECTORS

Regular Meeting of the Board of Directors of the Rivanna Water & Sewer Authority

DATE: **July 23, 2019**

LOCATION: **Conference Room, Administration Building**
695 Moores Creek Lane, Charlottesville, VA

TIME: **2:15 p.m.**

AGENDA

1. ***CALL TO ORDER***

2. ***MINUTES OF PREVIOUS BOARD MEETINGS***
   a. *Minutes of Regular Board Meeting on May 28, 2019*
   b. *Minutes of Regular Board Meeting on June 25, 2019*

3. ***RECOGNITION***

4. ***EXECUTIVE DIRECTOR'S REPORT***

5. ***ITEMS FROM THE PUBLIC***

6. ***RESPONSES TO PUBLIC COMMENTS***

7. ***CONSENT AGENDA***
   a. *Staff Report on Finance*
   b. *Staff Report on Ongoing Projects*
   c. *Staff Report on Operations*
   d. *Construction Contract Award and CIP Amendment– Buck's Elbow Ground Storage Tank Chlorination System Improvements – Littleton and Associates, Inc.*
   e. *Construction Contract Award and CIP Amendment – Glenmore Secondary Clarifier Coating – Nostos SS Contractors*
   f. *Contract Award – Security Enhancements, Access Control Implementer – Security 101*

8. OTHER BUSINESS

a. Presentation: Cyber Security; Steven Miller, I.S. Administrator

b. Presentation: Emerging Drinking Water and Wastewater Regulations; Dave Tungate, Director of Operations

c. Presentation and Work Authorization Approval: Additional GAC Facilities, Observatory Water Treatment Plant – Jennifer Whitaker, Director of Engineering and Maintenance

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

10. CLOSED MEETING

11. ADJOURNMENT

GUIDELINES FOR PUBLIC COMMENT AT RIVANNA BOARD OF DIRECTORS MEETINGS

If you wish to address the Rivanna Board of Directors during the time allocated for public comment, please raise your hand or stand when the Chairman asks for public comments.

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Items From The Public." Each person will be allowed to speak for up to three minutes. When two or more individuals are present from the same group, it is recommended that the group designate a spokesperson to present its comments to the Board and the designated speaker can ask other members of the group to be recognized by raising their hand or standing. Each spokesperson for a group will be allowed to speak for up to five minutes.

During public hearings, the Board will attempt to hear all members of the public who wish to speak on a subject, but it must be recognized that on rare occasion presentations may have to be limited because of time constraints. If a previous speaker has articulated your position, it is recommended that you not fully repeat the comments and instead advise the Board of your agreement. The time allocated for speakers at public hearings are the same as for regular Board meetings, although the Board can allow exceptions at its discretion.

Speakers should keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. for that reason, speakers are requested to speak from the podium and wait to be recognized by the Chairman. In order to give all speakers proper respect and courtesy, the Board requests that speakers follow the following guidelines:

- Wait at your seat until recognized by the Chairman.
- Come forward and state your full name and address and your organizational affiliation if speaking for a group;
- Address your comments to the Board as a whole;
- State your position clearly and succinctly and give facts and data to support your position;
- Summarize your key points and provide the Board with a written statement, or supporting rationale, when possible;
- If you represent a group, you may ask others at the meeting to be recognized by raising their hand or standing;
- Be respectful and civil in all interactions at Board meetings;
- The Board may ask speakers questions or seek clarification, but recognize that Board meetings are not a forum for public debate; Board Members will not recognize comments made from the audience and ask that members of the audience not interrupt the comments of speakers and remain silent while others are speaking so that other members in the audience can hear the speaker;
- The Board will have the opportunity to address public comments after the public comment session has been closed;
- At the request of the Chairman, the Executive Director may address public comments after the session has been closed as well; and
- As appropriate, staff will research questions by the public and respond through a report back to the Board at the next regular meeting of the full Board. It is suggested that citizens who have questions for the Board or staff submit those questions in advance of the meeting to permit the opportunity for some research before the meeting.

The agendas of Board meetings, and supporting materials, are available from the RWSA Administration office upon request or can be viewed on the Rivanna website(s)

Rev. September 22, 2009

RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
May 28, 2019

A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was held on Tuesday, May 28, 2019 at 2:25 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mike Gaffney, Gary O'Connell, Dr. Tarron Richardson, Kathy Galvin.

Board Members Absent: Lauren Hildebrand, Jeff Richardson, Dr. Liz Palmer.

Staff Present: Lonnie Wood, Jennifer Whitaker, Phil McKalips, David Rhoades, Steven Miller, Liz Coleman, Scott Schiller, Bill Morris, Victoria Fort, Dyon Vega, Austin Marrs, Andrea Terry, David Tungate, Michelle Simpson, Bill Mawyer, Katie McIlwee.

Also Present: Mr. Kurt Krueger, RWSA counsel, members of the public and media representatives.

1. *CALL TO ORDER*

At 2:25 p.m., Mr. Gaffney opened the May 28, 2019 regular meeting of the Rivanna Water and Sewer Authority as a joint meeting with the Rivanna Solid Waste Authority.

2. *OTHER BUSINESS*

a. Presentation: Quarterly Strategic Plan Update – year one Wrap-Up; Goal Team Leaders

Ms. Katie McIlwee reminded the Board that they have had three previous updates and stated the champions of the six goal eams will present their year-end wrap ups, after which the Board may ask questions. She stated they have six goals and 12 strategies from which the goal teams have developed 78 tactics and they have completed 100% of what they had intended for year one.

Ms. McIlwee presented for the Communications and Collaboration goal team. She stated that over the last quarter they have continued to collaborate with IT and other members of the goal team to test and research different methods of increasing internal communication and Office 365 products and have also worked with Administration and IT to research a new document management workflow software. She stated they have completed the employee portal, enhanced the usability of the Rivanna website, and coordinated with Environmental Stewardship goal team on some community events, such as Imagine A Day Without Water and Riverfest, as well as a regional managers' mixer, for which they brought in other utilities from the Central Virginia area, and team building events with the City and the Albemarle County Service Authority. She stated they also have quarterly internal employee team building engagements and a bi-monthly Rivanna employees' newsletter.

Mr. O'Connell asked what the communications agreement among water partner agencies was about.

Ms. McIlwee explained that this stemmed from the initial tactic planning meetings when they were deciding how to implement strategies and thought that an agreement was needed, though as they have moved along they have realized that some of the tactics are not necessary. She stated this tactic was about knowing who to speak with at the County, City, or ACSA with regards to communications or marketing and working together, more than developing an actual agreement.

Ms. Betsy Nemeth, Manager of Human Resources, presented for the Workforce Development goal team. She stated they have been busy working their strategy of developing a comprehensive staffing classification and compensation plan and to conduct a training needs assessment and enhance the training program. She noted that they recommend a pay grade scale adjustment as well as new positions for both Authorities, which she noted are in the final draft of the Personnel Management Plan, which now is combined for the two Authorities and has had language regarding standard operating procedures removed. She stated they have conducted and continue to conduct training on CPR, ADAD, and leadership for managers and certain operators, for which they have partnered with PVCC, which she characterized as an amazing and terrific partner. She continued that last July 1st they implemented the recommendations of the compensation plan salary survey conducted by Evergreen. She stated they have a Staffing Master Plan which will be regularly evaluated and a Consolidated Personnel Management Plan.

Mr. David Tungate, Director of Operations, presented for the Operational Optimization goal team. He stated their strategy is to continually evaluate, prioritize, and improve key business and operational processes and to protect our workforce and the public by continually growing a culture of safety. He reviewed recent activity, including completion of Phase 1 and the beginning of Phase 2 of the corrosion inhibitor project, compliance with the American Water Infrastructure Act, by conducting a vulnerability assessment for which they must demonstrate compliance by August 2020 and expect to be compliant by next March, and continuing with the design of the South Rivanna Water Treatment Plant, which will use updated technology and allow them to change some processes. He reviewed year one highlights, which include the hiring of a consultant to conduct a safety master plan to look at how they do things on the operations side, how they treat water and wastewater, and the equipment and processes. He stated they have installed web-based security cameras at South Rivanna, Crozet, and Moores Creek.

Ms. Andrea Terry, Water Resources Manager, presented for the Environmental Stewardship goal team. She stated that their strategies are to increase environmental engagement and designate resources to support environmental outreach agreements. She stated they wanted to have an employee from each division come and sit with them and talk about what Rivanna does that is good for the environment and how they can engage with the community and partners to do this a little bit more. She stated the committee has supported the Rivanna Riverfest, which she characterized as a great effort with Rivanna Conservation Alliance and ACSA and a good collaborative opportunity. She stated they also conducted stream cleanup on Moores Creek after which three employees asked to serve on the committee and now serve. She stated they have catalogued a list of green activities, increased outside collaboration and will continue to do so, and they plan to establish an environmental committee next year, which will meet bi-monthly and consider ways to become more engaged.

Mr. Stewart expressed his thanks to Phil McKalips for taking part in the climate action team and stated that he has been an incredible resource.

Mr. Phil McKalips, Director of Solid Waste, presented for the Solid Waste Services goal team. He stated that when considering their strategies he considers what people want them to be and what the community landscape is. He stated they feel they have set themselves up well to be able to communicate with community partners such as haulers, UVA, the City and County, and the public, which can provide feedback as to where they see needs. He stated they decided to open on Mondays after speaking with haulers, which stimulated them to conduct cost modeling and which has been favorably received. He explained that the idea to introduce composting resulted from dialog with representatives of UVA and the Climate Action Committee. He reviewed ideas they have for next year, including optimization of existing resources at McIntire and improving public outreach.

Mr. Gaffney emphasized that the strategic plan was a long time coming and has taken some time to be developed, and stated that he is thoroughly impressed every time. He asked how it has helped Mr. McKalips as well as others in the organization along the way.

Mr. McKalips replied that putting the idea of optimization on a piece of paper has pushed them to look at things outside of the box and he feels they have utilized the process effectively.

Mr. Mawyer echoed Mr. McKalips' comment, adding that they are looking in every drawer and at every policy and procedure to see if they can do things in a better way. He emphasized that the skillset and knowledge of staff is important to be able to do this.

Mr. Scott Schiller, Engineering Manager, presented for the Infrastructure & Master Planning goal team. He stated their two strategies are to implement an asset management program for the Authority and to develop and maintain long-term master plans. He stated they have developed an internal asset management policy, which can help dictate how the program proceeds and is part of the first phase of the plan, which they focused on this year. He described this as a road map for what they want the plan to look like, how it will be implemented over the next few years and indicated that, as part of the process, they have had staff training workshops, performed a gap assessment on procedures, and are looking at business process improvements and IT strategies.

Mr. Schiller stated they have developed an inventory of master plans to enable to determine if there are projects that have been identified that still have to be done and to see which facilities or systems may have gaps for which they don't have a master plan. He next reviewed year one highlights. He stated they contracted with a nationally recognized consulting firm to guide them through the asset management process, which he characterized as a great learning experience, and for both strategies they have begun to organize internal assets, some of which will be included in the internal asset management program as they move to the implementation phase, and which will allow them to identify some critical assets in the Master Plan that may warrant their own master plans.

Ms. Galvin asked who the consulting firm is.

Mr. Schiller replied that it is GHD, based in Maryland.

Mr. Gaffney asked if there is a way to measure ways to increase the life of equipment and if the consulting company can help with this.

Mr. Schiller replied that a lot of the asset management involves risk assessment and where to best apply their efforts and they will answer questions about pieces of equipment to determine risk and consequence of failure in order to apply efforts most effectively. He stated there could be opportunities to extend the life of equipment through additional preventive maintenance or by having more spare parts in stock.

Mr. Mawyer added that there are benefits in cost savings where they can proactively plan for replacement rather than react when something breaks.

Ms. McIlwee stated that in year two some of the goal teams will be replacing members and inviting additional employees to serve, the teams will develop new tactics, start new strategies, decide what needs to roll forward and what is complete, and they will provide another update to the Board next quarter.

Ms. Galvin remarked that she understands the value of the strategic plan, described it as being crisp, clean, concise, substantive, and can be used to enhance performance. She thanked them for taking it so seriously and for implementing it so wholeheartedly.

Mr. Mawyer remarked that the strategic plan has given them guidance and direction.

Mr. McKalips remarked that it is helpful to have the strategic plan posted at work locations.

Mr. Mawyer stated that at the benefits and safety meeting they talked about the purpose and goals of the strategic plan and have tried to keep it front and center for everyone.

a. Presentations; Lonnie Wood, Director of Finance and Administration
i. Personnel Management Plan Update
ii. FY 2020 Pay Scale Adjustment
iii. Virginia Retirement System Long Term Care Program

Mr. Wood stated they have come up with a new personnel management plan based on the combining of existing plans and the elimination of some procedures. He noted that their payroll timesheet and timekeeping process is manually driven, though they plan to go to an automated system as part of their IT Master Plan, as their policies didn't fit with modern payroll and timekeeping processes. He continued that they have gone to a blended overtime rate, which means that overtime is calculated weekly, whereas the Authority has a bi-weekly pay schedule, which could result in two different overtime rates on one paycheck. System changes they have made will allow them to do this and to bring the overtime policy into the modern era and to meet all FLSA requirements. He stated they have added night differential pay of 2% of base pay for water and wastewater operators that work a rolling 12 hour day/night shift, as this had been identified in meetings with employees and is an incentive for employees to take this shift.

Mr. O'Connell asked if he has included the funding for that in the budget.

Mr. Wood replied that it will cost about $16K and will be absorbed under normal vacancy turnover and, should it run over, they can make up the difference in workman's compensation since they received a better bid this year. He stated they have included a retirement benefit that mirrors what VRS Plan 1 employees receive in the old manual. The new policy enables hybrid employees to receive $200 of sick leave pay for each year of service up to a maximum of $5K. He stated he will review a couple of other notable policy changes. He stated the Wednesday before Thanksgiving will become a formal holiday and they will make April 13, Thomas Jefferson's birthday, a floating holiday for which the Authority will be open. He stated they have increased the tuition reimbursement of college credit courses from $2,625 to $5,250, which is the IRS tax-exempt limit. He thanked Ms. Nemeth for her work on this.

Mr. Wood reminded the Board that in summer 2017, they instituted a salary survey along with the compensation plan and that salary adjustments in 2018 were made based on the results, despite the fact the data was probably a year old. He stated they utilized that year-old data and will now add a CPI-U Index adjustment increase which could support a 5% increase, but which will not have a budget impact.

Dr. Richardson asked how they planned to keep the scale moving.

Mr. Wood replied that the Authority's policy mandates a salary survey every five years, though their goal is to conduct this every three years, and in off years will look at the CPI-U increase.

Mr. Gaffney stated if they only did it once every five years, it would look like a huge jump.

Mr. Wood informed the Board that VRS offers a long-term care insurance program through political subdivision employers, the last time political subdivisions could opt in was in 2010-2011, and the Authority recommends they opt in this time, as this will not entail any cost to the Authority as employees pay for 100% of the cost and it does not have to be deducted by payroll.

Dr. Richardson asked what the savings on overtime will be by calculating overtime pay on a weekly basis.

Mr. Wood explained that under the current system, they consider holiday and unscheduled time pay to be overtime pay, which is difficult to manage, and the new system will be easier to manage by separating out what is truly overtime and allow them to adjust schedules to reduce overtime.

Dr. Richardson remarked that when a person takes off the second week of the pay period the costs jump if overtime is calculated weekly and he thinks they will see cost savings.

Mr. Wood replied that he is hoping they will.

Ms. Galvin asked how often employees were evaluated.

Mr. Wood replied that the evaluation period runs from April 1–March 30, so that the merit system can be effective July 1, and enables them to have sufficient time to conduct evaluations, meet with employees, and enter the information into the system.

Mr. Mawyer explained that employees are rated on a 1 to 3 scale and the 3% pool money approved by the Board is distributed in accordance with the merit score.

Mr. Wood added that the pool of money for merit pay is limited and they have to wait until everyone has been evaluated in order to calculate the merit pay for each employee.

Ms. Galvin moved that the boards of the RSWA and RWSA approve the update of the Personnel Management Plan, FY20 payroll scale adjustment, and Virginia Retirement System Long-Term Care Insurance program. The motion was seconded by Mr. Oberdorfer and passed (5-0) by the RSWA Board and (5-0) by the RWSA Board. Mr. Richardson and Dr. Palmer were absent from the joint meeting and the vote.

The Rivanna Solid Waste Authority Board Meeting was adjourned at this time. At 3:01 p.m., Ms. Galvin moved that the RSWA Board adjourn its meeting. The motion was seconded by Mr. Oberdorfer and passed (5-0).

3. *ELECTION OF VICE-CHAIR*

Ms. Galvin moved to elect Dr. Richardson as Vice-Chair of the RWSA Board. Mr. O'Connell seconded the motion, which passed unanimously (4-0). Ms. Hildebrand, Mr. Richardson, and Dr. Palmer were absent from the meeting and the vote.

4. *APPROVAL OF MINUTES*

a. Approval of April 2019 RWSA Board meeting minutes.

The Board deferred a vote on the April 2019 minutes until the June meeting because Dr. Richardson had not been present at the meeting and thus could not vote.

5. *RECOGNITION*

a. Government Finance Officers Association – Certificate of Achievement for Excellence in Financial Reporting: Director of Finance, Mr. Lonnie Wood

Mr. Gaffney noted that receipt of this Certificate was acknowledged at the RSWA meeting.

6. *EXECUTIVE DIRECTOR'S REPORT*

Nothing Reported

7. *Originally Item 9 c. on the agenda:*

Presentation and Public Hearing: Rate Resolution Adoption, Approval of FY 2019 – 2020 Budget and FY 2020-2024 CIP: Bill Mawyer, Executive Director

Mr. Bill Mawyer presented. He reminded the Board that they discussed the budget and CIP in February and March. He noted that the budget is over $36M, a $2.9M increase over last year, which is split between an operating expense increase of $1.7M and debt service of $1.2M. He stated the operating expense increase represents a $491K increase for the City and $1.5M increase for Service Authority, and Rivanna will contribute $667K from reserves to offset some of the expenses. He noted that 47% of the budget consists of bond debt service of $17M, which is used to finance the CIP. He continued that personnel costs are $8.5M, professional fees, utilities, insurance, and permits are almost $4M, and $6.7M is for chemicals, technology, and building and equipment repairs. He noted that much of the operating expense increase is for replacing the media in the filters of the granular activated carbon system at a budget cost of $900K.

Mr. Mawyer listed the following new positions added to the budget: construction inspector and laboratory chemist. He stated bio-solids have been shipped to Waverly for which they have a $128K increase. He stated they are trying to complete the wholesale meter project, which will add 28 meters that will need to be annually calibrated and maintained. He noted that they have reclassified a lab technician position as a chemist and will now have three chemists in the lab and four inspectors in the CIP group, for a total of 93.4 full-time equivalent (FTE) positions. He stated the $1.2M increase in debt service is to fund projects including Birdwood water line, the Observatory water treatment upgrade, South Rivanna Water Treatment Plant upgrade, Ragged Mountain to Observatory pipe and pump station replacement, Crozet water treatment plant upgrade, and Beaver Creek Dam upgrade. He presented photos of some of the facilities. He stated they will build a flow equalization tank for Crozet, which will store wastewater to prevent system overflows when it rains.

Mr. Mawyer presented the proposed CIP budget for the next five years at $97.2M for completion of 37 projects, including five that would extend to the next five-year cycle, which he stated is a significant decrease from $153M in last year´s CIP. He reminded the Board that these changes were made to level rates and mitigate costs to customers and to the Service Authority. He suggested they hold a public hearing on the wholesale rates charged to the City and to ACSA and asked the Board to approve the budget and CIP.

Mr. Gaffney opened the public hearing on the rates and related budget. As no member of the public came forward to speak Mr. Gaffney closed the public hearing.

Ms. Galvin moved that the Board adopt the rate resolution, approve the FY 20 Budget, and the FY 20–24 CIP. The motion was seconded by Mr. O'Connell and passed unanimously (4:0). Ms. Hildebrand, Mr. Richardson, and Dr. Palmer were absent from the meeting and the vote.

8. *ITEMS FROM THE PUBLIC*

There were none presented.

9. *RESPONSES TO PUBLIC COMMENTS*

There were no responses to public comments.

10. *CONSENT AGENDA*

a. Staff Report on Finance

b. Staff Report on Ongoing Projects

c. Staff Report on Operations

d. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs – Engineering Design, Bid, and Construction Phase Services

The Board unanimously approved the consent agenda.

11. *OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA*

There were none presented.

12. *CLOSED MEETING*

There was no closed meeting held.

13. *ADJOURNMENT*

At 3:10 p.m., Ms. Galvin moved to adjourn the RWSA Board meeting. Mr. O'Connell seconded the motion, which passed unanimously 4-0. Ms. Hildebrand, Mr. Richardson, and Dr. Palmer were absent from the meeting and the vote.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
June 25, 2019

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, June 25, 2019 at 2:31 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mike Gaffney, Tarron Richardson (left at 4:20 p.m.), Kathy Galvin, Lauren Hildebrand, Jeff Richardson, Liz Palmer.

Board Members Absent: Gary O'Connell.

Rivanna Staff Present: Lonnie Wood, Jennifer Whitaker, Phil McKalips, Liz Coleman, Scott Schiller, Austin Marrs, Andrea Terry, David Tungate, Michelle Simpson, Grace Hopkins, David Rhoades, Mike Ralston, Mike Haley, Dyon Vega, Bill Mawyer, Katie McIlwee.

Also Present: Kurt Krueger, RWSA counsel, members of the public and media representatives.

1. CALL TO ORDER

Mr. Gaffney called the June 25, 2019 regular meeting of the Rivanna Water and Sewer Authority to order at 2:31 p.m.

2. MINUTES OF PREVIOUS BOARD MEETINGS

a. Minutes of Regular Board Meeting on April 23, 2019
b. Minutes of Regular Board Meeting on May 28, 2019

Mr. Gaffney asked members if they had any comments or changes. There were none

Dr. Palmer moved that the board approve the minutes of the regular board meeting of April 23, 2019. The motion was seconded by Ms. Galvin and passed unanimously (5-0). Dr. Richardson abstained and Mr. O'Connell was absent from the meeting and the vote.

The approval of the minutes of the May 28, 2019 board meeting was deferred as there was not a sufficient quorum of Board members present who had attended that meeting.

3. ***RECOGNITIONS***

a. Mr. Michael R. Davis
b. Mr. Michael R. Haley
c. Mr. Michael F. Ralston

Mr. Gaffney read the resolution recognizing Michael R. Davis:

WHEREAS, Mr. Davis has served in a number of positions for the Rivanna Water and Sewer Authority since May of 2005, most recently as a Wastewater Operator; and

WHEREAS, over the same period in excess of 14 years, Mr. Davis has demonstrated

leadership in his field and has been a valuable resource to the authority and its employees; and

WHEREAS, Mr. Davis's understanding of the authority's operation and dedication and loyalty to the authority has positively impacted the authority, its customers and its employees; and

WHEREAS, the Rivanna Water and Sewer Authority Board of Directors is most grateful for the professional and personal contributions Mr. Davis has provided to the Rivanna Water and Sewer Authority and to its customers and its employees; and

NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water and Sewer Authority Board of Directors recognizes, thanks and commends Mr. Davis for his distinguished service, efforts and achievements as a member of the Rivanna Water and Sewer Authority, and presents this Resolution as a token of esteem, with its best wishes in his retirement.

BE IT FURTHER RESOLVED that this Resolution be entered upon the permanent Minutes of the Rivanna Water and Sewer Authority.

Dr. Palmer moved that the board adopt the resolution as read. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

Mr. Gaffney read the resolution recognizing Michael R. Haley:

WHEREAS, Mr. Haley has served in a number of positions for the Rivanna Water and Sewer Authority since May of 1996, most recently as a Mechanic 2; and

WHEREAS, over the same period in excess of 23 years, Mr. Haley has demonstrated leadership in his field and has been a valuable resource to the authority and its employees; and

WHEREAS, Mr. Haley's understanding of the authority's operation and dedication and loyalty to the authority has positively impacted the authority, its customers and its employees; and

WHEREAS, the Rivanna Water and Sewer Authority Board of Directors is most grateful for the professional and personal contributions Mr. Haley has provided to the Rivanna Water and Sewer Authority and to its customers and its employees; and

NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water and Sewer Authority Board of Directors recognizes, thanks and commends Mr. Haley for his distinguished service, efforts and achievements as a member of the Rivanna Water and Sewer Authority, and presents this Resolution as a token of esteem, with its best wishes in his retirement.

BE IT FURTHER RESOLVED that this Resolution be entered upon the permanent Minutes of the Rivanna Water and Sewer Authority.

Dr. Palmer moved that the board approve the resolution. The motion was seconded by Ms. Galvin and approved unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

Mr. Mawyer offered his congratulations to Mr. Haley.

Mr. Haley stated he looks forward to his retirement and would not be sitting on the couch.

