Rivanna Water and Sewer Authority

Board of Directors Meeting

July 24, 2018

2:15pm

695 MOORES CREEK LANE
CHARLOTTESVILLE, VA 22902-9016
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BOARD OF DIRECTORS

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

DATE: **July 24, 2018**

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 June 26, 2018*

3. ***RECOGNITION***
   a. *Resolution of Appreciation for Maurice Jones*

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

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

6. ***RESPONSES TO PUBLIC COMMENTS***
   a. *Additional Information on the South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Project*

7. ***CONSENT AGENDA***
   a. *Staff Report on Finance*

   b. *Staff Report on Ongoing Projects*

   c. *Staff Report on Operations*

   d. *Recommendation: Award Construction Contract for the Crozet Interceptor System Pump Station Improvements Project; Anderson Construction, Inc.*

8. ***OTHER BUSINESS***
   a. *Presentation: South Rivanna Dam Update - Gates and Meter: Jennifer Whitaker, Director of Engineering & Maintenance*

   b. *Presentation: Capital Construction Update: Scott Schiller, Engineering Manager, Engineering & 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

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RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
June 26, 2018

A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was held on Tuesday, June 26, 2018 at 2:15 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mr. Mike Gaffney, Chair; Ms. Kathy Galvin; Ms. Lauren Hildebrand; Mr. Maurice Jones; Dr. Liz Palmer; and Mr. Jeff Richardson.

Board Members Absent: Mr. Gary O'Connell.

Staff Present: Mr. Mark Brownlee, Mr. Matt Bussell, Mr. Tim Castillo, Ms. Victoria Fort, Mr. Tom Freeman, Mr. Kenny Lawhorne, Mr. Austin Marrs, Mr. Bill Mawyer, Ms. Katie McIlwee, Mr. Philip McKalips, Mr. Bill Morris, Ms. Teresa Napier, Ms. Betsy Nemeth, Mr. Scott Schiller, Ms. Michelle Simpson, Ms. Andrea Terry, Mr. David Tungate, Ms. Jennifer Whitaker, and Mr. Lonnie Wood.

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

1. CALL TO ORDER

Mr. Gaffney called the regular meeting of the Board of Directors of the Rivanna Water and Sewer Authority at 2:32 p.m.

2. MINUTES OF PREVIOUS BOARD MEETINGS

a. Minutes of Regular Board Meeting on May 22, 2018

Mr. Mawyer mentioned that staff would like to amend certain parts of page 7 of the minutes, and he provided clarifications as to the changes.

Ms. Galvin moved to approve the minutes of May 22, 2018 with the amendments proposed by Mr. Mawyer. Mr. Richardson seconded the motion, which passed 5-0-1. Dr. Palmer abstained from the vote as she had been absent from that meeting. Mr. O'Connell was absent from the meeting and the vote.

3. RECOGNITION

a. Resolution of Appreciation for Carol Sue Wiles

Mr. Gaffney read the following recognition into the record for Carol Sue Wiles:

WHEREAS, Ms. Wiles has served as an Administrative Assistant for the Rivanna Water and Sewer Authority since July of 1997; and

WHEREAS, over the same period of 21 years, Ms. Wiles has demonstrated leadership in her field and has been a valuable resource to the Authority and its employees; and

WHEREAS, Ms. Wiles' 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 Ms. Wiles 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 Ms. Wiles for her 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 her retirement.

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

Dr. Palmer moved to adopt the resolutions of recognition as presented. Ms. Hildebrand seconded the motion, which passed unanimously (6-0).

Mr. Mawyer announced that Teresa Napier had been hired to replace Ms. Wiles and had started on June 25.

b. Resolution of Appreciation for Frederick A. Lanzon

Mr. Gaffney read the following recognition into the record for Frederick A. Lanzon:

WHEREAS, Mr. Lanzon has served as a Wastewater Operator for the Rivanna Water and Sewer Authority since July of 1997; and

WHEREAS, over the same period of 21 years, Mr. Lanzon has demonstrated leadership in his field and has been a valuable resource to the Authority and its employees; and

WHEREAS, Mr. Lanzon'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. Lanzon 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. Lanzon 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 to adopt the resolutions of recognition as presented. Mr. Jones seconded the motion, which passed unanimously (6-0).

c. Resolution of Appreciation for Richard Graham Bond

WHEREAS, Mr. Bond has served as a Water Operator for the Rivanna Water and Sewer Authority since August of 1978; and

WHEREAS, over the same period of almost 40 years, Mr. Bond has demonstrated leadership in his field and has been a valuable resource to the Authority and its employees; and

WHEREAS, Mr. Bond'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. Bond 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. Bond 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 to adopt the resolutions of recognition as presented. Mr. Richardson seconded the motion, which passed unanimously (6-0).

Mr. Mawyer commented that the three retiring employees represent a total of 82 years of service to the authorities, and replacements for all three had been hired.

4. EXECUTIVE DIRECTOR'S REPORT

Mr. Mawyer reported that Kenneth Lawhorne had recently completed 8,000 hours of apprenticeship work and had obtained his journeyman certification as a maintenance mechanic.

Mr. Mawyer noted that Board members had suggested that Rivanna put together a video of facilities, and staff was in discussions with Shurtleff Photography about creating some narrative short films on the Observatory, South Rivanna, and Crozet water treatment plants. He stated that they may also add a drone video of the Rivanna to Ragged Mountain water pipeline alignment as proposed. Mr. Mawyer noted that the videos would be 3-5 minutes each and would provide some history and commentary of the projects.

Mr. Mawyer reported that the granular-activated carbon (GAC) update is included in the operations report but is provided again, and the graph demonstrated that GAC was helping water quality. He noted the disinfection byproducts that were removed from drinking water, noting that in comparing May 2017 to May 2018 results from Scottsville, 70% more of byproducts were removed from the water; Crozet was in the 40% range; North Rivanna was over 70% for halo acetic acids and 40% on trihalomethanes; and Observatory was not in the graph because the GAC material had not been put in the contactors due to access issues with the road. Mr. Mawyer emphasized that this data was a testimonial to the fact that GAC filters reduced the disinfection by-product precursors, which in turn reduced the disinfection byproducts and improved the water quality.

Ms. Galvin thanked staff for monitoring the impact of GAC in the water system.

Mr. Mawyer responded that staff would provide updates as more data became available.

Mr. Mawyer presented that he had provided an overview to City Council on the Rivanna-Ragged Mountain waterline project on June 4, including benefits and challenges, and also presented four option timelines as presented to the RWSA Board in January. He stated that City Council voted to approve options B and C as the preferred options. Mr. Mawyer noted that Rivanna staff had met with County administration staff and Board of Supervisors members Diantha McKeel and Ned Gallaway regarding the pipeline alignment and had met with Albemarle County Schools facility staff about it, as well as held a community information meeting on June 19 to provide an overview of the project and proposed water line alignment.

Mr. Mawyer referenced a map as presented to the RWSA Board that showed multiple route options, but Rivanna had since eliminated some of the candidates and was focusing on a route up Woodburn Road, Rio, and Hydraulic -- then down Lambs Road behind Albemarle High School behind the school's bus facility and behind Greer Elementary, across VDOT property behind

Ingleridge Farm. He explained that it then crossed Barracks Road at Colthurst Farm, going down Colthurst Drive to Birdwood across Route 250 en route to Reservoir Road. He stated that they have a second alternative that traverses the front of the school property, but that was much less preferred.

Ms. Galvin asked for a summary of comments from the School Board and Supervisors, as Albemarle County residents had come to City Council meetings and expressed concern about the impact of the pipeline pathway to County schools.

Mr. Mawyer responded that the construction would take place from 2030-2040 and thus was in the somewhat distant future, but going down Lambs Road would put the route over 100 feet from the high school and 700 feet away from Greer Elementary. He noted that their intent would be to do the work in the summer to avoid conflict with school operations, emphasizing that staff felt the preferred route encountered less conflict. He noted that the school facilities personnel were in favor of this route, but the School Board had not yet approved it. Mr. Mawyer noted that they had discussed creating a trail as part of the project through the easement, making it an amenity to the schools for the track team, etc. He stated that going around Georgetown Green would impact the viewshed there and was a tight fit, so the Lambs Road route was viewed as less conflicting.

Dr. Palmer stated that in 2005 or 2006, there was a series of community meetings held at Albemarle High School regarding the pipeline route, with a lot of comments provided at that time that paralleled the current input. He asked Ms. Whitaker for clarification of that timeframe.

Ms. Whitaker confirmed that the timeframe Dr. Palmer had recalled was correct.

Mr. Mawyer reported that Rivanna had also been meeting with the University of Virginia Foundation about the alignment through Birdwood and trying to coordinate efforts, but at this point the Foundation had not yet received a commitment to move forward with the area of the golf course where the pipeline would go.

Mr. Mawyer stated that Rivanna had been working with its hydrologics consultant regarding safe yield but had not yet completed the study. He noted that preliminarily it was estimated that the waterline would increase the urban safe yield by approximately 3.1 million gallons per day, raising the Ragged Mountain Reservoir level by 12 feet and would add 2.6 MGD and completing both the water line and raising the water level 12 feet would add a collective total of about 5 MGD in safe yield. Mr. Mawyer noted that they were still working to finalize the effort and planned to give the board an update in August, including the impact of droughts on the reservoir water levels.

Mr. Mawyer reported that Rivanna had been studying the Crozet drinking water system for the past year to determine whether there was an adequate long-term water supply to accommodate the growth of that community. He noted that preliminarily, they felt there was adequate water for Crozet, and Rivanna had held a meeting the previous week with the Crozet Community Advisory Committee (CCAC). Mr. Mawyer stated that prior to that, staff had meet with the County to review the findings that there should be adequate water until 2075, or over 50 years.

He stated that with that in mind, Rivanna was combining several projects: the water supply study and what improvements needed to be made to the Beaver Creek Dam, due to the Department of Conservation and Recreation's requirement that the dam must be upgraded pursuant to its reclassification from a "significant hazard dam" to a "high hazard dam." Mr. Mawyer noted that he had met with the County and reviewed several alternatives, explaining that the preferred alternative presented to the CCAC was the labyrinth spillway going right through the dam and leaving the park area of the existing spillway unaffected and filled in. He stated that they would relocate the existing raw water pump station and would put in the hypolimnetic system -- the bubble diffuser system -- that mixed the water and improved water quality in the Beaver Creek Reservoir.

Dr. Palmer asked how deep the drop was off the labyrinth spillway.

Ms. Whitaker responded that it was fairly tall -- between 10 and 20 feet tall.

Dr. Palmer asked if the park setting made this more dangerous, as there was more surface area for people to be on.

Ms. Whitaker responded that these spillways were becoming more prevalent across the U.S., particularly in the Southeast, and she had not heard of that being an issue. She noted that there were some aspects to the Ragged Mountain Dam that she thought might have that potential as well, with the other side of that being that from a dam safety perspective, they must execute some kind of project. She added that this involved posting it, putting up fencing up where appropriate, and deciding what type of signage was needed.

Mr. Gaffney asked about the information in the staff report that noted "two-stage labyrinth where crest elevation 5.5, 1.4, and 2.3," and asked if that meant it was not one foot.

Ms. Whitaker responded that she did not have that information in front of her, but she knew it was not a one-foot spillway. She noted that she would review the specs and send them through email.

Ms. Galvin asked what the advantage of a labyrinth design was.

Mr. Mawyer explained that it provided more linear surface area over which more water could pass, noting a comparison of about 200-300 feet versus 50 feet for a straight line, allowing more water volume in a shorter section without raising the height.

Ms. Whitaker stated that there were two ways to pass more water over spillways: to have the water be deeper, or to have the weir be longer. She noted that a combination of the two allowed the same amount of water to pass in a smaller footprint, which also made it less costly.

Ms. Galvin commented that this may also make it safer because people couldn't access it.

Ms. Whitaker responded that it would be under the bridge.

Mr. Mawyer pointed out that there was already a fishing pier, but he was not aware of any problems that had occurred. He noted that the project was $20 million total, but staff felt that it protected the park, achieved dam safety requirements, and minimized the amount of property used. He noted they would have to acquire more property at the foot of dam and would move the pump station to the side of the reservoir and put in the hypolimnetic system. Mr. Mawyer noted that they were planning to begin design this year, with construction scheduled to commence in 2021.

Mr. Mawyer reported that Rivanna had been monitoring its reservoirs for algae content and had added treatments to Beaver Creek, while coordinating with the County to address their concerns at Chris Greene Lake. He stated that Mr. Tungate had worked with the 5th grade elementary school class at Crozet Elementary in creating a public service announcement regarding water quality and monitoring efforts, and he presented a video featuring the PSA.

5. ITEMS FROM THE PUBLIC

Mr. Gaffney opened the floor to items from the public.

Mr. Brendan Hassler, resident of Albemarle County, addressed the RWSA Board and explained that in listening to a presentation of the waterline route at a City Council meeting, he asked that the board consider routes further away from Albemarle County High School. He stated that it was difficult for students to focus when there was construction activity nearby, but he felt better knowing that it was recommended to take place in the summer -- while also holding some doubts as to whether that timeline could be contained in terms of drilling and disruption. Mr. Hassler noted that if parents and teachers were accepting of the route on Lambs Road, he would accept it, but otherwise he would advocate for the second option closer to Hydraulic. He noted that a jackhammer going through pavement produced a noise of about 110 decibels at a one-foot distance, and they would have to get to about 300-500 feet away before it was at a level that it wouldn't be audible over someone in a classroom talking.

Dr. Rich Gullick addressed the RWSA Board and stated that he was former RWSA Director of Operations and wanted to discuss the reservoir pipeline project. Dr. Gullick submitted a copy of his comments, a flyer, an evaluation of the 2017 reservoir drop, an extensive fact-checking report, a statement he had made to the RWSA Board, and his water supply plan proposal. He stated that Rivanna had a history of trying to solve problems that weren't really problems, while leaving other problems unidentified or unaddressed. Dr. Gullick commented that this was demonstrated by Rivanna's decision to complete the water pipeline project before it was actually needed.

Dr. Gullick stated that there had been a tremendous amount of misinformation disseminated by the Authority's leadership regarding the project, and noted that he had done his best to work with Mr. Mawyer to correct this information -- but without success. He noted that he resigned his position with Rivanna in protest of the misinformation campaign. Dr. Gullick stated that the pipeline was not needed anytime soon and would not be necessary until sometime well after 2062, and it was not needed to prevent a repeat of Fall 2017's low water scare in the South Fork Rivanna Reservoir. He pointed out that it had rained more from August 1--September 20, 2017

than it did any of the three previous years, and Rivanna had let the water drain out through the reservoir through leaking dam gates -- dropping 17 MGD in late September, but immediately stopping when the gates were plugged with cat litter and garden mulch.

Dr. Gullick emphasized that the proof was irrefutable, but Rivanna's officials still claimed that even if the gates had not been leaking, they would have needed mandatory conservation and water restrictions anyway. He noted that the reality was that had the gates not been leaking, the reservoir would have remained full or nearly full all along. Dr. Gullick stated that it was one thing to not admit the severity of mistakes but another thing to "cover up what happened," and something else to spread falsehoods about this self-induced emergency to create fear in the community and rally support for this unrelated and unnecessary pipeline. He noted that fear-mongering had no place in a public water utility, and not correcting the information was the equivalent of covering up from the public the true facts about the lack of need for the pipeline.

Dr. Gullick asked at what point the deception was considered conspiracy or malfeasance, adding that the recent push for the pipeline was primarily the result of political pressure from one single Rivanna Board member, who wanted to see more flow in the Moorman's River. He stated that once the pipeline was completed, Rivanna would actually be allowed by its permit to discharge less water from Sugar Hollow for most of the time than they were required to discharge now -- including any time the discharge was at its lowest, specifically 2.22 MGD. Dr. Gullick noted that this had been an absolute debacle, and no responsible or competent water utility would approach projects in this manner.

Dr. Gullick urged the RWSA Board to reverse course and start working now to continue filling Ragged Mountain to increase raw water storage, base the timing of the pipeline in actual need as determined by engineering analyses, and change the permit when the time came for the pipeline so that water continued to be transferred from Sugar Hollow directly to Ragged Mountain.

6. RESPONSES TO PUBLIC COMMENTS

Dr. Palmer thanked Mr. Hassler for coming in and assured him that the RWSA Board would be discussing the route options with Albemarle High School officials and listening to their concerns.

Ms. Galvin asked Mr. Mawyer to report when the School Board had been contacted about this issue, as they were the elected body to represent the parents and children of the County.

Mr. Mawyer confirmed that the School Board would have to grant the easements to go on that property.

Mr. Gaffney commented that Dr. Gullick had provided the board with handouts, and the board and staff would be reviewing them.

Dr. Gullick thanked them for listening and for their patience.

7. CONSENT AGENDA

a. Staff Report on Finance

b. Staff Report on Ongoing Projects

c. Staff Report on Operations

d. Approval of FY 2019-2023 Capital Improvement Program

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

Mr. Jones moved to approve the Consent Agenda as presented. Ms. Galvin seconded the motion, which passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

8. OTHER BUSINESS

a. Presentation of Storm Impacts on May 31, 2018: Jennifer Whitaker, Director of Engineering & Maintenance and David Tungate, Director of Operations

Ms. Whitaker reported that staff would report on the RWSA's activities over the previous three weeks, noting that there had been some long days for staff pursuant to the May 30 and 31 storms. She stated that the storm had created a dynamic situation with 8-10 inches of rainfall, with the intensity of this event making it different from other types of storms typically hitting the area. Ms. Whitaker presented graphs showing a 24-hour total of almost 10 inches. She stated that for 5-7 hours, portions of the drainage area -- especially those between Sugar Hollow and the South Fork Rivanna Dam -- received 9-10 inches of rain.

Ms. Whitaker presented the USGS stream gauges for the Mechums, the Moorman's, and the North Rivanna River, and staff observed that the Mechums River had jumped from 5 to 17 feet in less than 7.5 hours; the week prior to this storm, about 120 cubic feet per second went down the river, and at the peak of the storm that had jumped to over 8,000 cubic feet per second. She noted that staff believes the gauge may have actually pegged out, as opposed to that being the max. Ms. Whitaker stated that at the Moorman's, they went from 4 to 15 feet in 5.5 hours, and the cubic feet per second jumped from 90 to 8,000 -- with similar concerns about that being an artificial maximum due to gauge limits. She noted that at the North Fork Rivanna near Earlysville, the level went from 2 to 18 feet in 8 hours, going from 120 to 20,000 cubic feet per second -- with the gauge again probably not registering the maximum.

Ms. Whitaker stated that the South Fork Rivanna Dam water level prompted calls from staff and she credited the operator who was working that night, as he had many other things to deal with but immediately called out. She explained that when the water levels approach 6.5 feet, staff is supposed to activate an emergency action plan, which alerts everyone that there is a weather event. She stated that the South Fork Rivanna Dam peaked out at just over 7 feet, which was the highest flow she was aware of since the dam was built. She explained that Beaver Creek was about 2.75 feet.

Dr. Palmer asked what would constitute a dam safety issue.

Ms. Whitaker responded that it was a level over 18 feet. She noted that the South Fork Rivanna Dam passed more than 40,000 cubic feet of water per second over the dam at peak.

Ms. Whitaker reported that Ragged Mountain had jumped to 1.75 feet, with Sugar Hollow staying at 0.25 feet, which she would explain later in her report. She stated that Rivanna immediately initiated onsite inspection and had staff start monitoring the conditions of the dams. Ms. Whitaker presented images of Beaver Creek, noting that the intake was flooded and pointing out the volumetric effects of the water coming out on the downstream end. She presented images of Sugar Hollow, stating that the five-foot bladder on top of the dam was actually programmed, and as inflow came up, it started lowering the inflation pressure to hold the water level steady. She noted that the dam reacted exactly as it was supposed to and the water level did not rise to great heights, it stayed steady as it passed over the dam. Ms. Whitaker pointed out the arc of the water versus a straight trajectory, which was caused by the dam inflating because of the drop in water levels.

Ms. Whitaker reported that Ragged Mountain looked fine and was capable of handling storm events, other than Reservoir Road washing out, with the intent to raise the water level 12 feet at a future point. She mentioned that Sugar Hollow Road had also flooded. Ms. Whitaker presented images of the South Fork Rivanna Dam, noting the levels when there was about 4 feet of water passing over the spillway and peak flows over 7 feet. She pointed out the location of a roller bucket that guided the water to the center of the stream channel, noting that there was a hydraulic there that caused some damage and the water was all the way up to the hydropower facility.

Ms. Whitaker stated that there had been no structural dam safety issues, and the emergency action plan had worked exactly as intended, with many staff members awake and aware of the situation. She noted that the South Fork Rivanna Dam had since been inspected by the dam safety consultant, and FERC had inspected the dam pursuant to their regularly scheduled annual inspection.

Mr. Tungate shared with the board a sample of water with 2,100 NTU (Nephelometric Turbidity Units), which measures how dirty the water is, and he noted the sample had been taken the morning of June 1 -- with the previous highest level at 300 NTUs. He stated that there were typically about 75,000 pounds of residuals processed in a week, with solids settling out of the water as it was treated, processed through a belt presser for dewatering -- and since May 31, they had been doing about 175,000 pounds per week. Mr. Tungate noted that the Brian Balsley was the operator on duty that night at 12:45 a.m. when he made the call, and at that point the level was at 6.8 feet. He mentioned that Rivanna was very proud of this response, as they did a lot of drills and practice exercises in anticipation of these types of events.

Mr. Tungate reported that there were benefits resulting from the GAC process, including upgrade of the lime feed system at South Rivanna. He noted that the existing system that was in place before that project could feed 530 grams per minute of dry lime product, and this event precipitated a need for 1,930 grams per minute of lime -- and the existing system prior to GAC

could not have done that. Mr. Tungate emphasized that the decisions the board had made to upgrade the lime feed system at South Rivanna had helped the community have a treated water supply.

Dr. Palmer noted that this was one of the things that had been mentioned by the public as a "problem that didn't exist."

Mr. Tungate noted that there was a tremendous advantage in being able to meet demand, adding that there had been a tremendous strain on resources but they were able to meet it with the new equipment in place.

Dr. Palmer asked if it was necessary to take water out of the South Fork Rivanna when the water was contaminated during high flood situations like this.

Mr. Tungate confirmed this.

Mr. Mawyer commented that they would be strategic on when they pumped water from Rivanna to Ragged, and when Rivanna water versus Ragged was used, so if the pipeline was in when the muddy water was going across Rivanna, they could have transferred water from Ragged -- which was full -- and treated it at the South Rivanna Treatment Plant as well as Observatory. He noted that this provided water quality flexibility as well as volume flexibility.

Mr. Gaffney stated that the water going over the reservoir would be going over for quite some time, so it would settle out and be clean and be more conducive to pumping.

Mr. Mawyer noted that if the water flow had caused some sort of structural problem and impacted the reservoir or the dam with the pipeline, they would have had the flexibility to bring water from Ragged Mountain to Rivanna and treat it.

Mr. Tungate presented images of North Fork Rivanna under normal conditions and on the day after the storm, stating that it had also overflowed its banks on June 22. He noted that at 4:45 a.m., a team of staff members had come in to address the situation, deciding to close the valve at the Camelot subdivision -- with everything north of the river being able to use what was left in the Piney Mountain tank. He mentioned that there is a pipe that runs from the water treatment plant, follows the river bank, then ties in at the confluence of Route 29 and the Rivanna River, with the water going south under the river and north up the Piney Mountain tank.