Mr. Gaffney read the resolution recognizing Michael F. Ralston:

WHEREAS, Mr. Ralston has served in a number of positions for the Rivanna Water and Sewer Authority since August of 1992, most recently as a Mechanic Helper; and

WHEREAS, over the same period in excess of 26 years, Mr. Ralston has demonstrated leadership in his field and has been a valuable resource to the authority and its employees; and

WHEREAS, Mr. Ralston's understanding of the authority's operation and dedication and loyalty to the authority has positively impacted the authority, its customers and its employees; and

WHEREAS, the Rivanna Water and Sewer Authority Board of Directors is most grateful for the professional and personal contributions Mr. Ralston has provided to the Rivanna Water and Sewer Authority and to its customers and its employees; and

NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water and Sewer Authority Board of Directors recognizes, thanks and commends Mr. Ralston for his distinguished service, efforts and achievements as a member of the Rivanna Water and Sewer Authority, and presents this Resolution as a token of esteem, with its best wishes in his retirement.

BE IT FURTHER RESOLVED that this Resolution be entered upon the permanent Minutes of the Rivanna Water and Sewer Authority.

Dr. Palmer moved that the board approve the resolution. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

Mr. Mawyer offered congratulations to Mr. Ralston for a job well done.

Mr. Ralston stated that he and his wife hope to move to Myrtle Beach in a couple of years.

Mr. Mawyer remarked that it is not a coincidence that three retirements are occurring at the same time as the Authority offers a voluntary early retirement program which all three gentlemen accepted in December. He wished them all the best.

4. EXECUTIVE DIRECTOR'S REPORT

Mr. Mawyer stated that Rivanna had sent a condolence letter to the City of Virginia Beach for the tragic event with loss of life. He stated they knew some of the people in the water and wastewater department and are deeply touched, supportive, and sympathetic of their friends in Virginia Beach.

Mr. Mawyer announced that 43-year employee Randy Jones, who retired two years ago, passed away last week. He stated they are sorry and have expressed their condolences to his family.

Mr. Mawyer noted that, in response to the occurrence in Virginia Beach, they have enhanced security with the following measures: County police officers present at Board meetings, locking facility doors, active shooter training with an FBI agent coming tomorrow, and future controlled access card system at all facilities.

Mr. Mawyer announced that June 30 is Drinking Water and Wastewater Professionals Appreciation Day in Virginia and read the proclamation passed in the House of Delegates in

2016:

HOUSE JOINT RESOLUTION NO. 88

Designating June 30, in 2016 and in each succeeding year, as Drinking Water and Wastewater Professionals Appreciation Day in Virginia.

(Agreed to by the House of Delegates, January 26, 2016; agreed to by the Senate, February 23, 2016.)

WHEREAS, before the implementation of reliable drinking water and wastewater treatment, thousands of people in the United States died of waterborne diseases like cholera, dysentery, typhoid, polio, and hepatitis each year; and

WHEREAS, the World Health Organization estimates that unsafe water supplies in developing nations still cause approximately 1.8 million deaths annually; and

WHEREAS, technological advances by water and wastewater professionals have improved the treatment of both drinking water and wastewater in the Commonwealth, the United States, and the world; and

WHEREAS, access to clean drinking water is crucial to the health and safety of more than 8.3 million Virginians; and

WHEREAS, treatment of the Commonwealth's average of more than 620 million gallons of wastewater each day plays a critical role in reducing toxic chemicals and nutrient buildup in Virginia's surface waters, such as the Potomac River and the Chesapeake Bay; and

WHEREAS, much of the drinking water and wastewater infrastructure in the United States is located underground in millions of miles of pipes, unseen by the public; and

WHEREAS, thousands of water and wastewater industry professionals in the Commonwealth dedicate their careers to keeping drinking water and treated wastewater clean and free of disease-carrying organisms that can harm both humans and the environment; and

WHEREAS, the Virginia Section of the American Water Works Association and the Virginia Water Environment Association (member association of the Water Environment Federation), as well as the Washington Metropolitan Council of Governments, the Northern Virginia Regional Commission, and the Virginia Rural Water Association, support the creation of Drinking Water and Wastewater Professionals Appreciation Day;

NOW, THEREFORE BE IT RESOLVED by the House of Delegates, the Senate concurring, That the General Assembly designate June 30, in 2016 and in each succeeding year, as Drinking Water and Wastewater Professionals Appreciation Day in Virginia; and,

BE IT RESOLVED FURTHER, That the Clerk of the House of Delegates transmit copies of this resolution to the Virginia Section of the American Water Works Association, the Virginia Water Environment Association, the Washington Metropolitan Council of Governments, the Northern Virginia Regional Commission, and the Virginia Rural Water Association so that members of these organizations may be apprised of the sense of the General Assembly of Virginia in this matter; and,

BE IT RESOLVED FINALLY, That the Clerk of the House of Delegates post the designation of this day on the General Assembly's website.

Mr. Mawyer announced that they attended a meeting of the Crozet Community Advisory Committee on June 12 to discuss a number of past, ongoing, and future projects, including dam

modifications. He stated they studied the water supply and believe the Beaver Creek Reservoir is adequate to support Crozet for 50 years.

Mr. Mawyer announced that he would speak to the Chamber of Commerce on Monday, July 8, about the long-term water supply plan.

Mr. Mawyer reported that this week they would be conducting work on the two large overflow holding ponds that hold about 8.5M gallons each at the end of the wastewater treatment process. He advised that, since the ponds hold sludge, there could be an odor in the area while the work is being conducted and they have sent a letter to the Woolen Mills Association informing of this. He stated the sludge is covered with about five feet of water, which they would pump in order to assess the conditions of equipment in preparation for maintenance to occur later in the year.

Mr. Mawyer reported that all reservoirs are full, except for Sugar Hollow, of which they have concerns since the water level has been dropping faster than it should. He stated they have been making some adjustments in the releases to get it balanced and noted that their permit requires them to release the same amount of water as flows in and the level should remain the same, except for evaporation and seepage, and they are working with Department of Environmental Quality to evaluate the situation.

Dr. Palmer asked when the evaluation would be complete.

Mr. Mawyer replied that the monitoring consists of mass balance calculations.

Ms. Jennifer Whitaker, Rivanna staff member, responded that they have done some work on inflow calculations, which is the methodology they use under the current permit, and believe they would want to make some modifications to the calculation when the permit is renewed, specifically related to how the inflow to Sugar Hollow is calculated.

Dr. Palmer asked if this is based on the formula we had with the area vs. the Mechum gauge.

Ms. Whitaker confirmed this. She stated they would likely advocate for a switch to the Moormans gauge for Sugar Hollow and to use a combination of the Mechums and Moormans River gauge for the rest of the urban water system, with a little more complicated formula that factors in rain amounts.

Dr. Palmer asked if they are thinking about going directly to the use of the Moorman's River gauge for Sugar Hollow and not a combination.

Ms. Whitaker confirmed this. She stated they would use a scaling factor. She noted that Sugar Hollow is very flashy, has a different topography than Mechums, and they are finding more water when it rains and less when it is dry.

Dr. Palmer observed that water levels are currently high and at higher levels than they normally would be in June. She asked if this is what they are seeing now or if it is specific to a particular day.

Ms. Whitaker replied that they stopped spilling last week and they expected the reservoir to stay about even, according to their calculations, though it dropped by a couple of feet over the course of a week.

Mr. Mawyer remarked that in some ways this is similar to the circumstances they had in 2017, when South Rivanna Reservoir was letting out more water than was coming in. He stated they are applying the lessons learned from that experience to stay on top of the situation at Sugar Hollow. He stated the newspaper reported that rainfall was 5 inches greater than normal for this year but ten inches below the totals of last year. He concluded his report.

Mr. Gaffney asked if there is anything new with Observatory.

Mr. Mawyer replied that they are working with UVA, plan to hold meetings with them, and Kurt Krueger has spoken with their counsel about contracts and easements to get everyone on the same page.

Dr. Palmer stated she has been getting questions about Lickinghole basin and asked if this has ever been dredged.

Mr. Mawyer indicated it has not been dredged.

Dr. Palmer asked how often they conduct bathymetric studies as constituents have observed that it appears to be full of sediment.

Mr. Mawyer replied that they would conduct a bathymetric study within the next six months, as they have done for South Rivanna and Ragged Mountain Reservoirs.

Dr. Palmer asked how often they conduct these studies.

Ms. Whitaker replied that she believes this is the first one for which they've done a formal study with a consultant, while in the past in-house staff has conducted informal studies so they do have a volume number for comparison.

Dr. Palmer surmised that the number may not be very accurate.

Ms. Whitaker indicated that this is a possibility and she is interested to see the numbers.

Mr. Gaffney asked if they would refill the two ponds at Moores Creek they plan to drain for maintenance with water or to let them fill up normally.

Mr. Mawyer replied that if the rain doesn't refill them they can fill them artificially with water cannons to cover the sludge and keep the odors contained.

5. ITEMS FROM THE PUBLIC

Mr. Gaffney opened the meeting to the public.

Mr. Larry Miller, resident of Free Union, addressed the board. He stated he leases part of the Buck Mountain property and asked the Board if they plan to continue leases in the future. He stated he expects Andrea Terry to answer this question later in the meeting.

As no one else came forward to address the board, Mr. Gaffney closed this portion of the meeting.

6. RESPONSES TO PUBLIC COMMENTS

Mr. Gaffney stated there was not a public comment held at the last meeting.

7. CONSENT AGENDA

a. Staff Report on Finance

b. Staff Report on Ongoing Projects

c. Staff Report on Operations

d. Resolution of Official Intent to Reimburse Expenditures with Proceeds of a Borrowing

e. Construction Change Order Authorization - Crozet Interceptor System Pump Station Improvements Project– Anderson Construction

f. Construction Work Authorization - Sugar Hollow Transfer Flow Meter – G.L. Howard Construction

g. Construction Contract Award – Scottsville Water Treatment Plant Finished Water Flow Metering Improvements – Anderson Construction

Mr. Gaffney asked board members if there were any items they would like to pull from the consent agenda. There were none.

Dr. Palmer moved that the board approve the Consent Agenda. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

7. OTHER BUSINESS

a. *Presentation: Buck Mountain Property Review; Andrea Terry, Water Resources Manager*

Mr. Mawyer informed the board that Ms. Terry is Water Resources Manager and has a long history of working with the Buck Mountain property and the Ragged Mountain Dam project, for which they were required to mitigate environmental impacts from the dam at the Buck Mountain property. He invited guidance from the Board.

Ms. Andrea Terry recognized four Buck Mountain lease holders in the audience and thanked them for attending and for continuing to work with the Authority. She pointed to the Buck Mountain property on a map. She explained that, as a result of the water supply concerns of the

urban area back as far as 1977, 38 parcels were acquired through an agreement with landowners or taken through eminent domain from 1984 – 1987, with the intent to build the Buck Mountain Reservoir. She stated the authority owns 1,313 acres, which were acquired for $6.95M, with funds spent as early as 1981 on studies to evaluate the Buck Mountain alternative and to obtain permitting and posted to that account through 1998. She stated the parcels range in size from 1–160 acres and noted that deed restrictions were placed on 600 acres to prohibit development and to protect the water quality of Buck Mountain Creek, which lies within the watershed of South Rivanna Reservoir, as part of the Ragged Mountain Dam mitigation requirement.

Dr. Palmer asked if it lies within the 100-year floodplain.

Ms. Terry replied that some of it does, but not all of it, and stated the Authority purchased the parcels that would be flooded by the potential proposed reservoir. She confirmed that the majority of the property lies within the 100-year floodplain.

Ms. Terry continued that they faced an environmental challenge when the James River Spinymussel, a state and federally listed endangered species, was found within the Buck Mountain watershed. She stated that several bonds were issued during the 1980s and 1990s, of which many have been refinanced, and it is difficult to confirm if all the debt has been retired. She noted that any sale of the assets of the Authority would have to be approved by a majority of the bond holders and Bank of New York/Mellon, the bond trustee, regardless of whether an asset is still covered by a current bond issue.

Ms. Terry informed the board that the Buck Mountain surcharge was created in 1983 by a joint resolution of all four public bodies and required the City and ACSA to charge a connection fee ranging from $200 - $43K, with amounts collected transferred to Rivanna, with almost $4M collected since 1983. She stated the development of the Ragged Mountain Reservoir had environmental impacts, including the inundation of two acres of wetlands and 11,500 linear feet of stream, for which they had to mitigate. She stated the fact that mitigation performed in Buck Mountain watershed which falls within the South Rivanna watershed is a benefit if they can protect areas that flow to the South Fork Rivanna Reservoir.

Ms. Terry presented photographs of the Buck Mountain areas that underwent stream and buffer restoration. She stated the buffers range from 100–200 feet on each side of the stream, they have planted 40,000 trees on 93 acres, and have placed deed restrictions on those areas. She stated that 9 leaseholders hold leases on 390 acres, of which 8 parcels are in agriculture, cattle, or horses, with the remainder used for quiet enjoyment. She noted that in 2012, they shortened lease terms to two years, hold several water quality easements on parcels, and the leases generate approximately $1,600/year. She pointed to the buffer areas around the streams that have deed restrictions on a map.

Dr. Palmer asked if there are any areas on leased lands with only a 100-foot stream buffer that are being farmed.

Ms. Terry replied that some properties with 100-foot stream buffers were used for pasture. The Authority adjusted the buffer to 400 feet in some places to help with ongoing operations of the leaseholders.

Dr. Palmer asked for confirmation that there are some locations with cattle or corn that have 100-foot buffers.

Ms. Terry confirmed this. She emphasized that the cattle are fenced out of the buffer and use alternate water sources.

Mr. Gaffney asked if the buffer size was decided upon by the Authority.

Ms. Terry replied that the Soil and Water Conservation District requires only 35 feet, but the Authority proposed to make them larger to gain approval of the mitigation plan from VDEQ and ACOE.

Mr. Mawyer added that approval from DEQ was required for our mitigation plan on the Buck Mountain property resulting from the environmental impacts of the Ragged Mountain Dam project.

Dr. Palmer asked for confirmation that the water protection ordinance buffer is 100 feet for perennial streams and 200 feet around a reservoir.

Ms. Terry confirmed this.

Mr. Krueger asked if there were people plowing and planting corn or if it is mostly hay.

Ms. Terry replied that it is hay and cattle.

Ms. Galvin asked for confirmation that there are no insecticides.

Ms. Terry confirmed this.

Dr. Palmer noted that fertilizer is used for hay.

Ms. Terry replied that it is kept out of the buffer areas.

Mr. Mawyer remarked that there are no applications of bio-solids on those farms.

Dr. Palmer asked if the leases prohibit this.

Mr. Terry replied that she doesn’t believe so.

Mr. Krueger noted that leaseholders are required to abide by state, federal, and county regulations.

Dr. Palmer asked if we can control bio-solids.

Mr. Mawyer confirmed we could.

Ms. Terry resumed her presentation. She stated the original leases ran anywhere from 20 years to 5 years, with varying costs, and in 2012 when we encumbered the land with deed restrictions, staff conducted an analysis and determined that the lands should be leased at $10 for pastureland, $3 for forest, and $0 for the deed-restricted area, where no activity can take place other than enjoyment of the land.

Dr. Palmer asked if it is used for hunting.

Ms. Terry replied affirmatively and stated it is also used for quiet enjoyment. She described long-time leaseholders as really good stewards of the land who provide input on things the Authority doesn't always see. She stated several people ride horses and use the land because it is beautiful and they enjoy it, as well as for cattle operations.

Ms. Terry stated she would touch on some property management issues. She presented a photo of a bridge the Authority owns on Allen Farm Lane, for which an assessment was conducted in 2006, and it was determined that work was needed on the piers at a cost of $10K. She pointed to a low water crossing beside the bridge that is used by trucks, on which they have worked with lease holders as it can be rough and difficult to cross. She continued that they own a house that was leased for around $600/month, though it has not been leased for some time as it is no longer in a condition to be rented.

Dr. Palmer remarked that she has been out to the site many times and asked if delivery trucks have to run through the creek to reach the houses on the other side.

Mr. Mawyer replied that they are supposed to.

Mr. Gaffney asked how many houses are up there and if this is the only access.

Ms. Terry replied that there are two lease holders as well as some other houses. She stated the map indicates there may be one additional access at the other end that used to be open and the owner has closed the gate. Ms. Terry presented a photo of a pond on one of the properties, which she stated has been having trouble with outflows getting dammed up for which they have put in work and may need to put in more work. She stated they are working with the Virginia Department of Conservation and Recreation to determine if they have an agricultural exemption for the pond and, should maintenance be needed, it would cost around $40K.

Mr. Mawyer remarked that they can take out the pond.

Ms. Terry continued that they have a lot of issues with people hunting out of season, trespassing, and growing illegal substances for which they have worked with the Albemarle County police.

Ms. Terry presented the Board with options for the property. She stated the first is to continue to retain, lease, and manage the property, though it is challenging and takes staff time. A second option she presented is to sell properties that are not part of the 600 acres in deed restrictions, with sales governed by the Code of Virginia.

Ms. Galvin asked why the reservoir is needed.

Ms. Terry replied that some feel that in the future environmental circumstances or laws could change and they could have a reservoir.

Dr. Palmer remarked that some communities buy property upland from their watershed, which is very expensive.

Ms. Galvin remarked that this is a conservation area, not a reservoir.

Dr. Palmer replied that it drains into the watershed.

Ms. Galvin clarified that it is not part of the future backup water supply, as they have a plan.

Mr. Gaffney remarked that the land is not part of their 50-year plan, though it could be in a 200-year plan.

Dr. Palmer stated that a reason to keep it is to protect the watershed, which is why she asked if it were in the floodplain.

Ms. Terry noted that the deed restrictions would remain with any sale of the property and they were saying not to sell that part of the property.

Ms. Galvin asked if there are trails open to the public.

Ms. Terry replied that there are not.

Ms. Galvin asked if there is a long-term plan to turn the land into a recreation area.

Ms. Terry replied that this has been brought up in the past and Rivanna has stated it would not let that happen.

Mr. Krueger stated they have to recognize that RWSA is a water utility versus what the County is as a provider of public parks.

Ms. Galvin stated the land can be sold to the County for a recreational facility.

Mr. Krueger confirmed that in theory it can be sold to Albemarle County and developed into a park, which would be up to the Board of Supervisors of the County.

Dr. Palmer remarked that Sugar Hollow is owned by the City and, in her opinion, is being overused. She recognized that this land has other issues but that at least the leaseholders are managing and protecting it and working with Rivanna. She stated she would like to have a bigger discussion about the watershed in general.

Ms. Galvin remarked that they are using a lot of staff time to maintain this.

Dr. Palmer stated that a lot of water authorities maintain land in their watersheds.

Ms. Hildebrand remarked that those properties are usually directly adjacent or contiguous to the reservoir and not this far away from it.

Ms. Terry replied that it probably varies and she is aware of some that are contiguous, though in New York it is much greater.

Mr. Gaffney asked Ms. Terry if one of the reasons they are discussing this now is because the two-year period for the leases is up and they need to approve another two years.

Ms. Terry replied that the leases roll on different two-year schedules. She explained that recently Dr. Wellons asked if he could buy the land and lease it back and we thought it would be a good idea to bring this forward to the Board now.

Dr. Palmer stated she would like to see the leases and the Board's options with respect to them, and recognized that they must keep some of the properties. She expressed confidence in the leaseholders and staff for their management of the land. She wondered if they can impose a restriction on the use of bio-solids.

Ms. Terry stated the last time they did this was in 2012, that all of the leases are identical, and she offered to check and get back with Dr. Palmer on the bio-solids question.

Mr. Mawyer remarked that, since seven years have passed since lease rates were set, it would be prudent to look at the market value.

Mr. Gaffney expressed his preference to continue to maintain and lease the land and, should the Board decide to consider something else, he would suggest they conduct a study first.

Ms. Galvin acknowledged that they have a strategic plan and wondered if there should be a strategic plan for the organization's assets over time. She expressed an understanding of why they possess the land, while also recognizing that Sugar Hollow is overused because there is a crying need for recreation space and they are maintaining an asset that is not being used for a general public good; other than to protect the watershed. She posed the question of whether or not they should expand the land's purpose to public use.

Dr. Palmer remarked that some members of the Board of Supervisors have advocated for the purchase of more land in the watershed to protect against sedimentation and she is responding to some of those comments.

Mr. Gaffney asked if the majority of what they spend on the Buck Mountain property is for the management of the deed-restricted area or if it is spread among all the property.

Ms. Terry responded that there are two parts to it: the mitigation area where there is ongoing work with DEQ and Army Corps of Engineers to look at the deed restricted areas, which they would have to do for another four years, and then there is the part with the lease holders. She stated the bridge, house, and pond are assets which might involve big dollars, plus her time and that of the attorney.

Mr. Gaffney recognized that assets, such as the house, can cause them to spend more money and asked if they are costing anything now.

Ms. Terry replied that the dam is the one they might have to spend money on. She stated they just conducted a review of the bridge and determined that it is in good shape.

Mr. Mawyer stated that once they receive the results of the consultant's annual inspection of the buffer, required by DEQ, they would have to spend some money on mitigation. He stated they haven't spent much money on the assets outside of the buffer and there are questions to be resolved, such as what to do with the house and the pond.

Ms. Galvin expressed that she is trying to understand if the care and maintenance is for the land to be a reservoir or as part of protecting the watershed. She emphasized that it is not part of the water supply plan.

Mr. Mawyer informed her that it was part of the water supply plan until the spiny mussel took it out of the plan, and it is now part of buffer management and mitigation.

Dr. Palmer remarked that she always thinks of this as protecting the watershed and not as a potential future reservoir. She extolled the benefit of being able to do mitigation within their own watershed.

Mr. Mawyer added that it would have been extremely expensive to find mitigation area if they did not have the Buck Mountain property.

Dr. Palmer stated it was not only the expense but that they were actually putting in buffers in the watershed to protect against sedimentation of a 260 square mile watershed that is a very big portion of the 50-year supply.

Mr. Mawyer recalled that mitigation costs for Henrico County's Cob's Creek Reservoir located in Cumberland County was $18M to buy credits and lease property.

Mr. Richardson asked Mr. Gaffney to expand on the reasons for his earlier comment that he supports having the Authority continue to maintain, manage, and lease the property.

Mr. Gaffney remarked that, for anything other than this option, they would need time to study. He suggested they continue as is until they decide otherwise.

Mr. Richardson expressed his agreement with Mr. Gaffney that they should continue to maintain, manage, and lease the property unless a long range plan study were to suggest something else.

Dr. Palmer stated she would love to know the status of the house and recalled that at one point they thought it could be wonderful to have a police officer rent the Rivanna caretaker's house at Sugar Hollow at a discount, until mold was discovered and it had to be ripped down. She speculated that this house is in a similar condition.

Mr. Mawyer summarized the Board's guidance as being to optimize and maintain what they have, to look at the market value of leases, and to develop a longer-range plan for use of the property, which would probably involve discussions with the County as a future public facility.

Mr. Mawyer reported that they have received calls over the last six weeks about dumping on Buck Mountain property in Free Union that is leased to the Johnson family by the Authority. He presented a photo of the property and pointed out a polygon-shaped fill site the Johnsons are completing on their own property, not on Rivanna's property. He stated Albemarle County's erosion control staff has visited the site multiple times to confirm they are doing this properly and have permits. He noted that the owner had the property surveyed and staked to make sure the filling operation did not occur on Rivanna property.

Mr. Gaffney asked for confirmation that these RWSA parcels are leased by the Johnsons.

Ms. Terry and Mr. Mawyer confirmed that all three parcels are leased.

Mr. Richardson asked for confirmation that the leases have restrictions that would not allow anything like what is happening on their own property.

Ms. Terry confirmed this.

Mr. Gaffney remarked that if they were to sell them then they would not have the creek.

Mr. Mawyer confirmed this. He stated the deed restrictions in the buffer would follow the property and development is not allowed in the buffer.

Dr. Palmer remarked that they don't know if the buffer is 100 or 200 feet.

Ms. Terry speculated that the buffer may have been more than 200 feet, though it doesn't come up to the parcel line between Rivanna and the Johnson property.

Mr. Krueger remarked that, theoretically, they could put more restrictions on the land that lies within the mitigation restriction and that what they are doing is balancing between restrictions that might protect water quality but which would cause a decline in the value of the land.

Ms. Galvin indicated that they should not consider anything until they revisit the lease terms.

Mr. Gaffney remarked that they don't need a vote.

Mr. Krueger remarked that no vote essentially puts them with Option 1.

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

There were no other items.

10. *CLOSED MEETING: (JOINT SESSION WITH THE RSWA)*

At 3:33 p.m., Dr. Palmer moved that the Board of Directors of the Rivanna Water and Sewer Authority enter into a joint closed meeting with Rivanna Solid Waste Authority Board to discuss confidential personnel matters, as permitted by Section 2.2-3711A.1. of the Code of Virginia. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

Dr. Richardson left the closed meeting at 4:20 p.m.

The Board returned to open session at 4:34 p.m. Mr. Krueger read the following closed meeting certification:

WHEREAS, the Rivanna Water and Sewer Authority Board has convened a joint closed meeting with the Rivanna Solid Waste Authority on this date, pursuant to an affirmative recorded vote and in accordance with the provisions of the Virginia Freedom of Information Act and,

WHEREAS, Section 2.2-3712.D. of the Code of Virginia requires certification by the Rivanna Water and Sewer Authority that such a closed meeting was conducted in conformity with Virginia law.