Mr. Tungate noted that there wasn't a big break, but it was enough of a break to drain all the water. He stated that Ms. Whitaker's group and engineering ended up relocating 190 feet of the water main and used restrain joint pipes, which was a more secure fitting. Mr. Tungate explained that once they had the leak isolated, they mobilized the temporary pump to the Kohl's facility and took water from the South Rivanna and pumped it up into North Rivanna.

Mr. Mawyer stated that this was where they have plans for a new permanent pump station so they don't have to have a pump truck-hauled to connect the northern and southern parts of the system.

Ms. Whitaker mentioned that they had brought a crew of 12 men in at 4:30 a.m. to haul the pump and set it up.

Mr. Mawyer noted that Rivanna had condemned property to obtain the correct parcel, and there was a temporary pump that hooked the two parts of the system where it was disconnected.

Mr. Tungate added that the pressure was higher at North Rivanna distribution system than at the South Rivanna Observatory system.

Mr. Mawyer clarified that this was located at Meeting Street north of Kohl's, where the radio tower was located, and Rivanna now owned the property.

Mr. Tungate presented pictures of the construction project, stating that they were using 200 feet of 14-inch pipe moved further away from the bank to prevent this type of situation or at least slow it down.

Mr. Tungate also presented images of waste lagoons at the North Rivanna plant under normal operations, noting that the river rose so high that it put river water in the lagoons. He stated that to put the plant back online, they had to pump out the lagoons -- which hold 200,000 gallons each. He pointed out the damage to the pump station fence from the water and debris. Mr. Tungate presented a photo of Steve Kvetch, Drinking Water Inspector with the Virginia Department of Health, who had come out to look at the situation and the response.

Mr. Tungate reported that on May 31, Tim Castillo had come into work and made decisions about the treatment plant. Mr. Tungate stated that moving the Rivanna pump station onto the property and increasing its capacity allowed them to meet storm demand and prevent sanitary sewer overflows from this event. He presented images that Mr. Castillo had taken of the Glenmore pump station at 6 a.m. and 9 a.m., noting the overflow of Carroll Creek.

Mr. Tungate presented images of the Ivy Materials Utilization Center, noting that more than 94,000 gallons of storm-related leach had been hauled from Ivy to Moores Creek, and the entire road to the leach pod had to be regraded, with 225 tons of gravel added. He stated that 39 tons of storm-related debris had been collected, and the resiliency of employees and the organization had helped tremendously during the event.

Ms. Whitaker reported that there were about 100 employees working for Rivanna, with the entire maintenance crew working odd hours, operators working the plants, engineering staff inspecting dams, and wastewater staff responding to the events.

Ms. Galvin and board members expressed their gratitude to Rivanna staff, adding that excellent technology and equipment can extend the value and effectiveness of their expertise.

Ms. Whitaker reported that structurally, South Fork was in good shape, but there was quite a bit of damage to some of the aprons and rock faces to the aprons, as well as apron construction joints. She noted that on the far side, the river had created a secondary channel, with "rock dams"

of debris that would need to be removed by Rivanna, with the permission of the Army Corps of Engineers. She presented pictures of the river bank that had been eroded, noting that they would also work to reestablish the river corridor to prevent future damage to the dam.

Ms. Whitaker reported that the storm event had required expenditures for labor and equipment, emergency pump rentals, repair of the North Rivanna waterline -- with Faulconer Construction responding on call to the emergency and getting that back in service. She stated that there was an estimated $200,000 in grouting and concrete repairs, stream and restoration work to be done.

Dr. Palmer asked if it helped that the state had declared an emergency.

Mr. Mawyer responded that Rivanna was coordinating with Allison Farole about the region's cost, and she was handling that and would let them know about reimbursement.

Dr. Palmer stated that she had advocated for having Mr. Mawyer and staff to come to the Board of Supervisors to provide a report on this, as she felt it was very important, but she was not sure yet when that might be on an agenda.

Mr. Mawyer clarified that he had an abbreviated version of this report for the Board of Supervisors meeting the following week.

Ms. Galvin noted that Mr. Mawyer had just presented to City Council before this event.

Dr. Palmer mentioned that the two people who had died with the Ivy Creek flood were Bob and Carol Gilges, and they had been very involved with the water supply plan, as well as being active with the Friends of the Moorman's.

Ms. Galvin noted that this was a personal loss for Dr. Palmer.

Mr. Mawyer stated that staff wanted to give the presentation about the storm to show how the board's involvement with CIP and master planning, redundancy, facilities, and staffing had come together in responding to this event.

Ms. Galvin commented that she would like to have this shared with City Council, as it helped officials and the public understand why it was imperative to invest in infrastructure.

b. Presentation of 10-Year Financial Model: Lonnie Wood, Director of Finance & Administration, Michael Maker, MFSG and Ed Donahue, MFSG

Mr. Wood reported that in late 2017, Rivanna had hired Municipal Financial Services Group (MFSG) to work on a 10-year revenue model projection that could be used going forward, with the ability to plug in CIP, financial policies, etc.

Mr. Michael Maker addressed the board and stated that MFSG had been working on a financial model, built in Excel with assumptions and scenarios added. Mr. Maker stated that the guiding principles and objectives of the study are that the water and wastewater systems must each be

self-supporting so that one is not subsidizing the other; the Authority should maintain reserves to provide contingencies and unplanned expenses; water and wastewater rates should be kept as low as possible over time; the Authority should invest annually in regular planned maintenance, rehab, and replacement of infrastructure. He noted that the objective was to ensure operating rates and debt service charges were stable through sound financial management and system maintenance and did so by reviewing the funds and preparing a long-term plan to support capital investments.

Mr. Maker reported that some of the factors affecting rates and charges for any water utility across the country were operating and maintenance expense changes, with the option in the model to introduce inflation rates; the CIP and debt service -- both existing and future; customer and flow changes, with conservative parameters being used in this model and allocations being shifted more to the County as it grew; miscellaneous revenue charges other than operating and debt charges. He stated that the model recommends at least 90 days of operating expenses in a rainy day fund, and a 1.25 ratio debt service coverage, which did not meet the board's 1.5 goal but was still favorable among rating agencies.

Mr. Maker stated that the revenue requirements included operating and maintenance expenses, such as salaries, benefits, materials, and service supplies; two capital pieces -- outstanding debt and debt issuance, and upcoming capital projects that would be either reserve or debt funded. He noted that in the model, they have adopted these for all cost centers -- urban water, urban wastewater, and split between City and County, as well as non-urban rate centers. Mr. Maker stated that the first revenue requirement building block was operating and maintenance expenses, and he presented a pie chart for both water and wastewater. He noted that urban water for the City constituted 43% of water, with urban water for the County being the second highest, then Crozet and Scottsville. He stated that on the wastewater side, it was the City, County, then Glenmore and Scottsville. Mr. Maker noted that in forecasting those forward for 10 years, varying inflation rates included 4% increase for the FY19 budget for water, with 8% for wastewater.

Mr. Maker reported that the current debt payments for water were about $5 million per year, with wastewater at about $7-8 million per year, split between the City and County based on either flow or fixed amount agreements. He stated that the entire 10-year plan for water and wastewater showed that water had the bulk of the projects, with the majority to be debt funded. Mr. Maker noted that the total debt payments reflected issuance costs assumed at 5% of principal and 5.5% interest rate, with a maturity of 30 years.

Mr. Maker pointed out the revenue at current rates in charges, which would be covered in FY19 and FY20, but would have a slight shortfall in FY21 -- and expenses would not be covered as new debt was added. He presented revenues and proposed rates and charges, noting that this factored in debt service coverage of 1.25 by 2028. He stated that the wastewater expenses were lower but were still affected by debt and would need to be covered by FY21. Mr. Maker noted that one of the two financial ratios target was the operating and maintenance reserved, combined for water and wastewater, which factored in operating cash on hand (current cash divided by operating expenses times 365 days). He noted the target cash on hand for 90 days versus the

current cash on hand. Mr. Maker stated that debt coverage reflected a combined water/wastewater financial ratio.

Mr. Maker presented the projected rates and charges broken down by City and County, the operating rate per 1,000 gallons, and the debt service charge as a fixed charge per month. He compared current rates and charges to those projected for FY19 through FY28. Mr. Maker also presented the total revenue generated, how much would be brought in, and the dollar and percentage increases.

Mr. Maker stated that MFSG's conclusions and recommendations show that the Authority needed to increase rates and charges over the planning period to ensure that revenues covered expenses, and they recommended adopting a five-year plan to find the operating reserves and debt service coverage, to be revisited every year or so. He commented that Rivanna was doing a good job and he commended them for doing projection studies.

Mr. Mawyer pointed out that the Rivanna to Ragged Mountain pipeline construction was not in these numbers because it was beyond the planning timeline of 2028.

Mr. Gaffney noted that current debt was not decreasing much by 2028, and he wondered when it started to decline.

Mr. Wood responded that it would be about 2030.

Mr. Maker stated that the model went out 10 years, but the current debt sheet went out until it was exhausted.

Dr. Palmer commented that the Albemarle County Service Authority would also be working with MFSG to ensure that the finances meshed.

Mr. Maker noted that MFSG had done rate studies for both the City and the County, and they had used projections from that in this information.

Mr. Gaffney stated that it would be hard for them to adopt a five-year rate plan because the City and County would be shifting its percentages.

Mr. Mawyer noted that with this model, they could go beyond 10 years and run the model to show what the impact would be on rates -- but the further they projected, the less clear it would be.

Dr. Palmer asked about master planning for the urban area, as they had done for Crozet.

Mr. Mawyer responded that it was in the CIP to do a finished water master plan, but it was several years out -- and Mr. O'Connell had suggested doing it sooner. He noted that people like Ms. Whitaker may have a master plan in mind, but it would help to get it on paper.

Ms. Whitaker stated that Rivanna had a wastewater master plan that they started 10 years earlier, with updates every 5 years, but they needed to do this on the finished water side as well.

Mr. Mawyer commented that this dovetailed with their strategic plan.

Ms. Hildebrand asked if there were utilities that did more than a yearly rate in place.

Mr. Maker responded that five years was the maximum, but there were other authorities that set the rates -- with a clause allowing them to change that if necessary.

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

There were no other items presented.

10. CLOSED MEETING

There was a joint closed meeting held with the Rivanna Solid Waste Authority.

Mr. Krueger read the following resolution into the record:

RESOLVED that the Board of Directors of the Rivanna Water and Sewer Authority enter into a joint closed meeting with the Rivanna Solid Waste Authority Board to discuss confidential personnel matters as permitted by Section 2.2-3711.A.1 of the Code of Virginia.

Dr. Palmer moved to adopt a resolution to enter the joint closed session. Ms. Galvin seconded the motion, which passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

The board entered a closed meeting at 3:35 p.m.

Mr. Krueger read the following resolution into the record:

WHEREAS, the Rivanna Water and Sewer Authority 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 a certification by the Rivanna Water and Sewer Authority that such 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, (i) only public business matters lawfully exempted from open meeting requirements by Virginia law were discussed in the executive meeting to which this certification resolution applies, (ii) 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.

Mr. Richardson moved to adopt a resolution for the RWSA to reenter and open meeting. Dr. Palmer, which passed by a roll call vote of 5-0. Mr. O'Connell was absent from the meeting and the vote. Mr. Gaffney had left the meeting and was not present for the vote.

The board reentered into an open meeting at 4:38 p.m.

Dr. Palmer moved for the RWSA to authorize a 5% raise for Mr. Mawyer, bringing his annual salary from $183,712 to $192,897.60, and will also reimburse a moving expense tax reimbursement of $1,950. Ms. Galvin seconded the motion, which passed 5-0. Mr. O'Connell was absent from the meeting and the vote. Mr. Gaffney had left the meeting and was not present for the vote.

11. ***ADJOURNMENT***

Dr. Palmer moved to adjourn the meeting. Mr. Jones seconded the motion, which passed 5-0. Mr. O'Connell was absent from the meeting and the vote. Mr. Gaffney had left the meeting and was not present for the vote.

The RWSA Board adjourned the meeting at 4:41 p.m.

RIVANNA WATER & SEWER AUTHORITY
RIVANNA SOLID WASTE AUTHORITY
BOARD OF DIRECTORS

Joint Resolution of Appreciation for Maurice Jones

WHEREAS, Mr. Jones has served as a member of the Rivanna Water & Sewer Authority and Solid Waste Authority Boards of Directors since 2010; and

WHEREAS, over that same period Mr. Jones has demonstrated leadership in water and sewer, solid waste and recycling services; and has been a valuable member of the Boards of Directors and a resource to the Authorities; and

WHEREAS, Mr. Jones's understanding of the water, sewer, solid waste and recycling operations of the City of Charlottesville, the Water & Sewer Authority and the Solid Waste Authority has supported a strategic decision-making process that provided benefits to the customers served by the City of Charlottesville as well as the community as a whole. During Mr. Jones's tenure and through his efforts, major projects were completed including:

- a Community Water Supply Plan, to ensure an adequate water supply for the next 50 years
- the Expanded Ragged Mountain Reservoir Dam
- the Rivanna Sewer Pumping Station
- Odor Control Improvements at the Moores Creek Advanced Water Resource Recovery Facility
- Granular Activated Carbon Filters for the water treatment plants
- a Strategic Plan for both Authorities; and

WHEREAS, the Water & Sewer Authority and Solid Waste Authority Boards of Directors are most grateful for the professional and personal contributions Mr. Jones has provided to both Authorities and to the community; and

NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water & Sewer Authority and the Rivanna Solid Waste Authority Boards of Directors recognizes, thanks, and commends Mr. Jones for his distinguished service, efforts, and achievements as a member of the Rivanna Water & Sewer Authority and the Rivanna Solid Waste Authority, and presents this Resolution as a token of esteem, with its best wishes in his future endeavors.

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

Michael Gaffney, Chairman
Jeff Richardson
Kathy Galvin
Liz Palmer
Gary O'Connell
Lauren Hildebrand
Paul Oberdorfer
Trevor Henry

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MEMORANDUM

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

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **EXECUTIVE DIRECTOR'S REPORT**

DATE: **JULY 24, 2018**

Recognitions

SP GOAL: Workforce Development

The professional qualifications of our staff continue to improve and enhance our services. The following employee has successfully completed the requirements for a higher-level license from the State:

- Thomas Corrice – Wastewater Operator Class 4 License

Wayne Barnes – promoted to Assistant Water Manager. Wayne has served in the Rivanna Water Department for 39 years.

Community Outreach

SP GOALS: Communication & Collaboration

Staff participated in the Emergency Operations Center Functional Exercise at Zehmer Hall on June 26th. The scenario included a plane crash in the South Rivanna Reservoir.

Staff attended and presented at the first Annual Facilities Coordination Meeting with representatives from UVA Facilities Management, UVA Foundation, ACSA, Albemarle County Department of Community Development, City of Charlottesville Utilities, and City of Charlottesville Neighborhood Development Services.

Our Water Resources Manager, Andrea Terry, gave a presentation on Reservoir Water Quality and Management Study at the Virginia AWWA conference on Optimizing System Performance held at the University of Richmond.

Our Director of Solid Waste, Phil McKalips, provided a tour of the McIntire Recycling Center to a class from the Lafayette School, and our Wastewater Department manager, Tim Castillo, provided a tour of the Moores Creek Facility. Mr. Castillo also provided a tour of the Moores Creek facility to an Environmental Biology class from PVCC.

South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Project

Key Points:

1. The purpose of this water line project is to ensure the urban water system has an adequate supply of drinking water for the next 50 years, including during extreme drought conditions like those endured in 2001-2002. This water line is an essential component of the Community Water Supply Plan (CWSP), which was widely discussed and crafted by many organizations in the community over a ten-year period from 2002 – 2012. In addition to water supply, the CWSP also considers other community values including maximizing the use of current infrastructure, replacement of aging infrastructure, and balancing the needs of the community with the needs of our rivers and reservoirs.

2. The Rivanna Water & Sewer Authority (RWSA) Board of Directors and staff are currently discussing this major water line project far in advance of the actual construction so that strategic financial planning can be implemented to maintain consistent drinking water costs for the community in the future.

3. The RWSA Board of Directors and staff have provided accurate information about the goals, budget and schedule for this project to the Charlottesville City Council, Albemarle Board of Supervisors, Albemarle County Service Authority (ACSA), the media, and many community groups including the League of Women Voters and the Sierra Club, as well as on our web page, over the past seven months. We held an informational meeting for residents near the proposed path of the water line in the Georgetown Road area on June 19, 2018 at Albemarle High School. Questions from all of these meetings have been openly and fully addressed.

4. In addition to increasing the raw water supply, the water line will provide greater dependability and flexibility for our drinking water system by connecting our two largest water supply reservoirs and two largest water treatment plants. This water line connection will make it possible to supply raw water from either reservoir to both of our two largest drinking water treatment plants, South Rivanna and Observatory. Major construction projects to increase the treatment capacity of the Observatory water treatment plant and renovate the South Rivanna water treatment plant will be completed over the next five years to further support water system dependability and flexibility.

5. This project will provide significant enhancements to the natural conditions in the Moormans River and the South Rivanna River basin by eliminating the withdrawal of four million gallons per day from the Sugar Hollow Reservoir. This goal was stated in the Joint Permit Application submitted by the RWSA to the Virginia Department of Environmental Quality (VDEQ) and the Army Corps of Engineers on June 30, 2006, as well as in City Council's Resolution Approving a Local Water Supply Plan dated June 2, 2008.

6. The preliminary schedule for completing final design and construction of the water line and associated facilities is over an eight-year period between 2027 and 2040. RWSA staff is updating urban area raw water supply and demand studies, which will be completed in the fall of 2019. Based on the results from these studies, the RWSA Board of Directors may defer or accelerate the project schedule as part of the annual review of the Capital Improvement Program.

7. RWSA has a contractual obligation with the City and the ACSA to raise the water level 12 feet in the RMR only when urban area demand reaches 85% of the water supply. The City and the ACSA would have to authorize any change to this requirement. RWSA also has a contractual obligation to assess water demand and supply every 10 years, with the first report required by 2020.

8. Water restrictions were implemented in October 2017 as the result of rapid decline in the SRR water level from September 17 – October 3, 2017. To capture forecasted rain and increase the water level in the reservoir in October, RWSA requested a permit modification to reduce the release of water into the river below the dam, as required by our permit. The VDEQ required the community to implement mandatory water conservation measures as a condition for approval of the permit modification.

RWSA staff have provided detailed information and responses to all questions about the causes of the decline in the reservoir including responses to an extensive list of questions Board members heard from the community. Information about the causes of the decline in the SRR, and operational changes subsequently implemented, was presented to the RWSA Board of Directors in a public meeting on October 27, 2017, which included:

a. Drought conditions in central Virginia, including Albemarle County and the City of Charlottesville, as a Drought Advisory Watch was declared by the VDEQ's Virginia Drought Monitoring Task Force (VDMTF) on October 11, 2017. The VDMTF stated that the primary factors contributing to the declaration included:
    - Precipitation totals less than 75 % of normal over the 90 days and less than 25 % of normal over the last 30 days
    - Stream flows lower than 75 – 95 % of recorded flows, indicating moderate to severe hydrolic drought with a period of below-average water content in streams, aquifers, lakes and soils
    - Groundwater levels lower than 75- 95% of previously recorded September and October levels

    In addition, precipitation in the Charlottesville /Albemarle area in 2017 totaled 36.62 inches, 11 inches below normal annual precipitation of 47.68 inches (data from Jerry Stenger, Director of AASC Designated State Office of Climatology).

b. RWSA gates through the dam which were leaking approximately 3 million gallons per day for two months (180 million gallons total), representing 36% of the total decline from the reservoir of approximately 490 million gallons.
c. An over-release from the reservoir resulting from the use of USGS / VDEQ stream gage provisional inflow data, which was later determined by VDEQ to be over recording the amount of water flowing into the reservoir. RWSA released more water into the river below the dam than would have been required to meet permit requirements (70% of inflow) based on the original provisional data. This is the normal procedure followed by VDEQ and RWSA to complete releases from the reservoir to the Rivanna River. VDEQ routinely verifies inflow gage data by taking actual flow measurements in the river.

In November, staff talked with the Daily Progress about how leaking gates and releases thru the meter in the dam contributed to the decline of the reservoir water level. Staff also discussed how adjustments to the gates would be monitored more frequently in the future. (Daily Progress article on November 11, 2017 by Allison Wrabel).

9. The RWSA Board of Directors and staff are committed to providing adequate, dependable, safe and cost-effective drinking water and wastewater services for the long-term future of the Charlottesville / Albemarle community. Our plans for this water line project reflect this commitment.

Historical Context:

In 2001-2002, a harsh and lengthy drought gripped the Charlottesville / Albemarle area. Our primary water source, the Rivanna River, dropped to levels never seen before. The 18-month event provided clear evidence that the public water supply system serving the urban area did not have an adequate supply of drinking water. Severe water restrictions were mandated for residents and businesses, outdoor landscape irrigation was forbidden, commercial car washes were closed, and other businesses were required to reduce their water usage by 25%. When the drought was over, the community demanded that actions must be taken to reduce the risk of severe restrictions in the future.

Following 10 years of extensive public discussion involving many organizations in the community, elected and appointed officials ultimately agreed on a Community Water Supply Plan (CWSP) in 2012. The CWSP included a strategy for constructing and utilizing the infrastructure necessary to increase the supply of public drinking water to meet the water requirements of the Charlottesville/Albemarle urban area for 50 years.

The CWSP reflects the level of risk the community is willing to take with our supply of drinking water. It also considers other community values including maximizing use of current infrastructure, replacement of aging infrastructure, and balancing the needs of the community with our rivers and reservoirs. The CWSP includes a strategy to increase the urban area water supply, and includes not just the storage of raw water, but also the ability to get that raw water to our treatment plants for processing into drinking water. The basin components of the CWSP includes:

- Constructing a larger dam for the Ragged Mountain Reservoir (RMR). The larger dam and expanded reservoir would increase raw water storage from 0.5 to 1.5 billion gallons, and have the capacity to store a total of 2.1 billion gallons when needed in the future.
- Constructing a water line from the South Rivanna Reservoir (SRR) to the RMR to be used as the sole means to fill the expanded RMR. The RMR is the only raw water supply for the Observatory water treatment plant. Upon completion of the new raw water line from SRR, the existing 90+ year old water line from the Sugar Hollow Reservoir (SHR) to the RMR, currently used to fill the RMR, would no longer be used. Initial planning anticipated construction of the water line by 2021.
- Increasing the amount of water stored in the RMR from 1.5 to 2.1 billion gallons by raising the water level an additional 12 feet (600 million gallons) when needed in the future.

To implement the CWSP, the City, the ACSA, and the RWSA entered into agreements providing for RWSA to construct the additional infrastructure to implement the CWSP and how the costs for that infrastructure would be allocated between the City and the ACSA, all as described in the Ragged Mountain Dam Project Agreement and the Water Cost Allocation Agreement, signed in 2012.