NOW THEREFORE BE IT RESOLVED, that the Rivanna Water and Sewer Authority hereby certifies that, to the best of each member's knowledge, only public business matters lawfully exempted from the open meeting requirements by Virginia law were discussed in the executive meeting to which this certification resolution applies and only such public business matters as were identified in the motion convening the closed meeting were heard, discussed, or considered by the Rivanna Water and Sewer Authority.

Dr. Palmer moved that the Board adopt the resolution to certify the closed meeting. The motion was seconded by Ms. Galvin and passed unanimously (5-0). Mr. O'Connell and Dr. Richardson were absent from the meeting and the vote.

Dr. Palmer moved that the Boards of the Rivanna Solid Waste Authority and Rivanna Water and Sewer Authority approve a 4.5% salary increase for Executive Director Bill Mawyer. The motion was seconded by Ms. Galvin and was passed by the RWSA Board unanimously (5-0). Mr. O'Connell and Dr. Richardson were absent from the meeting and the vote.

11. Adjournment

At 4:35 p.m., Ms. Galvin moved to adjourn the meeting of the Rivanna Water and Sewer Authority. The motion was seconded by Mr. Richardson and passed unanimously (5-0). Mr. O'Connell and Dr. Richardson were absent from the meeting and the vote.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **EXECUTIVE DIRECTOR'S REPORT**

DATE: **JULY 23, 2019**

STRATEGIC PLAN GOAL: COMMUNICATION AND COLLABORATION

Community Outreach

On July 8th, I reviewed our Community Water Supply Plan at the Chamber of Commerce's Member Monday presentation series. On July 17th, I presented our Community Water Supply Plan to a Farm Bureau Committee.

Mr. Rob Haacke, Wastewater Manager, gave a tour of the Moores Creek Advanced Water Resource Recovery Facility to a group of students from Piedmont Virginia Community College.

STRATEGIC PLAN GOAL: INFRASTRUCTURE AND MASTER PLANNING

Buck Mountain Property Master Plan

An RFP has been issued requesting responses from firms to develop alternatives for beneficial use of the properties. Completion of this plan is anticipated in the spring of 2020.

Preliminary Engineering Reports to be completed

- Demolition of Clarifiers (2) and Lime Silo, Moores Creek
- Renovation of Duty Station, Moores Creek
- Relocation of Septage Receiving Station, Moores Creek
- Replacement of Sewer Pump Station and Demolition of Sand Filter Basins, Albemarle-Berkley Sewer Pump Station

Birdwood Water Line

This project was completed in May 2019 with a total project cost of $3.2 M, below the originally estimated cost of $4 M. Project savings will be included in the FY 2021 – 2025 CIP.

South Rivanna to Ragged Mountain Water Line

Meetings are in progress with the UVA Foundation, VDOT, City staff and Albemarle School Board staff about locations for the water line easements. Surveying and appraisals are underway. We began making offers to acquire easements this month.

Observatory Water Treatment Plant Lease

Discussions continue with UVA staff to finalize updated lease and easement documents.

STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT

Security of our Employees and Facilities

Measures continue to be taken to secure our facilities. Visitor access to the Administration Building has been restricted. Security measures for the Engineering facilities will be improved shortly. Employees have received training for an "Active Shooter" event. **Award of a contract for an implementer to provide a card-controlled access system for our facilities is on the Board's agenda for consideration this month**.

Virginia Risk Sharing Association

As of July 1, 2019, we have changed workers' compensation insurance administrators. The Virginia Risk Sharing Association (VRSA) was chosen through competitive selection.

> "The Virginia Risk Sharing Association (VRSA) is the first and most financially sound self-insurance pool in the Commonwealth of Virginia. For more than 35 years VRSA has provided auto, property, liability, and workers' compensation coverage to more than 480 local political subdivisions across Virginia.
>
> VRSA's programs are designed to meet the needs of all Virginia local governments – from the smallest to the largest. VRSA provides comprehensive risk management program support, human resources, communications, and law enforcement expertise and consulting, and more."

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION**

REVIEWED: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **JUNE MONTHLY FINANCIAL SUMMARY – FY 2019**

DATE: **JULY 23, 2019**

Urban Water flow and rate revenues are 4% under budget estimates for the fiscal year, and Urban Wastewater flow and rate revenues are 35% over budget. We have a net surplus of $0.6M over all. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	$ 6,916,521	$ 10,412,333	$ 2,162,885	$ 19,491,739
Expenses	(8,246,580)	(8,575,121)	(2,145,040)	(18,966,741)
Surplus (deficit)	$ (1,330,059)	$ 1,837,212	$ 17,845	$ 524,998
Debt Service				
Revenues	$ 6,453,234	$ 8,707,403	$ 1,170,679	$ 16,331,316
Expenses	(6,418,312)	(8,624,713)	(1,164,691)	(16,207,716)
Surplus (deficit)	$ 34,922	$ 82,690	$ 5,988	$ 123,600
Total				
Revenues	$ 13,369,755	$ 19,119,736	$ 3,333,564	$ 35,823,055
Expenses	(14,664,892)	(17,199,834)	(3,309,731)	(35,174,457)
Surplus (deficit)	$ (1,295,137)	$ 1,919,902	$ 23,833	$ 648,598

Looking at page 1 of the Consolidated Budget vs. Actual monthly financial statements, you will note that overall operating revenues are $2.5 million higher than budget estimates, while operating expenses are running $1.9 million over budget, resulting in a net surplus of $0.5 million for the operating category. This is mostly related to the significant amount of flow resulting from record amounts of rainfall and the related revenues from Urban Wastewater. Overall, debt service revenues are higher than projected due to interest earnings being greater related to the rising interest rate environment creating a net surplus of $124,000 for the debt service category.

A. Professional Services (Urban Water, Scottsville Water, Urban Wastewater – pages 2, 4, 5) – The Urban Water rate center incurred unbudgeted expenditures of $203,000 for Engineering and Technical Services to support corrosion inhibitor, GAC and hydraulic

modeling studies, and unbudgeted legal fees related to the Observatory plant lease of $45,000. Scottsville Water has exceeded the prorated budget for Engineering and Technical Services for the Red Hill Community Water System, but ACSA has been billed for these costs. Urban Wastewater paid for an analysis of the Moores Creek AWRRF Cogeneration System that was not budgeted.

B. Other Services & Charges (Scottsville Water, Urban Wastewater, Engineering – pages 4, 5, 11) – Urban Wastewater is $435,000 over budget in this category for odor control costs at the Crozet Interceptor/Pump Stations, Moores Creek WWTP utilities, and the cost of hauling biosolids to Waverly, Virginia to be composted. Scottsville Water is $10,000 over budget on consultant laboratory analysis fees required for total organics and the GAC reductions in disinfection by products. The Engineering department is $26,000 over budget in this category for ACSA modeling services.

C. Equipment Purchases (Urban Water, Scottsville Water, Maintenance – pages 2, 4, 9) – Scottsville Water spent $50,000 in October for the unbudgeted purchase of a replacement flocculator which had deteriorated and had reached the end of its life cycle. Urban Water spent $197,000 more than the annual budget in this category primarily due to the unexpected need to replace a finished water pump at the South Rivanna plant and a high service pump at the North Rivanna plant, which had deteriorated and reached the end of their life cycle. The Maintenance department had unbudgeted equipment purchases totaling $13,000.

D. Operations & Maintenance (Urban Water, Crozet Water, Urban Wastewater, Lab, Maintenance – pages 2, 3, 5, 9, 10) – Urban Water spent $483,000 on unbudgeted line break repairs and $435,000 on unbudgeted chemicals, related to GAC chemical purchases. Chemical cost overages for algae treatments of the Beaver Creek Reservoir and for the purchase of GAC chemicals are the main reasons Crozet Water is $149,000 over budget in the Operations & Maintenance expense category. Urban Wastewater went $152,000 over budget on chemical purchases related to the significant flows for the year and spent $154,000 for a Moores Creek stream bank repair. Urban Wastewater also spent $261,000 on unbudgeted equipment repairs and maintenance, including $119,000 to replace UV lamps at the Moores Creek plant. The Lab and Maintenance departments are over budget on vehicle and equipment repairs.

E. Communications (Urban Water – page 2) – Urban Water's telephone and data service charges ran $12,000 higher than estimated.

F. Information Technology (Administration – page 8) – The Administration department made an unbudgeted purchase of optical character recognition (OCR) software in March needed for our document management system upgrade; however, there were savings in other cost centers to fund this overage.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019
Fiscal Year 2019

Consolidated
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 16,387,174	$ 16,387,174	$ 18,665,002	$ 2,277,828	13.90%
Lease Revenue		100,000	100,000	103,515	3,515	3.51%
Admin., Maint. & Engineering Revenue		462,000	462,000	486,788	24,788	5.37%
Other Revenues		528,084	528,084	668,501	140,417	26.59%
Interest Allocation		28,050	28,050	54,723	26,673	95.09%
Total Operating Revenues		**$ 17,505,308**	**$ 17,505,308**	**$ 19,978,528**	**$ 2,473,220**	**14.13%**
Expenses						
Personnel Cost		$ 8,429,784	$ 8,429,784	$ 7,932,130	$ 497,654	5.90%
Professional Services	**A**	710,250	710,250	893,966	(183,716)	-25.87%
Other Services & Charges	**B**	2,814,735	2,814,735	3,213,796	(399,061)	-14.18%
Communications	**E**	143,105	143,105	156,221	(13,116)	-9.17%
Information Technology	**F**	341,450	341,450	332,736	8,714	2.55%
Supplies		43,920	43,920	46,926	(3,006)	-6.84%
Operations & Maintenance	**D**	3,719,660	3,719,660	5,398,372	(1,678,712)	-45.13%
Equipment Purchases	**C**	459,400	459,400	636,383	(176,983)	-38.52%
Depreciation		843,000	843,000	843,000	-	0.00%
Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 17,505,304**	**$ 17,505,304**	**$ 19,453,530**	**$ (1,948,226)**	**-11.13%**
Operating Surplus/(Deficit)		**$ 4**	**$ 4**	**$ 524,998**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 14,852,531	$ 14,852,531	$ 14,852,520	$ (11)	0.00%
Use of Reserves for 2016 Bond DS		300,000	300,000	300,000	-	0.00%
Septage Receiving Support - County		109,440	109,440	109,441	1	0.00%
Buck Mountain Surcharge		118,600	118,600	110,300	(8,300)	-7.00%
Buck Mountain Lease Revenue		1,600	1,600	1,691	91	5.69%
Trust Fund Interest		46,400	46,400	178,222	131,822	284.10%
Reserve Fund Interest		344,000	344,000	779,141	435,141	126.49%
Total Debt Service Revenues		**$ 15,772,571**	**$ 15,772,571**	**$ 16,331,316**	**$ 558,745**	**3.54%**
Debt Service Costs						
Total Principal & Interest		$ 12,295,400	$ 12,295,400	$ 13,058,104	$ (762,704)	-6.20%
Reserve Additions-Interest		344,000	344,000	779,141	(435,141)	-126.49%
Debt Service Ratio Charge		725,000	725,000	725,000	-	0.00%
Reserve Additions-CIP Growth		2,408,175	2,408,175	1,645,471	762,704	31.67%
Total Debt Service Costs		**$ 15,772,575**	**$ 15,772,575**	**$ 16,207,716**	**$ (435,141)**	**-2.76%**
Debt Service Surplus/(Deficit)		**$ (4)**	**$ (4)**	**$ 123,599**		

Summary

Total Revenues	$ 33,277,879	$ 33,277,879	$ 36,309,844	$ 3,031,965	9.11%
Total Expenses	33,277,879	33,277,879	35,661,246	(2,383,368)	-7.16%
Surplus/(Deficit)	**$ 0**	**$ 0**	**$ 648,598**		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Urban Water Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 7,034,788	$ 7,034,788	$ 6,774,911	$ (259,877)	-3.69%
Lease Revenue		70,000	70,000	75,323	5,323	7.60%
Miscellaneous		-	-	43,035	43,035	
Interest Allocation		12,000	12,000	23,252	11,252	93.77%
Total Operating Revenues		**$ 7,116,788**	**$ 7,116,788**	**$ 6,916,521**	**$ (200,267)**	**-2.81%**
Expenses						
Personnel Cost		$ 1,903,779	$ 1,903,779	$ 1,771,190	$ 132,588	6.96%
Professional Services	**A**	329,250	329,250	577,354	(248,104)	-75.35%
Other Services & Charges		582,700	582,700	575,546	7,154	1.23%
Communications	**E**	64,200	64,200	76,521	(12,321)	-19.19%
Information Technology		65,300	65,300	61,653	3,647	5.59%
Supplies		5,000	5,000	9,762	(4,762)	-95.25%
Operations & Maintenance	**D**	1,570,660	1,570,660	2,519,971	(949,311)	-60.44%
Equipment Purchases	**C**	106,600	106,600	303,844	(197,244)	-185.03%
Depreciation		300,000	300,000	300,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 4,927,489	$ 4,927,489	$ 6,195,841	$ (1,268,353)	-25.74%
Allocation of Support Departments		2,189,298	2,189,298	2,050,739	138,559	6.33%
Total Operating Expenses		**$ 7,116,787**	**$ 7,116,787**	**$ 8,246,580**	**$ (1,129,794)**	**-15.88%**
Operating Surplus/(Deficit)		**$ 1**	**$ 1**	**$ (1,330,059)**		

Debt Service Budget vs. Actual

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues					
Debt Service Rate Revenue	$ 5,863,271	$ 5,863,271	$ 5,863,272	$ 1	0.00%
Trust Fund Interest	18,000	18,000	61,130	43,130	239.61%
Reserve Fund Interest	184,000	184,000	416,841	232,841	126.54%
Buck Mountain Surcharge	118,600	118,600	110,300	(8,300)	-7.00%
Lease Revenue	1,600	1,600	1,691	91	5.69%
Total Debt Service Revenues	**$ 6,185,471**	**$ 6,185,471**	**$ 6,453,234**	**$ 267,763**	**4.33%**
Debt Service Costs					
Total Principal & Interest	$ 4,190,796	$ 4,190,796	$ 4,557,580	$ (366,784)	-8.75%
Reserve Additions-Interest	184,000	184,000	416,841	(232,841)	-126.54%
Debt Service Ratio Charge	400,000	400,000	400,000	-	0.00%
Reserve Additions-CIP Growth	1,410,675	1,410,675	1,043,891	366,784	26.00%
Total Debt Service Costs	**$ 6,185,471**	**$ 6,185,471**	**$ 6,418,312**	**$ (232,841)**	**-3.76%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 34,922**		

Rate Center Summary

Total Revenues	$ 13,302,259	$ 13,302,259	$ 13,369,755	$ 67,496	0.51%
Total Expenses	13,302,258	13,302,258	14,664,892	(1,362,634)	-10.24%
Surplus/(Deficit)	**$ 1**	**$ 1**	**$ (1,295,136)**		
Costs per 1000 Gallons	2.09		2.52		
Operating and DS	3.92		4.48		
Thousand Gallons Treated	3,397,700	3,397,700	3,272,904	(124,796)	-3.67%
or					
Flow (MGD)	9.309		8.967		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Crozet Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 957,384	$ 957,384	$ 957,384	$ -	0.00%
Lease Revenues		30,000	30,000	28,192	(1,808)	-6.03%
Interest Allocation		1,700	1,700	3,286	1,586	93.32%
Total Operating Revenues		**$ 989,084**	**$ 989,084**	**$ 988,862**	**$ (222)**	**-0.02%**
Expenses						
Personnel Cost		$ 288,389	$ 288,389	$ 267,652	$ 20,737	7.19%
Professional Services		30,000	30,000	5,552	24,448	81.49%
Other Services & Charges		126,960	126,960	119,229	7,731	6.09%
Communications		4,450	4,450	5,823	(1,373)	-30.85%
Information Technology		14,200	14,200	480	13,720	96.62%
Supplies		620	620	1,331	(711)	-114.71%
Operations & Maintenance	D	261,150	261,150	410,768	(149,618)	-57.29%
Equipment Purchases		26,450	26,450	9,911	16,539	62.53%
Depreciation		30,000	30,000	30,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 782,219	$ 782,219	$ 850,746	$ (68,527)	-8.76%
Allocation of Support Departments		206,863	206,863	194,012	12,851	6.21%
Total Operating Expenses		**$ 989,082**	**$ 989,082**	**$ 1,044,758**	**$ (55,676)**	**-5.63%**
Operating Surplus/(Deficit)		**$ 2**	**$ 2**	**$ (55,896)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 995,568	$ 995,568	$ 995,568	$ -	0.00%
Trust Fund Interest		1,800	1,800	6,238	4,438	246.54%
Reserve Fund Interest		6,700	6,700	15,583	8,883	132.58%
Total Debt Service Revenues		**$ 1,004,068**	**$ 1,004,068**	**$ 1,017,389**	**$ 13,321**	**1.33%**
Debt Service Costs						
Total Principal & Interest		$ 426,071	$ 426,071	$ 698,509	$ (272,438)	-63.94%
Reserve Additions-Interest		6,700	6,700	15,583	(8,883)	-132.58%
Reserve Additions-CIP Growth		571,300	571,300	298,862	272,438	47.69%
Total Debt Service Costs		**$ 1,004,071**	**$ 1,004,071**	**$ 1,012,954**	**$ (8,883)**	**-0.88%**
Debt Service Surplus/(Deficit)		**$ (3)**	**$ (3)**	**$ 4,435**		
Rate Center Summary						
Total Revenues		$ 1,993,152	$ 1,993,152	$ 2,006,251	$ 13,099	0.66%
Total Expenses		1,993,153	1,993,153	2,057,712	(64,559)	-3.24%
Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ (51,462)**		
Costs per 1000 Gallons		5.02		5.56		
Operating and DS		10.12		10.95		
Thousand Gallons Treated		196,946	196,946	187,993	(8,953)	-4.55%
Flow (MGD)		0.540		0.515		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Scottsville Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 443,328	$ 443,328	$ 443,328	$ -	0.00%
Red Hill		-	-	52,440	$ 52,440	
Interest Allocation		750	750	1,476	726	96.87%
Total Operating Revenues		**$ 444,078**	**$ 444,078**	**$ 497,245**	**$ 53,167**	**11.97%**
Expenses						
Personnel Cost		$ 153,885	$ 153,885	$ 141,205	$ 12,680	8.24%
Professional Services	A	20,000	20,000	28,691	(8,691)	-43.46%
Other Services & Charges	B	28,680	28,680	38,784	(10,104)	-35.23%
Communications		3,210	3,210	4,636	(1,426)	-44.43%
Information Technology		7,000	7,000	7,338	(338)	-4.83%
Supplies		750	750	179	571	76.13%
Operations & Maintenance		66,570	66,570	65,382	1,188	1.78%
Equipment Purchases	C	14,000	14,000	60,973	(46,973)	-335.52%
Depreciation		20,000	20,000	20,000	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 314,095	$ 314,095	$ 367,188	$ (53,094)	-16.90%
Allocation of Support Departments		129,988	129,988	122,418	7,570	5.82%
Total Operating Expenses		**$ 444,083**	**$ 444,083**	**$ 489,606**	**$ (45,523)**	**-10.25%**
Operating Surplus/(Deficit)		**$ (5)**	**$ (5)**	**$ 7,639**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 129,280	$ 129,280	$ 129,276	$ (4)	0.00%
Trust Fund Interest		400	400	1,782	1,382	345.55%
Reserve Fund Interest		3,300	3,300	7,791	4,491	136.10%
Total Debt Service Revenues		**$ 132,980**	**$ 132,980**	**$ 138,850**	**$ 5,870**	**4.41%**
Debt Service Costs						
Total Principal & Interest		$ 129,680	$ 129,680	$ 129,680	$ -	0.00%
Reserve Additions-Interest		3,300	3,300	7,791	(4,491)	
Reserve Additions-CIP Growth		-	-	-	-	
Total Debt Service Costs		**$ 132,980**	**$ 132,980**	**$ 137,471**	**$ (4,491)**	**-3.38%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 1,378**		
Rate Center Summary						
Total Revenues		$ 577,058	$ 577,058	$ 636,094	$ 59,036	10.23%
Total Expenses		577,063	577,063	627,077	(50,015)	-8.67%
Surplus/(Deficit)		**$ (5)**	**$ (5)**	**$ 9,017**		
Costs per 1000 Gallons		23.70		31.02		
Operating and DS		30.80		39.73		
Thousand Gallons Treated		18,738	18,738	15,785	(2,953)	-15.76%
or						
Flow (MGD)		0.051		0.043		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Urban Wastewater Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 7,277,082	$ 7,277,082	$ 9,814,787	$ 2,537,705	34.87%
Stone Robinson WWTP		28,084	28,084	22,117	(5,967)	-21.25%
Septage Acceptance		410,000	410,000	445,957	35,957	8.77%
Nutrient Credits		90,000	90,000	104,060	14,060	15.62%
Miscellaneous Revenue		-	-	891	891	
Interest Allocation		12,500	12,500	24,521	12,021	96.17%
Total Operating Revenues		**$ 7,817,666**	**$ 7,817,666**	**$ 10,412,333**	**$ 2,594,667**	**33.19%**
Expenses						
Personnel Cost		$ 1,282,792	$ 1,282,792	$ 1,186,627	$ 96,165	7.50%
Professional Services	A	54,000	54,000	73,028	(19,028)	-35.24%
Other Services & Charges	B	1,816,225	1,816,225	2,251,426	(435,201)	-23.96%
Communications		10,430	10,430	10,672	(242)	-2.32%
Information Technology		57,250	57,250	49,522	7,728	13.50%
Supplies		2,700	2,700	1,277	1,423	52.69%
Operations & Maintenance	D	1,408,900	1,408,900	1,979,361	(570,461)	-40.49%
Equipment Purchases		74,500	74,500	71,850	2,650	3.56%
Depreciation		470,000	470,000	470,000	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 5,176,797	$ 5,176,797	$ 6,093,764	$ (916,968)	-17.71%
Allocation of Support Departments		2,640,868	2,640,868	2,481,357	159,512	6.04%
Total Operating Expenses		**$ 7,817,665**	**$ 7,817,665**	**$ 8,575,121**	**$ (757,456)**	**-9.69%**
Operating Surplus/(Deficit)		**$ 1**	**$ 1**	**$ 1,837,212**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 7,854,820	$ 7,854,820	$ 7,854,816	$ (4)	0.00%
Use of Reserves for 2016 Bond DS		300,000	300,000	300,000	-	0.00%
Septage Receiving Support - County		109,440	109,440	109,441	1	0.00%
Trust Fund Interest		26,200	26,200	108,894	82,694	315.63%
Reserve Fund Interest		148,000	148,000	334,252	186,252	125.85%
Total Debt Service Revenues		**$ 8,438,460**	**$ 8,438,460**	**$ 8,707,403**	**$ 268,943**	**3.19%**
Debt Service Costs						
Total Principal & Interest		$ 7,539,261	$ 7,539,261	$ 7,662,743	$ (123,482)	-1.64%
Reserve Additions-Interest		148,000	148,000	334,252	(186,252)	-125.85%
Debt Service Ratio Charge		325,000	325,000	325,000	-	0.00%
Reserve Additions-CIP Growth		426,200	426,200	302,718	123,482	28.97%
Total Debt Service Costs		**$ 8,438,461**	**$ 8,438,461**	**$ 8,624,713**	**$ (186,252)**	**-2.21%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ 82,690**		
Rate Center Summary						
Total Revenues		$ 16,256,126	$ 16,256,126	$ 19,119,735	$ 2,863,609	17.62%
Total Expenses		16,256,126	16,256,126	17,199,834	(943,707)	-5.81%
Surplus/(Deficit)		**$ (0)**	**$ (0)**	**$ 1,919,902**		
Costs per 1000 Gallons		2.31		1.87		
Operating and DS		4.79		3.76		
Thousand Gallons Treated		3,390,400	3,390,400	4,573,526	1,183,126	34.90%
or						
Flow (MGD)		9.289		12.530		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual					
Notes					
Revenues					
Operations Rate Revenue	$ 372,720	$ 372,720	$ 372,720	$ -	0.00%
Interest Allocation	600	600	1,203	603	100.48%
Total Operating Revenues	**$ 373,320**	**$ 373,320**	**$ 373,923**	**$ 603**	**0.16%**
Expenses					
Personnel Cost	$ 94,490	$ 94,490	$ 87,701	$ 6,788	7.18%
Professional Services	3,000	3,000	-	3,000	
Other Services & Charges	39,510	39,510	37,384	2,126	5.38%
Communications	2,600	2,600	3,257	(657)	-25.26%
Information Technology	3,350	3,350	-	3,350	100.00%
Supplies	100	100	-	100	100.00%
Operations & Maintenance	121,450	121,450	113,096	8,354	6.88%
Equipment Purchases	2,900	2,900	2,400	500	17.24%
Depreciation	5,000	5,000	5,000	0	0.00%
Subtotal Before Allocations	$ 272,400	$ 272,400	$ 248,838	$ 23,562	8.65%
Allocation of Support Departments	100,915	100,915	95,274	5,641	5.59%
Total Operating Expenses	**$ 373,315**	**$ 373,315**	**$ 344,112**	**$ 29,203**	**7.82%**
Operating Surplus/(Deficit)	**$ 5**	**$ 5**	**$ 29,811**		
Debt Service Budget vs. Actual					
Revenues					
Debt Service Rate Revenue	$ 1,586	$ 1,586	$ 1,584	$ (2)	-0.13%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	1,000	1,000	2,337	1,337	133.74%
Total Debt Service Revenues	**$ 2,586**	**$ 2,586**	**$ 3,921**	**$ (2)**	**-0.08%**
Debt Service Costs					
Total Principal & Interest	$ 1,586	$ 1,586	$ 1,586	$ -	0.00%
Reserve Additions-Interest	1,000	1,000	2,337	(1,337)	-133.74%
Total Debt Service Costs	**$ 2,586**	**$ 2,586**	**$ 3,923**	**$ (1,337)**	**-51.72%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ (2)**		

Rate Center Summary

Total Revenues	$ 375,906	$ 375,906	$ 377,844	$ 1,938	0.52%
Total Expenses	375,901	375,901	348,035	27,865	7.41%
Surplus/(Deficit)	**$ 5**	**$ 5**	**$ 29,809**		
Costs per 1000 Gallons	8.60		6.84		
Operating and DS	8.66		6.92		
Thousand Gallons Treated	43,412	43,412	50,325	6,913	**15.92%**
or					
Flow (MGD)	0.119		0.138		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 301,872	$ 301,872	$ 301,872	$ -	0.00%
Interest Allocation		500	500	984	484	96.79%
Total Operating Revenues		**$ 302,372**	**$ 302,372**	**$ 302,856**	**$ 484**	**0.16%**
Expenses						
Personnel Cost		$ 94,515	$ 94,515	$ 87,702	$ 6,813	7.21%
Professional Services		2,000	2,000	-	2,000	100.00%
Other Services & Charges		28,400	28,400	19,999	8,401	29.58%
Communications		2,630	2,630	3,726	(1,096)	-41.66%
Information Technology		2,350	2,350	-	2,350	100.00%
Supplies		100	100	446	(346)	-345.51%
Operations & Maintenance		57,850	57,850	45,628	12,222	21.13%
Equipment Purchases		3,200	3,200	3,050	150	4.69%
Depreciation		18,000	18,000	18,000	-	0.00%
Subtotal Before Allocations		$ 209,045	$ 209,045	$ 178,550	$ 30,494	14.59%
Allocation of Support Departments		93,328	93,328	88,014	5,314	5.69%
Total Operating Expenses		**$ 302,372**	**$ 302,372**	**$ 266,564**	**$ 35,808**	**11.84%**
Operating Surplus/(Deficit)		**$ (0)**	**$ (0)**	**$ 36,292**		

Debt Service Budget vs. Actual

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 8,006	$ 8,006	$ 8,004	$ (2)	-0.02%
Trust Fund Interest	-	-	178	178	
Reserve Fund Interest	1,000	1,000	2,337	1,337	133.74%
Total Debt Service Revenues	**$ 9,006**	**$ 9,006**	**$ 10,520**	**$ 1,514**	**16.81%**
Debt Service Costs					
Total Principal & Interest	$ 8,006	$ 8,006	$ 8,006	$ -	0.00%
Reserve Additions-Interest	1,000	1,000	2,337	(1,337)	
Estimated New Principal & Interest	-	-	-	-	
Total Debt Service Costs	**$ 9,006**	**$ 9,006**	**$ 10,343**	**$ (1,337)**	**-14.85%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 176**		

Rate Center Summary

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 311,378	$ 311,378	$ 313,376	$ 1,998	0.64%
Total Expenses	311,378	311,378	276,907	34,471	11.07%
Surplus/(Deficit)	**$ (0)**	**$ (0)**	**$ 36,468**		
Costs per 1000 Gallons	15.14		8.52		
Operating and DS	15.60		8.85		
Thousand Gallons Treated	19,966	19,966	31,292	11,326	**56.73%**
or					
Flow (MGD)	0.055		0.086		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Administration

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ 460,000	$ 460,000	$ 460,000	$ (0)	0.00%
Miscellaneous Revenue		2,000	2,000	8,978	6,978	348.88%
Total Operating Revenues		**$ 462,000**	**$ 462,000**	**$ 468,978**	**$ 6,978**	**1.51%**
Expenses						
Personnel Cost		$ 1,796,150	$ 1,796,150	$ 1,746,742	$ 49,408	2.75%
Professional Services		228,000	228,000	190,447	37,553	16.47%
Other Services & Charges		140,980	140,980	99,372	41,608	29.51%
Communications		20,280	20,280	20,061	219	1.08%
Information Technology	**F**	138,500	138,500	167,681	(29,181)	-21.07%
Supplies		21,000	21,000	24,533	(3,533)	-16.82%
Operations & Maintenance		60,400	60,400	41,787	18,613	30.82%
Equipment Purchases		27,500	27,500	27,347	153	0.56%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 2,432,810**	**$ 2,432,810**	**$ 2,317,972**	**$ 114,839**	**4.72%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,970,810)**	**$ (1,970,810)**	**$ (1,848,994)**	**$ (121,816)**	**6.18%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 867,157**	**$ 867,157**	**$ 813,557**	**$ 53,599**	
Crozet Water	4.00%	**$ 78,832**	**78,832**	**73,960**	**4,873**	
Scottsville Water	2.00%	**$ 39,416**	**39,416**	**36,980**	**2,436**	
Urban Wastewater	48.00%	**$ 945,989**	**945,989**	**887,517**	**58,472**	
Glenmore Wastewater	1.00%	**$ 19,708**	**19,708**	**18,490**	**1,218**	
Scottsville Wastewater	1.00%	**$ 19,708**	**19,708**	**18,490**	**1,218**	
	100.00%	**$ 1,970,810**	**$ 1,970,810**	**$ 1,848,994**	**$ 121,816**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Maintenance

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Miscellaneous Revenue		-	-	3,565	3,565	
Total Operating Revenues		**$ -**	**$ -**	**$ 3,565**	**$ 3,565**	
Expenses						
Personnel Cost		$ 1,304,247	$ 1,304,247	$ 1,204,252	$ 99,994	7.67%
Professional Services		-	-	-	-	
Other Services & Charges		17,500	17,500	18,905	(1,405)	-8.03%
Communications		17,325	17,325	17,014	311	1.79%
Information Technology		6,500	6,500	5,275	1,225	18.85%
Supplies		2,000	2,000	361	1,639	81.97%
Operations & Maintenance	**D**	64,300	64,300	91,484	(27,184)	-42.28%
Equipment Purchases	**C**	105,650	105,650	118,369	(12,719)	-12.04%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 1,517,522**	**$ 1,517,522**	**$ 1,455,660**	**$ 61,861**	**4.08%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,517,522)**	**$ (1,517,522)**	**$ (1,452,095)**	**$ (58,296)**	**3.84%**
Allocations to the Rate Centers						
Urban Water	30.00%	**$ 455,256**	**$ 455,256**	**$ 435,629**	**$ 19,628**	
Crozet Water	3.50%	**53,113**	**53,113**	**50,823**	**2,290**	
Scottsville Water	3.50%	**53,113**	**53,113**	**50,823**	**2,290**	
Urban Wastewater	56.50%	**857,400**	**857,400**	**820,434**	**36,966**	
Glenmore Wastewater	3.50%	**53,113**	**53,113**	**50,823**	**2,290**	
Scottsville Wastewater	3.00%	**45,526**	**45,526**	**43,563**	**1,963**	
	100.00%	**$ 1,517,522**	**$ 1,517,522**	**$ 1,452,095**	**$ 65,426**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Laboratory

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
N/A						
Expenses						
Personnel Cost		$ 301,100	$ 301,100	$ 288,451	$ 12,649	4.20%
Professional Services		-	-	-	-	
Other Services & Charges		14,230	14,230	7,284	6,946	48.81%
Communications		800	800	2,175	(1,375)	
Information Technology		2,500	2,500	-	2,500	100.00%
Supplies		2,150	2,150	1,057	1,093	50.83%
Operations & Maintenance	D	53,500	53,500	85,656	(32,156)	-60.10%
Equipment Purchases		72,100	72,100	11,618	60,482	83.89%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 446,380**	**$ 446,380**	**$ 396,242**	**$ 50,138**	**11.23%**

Department Summary

Net Costs Allocable to Rate Centers	**$ (446,380)**	**$ (446,380)**	**$ (396,242)**	**$ (50,138)**	**11.23%**
Allocations to the Rate Centers					
Urban Water 44.00%	**$ 196,407**	**$ 196,407**	**$ 174,346**	**$ 22,061**	
Crozet Water 4.00%	**17,855**	**17,855**	**15,850**	**2,006**	
Scottsville Water 2.00%	**8,928**	**8,928**	**7,925**	**1,003**	
Urban Wastewater 47.00%	**209,799**	**209,799**	**186,234**	**23,565**	
Glenmore Wastewater 1.50%	**6,696**	**6,696**	**5,944**	**752**	
Scottsville Wastewater 1.50%	**6,696**	**6,696**	**5,944**	**752**	
100.00%	**$ 446,380**	**$ 446,380**	**$ 396,242**	**$ 50,138**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2019

Engineering

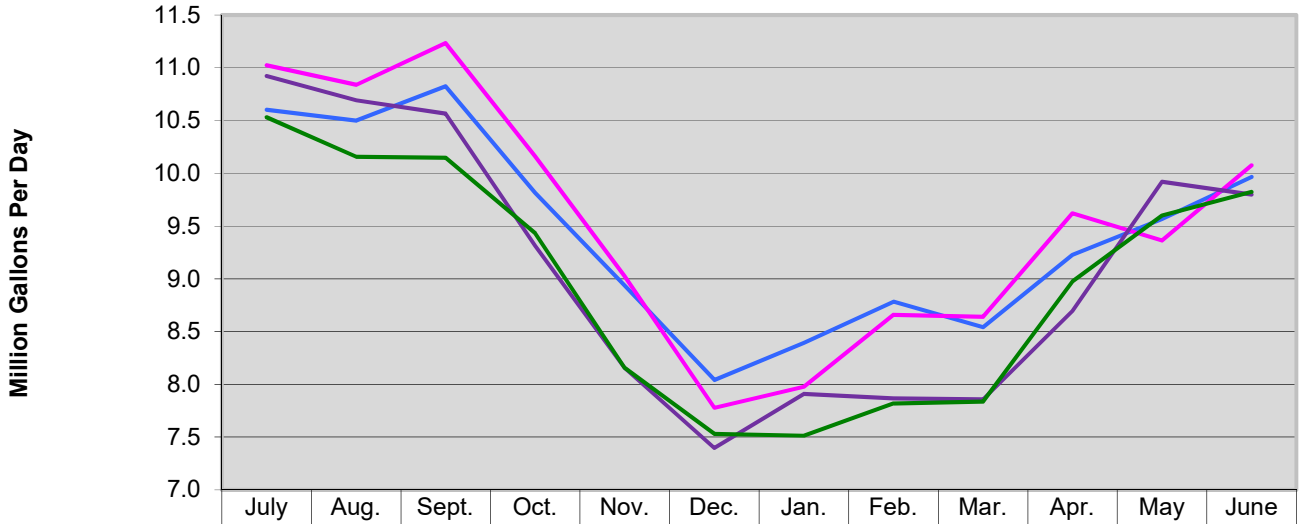
Operating Budget vs. Actual

		Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ -	$ -	$ 14,246	$ 14,246	
Total Operating Revenues		**$ -**	**$ -**	**$ 14,246**	**$ 14,246**	
Expenses						
Personnel Cost		$ 1,210,438	$ 1,210,438	$ 1,150,608	$ 59,830	4.94%
Professional Services		44,000	44,000	18,893	25,107	57.06%
Other Services & Charges	**B**	19,550	19,550	45,866	(26,316)	-134.61%
Communications		17,180	17,180	12,336	4,844	28.20%
Information Technology		44,500	44,500	40,787	3,713	8.34%
Supplies		9,500	9,500	7,979	1,521	16.01%
Operations & Maintenance		54,880	54,880	45,238	9,642	17.57%
Equipment Purchases		26,500	26,500	27,021	(521)	-1.96%
Depreciation & Capital Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 1,426,548**	**$ 1,426,548**	**$ 1,348,727**	**$ 77,821**	**5.46%**

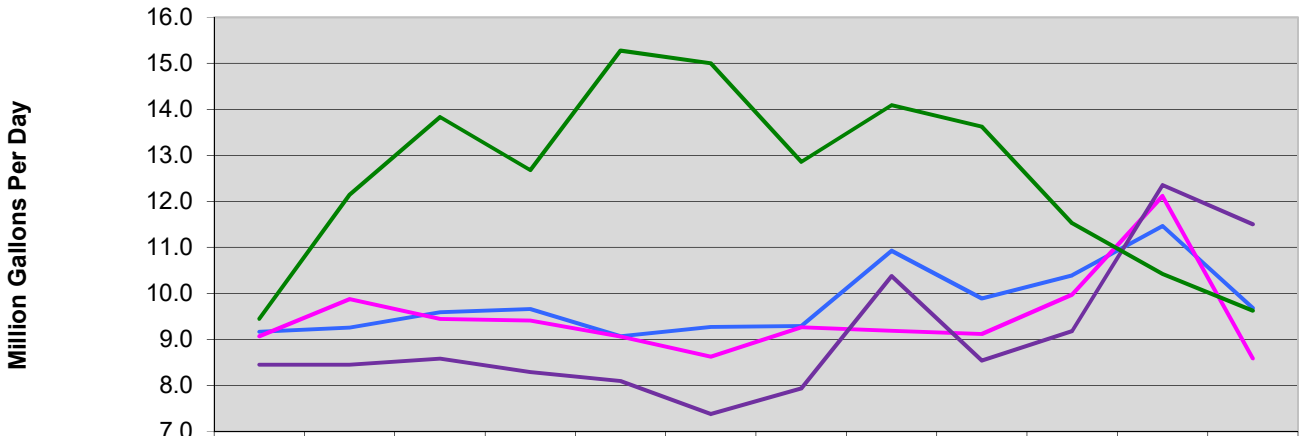
Department Summary

Net Costs Allocable to Rate Centers		**$ (1,426,548)**	**$ (1,426,548)**	**$ (1,334,481)**	**$ (63,575)**	**4.46%**
Allocations to the Rate Centers						
Urban Water	47.00%	**$ 670,477**	**$ 670,477**	**$ 627,206**	**$ 43,271**	
Crozet Water	4.00%	**57,062**	**57,062**	**53,379**	**3,683**	
Scottsville Water	2.00%	**28,531**	**28,531**	**26,690**	**1,841**	
Urban Wastewater	44.00%	**627,681**	**627,681**	**587,172**	**40,509**	
Glenmore Wastewater	1.50%	**21,398**	**21,398**	**20,017**	**1,381**	
Scottsville Wastewater	1.50%	**21,398**	**21,398**	**20,017**	**1,381**	
	100.00%	**$ 1,426,548**	**$ 1,426,548**	**$ 1,334,481**	**$ 92,067**	

Rivanna Water and Sewer Authority
Flow Graphs



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG.	10.60	10.50	10.83	9.82	8.94	8.04	8.39	8.78	8.54	9.23	9.57	9.97
FY 2017	11.02	10.84	11.23	10.16	9.02	7.78	7.98	8.66	8.64	9.62	9.36	10.07
FY 2018	10.92	10.69	10.57	9.31	8.16	7.40	7.91	7.87	7.86	8.70	9.92	9.80
FY 2019	10.53	10.16	10.15	9.43	8.16	7.53	7.51	7.82	7.84	8.98	9.60	9.82



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG	9.17	9.26	9.59	9.66	9.07	9.27	9.29	10.93	9.89	10.39	11.47	9.68
FY 2017	9.07	9.87	9.45	9.41	9.06	8.62	9.26	9.19	9.12	9.97	12.12	8.59
FY 2018	8.45	8.45	8.59	8.29	8.10	7.38	7.94	10.38	8.54	9.18	12.36	11.50
FY 2019	9.45	12.14	13.83	12.68	15.28	15.00	12.86	14.09	13.62	11.52	10.42	9.62

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **STATUS REPORT: ONGOING PROJECTS**

DATE: **JULY 23, 2019**

This memorandum reports on the status of the following Capital Projects as well as other significant operating, maintenance and planning projects.

Under Construction

1. Crozet Water Treatment Plant Expansion
2. Wholesale Water Master Metering
3. Interceptor Sewer & Manhole Repair
4. Valve Repair – Replacement (Phase 2)
5. Piney Mountain Tank Rehabilitation
6. Scottsville WTP – Finished Water Metering Improvements
7. Buck's Elbow Ground Storage Tank Chlorination System
8. Glenmore Secondary Clarifier Coating
9. Security Enhancements
10. Urgent and Emergency Repairs

Design and Bidding

11. Observatory Water Treatment Plant Expansion
12. South Rivanna Water Treatment Plant Improvements
13. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
14. Crozet Flow Equalization Tank
15. Beaver Creek Dam Alterations
16. Beaver Creek Raw Water Pump Station
17. Crozet Interceptor Pump Station Rebuilds
18. MCAWRRF Digester Sludge Storage Improvements
19. MCAWRRF Aluminum Slide Gate Replacements

20. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
21. South Rivanna Dam – Gate Repairs
22. Moores Creek Wetland Hydrology Improvements

Planning and Studies

23. Avon to Pantops Water Main (on hold until completion of the Urban Water Master Plan)
24. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
25. Urban Water Demand and Safe Yield Study
26. Urban Finished Water Infrastructure Master Plan
27. South Rivanna River Crossing and North Rivanna Transmission Main
28. Route 29 Pump Station
29. South Rivanna Hydropower Plant Decommissioning
30. Upper Schenks Branch Interceptor, Phase II
31. Asset Management Plan

O&M Related Projects

32. NRWTP Raw Metering Improvements
33. NRWTP Sludge Lagoon Study and Needs Assessment
34. MCAWRRF Cogeneration System Analysis
35. SRWTP Future Site Development Analysis

1. Crozet Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Orders Construction Co. (WVA)
Construction Start:	December 2018
Percent Completion:	10 %
Base Construction Contract + Change Order to Date = Current Value:	$7,170,000- $285,000 = $6,885,000
Expected Completion Date:	March 2021
Total Capital Project Budget:	$8,500,000

Current Status:

A Notice to Proceed was issued on December 13, 2018 and the contractor mobilized on February 26, 2019. Work towards the completion of Milestone No. 1continues, which includes rehabilitation and construction of the PAC contactors and flocculation basins.

History:

This project was created to increase the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal was to not drastically increase the plant footprint in regard to the existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity will be improved by approximately 100% (from 1 to 2 mgd). SEH completed a Preliminary Engineering Report (PER); watershed data collection; raw

water jar testing; pilot scale testing, as well as preliminary and final design.

2. <u>Wholesale Water Master Metering</u>

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	98%
Base Construction Contract + Change Orders to Date = Current Value:	$2,228,254 - $284,104.24 = $1,944,149.76
Expected Completion Date:	August 2019
Total Capital Project Budget:	$3,200,000

<u>Current Status</u>:

Three water treatment plant flow meters, and all 25 distribution system flow meters have been installed. Of those 25 meters, 16 are currently functional, five are under review by Baker, three have been returned to the manufacturer to resolve calibration issues, and the final replacement meter will be installed and calibrated upon receipt in July. Staff hopes to have a fully functioning metering system by the end of August 2019, if no additional unforeseen issues arise.

<u>History</u>:

In January 2012, a Water Cost Allocation Agreement was signed by the City of Charlottesville (City) and ACSA designating how the two agencies would share in the financing of the New Ragged Mountain Dam project. Within the agreement is a general provision developed by the ACSA and City to enhance measurement of the water usage by each of the distribution agencies.

The Board authorized staff in August of 2012 to enter into an agreement with Michael Baker International, Inc. (Baker) to complete an engineering study on metering plan alternatives. Baker's study identified several alternatives for a metering plan based on combinations of metering and estimating methodologies. Based on feedback from ACSA, the City, and RWSA, Baker recommended a Jurisdictional Approach which included installation of water meters at 34 locations at the City/County corporate boundary and at each of the three urban water treatment plants at an estimated cost of $6.4 million. At its September 2013 meeting, the RWSA Board of Directors requested staff to proceed with the Jurisdictional Coverage Approach. In February 2014, the Board of Directors authorized Baker to complete preliminary and final design for the project and to provide bid-phase services. The final design includes construction of 25 metering systems in underground vaults and required acquisition of twenty (20) permanent water line easements and one (1) permanent access easement.

In May 2018, a final version of the *Wholesale Metering Administration and Implementation Policy* was completed and forwarded to the ACSA and the City. RWSA terminated the construction contract with Linco, Inc. on April 2, 2018 and is coordinating the remaining work in-house.

3. Interceptor Sewer and Manhole Repair

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	21%
Base Construction Contract + Change Orders to Date = Current Value:	$1,244,337.19
Expected Completion:	2021
Total Capital Project Budget:	$1,088,330 (Urban) + $625,000 (Crozet) = $1,713,330

Current Status:

Frazier Engineering continues to conduct condition assessment activities and has reviewed CCTV results from investigation activities performed by IPR Northeast. The results from these investigations and previous investigations have been compiled into an initial construction work authorization for rehabilitation work on portions of the Crozet and Morey Creek Interceptor. Some additional CCTV work will also be performed following the cleaning of certain sections of the interceptor system. Additional investigation and rehabilitation work will follow after the initial round of CCTV investigations.

History:

Results from sewer flow monitoring and modeling under the Comprehensive Sanitary Sewer Study provided awareness to specific inflow and infiltration (I&I) concerns in the collection system and resulted in strengthened commitments from the City, ACSA and RWSA to continue professional engineering services to aid in the rehabilitation and repair of the sewer collection system. Engineering services will be used for sewer infrastructure condition assessments and the development of a sewer rehabilitation bid package for the procurement of a contractor to perform the recommended rehabilitation work.

4. Valve Repair – Replacement (Phase 2)

Design Engineer:	RWSA / Dewberry
Construction Contractor:	Garney Construction
Construction Start:	May 2019
Percent Complete:	15%
Base Construction Contract + Change Orders to Date = Current Value:	$843,460.00 + ($75,637.00) + $2,269.90 = $770,092.90
Expected Completion:	December 2019
Total Capital Project Budget:	$882,914

Current Status:

Due to the ongoing Piney Mountain Tank Rehabilitation and bypass pumping necessary for that work, two valves identified for replacement in the Valve Repair-Replacement Project are currently unavailable to be replaced. As such, the Contractor demobilized from the project after the valve replacement completed on May 21, 2019 and will return in early August once all valves included in

the project are available for replacement. RWSA staff is continuing internal coordination, as well as external communication with the Contractor and other utilities involved to help ensure that the remainder of the work can be completed as scheduled.

History:
Isolation valves are critical for normal operation of the water distribution system and timely emergency response to water main breaks. Staff continuously reviews results from an ongoing Valve Exercising and Condition Assessment Program. This project will replace the highest-priority valves that are identified during the condition assessment as not operable and not repairable. In addition, valves that are identified in the condition assessment as being inoperable and repairable will be repaired as a part of the project. Phase 1 of the Valve Repair-Replacement Project replaced several inoperable and unrepairable valves in the North Rivanna Finished Water System. Phase 2 will continue replacing inoperable and unrepairable valves in the North Rivanna Finished Water System, but it will also replace (and potentially repair) valves on the South Rivanna, Crozet, Pantops, and Southern Loop Finished Water Systems. Once all specified valves have been repaired/replaced in Phase 2, the focus will shift to replacing older isolation valves in subsequent phases. Numerous valves in the North Rivanna and South Rivanna Finished Water Systems are 50+ years old and replacing these valves will enhance the resiliency and reliability of the two systems.

A Request for Bids (RFB) was issued on November 6, 2018. A Pre-Bid Conference was held on November 19, 2018. The first (and only) Addendum was issued on November 30, 2018. RWSA staff opened bids for the project on December 11, 2018, and Garney Companies, Inc. was the apparent low bidder ($843,460). The RWSA Board of Directors approved the bid award recommendation and Capital Improvement Plan Budget Amendment on January 22, 2019. A Notice of Award was sent to Garney Companies, Inc. on February 6, 2019. A Pre-Construction Conference was held with the Contractor, VDOT, ACSA, and RWSA on March 11, 2019. Mobilization occurred during the week of April 29, 2019, and a Notice to Proceed was issued on May 6, 2019.

Two (2) valve replacements were completed in May 2019; one (1) valve was replaced on the Crozet Waterline, and one (1) valve was replaced on the South Rivanna Waterline.

5. Piney Mountain Tank Rehabilitation

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	Utility Service Co, Inc.
Construction Start:	April 2019
Percent Complete:	70%
Base Construction Contract + Change Orders to Date = Current Value:	$251,700 + $12,585 = $264,285
Expected Completion:	August 2019
Total Capital Project Budget:	$570,000

Current Status:

The Piney Mountain Tank was taken offline during the week of April 22, 2019. The Contractor completed all structural repairs on June 21, 2019 and has now transitioned to the coating portion of the project. It is anticipated that the tank will be placed back online in August 2019.