Under the Ragged Mountain Dam Project Agreement, the City and ACSA directed RWSA to:

- Construct, fill and operate the larger dam for the RMR to hold 1.5 billion gallons including an extra 12 feet for a future increase in the water level (see 4th bullet point below).
- Evaluate the storage capacity of the urban water system (SRR, RMR and the SHR), as well as the current and future water demand of the urban area. These evaluations were required to be completed by the year 2020 and every 10 years thereafter.
- Construct, own and operate the water line from the SRR to the RMR.
- Raise the RMR water level 12 feet (600 million gallons) if the urban area water demand reached 85% of the urban area water supply. Either the City or ACSA acting alone may direct RWSA to fill RMR with the additional 12 feet of water when the demand reached 85% of supply.

The Water Cost Allocation Agreement generally required:

- The City to pay 15% and the ACSA to pay 85% of the cost of the larger RMR dam.
- The City to pay 20% and the ACSA to pay 80% of the cost of the SRR to RMR water line.
- The City to be allocated 20% of the additional water (1.98 million gallons per day).
- The ACSA to be allocated 80% of the additional water (7.92 million gallons per day).
- A “True-Up” of costs if the City or ACSA exceeded its water allocation.

The current status of the Community Water Supply Plan is:

- RWSA completed construction of the larger dam for the RMR in 2014. One billion gallons of water was added to the larger reservoir in 2014 – 2015.
- RWSA is updating the estimated storage capacity of the urban water system, as well as the current and future water demand of the urban area. These studies will be completed by the fall of 2019. Currently, water supply for the urban area is estimated to be 16.4 million gallons per day, and water demand is about 9.1 million gallons per day. The most recent water demand study completed in 2011 indicated the urban area will require addition water storage capacity by 2040.
- RWSA is evaluating locations for installation of the nine-mile-long water line from the SRR to the RMR, and will acquire permanent easements in 2019 – 2021 to prevent conflicts with facilities property owners may want to construct in the future. RWSA originally explored water line locations near Georgetown Road. Those locations were determined to be difficult due to conflicts with traffic and existing underground utilities within a limited street width. Currently under consideration is a route along Lambs Road and behind the Albemarle/Jouett/Greer schools complex. The currently proposed route can be viewed on our web page http://www.rivanna.org/srr-to-rmr-water-line-project/. Discussions with the Albemarle County School Board will be held to consider the proposed rout.

Benefits of the water line are:

- Dependability of our urban water system:
    - By connecting the SRR and RMR with this water line, as well as the South Rivanna and Observatory Water Treatment Plants, our water storage and water treatment facilities will be better prepared to maintain drinking water service to the urban area, especially during periods of drought or disasters. Two examples demonstrating the importance of redundancy and reliability to the public drinking water system include:
        - A recent exercise sponsored by the regional Emergency Operations Center included a scenario in which a plane crashed into the SRR, spilling fuel into the water, raising concern about structural damage to the dam, and making the water in the SRR unusable until the cleanup was completed. While we are hopeful this would never occur, this is a realistic scenario given the close proximity of the airport to the SRR. Under these conditions, the proposed water line could be used to transfer water from the RMR to the South Rivanna Water Treatment Plant, and in combination with the Observatory Water Treatment Plant, maintain water service to urban water customers in the City, County and UVA.

        - During the significant rain storm on May 30, 2018, there was seven feet of water powering over the SRR dam. Under normal weather conditions, there is typically several inches of water flowing over the dam. Fortunately, there was no damage to the dam due to the storm, but the event showed the formidable natural forces which could impact our drinking water infrastructure. The proposed water line would increase our ability to maintain water service in the urban area during natural and manmade disasters.
- Increased water supply:
    - By completing the water line and adding 600 million gallons to the RMR and the urban water system, an additional supply of water will be available to maintain water services over the duration of any future drought.

- Better for the environment:
    - The proposed water line and associated facilities will balance the needs of the community with the needs of our rivers and reservoirs. The water line will withdraw up to 25 million gallons of raw water per day from the SRR when the reservoir is overflowing and pump the raw water to the RMR or to the Observatory Water Treatment Plant. The existing water line, currently used to transfer four million gallons of water per day from SHR to fill RMR, will be taken out of service. Because of this change, an additional four million gallons per day will remain in the SHR and will be available for release into the river. While the new regulatory permit we will receive after the water line is completed will reduce the release required from SHR from 100% of inflow to 90% of inflow, the transfer of four million gallons per day from SHR to RMR will no longer be required to fill RMR. Consequently, water levels in the SHR will be greater than or equal to current water levels. By withdrawing and transferring water thru the proposed water line from SRR to fill RMR, more water will be available in the SHR, the Moorman's River and the South Rivanna River basin.

    - This project was always intended to provide significant enhancements to the natural conditions in the Moorman’s River and the South Rivanna River basin. This goal was specifically stated in the Joint Permit Application submitted to the Virginia Department of Environmental Quality and the Army Corps of Engineers on June 30, 2006, as well as in the City Council’s Resolution Approving a Local Water Supply Plan dated June 2, 2008.

Schedule for final design and construction of the water line is:

- The RWSA Board of Directors reviews the Authority's Capital Improvement Program (CIP) each year to assess the purpose, priority, cost and schedule of all proposed water and wastewater projects. To assist RWSA staff with financial planning for the FY 2019 – 2023 CIP, the Board recently established a schedule of 2027 – 2040 as the likely period for completion of this project, expected to take eight years for final design and construction.
- RWSA staff will provide updated information about the estimated storage capacity of the SRR and the urban water system, as well as the current and future water demand of the urban area, when ongoing studies are completed by the fall of 2019. Based on the results from these studies, the RWSA Board of Directors may defer or accelerate the project schedule during the annual CIP planning and approval process.
- The Charlottesville City Council also endorsed the 2027 – 2040 schedule.
- The ACSA Board of Directors approved a similar schedule of 2027 – 2035.

Will the water line prevent water restrictions like those required in October 2017?

- The water line would provide additional flexibility by connecting two of our reservoirs and two of our water treatment plants, which would reduce the risk of water restrictions during drought conditions as well as natural and manmade disasters. By increasing the amount of raw water we can store in the RMR and the urban water system, we can withstand abnormal conditions for longer periods.

- Water restrictions required in October 2017 were the result of rapid decline in the SRR water level from September 17 – October 3, 2017. In an effort to capture forecasted rain and increase the water level in the reservoir in October, RWSA requested a permit modification to reduce the release of water into the river below the dam. The VDEQ required the community to implement mandatory water conservation measures as a condition for approval of the permit modification. The decline in the SRR water level was the result of:
    - Drought conditions in central Virginia, as declared by VDEQ's Virginia Drought Monitoring Task Force on October 11, 2017.
    - RWSA gates through the dam which were leaking approximately three million gallons per day for two months (180 million gallons), representing 36% of the total decline from the reservoir of approximately 490 million gallons.
    - Over-release from the reservoir resulting from provisional stream inflow gauge data which was over recording the amount of water flowing into the reservoir and causing RWSA to release more water than would have been required to meet RWSA's permit requirements.

- The summer of 2017 was the first period of drought conditions after completion of the larger dam and filling of the larger RMR reservoir in 2015. RWSA staff gained valuable experience in the coordinated storage of water in the SHR, SRR and RMR, as well as the coordinated use of our South Rivanna and Observatory Water Treatment Plants during periods of lower than normal rainfall and drought. We have captured those lessons, updated our operational procedures, and will use them to support the urban water system here forward.

The Rivanna Water and Sewer Authority Board of Directors and staff are committed to providing adequate, dependable, safe and cost-effective drinking water and wastewater services for the long-term future of the Charlottesville / Albemarle community. Our plans for this water line project reflect this commitment.

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MEMORANDUM

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

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

SUBJECT: **JUNE MONTHLY FINANCIAL SUMMARY – FY 2018**

DATE: **JULY 24, 2018**

Urban Water flows and rate revenues are 3% under budget estimates for Fiscal Year 2018, and Urban Wastewater rate revenues are 5% under budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	$ 6,662,775	$ 6,928,898	$ 2,039,612	$ 15,631,285
Expenses	(6,509,525)	(8,008,060)	(1,977,660)	(16,495,245)
Surplus (deficit)	$ 153,250	$ (1,079,162)	$ 61,952	$ (863,960)
Debt Service				
Revenues	$ 5,671,823	$ 8,266,226	$ 842,209	$ 14,780,258
Expenses	(5,638,756)	(8,275,057)	(842,854)	(14,756,667)
Surplus (deficit)	$ 33,067	$ (8,831)	$ (645)	$ 23,591
Total				
Revenues	$ 12,334,598	$ 15,195,124	$ 2,881,821	$ 30,411,543
Expenses	(12,148,281)	(16,283,117)	(2,820,514)	(31,251,912)
Surplus (deficit)	$ 186,317	$ (1,087,993)	$ 61,307	$ (840,369)

Some expense categories are over the prorated year-to-date budget as follows:

A. Personnel Costs (Administration, Lab – pages 8, 10) – The GIS coordinator's payroll costs were included in the annual Engineering department's budget, but that position was moved to the Administration department in April, which contributed to the budget overage for Administration. Lab salaries are over budget due to the August 2017 payment of accumulated leave balances to the lab manager upon his retirement, and due to overlapping salaries in July for the former lab manager and his replacement.

B. Other Services & Charges (Scottsville Water, Urban Wastewater, Administration, Engineering - pages 4, 5, 8, 11) - Urban Wastewater is $242,000 over budget on odor control costs for Crozet Interceptor/Pump Stations, and Utility costs are $201,000 higher than budget estimates. Scottsville Water's Utility costs are also exceeding budgeted estimates. The Administration department is $33,700 over the annual budget for strategic planning costs. The Engineering department is only $2400 over budget for water and sewer modeling services provided by ACSA, but ACSA's final quarterly billing of $8,400 for FY 2017 services was paid last July and included in this FY 2018 report.

C. Equipment Purchases (Crozet Water, Scottsville Wastewater – pages 3, 7) – Crozet Water and Scottsville Wastewater made some unbudgeted purchases of needed equipment.

D. Professional Services (Urban Water, Crozet Water, Administration – pages 2, 3, 8) – Urban Water is $194,000 over budget for professional services ($64,000 for legal fees related to the Observatory plant lease and $130,000 for engineering and technical services related mainly effects of the drought). Crozet Water has spent $58,000 on unbudgeted engineering and technical services related to low chlorine residuals in the distribution system. Administration spent $22,000 more than projected for legal fees.