History:

The 700,000 gallon Piney Mountain Tank serves the North Rivanna pressure zone. A routine inspection of the Piney Mountain Tank in April of 2012 revealed several deformed roof rafters, indicating the potential for structural deficiency. An in-depth structural inspection was performed in May of 2013 and a list of recommended roof repairs provided. This project includes consultant services for design and bidding of necessary roof repairs and other ancillary items, as well as construction, construction administration, and inspection services. Long term plans for the Rt. 29 service area include the modification or elimination of this facility. The current recommended improvements are needed in order to maintain the existing tank in service for at least the next 10 years.

The project was advertised for bid on November 28, 2017 and bids were opened on January 9, 2018. At its January 2018 meeting, the RWSA Board of Directors approved staff's recommendation of award to Utility Service Co., Inc., the apparent low bidder on the project. Due to unforeseen complications with an extended tank shutdown and other ongoing construction activities in the North Rivanna Water System in spring of 2018, construction of the Piney Mountain Tank repairs was postponed to spring of 2019. The RWSA Board of Directors approved an amendment to the Capital Improvement Plan Budget at its March 2019 meeting.

6. Scottsville WTP – Finished Water Metering Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Anderson Construction Inc.
Construction Start:	September 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$115,500
Completion:	January 2020
Approved Capital Budget:	$145,000

Current Status:

Construction bids were opened on May 29, 2019 and a Notice of Award was provided to the contractor on July 9, 2019.

History:

The Scottsville WTP is permitted to provide up to 0.25 MGD of potable drinking water to RWSA customers in the Scottsville service area. After water has been treated in the plant it is collected in an existing clearwell, which was constructed with the original facility. From the clearwell, the water is pumped into the distribution system by one of the two high service pumps. The flow from these pumps is not metered. In order to keep a record of the total flow entering the Scottsville system, plant operators must periodically conduct draw-down tests to verify the pumping rate of each of the two pumps. The total flow is then calculated based on the run time of each pump. This method of measuring flow is not accurate, as the pumping rate will vary based on the clearwell level and the hydraulic grade line of the distribution system. In addition, the Virginia Department of Health has indicated that the flow should be metered during recent conversations related to the disinfection profile calculation throughout the plant. The purpose of this project is to install a finished water meter at the plant.

7. Buck's Elbow Ground Storage Tank Chlorination System

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Littleton and Associates, Inc.
Construction Start:	September 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$186,000
Completion:	April 2020
Approved Capital Budget:	$187,000 + $52,000 requested = $239,000

Current Status:

SEH and RWSA finalized the Bidding Documents and posted the Request for Bids on June 20, 2019. Bidding Documents have been sent to the Virginia Department of Health (VDH) for final regulatory approval. Bids were opened on July 11, 2019, and a bid award recommendation is included in this month's board packet.

History:

The two million-gallon Bucks Elbow Ground Storage Tank provides finished water storage for the Crozet Area. Historically, RWSA has experienced low chlorine residuals in the tank during the warm weather months due to water age and stratification. When chlorine residuals drop, RWSA must manually feed chlorine into the tank. Previously, this meant that staff had to bring all required pumping infrastructure to the site and climb the tank to access the injection point(s). To enhance the efficiency and safety of this process, SEH is assisting RWSA with the design of a chlorine feed system that is capable of one-person operation, will not require tank climbing or confined space entry into the adjacent altitude valve vault, and will minimize overall chemical exposure risk to RWSA staff. An active mixing system will also be installed at the Buck's Elbow Ground Storage Tank as a part of the work to supplement the existing passive mixing system. This will ensure that the tank is being appropriately mixed during the chlorine feed process and will decrease overall stratification in the tank.

SEH completed an update to the project's original Alternatives Analysis (completed in Winter 2017 as an O&M Project) and held a review meeting with RWSA Engineering and Operations staff during the week of May 6, 2019. This document was submitted to VDH for preliminary review following the meeting

8. Glenmore Secondary Clarifier Coating

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Nostos SS Contractors, LLC
Construction Start:	August 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$98,900
Completion:	January 2020
Approved Capital Budget:	$110,000 + $50,000 requested = $160,000

Current Status:

Request for Quote No. 1087 was issued on June 11, 2019. Quotes for cleaning and coating both clarifiers were received on June 25, 2019. A separate Board Report is included in this month's packet to request additional funding needed to complete this work.

History:

The secondary clarifiers at the Glenmore facility were painted over 10-years ago. The clarifier environment is a particularly harsh environment subject to corrosive gases, grit abrasion and mechanical wear. Based on observations by operations staff, the coating system is in need of replacement to prevent deterioration and failure of the underlying metal superstructure. This project includes the cleaning and full coating of the clarifier.

9. Security Enhancements

Contractor:	Security 101
Construction Start:	August 2019
Percent Complete:	0%, Award
Completion:	2024
Approved Capital Budget:	$1,000,000

Current Status:

RWSA opened proposals for its access control system Implementer RFP on June 27, 2019. The selected Implementer will install the proposed access control system at the Crozet, Observatory, and South Rivanna WTPs, as well as the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) as in initial measure, with additional facilities to follow. Interviews were conducted on July 15 and 16, 2019, and a recommendation has been made in this month's board packet. As a part of the RFP process, prospective Implementers also submitted their Firm's capabilities on several other security measures, such as CCTV cameras and intrusion detection systems.

History:

As required by the Federal Bioterrorism Act of 2002, water utilities must conduct Vulnerability Assessments and have Emergency Response Plans. RWSA recently completed an updated Risk Assessment of its water system in collaboration with the Albemarle County Service Authority (ACSA), City of Charlottesville (City), and University of Virginia (UVA). A number of security improvements that could be applied to both the water and wastewater systems were identified. The purpose of this project will be to install security improvements at RWSA facilities including additional security gate and fencing components, vehicle bollards, facility signage, camera system enhancements, additional security lighting, intrusion detection systems, door and window hardening, installation of industrial strength locks, communication technology and cable hardening, and an enhanced access control program.

RWSA Engineering staff held a meeting with Operations staff to discuss overall project needs and priorities in October 2018. Meetings with ACSA and City staff were held in Fall/Winter 2018-2019 to discuss how access control and intrusion detection systems have been implemented into to the day-to-day operations of the two utilities. A Request for Proposal (RFP) for an Implementer to facilitate

selection of an access control system, confirmation of design requirements based upon RWSA's facilities and project goals, and installation of the selected system was issued on June 6, 2019. RWSA conducted a Pre-Proposal Meeting on June 14, 2019, and proposals were opened on June 27, 2019.

10. Urgent and Emergency Repairs

Staff is currently working on several urgent repairs within the water and wastewater systems as listed below:

Project No.	Project Description	Approx. Cost
2017-03	Crozet Sewer Force Main Air Release Valve Repair	$135,000
2018-06	South Rivanna Dam Apron and River Bank Repairs	$200,000
2019-05	Observatory Water Line Repair near Lambeth Pump Station	$50,000

- Crozet Sewer Force Main Air Release Valve Repair

  During routine inspections of the sewer force main, the Maintenance Department identified that the saddle for one of the air release valves was loose and needed to be repaired. Due to the profile of the force main however, it is not possible to dewater the force main and take pressure off the pipe at this location without the installation of line stops. As a result, a contractor was contacted to begin development of a method to address the issue and a site meeting was conducted. The contractor has provided estimated pricing and a work authorization is being developed. Coordination with the property owner is underway and this repair will be scheduled this summer.

- South Rivanna Dam Apron and River Bank Repairs

  Intense rainfall between May 30-31, 2018 resulted in extensive flooding throughout Charlottesville and parts of Albemarle County, with flows over the South Fork Rivanna Dam reaching more than 7 feet over the spillway crest at its peak. Staff has inspected the dam and abutments to determine the extent of damage resulting from the extreme flooding. Although there is no discernible damage to the dam itself, staff found erosion damage to the north downstream river bank and substantial displacement of large stone downstream of the dam to form a rock dam and pool below the north apron. Additionally, some damage to concrete structures on both aprons was noted, including possible creation of voids beneath the concrete and loss of concrete joint filler. Repairs to the river bank and removal of the rock dam were completed June 3-7, 2019 under RWSA's on-call construction contract. Repairs to the north and south concrete aprons will be designed by Schnabel Engineering and those services will be procured separately from the on-call contract.

- Observatory Water Line Repair near Lambeth Pump Station

  A small leak was observed along the Observatory Water Line near the Lambeth Pump Station. We coordinated with UVA to confirm whether small diameter irrigation lines in the vicinity could be causing the issue, but after isolating those lines the leak was still present. As a result, we contacted one of our On-Call Maintenance contractors, Faulconer Construction, to visit the site and plan for an exploratory excavation. This work is being coordinated and a repair approach will be confirmed once the source of the leak is identified.

11. Observatory Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	70% Design
Construction Start:	March 2020
Completion:	2023
Approved Capital Budget:	$19,700,000

Current Status:

Sixty percent design documents were submitted and are being reviewed by RWSA. A meeting with VDH is scheduled for July 15 to discuss the project in preparation for the official VDH review. A request to add four GAC contactors to this project ($5.8 M increase) is being submitted to the Board this month. Pending the approval of this amendment for additional design services, the schedule for advertising this project for bids may be extended into November 2019.

History:

A project kickoff meeting with staff was held on November 14, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results has being completed. Any agreed upon results will be incorporated into the project. This project will consider the design and costs for upgrading the plant systems to achieve a consistent 7.7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 or 12 MGD capacity. Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

12. South Rivanna Water Treatment Plant Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	70% Design
Construction Start:	March 2020
Completion:	2023
Approved Capital Budget:	$15,000,000

Current Status:

Sixty percent design documents were submitted and are being reviewed by RWSA. A meeting with VDH is scheduled for July 15 to discuss the project in preparation for the official VDH review. A request to amend the CIP budget for the Observatory Water Treatment Plant Improvements project is being submitted to the Board this month. Since these projects would be advertised for bid together,

the schedule to advertise this project may be extended to November 2019 pending the results of that request as well.

History:

A project kickoff meeting with staff was held on November 13, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results has being completed. Any agreed upon results will be incorporated into the project. The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks.

The scope of this project will not increase plant treatment capacity. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

13. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Prelim Design & Easement Acquisition in Progress
Construction Start:	2022
Completion:	2026
Approved Capital Budget:	$3,877,000
Current Project Estimate:	$18,000,000

Current Status:

A site evaluation study to recommend a location for the raw water pipe and pump station has been completed and is currently under review. Survey and appraisal work have been completed for portions of this alignment.

History:

A Work Authorization was executed in December 2018 with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process for this portion of the project. Raw water is transferred from the Ragged Mountain Reservoir to the Observatory Water Treatment Plant by way of two 18-inch cast iron pipelines, which have been in service for more than 110 and 70 years, respectively. The increased frequency of emergency repairs and expanded maintenance requirements are one impetus for replacing these pipelines. The proposed water line will be able to reliably transfer water to the expanded Observatory plant, which may eventually have the capacity to treat 10 mgd. The new pipeline is expected to be constructed of 36-

inch ductile iron and will approximately 14,000 feet in length. The opportunity to integrate the Observatory WTP raw water supply line with the proposed South Rivanna Reservoir to RMR raw water main project is currently being investigated as part of the approved 50-year Community Water Supply Plan.

The RMR to Observatory WTP raw water pump station is planned to replace the existing Stadium Road and Royal pump stations, which have exceeded their design lives or will require significant upgrades with the Observatory WTP expansion. The pump station will pump up to 10 million gallons per day (mgd) of raw water to the Observatory WTP. Integration of the new pump station with the planned South Rivanna Reservoir to RMR pipeline is being considered in the interest of improved operational and cost efficiencies. An integrated pump station would also include the capacity to transfer up to 16 mgd of raw water from RMR back to the SRR WTP.

14. <u>Crozet Flow Equalization Tank</u>

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	75% Design
Construction Start:	December 2019
Completion:	2021
Approved Capital Budget:	$4,860,000

<u>Current Status</u>:

Final design documents will be completed by August 2019.

<u>History:</u>

A 2016 update to the 2006 model was completed which evaluated the I&I reduction goals previously established and future capital project needs. Based on the results of that study, it was determined that the Crozet Interceptor system and namely the existing Crozet Pump Stations (1 through 4) have adequate capacity to handle the 2015 peak wet weather flow from the Crozet Service Area during a two-year storm. However, as projected growth in the service area occurs, peak wet weather flows in the area under the storm conditions established in the updated model will begin to exceed the firm capacities of the pump stations by 2025. Additional I&I reductions in order to reduce flows enough to not exceed the pump station firm capacities are not feasible and as a result, the construction of a flow equalization tank was identified as the best method to alleviate wet weather capacity issues.

While the study indicates that capacity should not be an issue until 2025, a flow equalization tank would also provide a significant benefit to the maintenance of the Crozet Pumping Station system which currently lacks system storage necessary to allow adequate time to perform repairs on the pumps and the associated force mains while the system is down. As a result, it is important to progress into the siting study for the flow equalization tank to ensure that it can be constructed in time for the 2025 flow targets but also to facilitate less complicated and more thorough maintenance on the system that has not been possible previously.

Greeley and Hansen completed a siting study to determine the location for the flow equalization tank based on the results of the comprehensive model update. The results of the siting study were reviewed

with ACSA and a final tank location was determined.

A work authorization with Schnabel Engineering was finalized and a Project Kick-off Meeting was held on July 12, 2018. A data collection period has begun which includes a wetlands investigation of the project site and a topographic survey of the site has also been completed. An inspection of the existing Pump Station No. 4 is scheduled for September 20, 2018 where information on the control and electrical systems will be gathered.

15. <u>Beaver Creek Dam Alterations</u>

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	Final Design and Permitting Underway
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	$4,898,000
Current Project Estimate:	$15,000,000

<u>Current Status</u>:

A Preliminary Engineering Report has been completed for the selected design alternative. Final design of the dam improvements is underway. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades began in May 2019 by Hazen & Sawyer and is expected to be completed in the summer of 2020. Staff is also currently pursing federal funding for the project.

<u>History</u>:

RWSA operates the Beaver Creek Dam and reservoir as the sole raw water supply for the Crozet Area. In 2011, an analysis of the Dam Breach inundation areas and changes to Virginia Department of Conservation and Recreation (DCR) *Impounding Structures Regulations* prompted a change in hazard classification of the dam from Significant to High Hazard. This change in hazard classification requires that the capacity of the spillway be increased. This CIP project includes investigation, preliminary design, public outreach, permitting, easement acquisition, final design, and construction of the anticipated modifications. Work for this project will be coordinated with the new relocated raw water pump station and intake and a reservoir oxygenation system project.

Schnabel Engineering developed three alternatives for upgrading the capacity of the Beaver Creek Dam Spillway in 2012. Following the adoption of a new Probable Maximum Precipitation (PMP) Study on December 9, 2015 and the release of DCR guidelines for implementing the PMP study in March of 2016, RWSA determined it would proceed with an updated alternatives analysis and Preliminary Engineering Report for upgrading the dam spillway. In 2017, RWSA entered into a term contract with Schnabel Engineering for dam-related engineering services. The design work for this project is being completed under Schnabel's term contract.

Following the completion of an updated alternatives analysis by Schnabel Engineering, staff met with members of Albemarle County and ACSA staff to discuss the preferred alternative. It was determined that staff would proceed with design of a labyrinth spillway and chute through the existing dam with

a bridge to allow Browns Gap Turnpike to cross over the new spillway.

16. Beaver Creek Raw Water Pump Station and Intake

Design Engineer:	Hazen & Sawyer
Project Start:	August 2018
Project Status:	Permitting and Site Selection Work Underway
Construction Start:	2023
Completion:	2026
Approved Capital Budget:	$4,138,000
Current Project Estimate:	$8,000,000

Current Status:

Hazen and Sawyer has begun work on a site selection study for the new Raw Water Pump Station and intake. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades is also underway and is expected to be completed in the summer of 2020.

History:

The Drinking Water Infrastructure Plan for the Crozet water service area, developed by Hazen and Sawyer, recommends installation of a new Raw Water Pump Station and Intake at the Beaver Creek Dam in order to meet new minimum instream flow requirements and provide adequate raw water pumping capacity to serve the growing Crozet community for the next 50 years. The pump station will be moved out of its existing location at the toe of the dam to a new location, to be determined during design. The new intake structure will include enhanced controls to allow for access to the best quality water at any given time.

17. Crozet Interceptor Pump Station Rebuilds

Design Engineer:	RWSA
Project Start:	July 2018
Project Status:	25% Design
Construction Start:	2019
Completion:	2023
Approved Capital Budget:	$545,000

Current Status:

The Maintenance Department has begun pump replacement work associated with this overall project. Staff is reviewing the overall scope of work for the project and will be coordinating other items with the Maintenance Department regarding schedule and preferred equipment and materials. Work will be performed via quote packages and the need for consultant assistance is being determined.

History:

The Crozet Interceptor Pump Stations were constructed in the 1980's and many of the components are still original. The project will include the replacement of pumps and valves at Pump Station No. 2 in order to improve pumping capabilities at this location and provide spare parts for the pumps at Pump Station No. 1. This work will also include roof replacements at all four pump stations, siding

replacement for the wet well enclosure at Pump Station No. 3, and installation of a new water well at Pump Station No. 3. Components of this project will be coordinated and timed to properly coincide with the Crozet Flow Equalization Tank project.

18. MCAWRRF Digester Sludge Storage Improvements

Design Engineer:	TBD
Project Start:	Summer 2019
Project Status:	Preliminary Design
Construction Start:	Fall 2019
Completion:	June 2020
Approved Capital Budget:	$313,000

Current Status:

We are currently scheduling an engineer to perform an interior inspection of the sludge storage tank. Preparation of construction documents will begin after an inspection is completed and scope of repair work better defined. Implementation of this work will commence after Digester No. 3 is coated and back in service in late summer 2019.

History:

With the second centrifuge installation, additional capacity for storage of digested sludge would provide the Authority operational flexibility it does not currently have. Additionally, the sole sludge storage tank at the MCAWRRF was constructed in 1959 of reinforced concrete and is in need of repairs. This project would convert one of the three existing anaerobic digesters (Digester No. 1) into a sludge storage tank through piping modifications, and would provide redundancy to the existing sludge storage tank so it can be removed from service, cleaned, inspected, and repaired with minimal impact to the existing sludge dewatering operations. The piping configuration would also allow flexibility for the anaerobic digester to be used as either an anaerobic digester or sludge storage tank as needed for operations. The scope of work would include piping modifications, hydraulic improvements, tank safety improvements such as handrail and lights, and structural improvements to the existing sludge storage tank roof.

19. MCAWRRF Aluminum Slide Gate Replacements

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	95% Design (for UV Facility work)
Construction Start:	November 2019
Completion:	June 2020
Approved Capital Budget:	$470,000

Current Status:

Staff is currently reviewing the design for the UV Facility Slide Gate Replacement Project for which a quote package will be advertised in August 2019.

History:

Several large aluminum slide gates are located at the influent side of the Moores Creek Pump Station. These gates allow staff to stop or divert flow to perform maintenance activities. After repeated attempts to access and repair the gates, it is now necessary to replace and modify the gate arrangement. The replacement includes new gates for greater flexibility and resiliency as well as significant influent flow bypass pumping. Likewise, there are several gates at the Ultraviolent disinfection facility that leak water, causing a reduced capacity of the facility. Replacement of these gates will restore the process to full capacity.

20. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs

Design Engineer:	Schnabel Engineering
Project Start:	January 2019
Project Status:	Design Work Underway
Construction Start:	2020
Completion:	2021
Approved Capital Budget:	$1,140,000

Current Status:

Schnabel Engineering has begun design work on the Sugar Hollow Dam Rubber Crest Gate Replacement. A dive inspection of the intake tower will be completed in summer of 2019. Construction is anticipated to begin in spring or summer of 2020.

History:

In 1998, the Sugar Hollow Dam underwent a significant upgrade to improve structural stability and spillway capacity. The original metal spillway gates were replaced with a manufactured five-foot-high inflatable rubber dam that is bolted to the existing concrete structure. This rubber dam allows for the normal storage of water in the reservoir with the ability to be lowered during extreme storm events. The rubber dam has an approximate service life of twenty years and is therefore now due for replacement. The aging intake tower structure will be inspected and evaluated. Recommended repairs may include issues relating to the intake gate valves and tower walls, including repair or replacement of intake trash racks, and sealing/grouting of minor concrete wall cracks.

21. South Rivanna Dam – Gate Repairs

Design Engineer:	Schnabel
Project Start:	July 2019
Project Status:	Work Authorization Development
Construction Start:	Spring- Fall 2020
Completion:	2020
Approved Capital Budget:	$900,000

Current Status:

Design will begin in July 2019 with construction in 2020, pending preliminary findings.

History:

The South Rivanna Dam, originally constructed in 1965, is equipped with two 36" diameter slide gates and conduits, one each on the north and south abutments of the dam, which can be utilized to dewater the facility or to meet minimum instream flow (MIF) requirements when the dam is not spilling. These gates are original to the dam and while they are operable and are exercised regularly, they can no longer provide a complete seal, therefore allowing some leakage through the dam. RWSA has protocols in place to temporarily stop leakage through the gates when necessary to conserve water; however, there is a desire to repair or replace the gates and components as needed to restore full functionality. The project includes other repairs to the facility, including improvements to the concrete wall adjacent to the Raw Water Pump Station as well as improvements to the north dam tower to provide safer access by staff while still discouraging access by the general public.

22. Moores Creek Wetland Hydrology Improvements

Design Engineer:	VHB/ECS, Mid-Atlantic
Project Start:	March 2019
Project Status:	60% Design
Construction Start:	October 2019
Completion:	February 2020
Approved Capital Budget:	$95,000

Current Status:

Design is underway. Anticipate construction bidding in August.

History:

As part of the Ragged Mountain project, RWSA was required to mitigate for impacts to streams and wetlands. The wetland mitigation site is located along Moores Creek on Franklin St. RWSA has been monitoring the mitigation sites, as required by the project permit, since construction in 2014. Reports on the success of the site are submitted to the Department of Environmental Quality (DEQ) at intervals during the first 10 year of the project construction. From this monitoring it was determined that the wetland is holding more water than is ideal for its function. VHB designed a Hydrology Improvement Plan for the site, which was approved by DEQ. RWSA is now working with ECS Mid-Atlantic, to obtain the necessary County permits for the improvements (i.e., Erosion and Sediment Control permit).

23. Avon to Pantops Water Main (on hold until completion of the Urban Water Master Plan)

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2017
Project Status:	Preliminary Engineering Report
Construction Start:	TBD
Completion:	TBD
Approved Capital Budget:	$2,100,000

Current Status:

Route alignment determination, hydraulic modeling, and preliminary design were underway. Due to

the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach is warranted and we should complete the Finished Water Master Plan prior to moving forward with final design and construction of the Avon to Pantops Water Main. This project is on hold.

History:

The focus of this project is on the southern half of the urban area water system which is currently served predominantly by the Avon Street and Pantops water storage tanks. The Avon Street tank is hydraulically well connected to the Observatory Water Treatment Plant while the Pantops tank is well connected to the South Rivanna Water Treatment Plant. The hydraulic connectivity between the two tanks, however, is less than desired, creating operational challenges and reduced system flexibility. In 1987, the City and ACSA developed the Southern Loop Agreement which laid out two key phases (with the first being built at the time). The 1987 Agreement and planning efforts will service as a starting point for this current project. An engineering contract has been negotiated and was approved by the Board of Directors in July 2017.

24. South Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2017
Project Status:	Easement Acquisition Underway
Completion:	2021
Approved Capital Budget:	$2,295,000

Current Status:

Appraisal work is ongoing for any easements with an estimated value over $10,000 in accordance with RWSA policy, and we have begun making offers to private property owners.

History:

A Draft PER was completed in January 2019. Survey work began in late March to begin preparation of easement plats. Several of the properties are owned by the VDOT, Albemarle School Board, UVA Foundation and the City of Charlottesville. A work authorization for easement acquisition services with ERM and Associates was approved by the Board in April.

The approved 50-year Community Water Supply Plan includes the future construction of a raw water line from the South Fork Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline along an alternative alignment to increase raw water transfer capacity in the Urban Water System. The preliminary route for the water line followed the proposed Route 29 Charlottesville Bypass; however, the Bypass project was suspended by VDOT in 2014, requiring a more detailed routing study for the future water line. This project includes a routing study, preliminary design and preparation of easement documents, as well as acquisition of water line easements along the approved route.

Baker is now completing the routing study. Preliminary design, plat creation and the acquisition of easements will take place as soon as the final route determination has been made. Property owners have been contacted to request permission to access properties for topographical surveying which will

take place following completion of the PER. A recommendation for a tentative final alignment was presented at a community information meeting in June 2018.

25. Urban Water Demand and Safe Yield Study

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	65% complete
Completion:	November 2019
Approved Capital Budget:	$154,000

Current Status:

Bathymetric studies of the South Rivanna and Ragged Mtn Reservoirs were completed in March 2019. Initial demand projections were presented to staff in mid-June. Additional workshops are anticipated with City, ACSA and County staff in the next month.

History:

The City of Charlottesville, Albemarle County Service Authority, and RWSA entered into the Ragged Mountain Dam Project Agreement in 2012. This Agreement included provisions to monitor the bathymetric capacity of the Urban water reservoirs as well as a requirement to conduct reoccurring demand analysis, demand forecasting and safe yield evaluations. This study will evaluate and calculate current and future demands and present safe yield. Per the project Agreement, these analyses shall be completed by calendar year 2020.

26. Urban Finished Water Infrastructure Master Plan

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2018
Project Status:	40% complete
Completion:	April 2020
Approved Capital Budget:	$253,000

Current Status:

Work on this project is on-going and is being coordinated with flow projections being provided by Hazen and Sawyer under the Urban Water Demand and Safe Yield Study. Flow data will be provided by the City and ACSA for use by the consultant.

History:

As identified in the 2017 Strategic Plan, the Authority has a goal to plan, deliver and maintain dependable infrastructure in a financially responsible manner. Staff has identified asset master planning as a priority strategy to improve overall system development. Many previously identified projects in the urban finished water treatment and distribution system are in preliminary engineering, design or construction. As such, staff have identified a need to develop a current and ongoing finished water master plan.

27. South Rivanna River Crossing and North Rivanna Transmission Main

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2020
Project Status:	Planning
Construction Start:	2021
Completion:	2023
Approved Capital Budget:	$5,340,000

Current Status:

An update to the Airport Zone Study Report was completed in summer of 2018, confirming the need for and timing of the river crossing and transmission main. Design of the project will begin in summer 2020.

History:

RWSA has previously identified through master planning that a 24-inch water main will be needed from the South Rivanna Water Treatment Plant (SRWTP) to Hollymead Town Center to meet future water demands. Two segments of this water main were constructed as part of the VDOT Rt. 20 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the Airport Road Pump Station Site, RWSA plans to construct a new river crossing at the South Fork Rivanna River and two "gap" sections of 24-inch water main between the already completed sections. Much of the new water main route is within VDOT right-of-way; however, acquisition of right-of-way will be required at the river crossing and on the Kohl's Property at Hollymead Town Center.

28. Route 29 Pump Station

Design Engineer:	TBD
Project Start:	July 2019
Project Status:	Planning
Construction Start:	2021
Completion:	2022
Approved Capital Budget:	$2,300,000

Current Status:

RWSA is determining who the design engineer for this project will be and a work authorization will be developed with design of the pump station beginning later this summer.

History:

The Rt. 29 Pipeline and Pump Station master plan was developed in 2007 and originally envisioned a multi-faceted project that reliably connected the North and South Rivanna pressure bands; reduced excessive operating pressures, and developed a new Airport pressure zone to serve the highest elevations near the Airport and Hollymead Town Center. The master plan update was completed in June of 2018 to reflect the changes in the system and demands since 2007. This project, along with

the South Rivanna River Crossing and North Rivanna Transmission Main project, will provide a reliable and redundant finished water supply to the North Rivanna area. The proposed pump station will be able to serve system demands at both the current high pressure and future low pressure conditions. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport water pressure zone.

29. <u>South Rivanna Hydropower Plant Decommissioning</u>

Consultant:	Gomez and Sullivan
Project Start:	October 2016
Project Status:	Exemption Surrender Process – Phase 2 Underway
Construction Start:	2019
Completion:	2020
Approved Capital Budget:	$725,000

<u>Current Status</u>:

A consultation document was provided to local regulatory agencies and a meeting was held on May 21, 2018 with the agencies to discuss the decommissioning process. Minor comments were provided by those agencies and development of the surrender application for submission to FERC is underway. As part of the application, a draft decommissioning plan has been developed and is being reviewed by RWSA. Due to a recent significant wet weather event, returning the 72-inch diameter penstock to a reservoir drain has been evaluated by Gomez and Sullivan. Modifications to the decommissioning plan are being developed to incorporate that into the project. A revised conceptual plan has been developed and is being distributed to local regulatory agencies to identify any issues prior to final submission to FERC.

<u>History</u>:

RWSA constructed a hydropower plant at the South Fork Rivanna Dam in 1987. Power generation at the plant was limited for a number of years due to various mechanical issues. In December 2011, RWSA retained HDR to perform a mechanical and electrical equipment assessment and to provide recommendations for capital expenditures and continued operation. This assessment identified the need to perform a number of mechanical and electrical modifications to improve operation of the hydropower plant. On June 16, 2013, while the plant was down for testing associated with repairs to the speed reducer and generator, the powerhouse flooded during a heavy rainfall event. A post-flood inspection indicated that the rising water damaged the electrical equipment. In addition to electrical system issues, the turbine blades were “stuck” and inoperable prior to the flood event. Prior to beginning any rehabilitation work on the hydropower plant, it was determined that a feasibility study should be performed that reviewed previous recommendations and took into account interaction with the Federal Energy Regulatory Commission (FERC) to determine if it was cost effective for RWSA to rehabilitate the facility. The feasibility study was conducted by Gomez and Sullivan and concluded that rehabilitation of the facility would most likely not provide a return on investment based on current market conditions. Staff recommended that RWSA proceed with surrendering the exemption to licensure with FERC and decommission the facility. During the meeting on October 25, 2016, the Board of Directors agreed with the recommendation and staff began to proceed with the surrender process.

Work associated with the first phase of the exemption surrender process with Gomez and Sullivan and Van Ness Feldman was completed confirming with FERC what the next steps in the surrender process would include. A work authorization with Gomez and Sullivan for Phase 2 of the exemption surrender process was finalized in August 2017 and includes tasks to manage the local regulatory agencies consultation process and development of the surrender application and decommissioning plan.

30. <u>Upper Schenks Branch Interceptor, Phase II</u>

Design Engineer:	Frazier Engineering, P.A.
Project Start:	TBD
Project Status:	Work Authorization Development
Construction Start:	TBD
Completion:	TBD
Approved Capital Budget:	$3,985,000

<u>Current Status:</u>

Discussions are underway to determine an alignment for the replacement sewer line, generally located between the McIntire Recycling Center and Preston Avenue along McIntire Road. As part of this process, a work authorization to perform some additional subsurface exploration work has been finalized to gather rock information along the alignment in McIntire Road as well as across the ballfield. The field work is scheduled for August with a final report anticipated by October 2019.

<u>History:</u>

The Schenks Branch Sanitary Sewer interceptor is a pipeline operated by RWSA that serves the City of Charlottesville. The 21-inch sewer line was originally constructed by the City in the 1950s. Evaluations from the flow metering and modeling from the Comprehensive Sanitary Sewer Interceptor Study, and negotiations with the ACSA and City, resulted in an inflow and infiltration reduction plan from which it was concluded that increased capacity of the Schenks Branch Interceptor was needed for wet weather peak flow. Due to several road construction projects and the construction of the Meadow Creek Interceptor project along the sewer alignment, Schenks Branch was to be constructed in multiple phases. The completed sections, collectively known as the Lower Schenks Branch Interceptor, include the Tie-in to Meadow Creek, the section along McIntire Road Ext, and the section though the Route 250 Interchange.

The remaining sections, which are considered the Upper Schenks Branch Interceptor, were split into 2 phases. The first phase has been completed and is located within City-owned Schenks Greenway adjacent to McIntire Road and the second phase is to be located on County property (baseball field and County Office Building) adjacent to McIntire Road or within McIntire Road. Both phases are included in a DEQ Consent Order. As a result of discussions between RWSA and DEQ, DEQ approved a milestone schedule for completing the Phase 1 section by March 31, 2017 and set in "abeyance" a schedule for completing work on Phase 2 as a result of complications associated with the execution of the necessary easements. Phase 2, preliminary construction drawings and specifications have been developed. No new agreements concerning right-of-way have been reported to RWSA regarding Phase 2. No bidding or construction can take place until one of the following two options occur: (1) County grants RWSA a suitable easement on County property; or (2) City grants RWSA permission and a street cut permit to install the sewer directly under McIntire Road.

31. Asset Management Plan

Design Consultant:	GHD, Inc.
Project Start:	July 2018
Project Status:	90% Complete (Phase 1)
Completion:	2020
Approved Capital Budget:	$500,000

Current Status:

As part of the first phase, Asset Management awareness training and workshops related to Asset Management Program Development, the Gap Assessment process, and development of an Asset Management Policy have been conducted. A draft report documenting the Gap Assessment has been submitted and various other documents associated with policy and business processes are being reviewed as well. The final workshop to discuss the implementation process was held on July 2, 2019 and a draft report to complete the first phase will be submitted by the end of July 2019.

History:

Asset management is the practice of managing our infrastructure to minimize the total cost of owning and operating these assets while providing desired service levels. In doing so, it is used to make sure planned maintenance activities take place and that capital assets are replaced, repaired or upgraded at the right time, while ensuring that the money necessary to perform those activities is available. RWSA has some components of an asset management program in place (i.e. GIS, work order system), but has identified the need to further develop the program as part of our Strategic Planning process. In order to continue to build the program, a consultant has been procured to assist with a three-phase process that will include facilitation and development of an asset management strategic plan, development and management of a pilot study where the results of the strategic plan will be applied to a specific class of assets, and assistance through a full implementation process. As part of this three-phase process, the consultant will also assist RWSA with the procurement of a software package to facilitate the overall program.

O&M Related Projects

Staff is currently working on several O&M related projects within the water and wastewater systems as listed below:

#	Project Description	Total Approx. Value
35	NRWTP Raw Water Metering Improvements	$135,000
36	NRWTP Sludge Lagoon Study and WTP Needs Assessment	$60,100
37	MCAWRRF Cogeneration System Analysis	$48,300
38	SRWTP Future Site Development Analysis	$15,000

- NRWTP Raw Water Metering Improvements

The NRWTP is permitted to provide up to 2.0 MGD of potable drinking water to customers located in the Urban service area. After water is pumped from the raw water pump station on the North Fork Rivanna River, the raw water flow is metered by an orifice plate, or insert style meter, prior to entering

the rapid mix chamber. The meter is located behind the existing powdered activated carbon feed system and is difficult to access. In addition, RWSA recognizes that the accuracy of this style of meter is reduced by laying length conditions in comparison to modern magnetic flow meters which have been installed at other locations. RWSA is working with SEH to develop contract documents to have a magnetic flow meter installed on the raw water line in an exterior below grade vault. The schedule for bidding of this work will be dependent on the availability of funds.

- NRWTP Sludge Lagoon Study and WTP Needs Assessment

  The two lagoons or settling ponds at the plant are earthen basins designed to capture and hold residuals generated through the treatment process as well as periodic draining and washdown of the sedimentation and flocculation basins. The basins were designed to allow all the residuals and solids to settle out and then the clarified water to be decanted and conveyed to the river. The operational use of these lagoons is not as originally intended, and the Virginia Department of Environmental Quality has concerns regarding their condition. A study is being performed to determine how they can be improved, and other locations on site that may be less prone to flood waters. Under this project, a needs assessment at the plant will be also be performed and updated. Construction activities associated with these improvements have been proposed in the FY20 CIP.

- MCAWRRF Cogeneration System Analysis

  The MCAWRRF currently utilizes a cogeneration facility which accepts digester gas and uses it to create electricity and heat. The facility was put into operation in 2011. The generator supplies power back to the plant electrical distribution system providing energy usage savings through offsetting usage through the electric utility. Unfortunately, there have been a number of issues associated with operation of the generator including, expensive and proprietary maintenance services and temperature issues. With a significant and expensive scheduled maintenance event forthcoming, RWSA wanted to conduct a study to determine if these issues could be resolved or if there was a more efficient way to utilize the digester gas. This study will evaluate options for improvements to the existing system or new systems that could be implemented along with estimated costs and returns on investment. A final report was submitted in February 2019, and RWSA is evaluating the alternatives.

- SRWTP Future Site Development Analysis

  As future water demands increase, facility expansions and additions at the SRWTP site are proposed to continue. At some point in the future, RWSA plans to increase the capacity at the SRWTP to 16 MGD along with preliminary plans for a 41 MGD raw water pump station and a 25 MGD pretreatment facility associated with the future transfer of raw water from the South Rivanna Reservoir to the Ragged Mountain Reservoir. With property development activity increasing near the plant, the intent of this analysis is to confirm what approximate space would be needed to meet the plant's future needs in order to better determine future property requirements. The analysis is expected to be completed by July 2019.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **DAVE TUNGATE, DIRECTOR OF OPERATIONS**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **OPERATIONS REPORT FOR June 2019**

DATE: **JULY 23, 2019**

WATER OPERATIONS:

The average daily/monthly total water distributed for June 2019 was as follows:

Water Treatment Plant	***Average Daily Production (MGD)***	***Total Monthly Production (MG)***	***Maximum Daily Production in the Month (MGD)***
Observatory	1.20	35.98	1.98 (6/21/19)
South Rivanna	8.61	258.24	9.66 (6/27/19)
North Rivanna	0.016	0.491	0.15 (6/18/19)
Urban Total	9.83	294.71	11.27 (6/20/19)
Crozet	0.643	19.28	0.872 (6/04/19)
Scottsville	0.053	1.59	0.113 (6/15/19)
RWSA Total	10.53	315.58	---

- All RWSA water treatment facilities were in regulatory compliance during the month of June.
- North Rivanna WTP is operating on an intermittent basis while Piney Mountain Tank is inoperable for repairs.
- Scottsville production data is skewed due to the filling of the ACSA 795 Tank, which was conducted from 6/13 thru 6/16.

Status of Reservoirs (as of July 15, 2019):

- Urban Reservoirs: 98.89 % of Total Useable Capacity
- Ragged Mountain Reservoir is -0.26' (98.89%)
- Sugar Hollow Reservoir is -0.86 feet (96.03%)
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is full (100%)
- Totier Creek Reservoir is full (100%)

WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during June 2019. Performance of the WRRFs in June was as follows compared to the respective VDEQ permit limits:

WRRF	*Average Daily Effluent Flow (mgd)*	*Average $CBOD_5$ (ppm)*		*Average Total Suspended Solids (ppm)*		*Average Ammonia (ppm)*	
		RESULT	*LIMIT*	*RESULT*	*LIMIT*	*RESULT*	*LIMIT*
Moores Creek	9.502	<QL	10	<QL	22	<QL	7.0
Glenmore	0.089	3.0	15	4.0	30	NR	NL
Scottsville	0.066	<QL	25	3.0	30	NR	NL
Stone Robinson	0.0005	NR	25	NR	30	NR	NL

NR = Not Required
NL = No Limit
<QL: Less than analytical method quantitative level (2.0 ppm for CBOD, 1.0 ppm for TSS, and 0.1 ppm for Ammonia).

Nutrient discharges at the Moores Creek AWRRF were as follows for June 2019.

State Annual Allocation (lb./yr.) Permit		*Average Monthly Allocation (lb./mo.) **	*Moores Creek Discharge June (lb./mo.)*	*Performance as % of monthly average Allocation**	*Performance as % of annual allocation*
Nitrogen	282,994	23,583	33,361	141% **	40%
Phosphorous	18,525	1,544	414	27%	18%

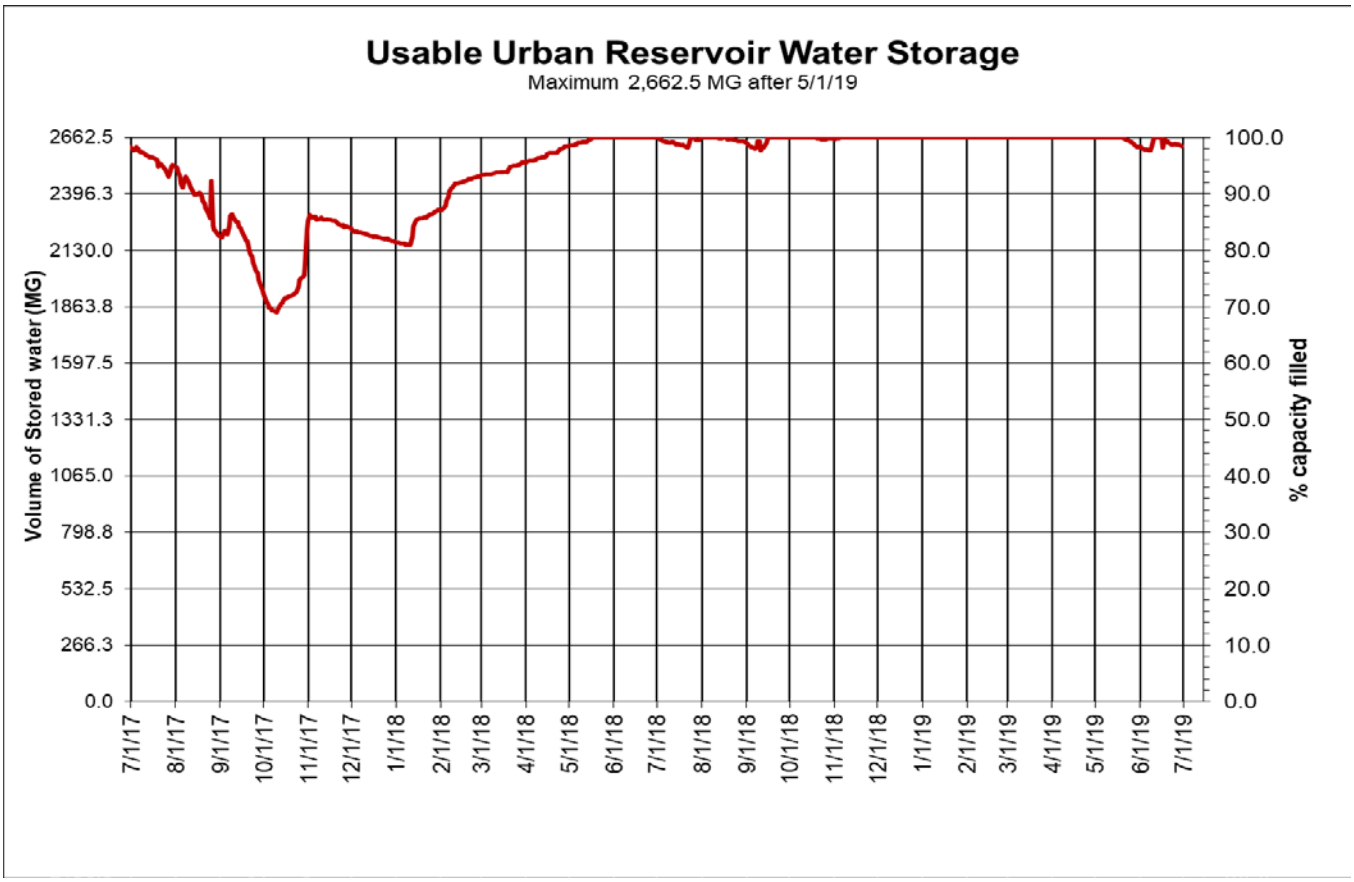
*State allocations are expressed as annual amounts. One-twelfth of that allocation is an internal monthly benchmark for comparative purposes only.

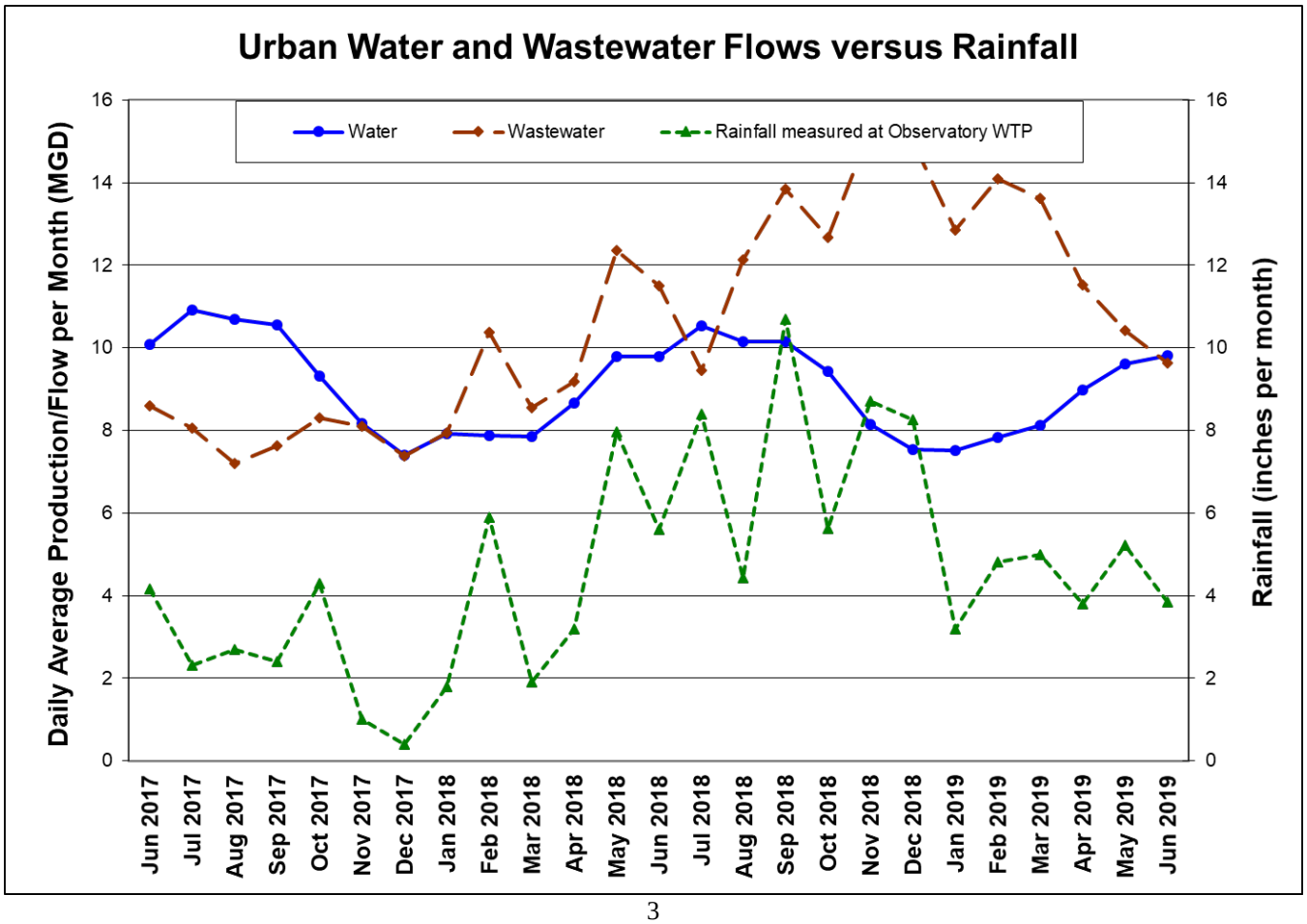
** These nitrogen results have been flagged by staff for further evaluation.

WATER AND WASTEWATER DATA:

The following graphs are provided for review:

- Usable Urban Reservoir Water Storage
- Urban Water and Wastewater Flows versus Rainfall


Usable Urban Reservoir Water Storage
Maximum 2,662.5 MG after 5/1/19
Volume of Stored water (MG)
% capacity filled
2662.5
2396.3
2130.0
1863.8
1597.5
1331.3
1065.0
798.8
532.5
266.3
0.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
7/1/17
8/1/17
9/1/17
10/1/17
11/1/17
12/1/17
1/1/18
2/1/18
3/1/18
4/1/18
5/1/18
6/1/18
7/1/18
8/1/18
9/1/18
10/1/18
11/1/18
12/1/18
1/1/19
2/1/19
3/1/19
4/1/19
5/1/19
6/1/19
7/1/19


Urban Water and Wastewater Flows versus Rainfall
Water
Wastewater
Rainfall measured at Observatory WTP
Daily Average Production/Flow per Month (MGD)
Rainfall (inches per month)
16
14
12
10
8
6
4
2
0
Jun 2017
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017
Jan 2018
Feb 2018
Mar 2018
Apr 2018
May 2018
Jun 2018
Jul 2018
Aug 2018
Sep 2018
Oct 2018
Nov 2018
Dec 2018
Jan 2019
Feb 2019
Mar 2019
Apr 2019
May 2019
Jun 2019

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER A. WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **CONSTRUCTION CONTRACT AWARD AND CAPITAL IMPROVEMENT PLAN AMENDMENT– BUCK'S ELBOW GROUND STORAGE TANK CHLORINATION SYSTEM IMPROVEMENTS – LITTLETON AND ASSOCIATES, INC.**

DATE: **JULY 23, 2019**

The two million-gallon Buck's Elbow Ground Storage Tank provides finished water storage for the Crozet Area. Historically, RWSA has experienced low chlorine residuals in the tank during the warm weather months due to water age. When chlorine residuals drop, RWSA must manually feed chlorine into the tank. Previously, this meant that staff had to bring all required pumping infrastructure to the site and climb the tank to access the injection point(s). To enhance the efficiency and safety of this process, RWSA authorized Short Elliot Hendrickson Inc. (SEH) to design a chlorine feed system that is capable of one-person operation, will not require tank climbing or confined space entry into the adjacent altitude valve vault, and will minimize overall chemical exposure risk to RWSA staff. An active mixing system will also be installed at the Buck's Elbow Ground Storage Tank as a part of the work to supplement the existing passive mixing system. This will ensure that the tank is being appropriately mixed during the chlorine feed process.

A Request for Bids was issued on June 20, 2019. A pre-bid conference was held on June 27, 2019, and a follow-up site visit was held on July 3, 2019. Construction bids were opened for the project on July 11, 2019. Four competitive bids were received for the project ranging from $186,000 to $278,700. The apparent low bidder was Littleton and Associates, Inc. of Covington, VA with a total bid of $186,000.