E. Operations and Maintenance (Crozet Water, Urban Wastewater, Administration, Maintenance, Lab – pages 3, 5, 8, 9, 10) – Crozet Water is over budget in this category due to the urgent repair of a water main. Urban Wastewater is $136,000 over budget for Pipelines and Appurtenances due to emergency repairs. Urban Wastewater is also over budget on chemical purchases and equipment repairs and maintenance. The Administration, Maintenance, and Lab departments are over budget on repairs.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018
Fiscal Year 2018

Consolidated
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 15,403,127	$ 15,403,127	$ 14,873,084	$ (530,043)	-3.44%
Lease Revenue		64,000	64,000	93,300	29,300	45.78%
Admin., Maint. & Engineering Revenue		410,000	410,000	447,421	37,421	9.13%
Other Revenues		534,630	534,630	545,710	11,080	2.07%
Use of Watershed Management Funds		80,000	80,000	87,047	7,047	8.81%
Interest Allocation		15,000	15,000	32,143	17,143	114.28%
Total Operating Revenues		**$ 16,506,757**	**$ 16,506,757**	**$ 16,078,705**	**$ (428,052)**	**-2.59%**
Expenses						
Personnel Cost	**A**	$ 7,841,522	$ 7,841,522	$ 7,528,798	$ 312,724	3.99%
Professional Services	**D**	590,350	590,350	738,823	(148,473)	-25.15%
Other Services & Charges	**B**	2,552,662	2,552,662	2,862,356	(309,694)	-12.13%
Communications		142,605	142,605	137,338	5,267	3.69%
Information Technology		324,400	324,400	282,335	42,065	12.97%
Supplies		44,970	44,970	40,045	4,925	10.95%
Operations & Maintenance	**E**	3,613,450	3,613,450	3,970,233	(356,783)	-9.87%
Equipment Purchases	**C**	336,300	336,300	322,238	14,062	4.18%
Depreciation		788,000	788,000	788,000	(0)	0.00%
Reserve Transfers		272,500	272,500	272,500	0	0.00%
Total Operating Expenses		**$ 16,506,759**	**$ 16,506,759**	**$ 16,942,666**	**$ (435,907)**	**-2.64%**
Operating Surplus/(Deficit)		**$ (2)**	**$ (2)**	**$ (863,961)**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 13,561,158	$ 13,561,158	$ 13,561,164	$ 6	0.00%
Use of Reserves for 2016 Bond DS		600,000	600,000	600,000	-	0.00%
Septage Receiving Support - County		109,440	109,440	109,441	1	0.00%
Buck Mountain Surcharge		84,000	84,000	123,100	39,100	46.55%
Buck Mountain Lease Revenue		1,600	1,600	1,309	(291)	-18.21%
Trust Fund Interest		46,400	46,400	31,178	(15,222)	-32.81%
Reserve Fund Interest		100,500	100,500	354,066	253,566	252.30%
Total Debt Service Revenues		**$ 14,503,098**	**$ 14,503,098**	**$ 14,780,258**	**$ 277,160**	**1.91%**
Debt Service Costs						
Total Principal & Interest		$ 12,370,200	$ 12,370,200	$ 12,370,200	$ -	0.00%
Reserve Additions-Interest		100,500	100,500	354,066	(253,566)	-252.30%
Debt Service Ratio Charge		725,000	725,000	725,000	-	0.00%
Reserve Additions-CIP Growth		1,307,400	1,307,400	1,307,400	-	0.00%
Total Debt Service Costs		**$ 14,503,100**	**$ 14,503,100**	**$ 14,756,666**	**$ (253,566)**	**-1.75%**
Debt Service Surplus/(Deficit)		**$ (2)**	**$ (2)**	**$ 23,592**		

Summary

Total Revenues	$ 31,009,855	$ 31,009,855	$ 30,858,963	$ (150,892)	-0.49%
Total Expenses	31,009,859	31,009,859	31,699,333	(689,474)	-2.22%
Surplus/(Deficit)	**$ (4)**	**$ (4)**	**$ (840,369)**		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Urban Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 6,758,077	$ 6,758,077	$ 6,539,852	$ (218,225)	-3.23%
Lease Revenue		35,000	35,000	65,903	30,903	88.29%
Miscellaneous		7,000	7,000	-	(7,000)	-100.00%
Use of Reserves		40,000	40,000	43,524	3,524	8.81%
Interest Allocation		6,300	6,300	13,496	7,196	114.22%
Total Operating Revenues		**$ 6,846,377**	**$ 6,846,377**	**$ 6,662,774**	**$ (183,603)**	**-2.68%**
Expenses						
Personnel Cost		$ 1,828,852	$ 1,828,852	$ 1,737,291	$ 91,561	5.01%
Professional Services	D	142,450	142,450	336,736	(194,286)	-136.39%
Other Services & Charges		606,100	606,100	450,901	155,199	25.61%
Communications		64,690	64,690	64,542	148	0.23%
Information Technology		65,300	65,300	65,690	(390)	-0.60%
Supplies		7,000	7,000	6,526	474	6.78%
Operations & Maintenance		1,522,660	1,522,660	1,340,882	181,778	11.94%
Equipment Purchases		106,500	106,500	68,940	37,560	35.27%
Depreciation		260,000	260,000	260,000	(0)	0.00%
Reserve Transfers		250,000	250,000	250,000	0	0.00%
Subtotal Before Allocations		$ 4,853,552	$ 4,853,552	$ 4,581,508	$ 272,045	5.61%
Allocation of Support Departments		1,992,824	1,992,824	1,928,017	64,807	3.25%
Total Operating Expenses		**$ 6,846,377**	**$ 6,846,377**	**$ 6,509,525**	**$ 336,852**	**4.92%**
Operating Surplus/(Deficit)		**$ 0**	**$ 0**	**$ 153,250**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 5,345,730	$ 5,345,730	$ 5,345,736	$ 6	0.00%
Trust Fund Interest		18,000	18,000	12,253	(5,747)	-31.93%
Reserve Fund Interest		18,000	18,000	189,426	171,426	952.36%
Buck Mountain Surcharge		84,000	84,000	123,100	39,100	46.55%
Lease Revenue		1,600	1,600	1,309	(291)	-18.21%
Total Debt Service Revenues		**$ 5,467,330**	**$ 5,467,330**	**$ 5,671,823**	**$ 204,493**	**3.74%**
Debt Service Costs						
Total Principal & Interest		$ 4,242,130	$ 4,242,130	$ 4,242,130	$ -	0.00%
Reserve Additions-Interest		18,000	18,000	189,426	(171,426)	-952.36%
Debt Service Ratio Charge		400,000	400,000	400,000	-	0.00%
Reserve Additions-CIP Growth		807,200	807,200	807,200	-	0.00%
Total Debt Service Costs		**$ 5,467,330**	**$ 5,467,330**	**$ 5,638,756**	**$ (171,426)**	**-3.14%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 33,068**		

Rate Center Summary

Total Revenues	$ 12,313,707	$ 12,313,707	$ 12,334,598	$ 20,891	0.17%
Total Expenses	12,313,707	12,313,707	12,148,280	165,426	1.34%
Surplus/(Deficit)	**$ 0**	**$ 0**	**$ 186,317**		
Costs per 1000 Gallons	1.99		1.96		
Thousand Gallons Treated	3,432,018	3,432,018	3,321,408	(110,610)	-3.22%
or					
Flow (MGD)	9.403		9.100		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Crozet Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 915,336	$ 915,336	$ 915,336	$ -	0.00%
Lease Revenues		29,000	29,000	27,397	(1,603)	-5.53%
Use of Reserves		24,000	24,000	29,229	5,229	21.79%
Interest Allocation		900	900	2,027	1,127	125.20%
Total Operating Revenues		**$ 969,236**	**$ 969,236**	**$ 973,990**	**$ 4,754**	**0.49%**
Expenses						
Personnel Cost		$ 289,212	$ 289,212	$ 272,943	$ 16,269	5.63%
Professional Services	**D**	47,000	47,000	104,724	(57,724)	-122.82%
Other Services & Charges		121,480	121,480	103,542	17,938	14.77%
Communications		4,230	4,230	5,154	(924)	-21.85%
Information Technology		14,200	14,200	8,883	5,317	37.44%
Supplies		670	670	990	(320)	-47.82%
Operations & Maintenance	**E**	233,630	233,630	244,193	(10,563)	-4.52%
Equipment Purchases	**C**	26,400	26,400	36,618	(10,218)	-38.70%
Depreciation		25,000	25,000	25,000	0	0.00%
Reserve Transfers		20,000	20,000	20,000	(0)	0.00%
Subtotal Before Allocations		$ 781,822	$ 781,822	$ 822,046	$ (40,225)	-5.15%
Allocation of Support Departments		187,417	187,417	182,194	5,223	2.79%
Total Operating Expenses		**$ 969,238**	**$ 969,238**	**$ 1,004,240**	**$ (35,002)**	**-3.61%**
Operating Surplus/(Deficit)		**$ (2)**	**$ (2)**	**$ (30,251)**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 691,476	$ 691,476	$ 691,476	$ -	0.00%
Trust Fund Interest		1,800	1,800	1,185	(615)	-34.18%
Reserve Fund Interest		2,700	2,700	5,311	2,611	96.70%
Total Debt Service Revenues		**$ 695,976**	**$ 695,976**	**$ 697,972**	**$ 1,996**	**0.29%**
Debt Service Costs						
Total Principal & Interest		$ 426,977	$ 426,977	$ 426,977	$ -	0.00%
Reserve Additions-Interest		2,700	2,700	5,311	(2,611)	-96.70%
Reserve Additions-CIP Growth		266,300	266,300	266,300	-	0.00%
Total Debt Service Costs		**$ 695,977**	**$ 695,977**	**$ 698,588**	**$ (2,611)**	**-0.38%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ (616)**		
Rate Center Summary						
Total Revenues		$ 1,665,212	$ 1,665,212	$ 1,671,962	$ 6,750	0.41%
Total Expenses		1,665,215	1,665,215	1,702,828	(37,613)	-2.26%
Surplus/(Deficit)		**$ (3)**	**$ (3)**	**$ (30,867)**		
Costs per 1000 Gallons		5.31		5.17		
Thousand Gallons Treated		182,610	182,610	194,150	11,540	6.32%
Flow (MGD)		0.500		0.532		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Scottsville Water Rate Center
Revenues and Expenses Summary