The current Capital Improvement Plan budget for this project is $187,000 including an estimated construction cost of $134,000. During the design process, additional operational components were added to the project in order to improve its functionality and connectivity. Based on the range of bid prices received, SEH and RWSA believe that the pricing provided is in accordance with the current market value for the work.

SEH has reviewed the bid documents submitted by Littleton and Associates, Inc. and verified that

the bid and attached documents are both responsive and responsible. SEH recommends awarding a construction contract for $186,000 to Littleton and Associates Inc. Incorporating Littleton and Associates Inc.'s bid value of $186,000 represents an increase to the CIP Budget of $52,000. Reserve funds will be used to support the additional costs.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to award a construction contract to Littleton and Associates, Inc. for a total value of $186,000 for the Buck's Elbow Ground Storage Tank Chlorination System Improvements Project, and any change orders to the construction contract, only when necessary for completion of this project, provided the total amount of any change orders does not exceed 10% of the total construction contract value.

Staff also requests the Board of Directors to amend the Capital Improvement Plan for Fiscal Years 2020 - 2024 to include a budget increase for the Buck's Elbow Ground Storage Tank Chlorination System Improvements Project of $52,000 in Fiscal Year 2020. This amendment would bring the total budget for the Bucks Elbow Ground Storage Tank Chlorination System Improvements Project to $239,000.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER A. WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **CAPITAL IMPROVEMENT PLAN AMENDMENT – GLENMORE SECONDARY CLARIFIER COATING**

DATE: **JULY 23, 2019**

The interior metal portions of two secondary clarifiers at the Glenmore Water Resource Recovery Facility were painted approximately 10 years ago. The clarifier environment is particularly harsh and subject to corrosive gases, grit, abrasion and mechanical wear. Based on observations and review, the coating system needs replacement to prevent deterioration and failure of the underlying metal superstructure. This project includes the cleaning and full coating of the interior metal portions in the clarifiers.

In accordance with our Small Purchasing Procedures, Request for Quote No. 1087 was issued to more than four contractors on June 11, 2019. Two quotes for cleaning and coating both clarifiers were received on June 25, 2019 ranging from $98,900 to $138,800. Nostos SS Contractors from Reston, Va. provided the lowest quote. This project will be awarded by the Executive Director, as authorized by our Purchasing Manual.

The original CIP project cost was developed under the assumption that our contractor coating the digesters at Moores Creek Advanced Water Resource Recovery Facility could perform the Glenmore Clarifier work as a change order, which would save on contract administration and mobilization costs. Under this scenario, our Engineer's coating inspector would be able to combine site visits for both projects providing additional cost efficiency. Unfortunately, the current digester contractor was not able to perform the work and the cost efficiencies could not be realized. Including construction costs, engineering construction administration and inspection costs, new squeegees for the clarifier sweeps, and project contingency costs, we will exceed the existing budget for the project. This necessitates an amendment to the Capital Improvement Plan Budget to add $50,000 and bring the total CIP Project budget up to $160,000. Reserve funds will be used to support the additional costs.

Board Action Requested:

Staff requests the Board of Directors amend the Capital Improvement Plan for Fiscal Years 2020 - 2024 to include a budget increase for the Glenmore Secondary Clarifier Coating project of $50,000 in Fiscal Year 2020. This amendment would bring the total budget for the Glenmore Secondary Clarifier Coating project to $160,000.

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER A. WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **CONTRACT AWARD – SECURITY ENHANCEMENTS, ACCESS CONTROL IMPLEMENTER – SECURITY 101**

DATE: **JULY 23, 2019**

As required by the Federal Bioterrorism Act of 2002, water utilities must conduct Vulnerability Assessments and have Emergency Response Plans. RWSA completed an updated Risk Assessment of its water system in collaboration with the Albemarle County Service Authority (ACSA), City of Charlottesville (City), and University of Virginia (UVA) in 2017. A number of security improvements that could be applied to both the water and wastewater systems were identified, and one of the key upgrades mentioned was the implementation of an access control program for our facilities. Project #44, Security Enhancements, was included in the approved FY 20 – 24 CIP with funding of $1 M, including prior year appropriations.

In 2018, staff began gathering information on modern access control systems. Meetings were conducted both internally and with partner utilities such as the City and ACSA to identify the needs of RWSA as it relates to access control and to discuss the experiences other utilities have had with such equipment. One of the key findings in the meetings with the partner utilities is that access control systems are generally procured, designed, and installed by one firm or "Implementer."

On June 6, 2019, staff issued a Request for Proposals (RFP) for an Access Control Implementer. The purpose of the RFP was not only for the firms to submit information detailing their qualifications, but firms also proposed the access control system that they felt best suited the needs of the Authorities. Firms were evaluated based upon their experience, qualifications, cost, and proposed systems, and also on factors such as coordination plans, proximity and ability to respond to needs, and ability to provide additional security measures, such as closed-circuit cameras, lighting, and third-party monitoring.

The initial scope of work includes access control implementation at most buildings at the Moores Creek Advanced Water Resource Recovery Facility, South Rivanna Water Treatment Plant, Observatory Water Treatment Plant, and Crozet Water Treatment Plant. We plan to extend these security measures to include most RWSA and RSWA facilities in the later terms of this contract.

Eight proposals were received and opened on June 27, 2019. After an initial review based upon the factors detailed above, staff chose to short-list and interview four of the prospective Implementers. To further compare the qualifications and costs among the firms on the short-list, staff required the firms provide a response to a sample project similar in size to the initial four-facility scope mentioned above, as well as a rate sheet detailing all hourly equipment and labor costs. After further evaluating the short-listed firms based upon their qualifications, proposed access control systems, revised pricing, coordination plans, proximity and ability to respond to project needs, and ability to provide further security measures, it was determined that "Security 101" from Richmond, Va., was the most meritorious and best qualified to serve the needs of the Authorities. The contract will be awarded for a one-year term, with the option for up to four additional one-year renewals for a total contract length of up to five years.

Board Action Requested:

Staff requests the Board of Directors authorize the Executive Director to:

- execute a contract with Security 101 for an initial term of one year with the option to annually renew the contract for a total term of up to years five years, and
- execute work authorizations needed to complete implementation of an access control system in RWSA and RSWA facilities, with a total cost of up to $950,000.

CYBER-SECURITY

Rivanna's 7 Layers of protection

Presented by:

Steven Miller, IS Administrator

RWSA/RSWA

WHAT IS CYBER-SECURITY?

cybersecurity noun

cy·ber·se·cu·ri·ty | \ˈsī-bər-si-ˌkyu̇r-ə-tē\

Cyber-security is the practice of defending computers, servers, mobile devices, electronic systems, networks and data from malicious attacks.

COMMON CYBER-SECURITY ATTACKS

- **Viruses**
- **Malware**
- **Phishing Emails**
- **Social Engineering**
  - *obtain passwords from users*
- **Theft**
  - *stealing of username and password*
- **Intercepting Communications**

CYBER ATTACK IS THE NUMBER ONE THREAT TO OUR WATER INFRASTRUCTURE.

Defense-In-Depth

- The layered approach is called the "defense-in-depth" strategy.
  - Defense-in-depth takes into account the fact that no single security product can adequately protect an industrial system. Rather, a properly configured combination of security technologies, controls, and policies is required.

- "You have to think of cyber security as a chain and it's only as strong as its weakest link," according to, a senior control systems technologist specializing water and wastewater,
  - "That's where the defense-in-depth approach comes from.“

According to the EPA Water Sector Cybersecurity Brief, cyberattacks on water utilities and automated controls systems like SCADA can cause service disruptions and real harm, including:

- Upset treatment and conveyance processes by opening and closing valves, overriding alarms or disabling pumps or other equipment;
- Deface the utility's website or compromise the email system;
- Steal customers' personal data or credit card information from the utility's billing system; and
- Install malicious programs like ransomware, which can disable business enterprise or process control operations.

Rivanna’s Philosophy

Employ an approach to cyber security consisting of 7 distinct layers.

Maintain a robust back-up Scheme to assist in recovery in the event of a disaster or successful cyber attack.

Monitor threats using data pulled from all of our main routers.

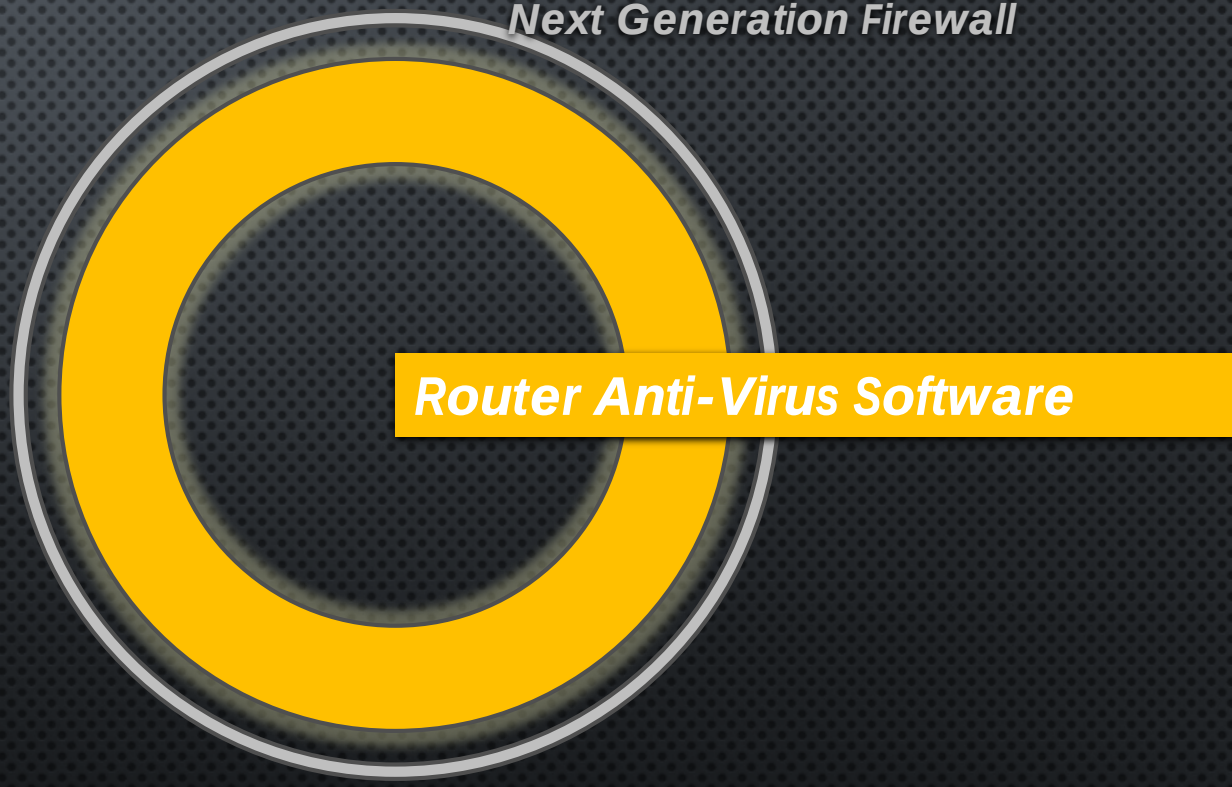
LAYER 1

Next Generation Firewall

The first layer is the firewall. This is the outer public facing protection ring consisting of a Next Generation (or adaptive) Firewall powered by our routers. Located at each site, these routers are the gate keepers for all internal, site to site and internet traffic.

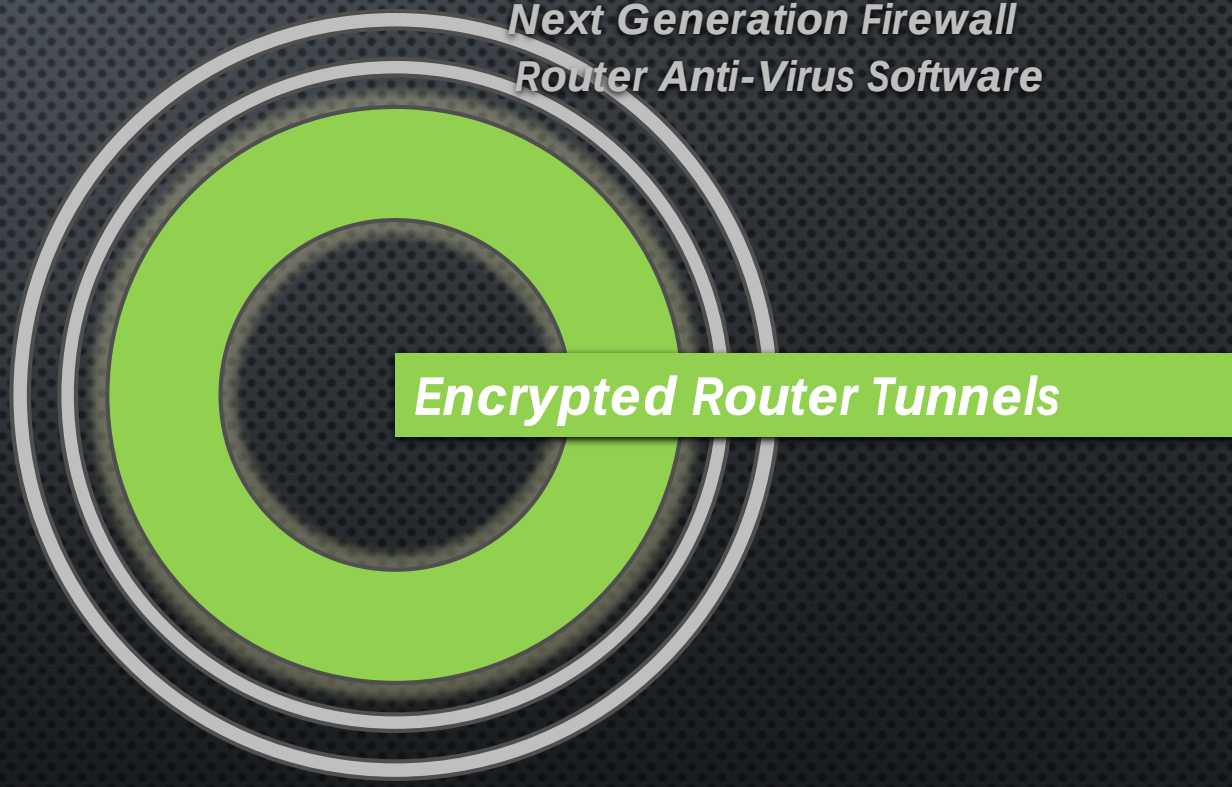
LAYER 2
Router Anti-Virus Software

Our routers contain built in Anti-Virus software that inspects every data packet from the outside world (e-mail, webpages, file transfers, etc.) before allowing to pass.



LAYER 3
Encrypted Router Tunnels

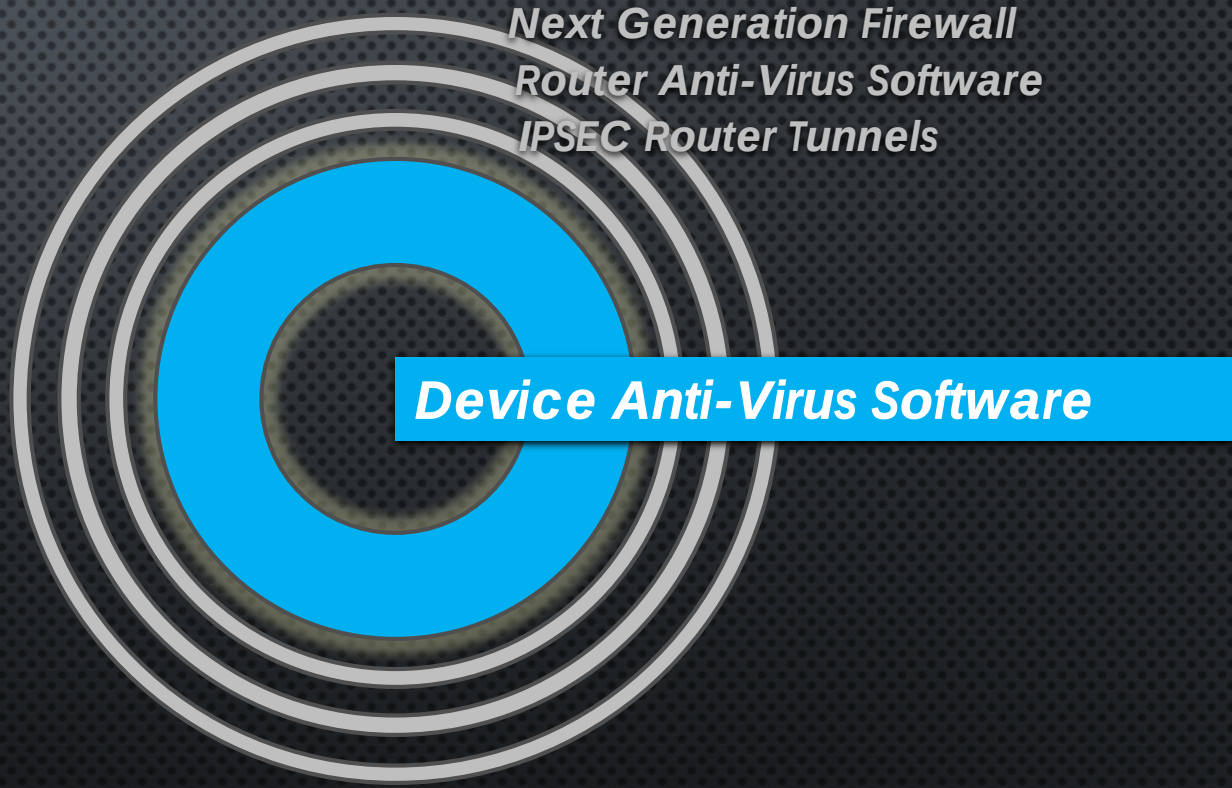
Our inter-site connections are made with router to router encrypted tunnels. This prevents unauthorized outside connections and interception of the data.



LAYER 4

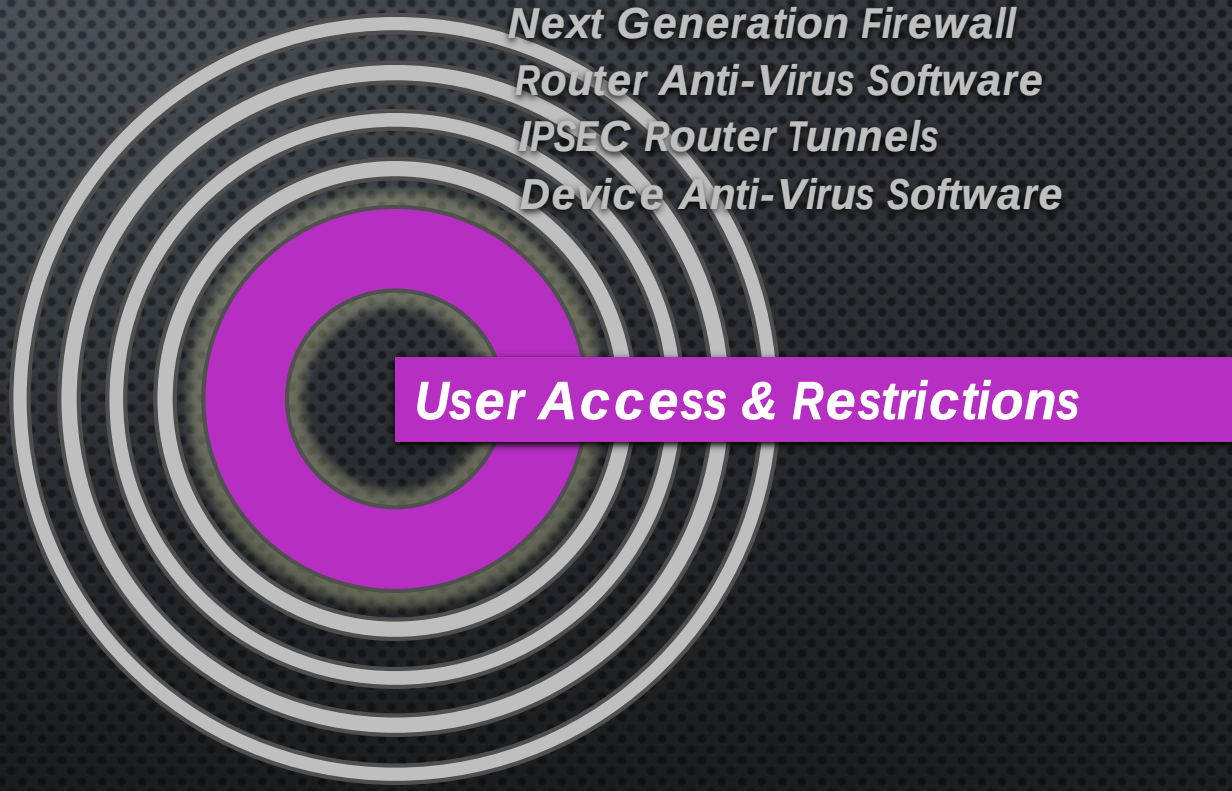
Device Anti-Virus Software

We use leading commercial Anti-virus software, which is installed on all workstations, servers, laptops and mobile devices (including phones) that connect to any Rivanna network.



LAYER 5
User Access & Restrictions

To control access to shared resources at a network level, We use Microsoft Active directory. Users are required to enter a unique password to log into the local network. Access is restricted and based on user need and function within Rivanna.



The FBI says that remote access is the number one Cyber vulnerability of SCADA systems.

LAYER 6
Password Protected Software

Software used for daily operations requires users to provide an additional username and password to access. This includes; SCADA, accounting software, e-mail, etc.

LAYER 7
User Based Protection

The most vulnerable part of any system is its user. Users can allow access inadvertently in many ways. We use education to fortify this avenue of attack.

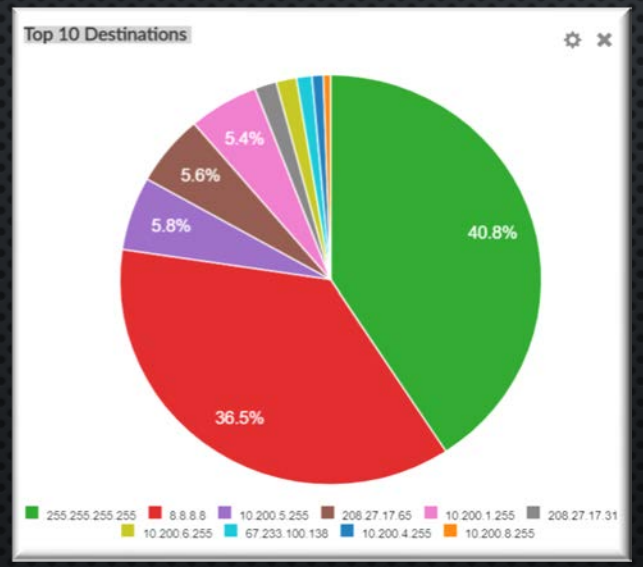
- *Next Generation Firewall*
- *Router Anti-Virus Software*
- *IPSEC Router Tunnels*
- *Device Anti-Virus Software*
- *User Access & Restrictions*
- *Password Protected Software*

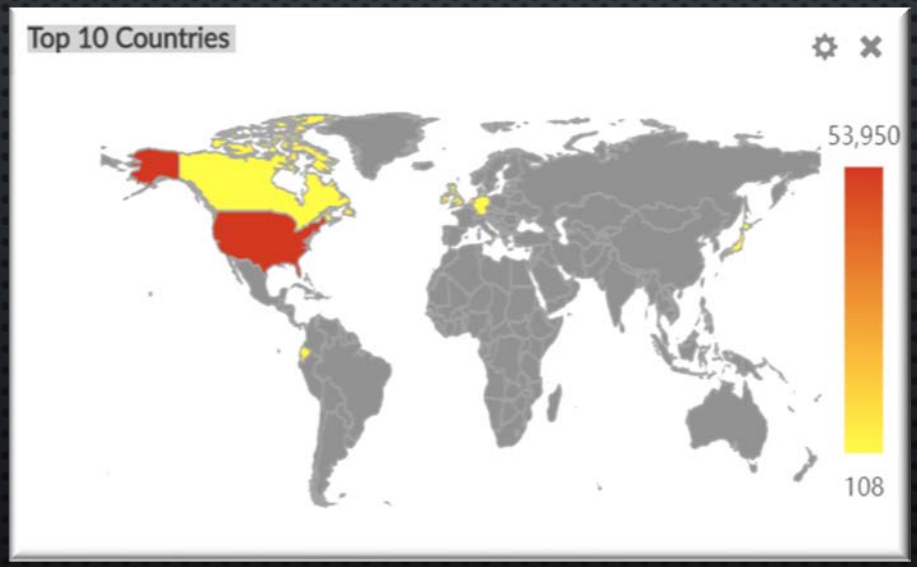
Disaster Recovery

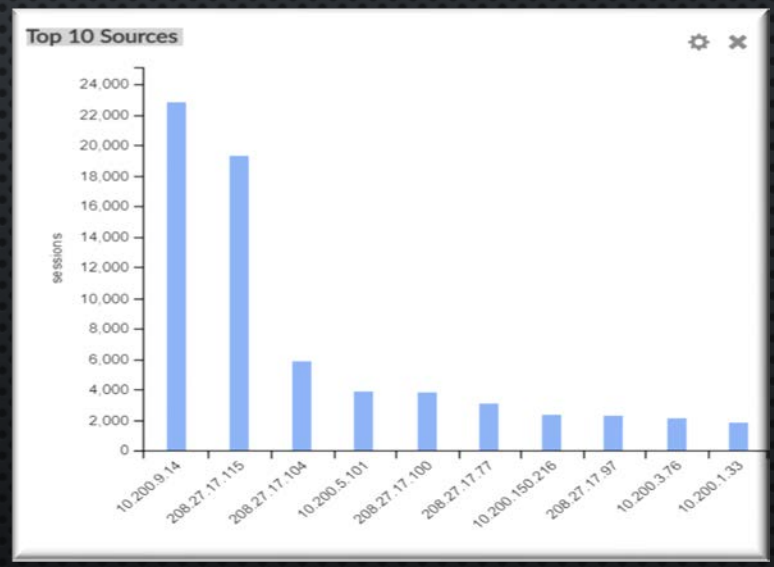
The disaster recovery/backup system provides Rivanna with several options for restoring data that has become corrupt, erased or encrypted in the event of a successful network breach/attack.

Threat Monitoring

A separate device monitors all our routers and provides dashboards with threat and usage information. It looks for patterns of suspect behavior by software and user. This device is monitored at least 3 times a day, by me as well as periodically during the day by the entire IT/SCADA staff. Additionally the device sends alerts if an immediate threat is detected.







IT / SCADA Overview

Our IT/SCADA department consists of 6 individuals:

IT/SCADA Administrator	IS Assistant Administrator	IT/SCADA Supervisor
IT/SCADA Technician	GIS Coordinator	Software Analyst

In addition to cyber security monitoring and configuration, the IT Team is responsible for overseeing networks, devices, and connections across numerous remote locations. These networks include:

- SCADA –
  - Control Software Systems
  - Historical Data Collection and Retrieval Capabilities
  - Maintaining and programming 68+ PLC's to power the SCADA system
- Administration –
  - E-mail and Software Distribution Systems
  - Internal and External GIS System
  - Accounting, Ticketing, Work Order Management and Document Storage Systems
  - Setup and Helpdesk for over 70 desktops and 30 servers
  - Mobile Devices (Including Laptops, Tablets and Cell Phones)

QUESTIONS?

RIVANNA
AUTHORITIES

Emerging Drinking Water & Wastewater Regulations

PRESENTED BY:

DAVID TUNGATE, DIRECTOR OF OPERATIONS

JULY 23, 2019

RIVANNA WATER & SEWER AUTHORITY

Emerging Contaminants in Drinking Water

- Per-and polyfluoroalkyl substances (PFAS)
  - More than 3000 man-made chemicals that can be found in fire fighting foam, food packaging, cleaning products, non-stick cookware, stain and water resistant coatings, dental floss and cosmetics
- Pharmaceutical by-products
  - Low level concentrations of prescription medicine in source water
  - RWSA does not have any drinking water intakes downstream of a wastewater treatment plant discharge
- GAC is the best available technology for removal of these contaminants

Proposed Wastewater Regulatory Changes

- As part of the Chesapeake Bay Total Maximum Daily Load Watershed Implementation Plan (WIP Phase III), regulations will require wastewater treatment plants to reduce nitrogen and phosphorus concentrations leaving the Moores Creek plant

- Reduced ammonia concentration leaving the plants

Chesapeake Bay

Cuyahoga River Fire 1952

Cuyahoga River near Cleveland, Ohio reportedly caught fire 13 times from 1868 to 1969

Original Caption: Firemen stand on a bridge over the Cuyahoga River to spray water on the tug Arizona, as a fire, started in an oil slick on the river, sweeps the docks at the Great Lakes Towing Company site in Cleveland Nov., 1st. The blaze destroyed three tugs, three buildings, and the ship repair yards. (Bettmann / Contributor via Getty Images)

History of Drinking Water and Wastewater Regulations

- Environmental Protection Agency was established by President Richard Nixon in 1970

- "Clean Water Act" of 1972 regulated the discharge of pollutants into the Waters of the U.S.

- "Safe Drinking Water Act" of 1974 established national standards for treatment of drinking water

Clean Water Act of 1972

- Established the basic structure for regulating pollutant discharges into the waters of the United States.
- Gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry.
- Funded the construction of sewage treatment plants under the construction grants program.

Safe Drinking Water Act of 1974

- Authorizes EPA to set national standards for drinking water to protect against health effects from exposure to naturally-occurring and man-made contaminants

- Standards apply to public water systems
  - Which have at least 15 water service connections or serve at least 25 people at least 60 days a year
  - Over 150,000 public water systems in US serve >300 million people

Drinking Water Standards

- National primary drinking water regulations
  - Legally enforceable standards that apply to public water systems
  - 87 chemical contaminants have limits that when exceeded can adversely affect public health

Virginia Department of Health

- The EPA has delegated Safe Drinking Water Act enforcement to the Virginia Department of Health (VDH)

- Water Department has an assigned VDH inspector who reviews the following:
  - SDWA water quality results and determines compliance
  - Monthly water treatment plant operations reports
  - Conducts yearly facility inspections at all 6 water treatment facilities.

Drinking Water Quality Monitoring

- 150 water quality samples each month in the water distribution system (coliform bacteria, chlorine residual)
- Continuous water quality monitoring in all of our water treatment plants (chlorine, fluoride, turbidity, pH)
- Majority of the analyses completed by RWSA Laboratory
- Outside Laboratories complete analysis for lead, copper, certain organics, algae counts and algae by-products (annual cost of over $100,000).

Improved Laboratory Detection Limits

- Minimum Recording Levels are as low as parts per trillion
  - 1 part per million is 1 car in a line of cars stretching from Cleveland, Ohio to San Francisco, California – 2456 miles
  - 1 part per billion is 1 car in a line of cars that circle the Earth 100 times – 791,700 miles
  - 1 part per trillion is 1 ounce of water in 7.5 billion gallons of water – 960,000,000,000 ounces

Per-and Polyfluoroalkyl Substances (PFAS)

	Minimum Detection Limit (ppt)	
Chemical Name	2014	2018
perfluorobutane sulfonic acid	90	2
perfluoroheptanoic acid	10	2
perfluorohexane sulfonic acid	30	2
perfluorononanoic acid	20	2
perfluorooctanoic acid	20	2
perfluorooctane sulfonic acid	40	2

Contaminant Candidate List #4

November 2016

Substance Name	Substance Name	Substance Name
1,1-Dichloroethane	Cumene hydroperoxide	N-nitrosodimethylamine (NDMA)
1,1,1,2-Tetrachloroethane	Cyanotoxins	N-nitroso-di-n-propylamine (NDPA)
1,2,3-Trichloropropane	Dicrotophos	N-Nitrosodiphenylamine
1,3-Butadiene	Dimethipin	N-nitrosopyrrolidine (NPYR)
1,4-Dioxane	Diuron	Nonylphenol[2]
17alpha-estradiol	Equilenin	Norethindrone (19-Norethisterone)
1-Butanol	Equilin	n-Propylbenzene
2-Methoxyethanol	Erythromycin	o-Toluidine
2-Propen-1-ol	Estradiol (17-beta estradiol)	Oxirane, methyl
3-Hydroxycarbofuran	Estriol	Oxydemeton-methyl
4,4'-Methylenedianiline	Estrone	Oxyfluorfen
Acephate	Ethinyl estradiol (17-alpha ethynyl estradiol)	Perfluorooctanesulfonic acid (PFOS)
Acetaldehyde	Ethoprop	Perfluorooctanoic acid (PFOA)
Acetamide	Ethylene glycol	Permethrin
Acetochlor	Ethylene oxide	Profenofos
Acetochlor ethanesulfonic acid (ESA)	Ethylene thiourea	Quinoline
Acetochlor oxanilic acid (OA)	Formaldehyde	RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
Acrolein	Germanium	sec-Butylbenzene
Alachlor ethanesulfonic acid (ESA)	HCFC-22	Tebuconazole
Alachlor oxanilic acid (OA)	Halon 1011 (bromochloromethane)	Tebufenozide
alpha-Hexachlorocyclohexane	Hexane	Tellurium
Aniline	Hydrazine	Thiodicarb
Bensulide	Manganese	Thiophanate-methyl
Benzyl chloride	Mestranol	Toluene diisocyanate
Butylated hydroxyanisole	Methamidophos	Tribufos
Captan	Methanol	Triethylamine
Chlorate	Methyl bromide (bromomethane)	Triphenyltin hydroxide (TPTH)
Chloromethane (Methyl chloride)	Methyl tert-butyl ether (MTBE)	Urethane
Clethodim	Metolachlor	Vanadium
Cobalt	Metolachlor ethanesulfonic acid (ESA)	Vinclozolin
	Metolachlor oxanilic acid (OA)	Ziram
	Molybdenum	
	Nitrobenzene	
	Nitroglycerin	
	N-Methyl-2-pyrrolidone	
	N-nitrosodiethylamine (NDEA)	

Proposed Chesapeake Bay Regulations

Nutrient	Current Permit Limit Daily (mg/L)	Proposed limit Daily (mg/L)	Moores Creek Average Daily (mg/L) *
Total Nitrogen	6.0	4.0	3.77
Total Phosphorus	0.5	0.3	0.18

*- Moores Creek data collected from 2018

Proposed Freshwater Ammonia Criteria

Facility	Current Ammonia Criteria Average/Max (mg/L)	Proposed Ammonia Criteria (mg/L) *	Average plant performance (mg/L)
Moores Creek May - Nov	2.2 / 2.7	1.9	0.2
Moores Creek Dec - April	7.0 / 8.6	1.9	0.13
Glenmore	Not regulated	1.9	0.3
Scottsville	Not regulated	1.9	0.3

* Based on pH 7.0 and Temperature of 20^{o} C

Cuyahoga River 2019

Questions?

RIVANNA WATER & SEWER AUTHORITY
695 Moores Creek Lane | Charlottesville, Virginia 22902-9016
434.977.2970
434.293.8858
www.rivanna.org

MEMORANDUM

TO: **RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS**

FROM: **JENNIFER A. WHITAKER, DIRECTOR OF ENGINEERING AND MAINTENANCE**

REVIEWED BY: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **WORK AUTHORIZATION – OBSERVATORY WATER TREATMENT PLANT IMPROVEMENTS – SEH ENGINEERS**

DATE: **JULY 23, 2019**

The Observatory Water Treatment Plant is the oldest of the three urban plants and was originally constructed in the mid-1950s. Since that time very little has been replaced or upgraded at the facility other than the addition of a granular activated carbon (GAC) system and flocculator system upgrades, which were completed in May 2018. At the time of these improvements, it was determined that a total GAC system capacity of 2 MGD would be sufficient for the removal of disinfection byproducts (DBPs). This was based on average daily flows at the plant, a need to provide GAC treatment throughout the urban system as cost effectively as possible, and the quality of the raw water that is being treated at the Observatory facility.

Following the GAC project, the Observatory plant was identified for general upgrades and an increase in its capacity to 10 MGD. As design of these improvements began, the Water Department had begun evaluating the effectiveness of the GAC treatment process on DBP removal at all our facilities. In addition, our customers have commented on the many benefits associated with the use of GAC, including improved taste, less odor and increased chlorine residual values in the distribution system. Also, more information is being identified in the regulatory and water industries about emerging contaminants such as Per- and Polyfluoroalkyl Substances (PFAS). As part of this industry discussion, GAC has been identified as the leading means to remove PFAS from water supplies. We have tested our reservoirs for PFAS, and have not found any of those contaminants. While our water supplies are not currently challenged by PFAS contributing discharges in the watersheds, we want to remain vigilant in monitoring and protecting our drinking water systems.

As a result of the benefits identified above, we believe it would be in the Authority's best interest to increase the GAC treatment capacity at the Observatory Water Treatment Plant from 2 MGD to 6 MGD, which would mean adding four additional GAC contactors as part of this current improvement project. Having 6 MGD of GAC capacity versus a total plant capacity of 10 MGD (following the upcoming improvements) at the Observatory Water Treatment Plant provides RWSA with generally the same treatment capacity ratio as in the South Rivanna Water Treatment

Plant, where we have 8 MGD of GAC capacity versus a total plant capacity of 12 MGD.

In October 2018, the RWSA Board of Directors authorized the Executive Director to execute a Work Authorization with Short Elliot Hendrickson Inc. (SEH) in the amount of $1,644,815 to provide preliminary engineering, final design, bidding and construction administration services for the Observatory Water Treatment Plant – Expansion and Rehabilitation project. The addition of four GAC contactors and the resulting building expansion, piping modifications and other ancillary impacts to those engineering services have been discussed with SEH and we have negotiated an amendment to their Work Authorization to cover these items for an amount not to exceed $291,756.

We also asked SEH to provide revised construction cost estimates associated with adding four GAC contactors to the Observatory Water Treatment Plant. Based on these revised construction costs estimates, the amendment to the SEH Work Authorization and other project related costs, we anticipate an increase of $5,800,000 to the total Capital Budget for this project. This would increase the total Capital Budget from $19,700,000 to $25,500,000. We plan to request an increase to the Capital Budget after receipt of construction bids later this year.

Board Action Requested:

Staff requests the Board of Directors authorize the Executive Director to execute an amendment to the Work Authorization with Short Elliot Hendrickson for preliminary engineering, final design, bidding and construction administration services associated with the addition of four GAC contactors and associated appurtenances to the Observatory Water Treatment Plant – Expansion and Rehabilitation project, for an amount not to exceed $291,756, and any additional amendments needed to complete the project, not to exceed 10% of the revised total contract value.

Granular Activated Carbon (GAC) Expansion at Observatory WTP

PRESENTED BY:

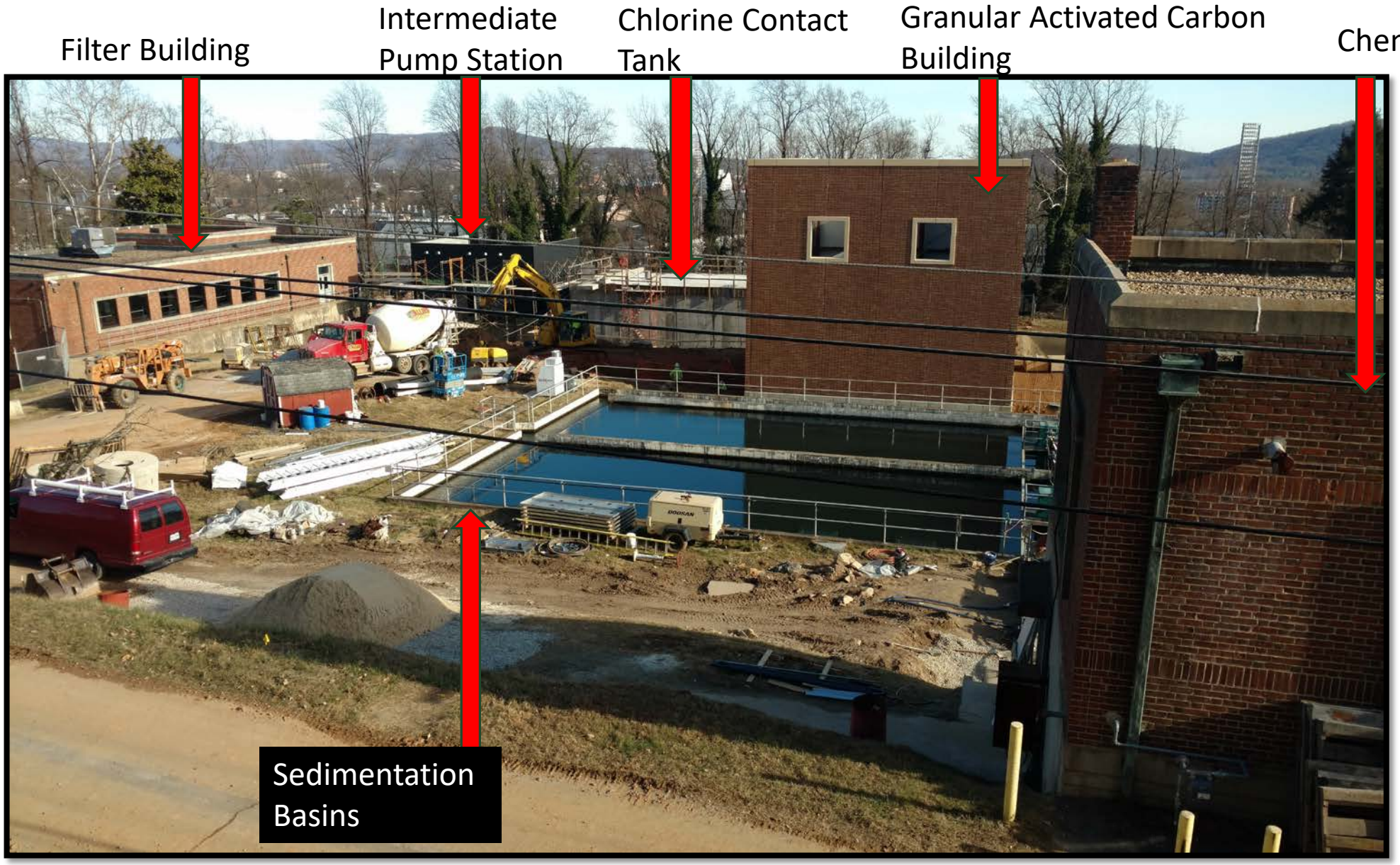
JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE

JULY 23, 2019

RIVANNA WATER & SEWER AUTHORITY

Observatory WTP Overview

- Constructed early 1900's
- First water treatment plant for UVA and the City
- Source water is Ragged Mtn. Reservoir
- Chemical treatment and filtration added in 1949-1954
- Initial GAC upgrade and improvements in 2015-2018



View from McCormick Rd during 2015-2018 upgrade

Observatory WTP Upgrade Project

- Upgrade of all processes & capacity to 10 MGD
  - Construction 2020-2023
  - Total project cost = $19.7M
- Greater reliability and redundancy in the Urban System
  - Future connection also to South Rivanna Reservoir
- Upgrade does not include GAC expansion
  - Planned for enhanced use of the powder activated carbon system

GAC in the Urban System

South Rivanna WTP
8 Contactors
8 MGD GAC Capacity
12 MGD Plant Capacity
GAC ratio = 66%

Observatory WTP
2 Contactors
2 MGD GAC Capacity
10 MGD Plant Capacity
GAC ratio = 20% **

North Rivanna WTP
1 Contactor
1 MGD GAC Capacity
1.5 MGD Plant Capacity
GAC ratio = 66%

Observatory WTP – GAC Addition

Recent optimization discussions suggest additional GAC treatment capacity will provide the following benefits:

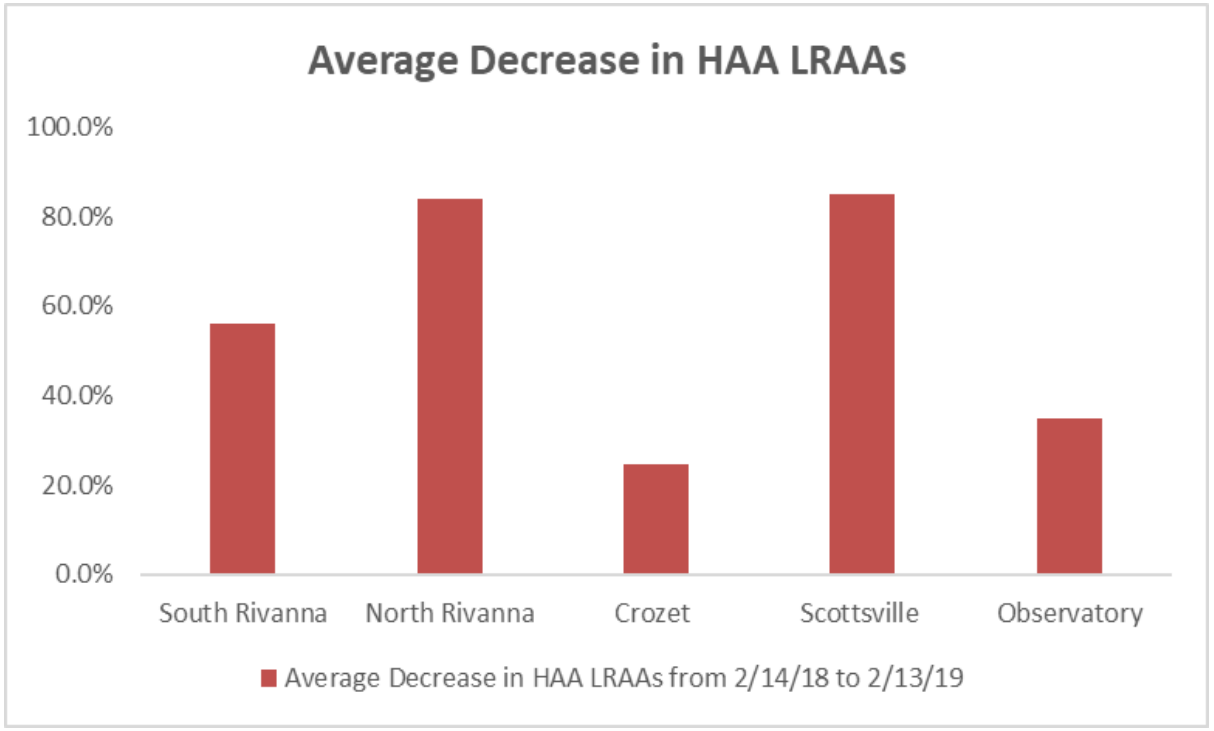
- Reduction of Disinfection By Products from chlorination
- Taste and odor improvements
- Better chlorine residuals in the distribution system
- Removal of emerging contaminants (such as PFAS). GAC is the leading removal technology

Recommendation

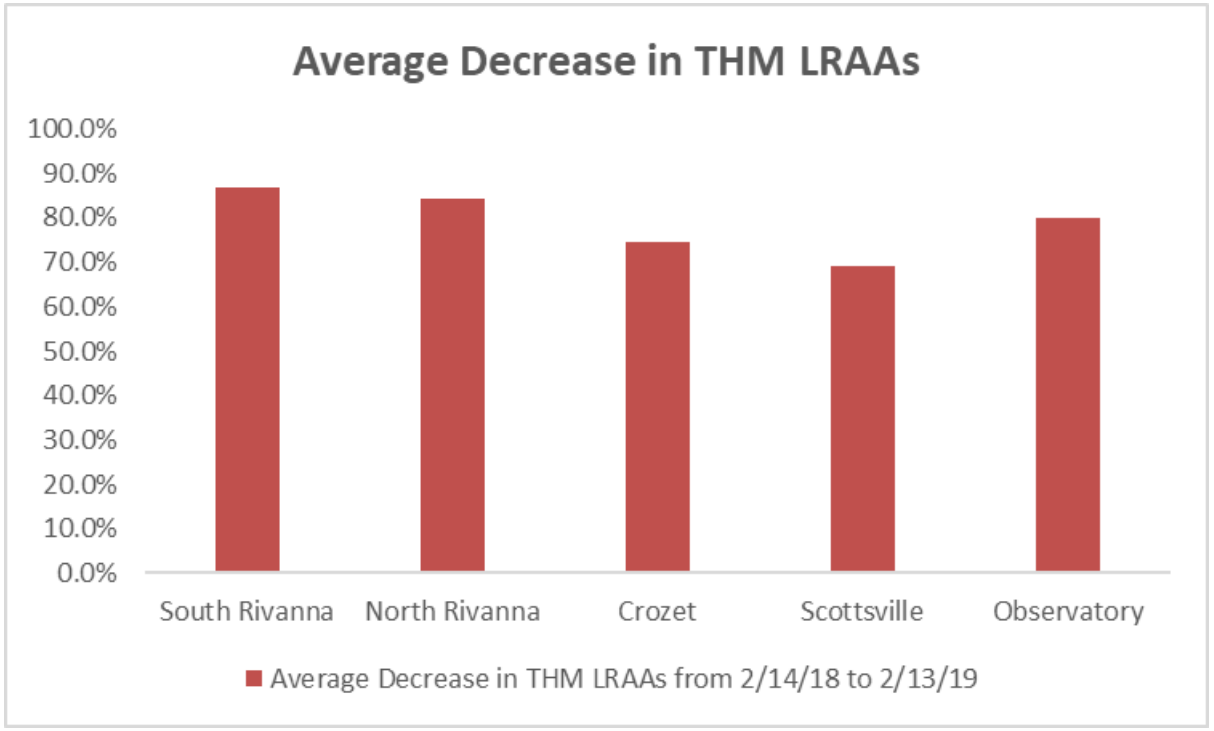
- Add 4 GAC contactors to the Ob WTP Upgrade Project
  - Increase GAC treatment ratio from 20% to 60%
    - Similar to South Rivanna and North Rivanna WTP's
    - Entire Urban water system will be consistent
  - Increase Design and Construction Admin = $291,756
  - Increase CIP budget = $5.8 M
    - Capital budget increase to be requested after construction bidding
    - Cost increase to City and ACSA = approx. 0.25%/year in overall costs for the next 4 years

Questions?

Average Percent Decrease in Haloacetic Acids (HAAs)



Average Percent Decrease in Trihalomethanes (THMs)



Source: RWSA Board presentation March 2019