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual						
Revenues						
Operations Rate Revenue		$ 412,236	$ 412,236	$ 412,236	$ -	0.00%
Use of Reserves		16,000	16,000	14,294	(1,706)	
Interest Allocation		400	400	839	439	109.68%
Total Operating Revenues		**$ 428,636**	**$ 428,636**	**$ 427,369**	**$ (1,267)**	**-0.30%**
Expenses						
Personnel Cost		$ 154,467	$ 154,467	$ 143,744	$ 10,724	6.94%
Professional Services		26,000	26,000	18,816	7,184	27.63%
Other Services & Charges	B	19,490	19,490	25,880	(6,390)	-32.79%
Communications		3,210	3,210	3,419	(209)	-6.50%
Information Technology		7,000	7,000	1,131	5,869	83.84%
Supplies		750	750	135	615	81.96%
Operations & Maintenance		66,570	66,570	59,649	6,921	10.40%
Equipment Purchases		14,400	14,400	2,364	12,036	83.58%
Depreciation		17,000	17,000	17,000	(0)	0.00%
Reserve Transfers		2,500	2,500	2,500	0	0.00%
Subtotal Before Allocations		$ 311,387	$ 311,387	$ 274,637	$ 36,750	11.80%
Allocation of Support Departments		117,247	117,247	114,562	2,685	2.29%
Total Operating Expenses		**$ 428,634**	**$ 428,634**	**$ 389,199**	**$ 39,435**	**9.20%**
Operating Surplus/(Deficit)		**$ 2**	**$ 2**	**$ 38,169**		
Debt Service Budget vs. Actual						
Revenues						
Debt Service Rate Revenue		$ 129,448	$ 129,448	$ 129,444	$ (4)	0.00%
Trust Fund Interest		400	400	343	(57)	-14.26%
Reserve Fund Interest		1,500	1,500	2,833	1,333	88.84%
Total Debt Service Revenues		**$ 131,348**	**$ 131,348**	**$ 132,620**	**$ 1,272**	**0.97%**
Debt Service Costs						
Total Principal & Interest		$ 129,848	$ 129,848	$ 129,848	$ -	0.00%
Reserve Additions-Interest		1,500	1,500	2,833	(1,333)	
Reserve Additions-CIP Growth		-	-	-	-	
Total Debt Service Costs		**$ 131,348**	**$ 131,348**	**$ 132,681**	**$ (1,333)**	**-1.01%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ (61)**		
Rate Center Summary						
Total Revenues		$ 559,984	$ 559,984	$ 559,988	$ 4	0.00%
Total Expenses		559,982	559,982	521,880	38,102	6.80%
Surplus/(Deficit)		**$ 2**	**$ 2**	**$ 38,108**		
Costs per 1000 Gallons		22.39		23.76		
Thousand Gallons Treated		19,143	19,143	16,377	(2,766)	-14.45%
or						
Flow (MGD)		0.052		0.045		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Urban Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 6,680,446	$ 6,680,446	$ 6,368,628	$ (311,818)	-4.67%
Stone Robinson WWTP		27,630	27,630	21,093	(6,537)	-23.66%
Septage Acceptance		390,000	390,000	436,840	46,840	12.01%
Nutrient Credits		100,000	100,000	87,105	(12,895)	-12.90%
Miscellaneous Revenue		10,000	10,000	673	(9,327)	-93.27%
Interest Allocation		6,800	6,800	14,560	7,760	114.12%
Total Operating Revenues		**$ 7,214,876**	**$ 7,214,876**	**$ 6,928,898**	**$ (285,978)**	**-3.96%**
Expenses						
Personnel Cost		$ 1,230,128	$ 1,230,128	$ 1,124,796	$ 105,332	8.56%
Professional Services		54,000	54,000	15,357	38,643	71.56%
Other Services & Charges	**B**	1,571,400	1,571,400	2,010,402	(439,002)	-27.94%
Communications		10,430	10,430	10,283	147	1.41%
Information Technology		57,300	57,300	60,036	(2,736)	-4.77%
Supplies		2,700	2,700	1,274	1,426	52.81%
Operations & Maintenance	**E**	1,390,300	1,390,300	1,942,224	(551,924)	-39.70%
Equipment Purchases		54,000	54,000	52,507	1,493	2.77%
Depreciation		465,000	465,000	465,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 4,835,258	$ 4,835,258	$ 5,681,879	$ (846,621)	-17.51%
Allocation of Support Departments		2,379,618	2,379,618	2,326,181	53,437	2.25%
Total Operating Expenses		**$ 7,214,876**	**$ 7,214,876**	**$ 8,008,060**	**$ (793,184)**	**-10.99%**
Operating Surplus/(Deficit)		**$ 0**	**$ 0**	**$ (1,079,162)**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 7,384,689	$ 7,384,689	$ 7,384,692	$ 3	0.00%
Use of Reserves for 2016 Bond DS		600,000	600,000	600,000	-	0.00%
Septage Receiving Support - County		109,440	109,440	109,441	1	0.00%
Trust Fund Interest		26,200	26,200	17,366	(8,834)	-33.72%
Reserve Fund Interest		77,300	77,300	154,727	77,427	100.16%
Total Debt Service Revenues		**$ 8,197,629**	**$ 8,197,629**	**$ 8,266,226**	**$ 68,597**	**0.84%**
Debt Service Costs						
Total Principal & Interest		$ 7,561,430	$ 7,561,430	$ 7,561,430	$ -	0.00%
Reserve Additions-Interest		77,300	77,300	154,727	(77,427)	-100.16%
Debt Service Ratio Charge		325,000	325,000	325,000	-	0.00%
Reserve Additions-CIP Growth		233,900	233,900	233,900	-	0.00%
Total Debt Service Costs		**$ 8,197,630**	**$ 8,197,630**	**$ 8,275,057**	**$ (77,427)**	**-0.94%**
Debt Service Surplus/(Deficit)		**$ (1)**	**$ (1)**	**$ (8,831)**		

Rate Center Summary

Total Revenues	$ 15,412,505	$ 15,412,505	$ 15,195,124	$ (217,381)	-1.41%
Total Expenses	15,412,506	15,412,506	16,283,117	(870,611)	-5.65%
Surplus/(Deficit)	**$ (1)**	**$ (1)**	**$ (1,087,993)**		
Costs per 1000 Gallons	2.11		2.42		
Thousand Gallons Treated	3,424,639	3,424,639	3,315,391	(109,248)	-3.19%
or					
Flow (MGD)	9.383		9.083		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

	Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Operating Budget vs. Actual					
Notes					
Revenues					
Operations Rate Revenue	$ 352,344	$ 352,344	$ 352,344	$ -	0.00%
Interest Allocation	300	300	675	375	124.99%
Total Operating Revenues	**$ 352,644**	**$ 352,644**	**$ 353,019**	**$ 375**	**0.11%**
Expenses					
Personnel Cost	$ 90,823	$ 90,823	$ 83,073	$ 7,750	8.53%
Professional Services	3,000	3,000	-	3,000	
Other Services & Charges	31,490	31,490	32,195	(705)	-2.24%
Communications	2,600	2,600	3,103	(503)	-19.33%
Information Technology	3,500	3,500	119	3,382	96.61%
Supplies	100	100	3	97	97.22%
Operations & Maintenance	121,450	121,450	105,791	15,659	12.89%
Equipment Purchases	3,100	3,100	2,600	500	16.13%
Depreciation	5,000	5,000	5,000	(0)	0.00%
Subtotal Before Allocations	$ 261,063	$ 261,063	$ 231,883	$ 29,180	11.18%
Allocation of Support Departments	91,584	91,584	89,105	2,479	2.71%
Total Operating Expenses	**$ 352,647**	**$ 352,647**	**$ 320,988**	**$ 31,659**	**8.98%**
Operating Surplus/(Deficit)	**$ (3)**	**$ (3)**	**$ 32,031**		
Debt Service Budget vs. Actual					
Revenues					
Debt Service Rate Revenue	$ 1,582	$ 1,582	$ 1,584	$ 2	0.13%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	600	600	1,062	462	77.03%
Total Debt Service Revenues	**$ 2,182**	**$ 2,182**	**$ 2,646**	**$ 2**	**0.09%**
Debt Service Costs					
Total Principal & Interest	$ 1,582	$ 1,582	$ 1,582	$ -	0.00%
Reserve Additions-Interest	600	600	1,062	(462)	-77.03%
Total Debt Service Costs	**$ 2,182**	**$ 2,182**	**$ 2,644**	**$ (462)**	**-21.18%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 2**		

Rate Center Summary

Total Revenues	$ 354,826	$ 354,826	$ 355,665	$ 839	0.24%
Total Expenses	354,829	354,829	323,632	31,197	8.79%
Surplus/(Deficit)	**$ (3)**	**$ (3)**	**$ 32,033**		
Costs per 1000 Gallons	8.12		7.34		
Thousand Gallons Treated	43,412	43,412	43,702	290	**0.67%**
or					
Flow (MGD)	0.119		0.120		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2018	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 284,688	$ 284,688	$ 284,688	$ -	0.00%
Interest Allocation		300	300	546	246	82.13%
Total Operating Revenues		**$ 284,988**	**$ 284,988**	**$ 285,234**	**$ 246**	**0.09%**
Expenses						
Personnel Cost		$ 90,848	$ 90,848	$ 83,072	$ 7,776	8.56%
Professional Services		2,000	2,000	-	2,000	100.00%
Other Services & Charges		22,900	22,900	23,268	(368)	-1.61%
Communications		2,630	2,630	3,956	(1,326)	-50.44%
Information Technology		4,400	4,400	-	4,400	100.00%
Supplies		100	100	3	97	97.23%
Operations & Maintenance		57,850	57,850	23,533	34,317	59.32%
Equipment Purchases	C	3,400	3,400	31,000	(27,600)	-811.77%
Depreciation		16,000	16,000	16,000	0	0.00%
Subtotal Before Allocations		$ 200,128	$ 200,128	$ 180,833	$ 19,296	9.64%
Allocation of Support Departments		84,858	84,858	82,400	2,458	2.90%
Total Operating Expenses		**$ 284,987**	**$ 284,987**	**$ 263,233**	**$ 21,754**	**7.63%**
Operating Surplus/(Deficit)		**$ 1**	**$ 1**	**$ 22,001**		

Debt Service Budget vs. Actual

Revenues						
Debt Service Rate Revenue		$ 8,233	$ 8,233	$ 8,232	$ (1)	-0.01%
Trust Fund Interest		-	-	31	31	
Reserve Fund Interest		400	400	708	308	77.02%
Total Debt Service Revenues		**$ 8,633**	**$ 8,633**	**$ 8,971**	**$ 338**	**3.92%**
Debt Service Costs						
Total Principal & Interest		$ 8,233	$ 8,233	$ 8,233	$ -	0.00%
Reserve Additions-Interest		400	400	708	(308)	-77.02%
Estimated New Principal & Interest		-	-	-	-	
Total Debt Service Costs		**$ 8,633**	**$ 8,633**	**$ 8,941**	**$ (308)**	**-3.57%**
Debt Service Surplus/(Deficit)		**$ -**	**$ -**	**$ 30**		

Rate Center Summary

Total Revenues	$ 293,621	$ 293,621	$ 294,206	$ 585	0.20%
Total Expenses	293,620	293,620	272,174	21,446	7.30%
Surplus/(Deficit)	**$ 1**	**$ 1**	**$ 22,032**		
Costs per 1000 Gallons	14.27		12.97		
Thousand Gallons Treated	19,967	19,967	20,302	335	**1.68%**
or					
Flow (MGD)	0.055		0.056		

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Administration

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ 409,000	$ 409,000	$ 409,000	$ (0)	0.00%
Miscellaneous Revenue		1,000	1,000	6,067	5,067	506.73%
Total Operating Revenues		**$ 410,000**	**$ 410,000**	**$ 415,067**	**$ 5,067**	**1.24%**
Expenses						
Personnel Cost	**A**	$ 1,544,126	$ 1,544,126	$ 1,600,578	$ (56,452)	-3.66%
Professional Services	**D**	171,900	171,900	194,326	(22,426)	-13.05%
Other Services & Charges	**B**	111,940	111,940	139,206	(27,266)	-24.36%
Communications		21,280	21,280	15,739	5,541	26.04%
Information Technology		118,000	118,000	98,858	19,142	16.22%
Supplies		22,000	22,000	23,422	(1,422)	-6.47%
Operations & Maintenance	**E**	36,600	36,600	44,543	(7,943)	-21.70%
Equipment Purchases		8,300	8,300	8,300	(0)	0.00%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 2,034,146**	**$ 2,034,146**	**$ 2,124,972**	**$ (90,826)**	**-4.47%**

Department Summary

Net Costs Allocable to Rate Centers	**$ (1,624,146)**	**$ (1,624,146)**	**$ (1,709,905)**	**$ 85,758**	**-5.28%**
Allocations to the Rate Centers					
Urban Water	44.00% **$ 714,624**	**$ 714,624**	**$ 752,358**	**$ (37,734)**	
Crozet Water	4.00% **$ 64,966**	**64,966**	**68,396**	**(3,430)**	
Scottsville Water	2.00% **$ 32,483**	**32,483**	**34,198**	**(1,715)**	
Urban Wastewater	48.00% **$ 779,590**	**779,590**	**820,754**	**(41,164)**	
Glenmore Wastewater	1.00% **$ 16,241**	**16,241**	**17,099**	**(858)**	
Scottsville Wastewater	1.00% **$ 16,241**	**16,241**	**17,099**	**(858)**	
	100.00% **$ 1,624,146**	**$ 1,624,146**	**$ 1,709,905**	**$ (85,758)**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Maintenance

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Miscellaneous Revenue		-	-	5,025	5,025	
Total Operating Revenues		**$ -**	**$ -**	**$ 5,025**	**$ 5,025**	
Expenses						
Personnel Cost		$ 1,150,821	$ 1,150,821	$ 1,132,299	$ 18,522	1.61%
Professional Services		-	-	-	-	
Other Services & Charges		12,300	12,300	16,906	(4,606)	-37.45%
Communications		15,635	15,635	17,059	(1,424)	-9.11%
Information Technology		6,500	6,500	2,328	4,172	64.19%
Supplies		500	500	221	279	55.85%
Operations & Maintenance	**E**	64,450	64,450	81,219	(16,769)	-26.02%
Equipment Purchases		94,850	94,850	95,856	(1,006)	-1.06%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 1,345,056**	**$ 1,345,056**	**$ 1,345,888**	**$ (832)**	**-0.06%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,345,056)**	**$ (1,345,056)**	**$ (1,340,863)**	**$ 5,857**	**-0.44%**
Allocations to the Rate Centers						
Urban Water	30.00%	**$ 403,517**	**$ 403,517**	**$ 402,259**	**$ 1,258**	
Crozet Water	3.50%	**47,077**	**47,077**	**46,930**	**147**	
Scottsville Water	3.50%	**47,077**	**47,077**	**46,930**	**147**	
Urban Wastewater	56.50%	**759,957**	**759,957**	**757,588**	**2,369**	
Glenmore Wastewater	3.50%	**47,077**	**47,077**	**46,930**	**147**	
Scottsville Wastewater	3.00%	**40,352**	**40,352**	**40,226**	**126**	
	100.00%	**$ 1,345,056**	**$ 1,345,056**	**$ 1,340,863**	**$ 4,193**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Laboratory

Operating Budget vs. Actual

	Notes	*Budget FY 2018*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
N/A						
Expenses						
Personnel Cost	**A**	$ 293,948	$ 293,948	$ 324,304	$ (30,356)	-10.33%
Professional Services		-	-	-	-	
Other Services & Charges		10,412	10,412	9,168	1,244	11.94%
Communications		600	600	1,268	(668)	
Information Technology		2,200	2,200	270	1,930	87.73%
Supplies		1,650	1,650	2,769	(1,119)	-67.80%
Operations & Maintenance	**E**	55,000	55,000	71,055	(16,055)	-29.19%
Equipment Purchases		1,500	1,500	1,000	500	33.34%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 365,310**	**$ 365,310**	**$ 409,834**	**$ (44,524)**	**-12.19%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (365,310)**	**$ (365,310)**	**$ (409,834)**	**$ 44,524**	**-12.19%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 160,736**	**$ 160,736**	**$ 180,327**	**$ (19,591)**	
Crozet Water	4.00%	**14,612**	**14,612**	**16,393**	**(1,781)**	
Scottsville Water	2.00%	**7,306**	**7,306**	**8,197**	**(890)**	
Urban Wastewater	47.00%	**171,696**	**171,696**	**192,622**	**(20,926)**	
Glenmore Wastewater	1.50%	**5,480**	**5,480**	**6,148**	**(668)**	
Scottsville Wastewater	1.50%	**5,480**	**5,480**	**6,148**	**(668)**	
	100.00%	**$ 365,310**	**$ 365,310**	**$ 409,834**	**$ (44,524)**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - June 2018

Engineering

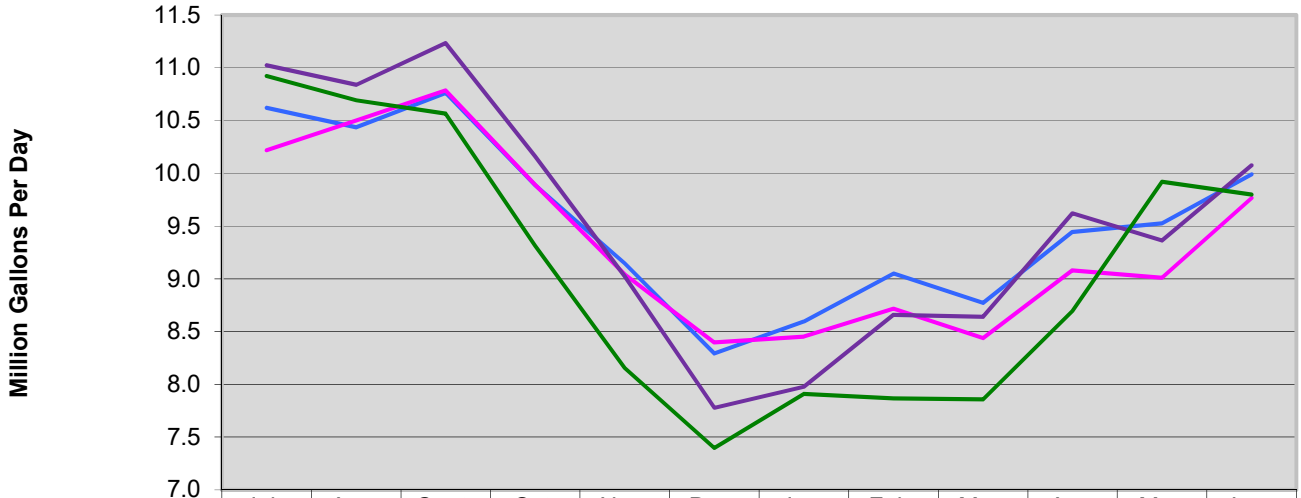
Operating Budget vs. Actual

		Budget FY 2018	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Payment for Services SWA		$ -	$ -	$ 27,329	$ 27,329	
Total Operating Revenues		**$ -**	**$ -**	**$ 27,329**	**$ 27,329**	
Expenses						
Personnel Cost		$ 1,168,296	$ 1,168,296	$ 1,026,698	$ 141,598	12.12%
Professional Services		144,000	144,000	68,865	75,135	52.18%
Other Services & Charges	**B**	45,150	45,150	50,886	(5,736)	-12.70%
Communications		17,300	17,300	12,816	4,484	25.92%
Information Technology		46,000	46,000	45,021	979	2.13%
Supplies		9,500	9,500	4,702	4,798	50.50%
Operations & Maintenance		64,940	64,940	57,145	7,795	12.00%
Equipment Purchases		23,850	23,850	23,052	798	3.34%
Depreciation & Capital Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 1,519,036**	**$ 1,519,036**	**$ 1,289,186**	**$ 229,850**	**15.13%**

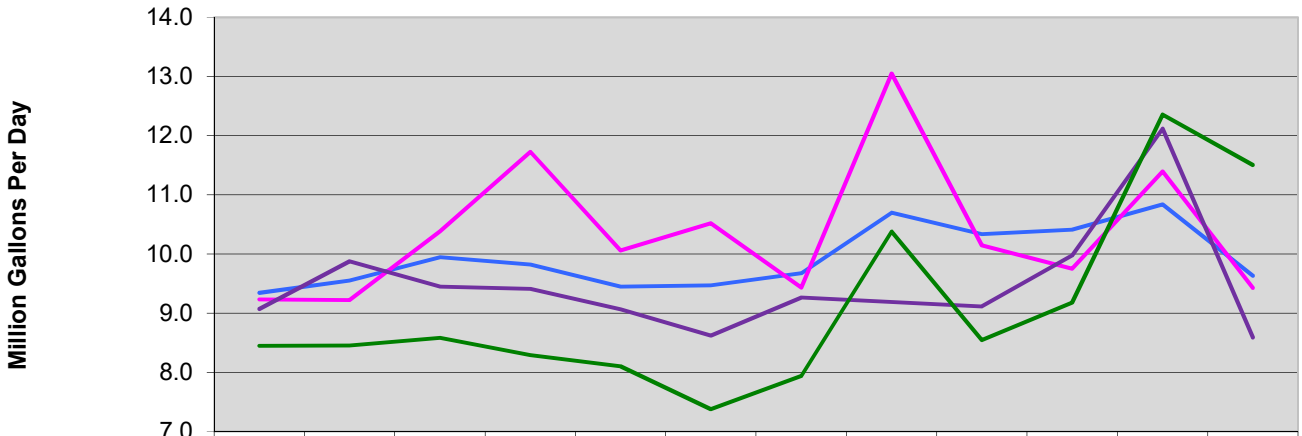
Department Summary

Net Costs Allocable to Rate Centers		**$ (1,519,036)**	**$ (1,519,036)**	**$ (1,261,857)**	**$ (202,521)**	**13.33%**
Allocations to the Rate Centers						
Urban Water	47.00%	**$ 713,947**	**$ 713,947**	**$ 593,073**	**$ 120,874**	
Crozet Water	4.00%	**60,761**	**60,761**	**50,474**	**10,287**	
Scottsville Water	2.00%	**30,381**	**30,381**	**25,237**	**5,144**	
Urban Wastewater	44.00%	**668,376**	**668,376**	**555,217**	**113,158**	
Glenmore Wastewater	1.50%	**22,786**	**22,786**	**18,928**	**3,858**	
Scottsville Wastewater	1.50%	**22,786**	**22,786**	**18,928**	**3,858**	
	100.00%	**$ 1,519,036**	**$ 1,519,036**	**$ 1,261,857**	**$ 257,178**	

Rivanna Water and Sewer Authority
Flow Graphs



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG.	10.62	10.44	10.76	9.89	9.15	8.29	8.60	9.05	8.77	9.45	9.53	9.99
FY 2016	10.22	10.50	10.79	9.89	9.04	8.40	8.45	8.72	8.44	9.08	9.01	9.77
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



	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
5 YR AVG	9.34	9.55	9.95	9.82	9.45	9.47	9.67	10.70	10.33	10.41	10.84	9.63
FY 2016	9.23	9.22	10.38	11.73	10.06	10.52	9.43	13.05	10.15	9.75	11.39	9.43
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

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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 24, 2018**

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

Under Construction

1. Wholesale Water Master Metering
2. Crozet Finished Water Pump Station
3. Moores Creek AWRRF Roof Replacements
4. Sugar Hollow Reservoir to Ragged Mountain Reservoir Transfer Flow Meter
5. Piney Mountain Tank Rehabilitation
6. Interceptor Sewer & Manhole Repair
7. Crozet Interceptor Pump Stations Bypass & Isolation Valves
8. Urgent and Emergency Repairs

Design and Bidding

9. Observatory Water Treatment Plant Expansion
10. South Rivanna Water Treatment Plant Improvements
11. Crozet Water Treatment Plant Expansion
12. Interconnect Lower Sugar Hollow and Ragged Mountain Raw Water Mains
13. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
14. Avon to Pantops Water Main
15. Crozet Flow Equalization Tank
16. Crozet Interceptor Pump Station Rebuilds
17. Security Enhancements
18. Valve Repair – Replacement (Phase 2)

19. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
20. Crozet Raw Water Pump Station and Hypolimnetic Oxygenation System

Planning and Studies

21. South Rivanna Hydropower Plant Decommissioning
22. Drinking Water Infrastructure Plan – Crozet Area
23. Urban Water Demand Projection and Safe Yield Study
24. Urban Finished Water System Master Plan
25. MCAWRRF Digester Sludge Storage Improvements
26. MCAWRRF Aluminum Slide Gate Replacements
27. Glenmore Secondary Clarifier Coating
28. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
29. South Rivanna River Crossing and North Rivanna Transmission Main
30. Route 29 Pump Station
31. Buck's Elbow & Crozet Waterball Tank Painting
32. Asset Management Plan
33. Engineering and Administration Building
34. Beaver Creek Dam Alterations

1. Wholesale Water Master Metering

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	95%
Base Construction Contract + Change Orders to Date = Current Value:	$2,228,254 - $240,604.24 = $1,987,649.76
Expected Completion Date:	August 2018
Total Capital Project Budget:	$3,600,000

Current Status:

Three water treatment plant flow meters, and 23 of 25 distribution system flow meters have been installed. Of those 23 meters, 16 are currently functional and 7 are experiencing reporting errors. Meter troubleshooting is ongoing with the intent of having all meters functional in August 2018. Completion of the Rt. 29 site is scheduled for August. The final remaining site located adjacent to Ivy Road, will be completed by Faulconer Construction Co. by August under the existing on-call contract. 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.

History:

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.

2. Crozet Finished Water Pump Station

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Anderson Construction, Inc.
Construction Start:	May 2017
Percent Complete:	95%
Base Construction Contract + Change Orders to Date = Current Value:	$1,941,000
Expected Completion Date:	September 2018
Total Capital Project Budget:	$2,600,000

Current Status:

Interior piping and controls work is complete. Rough grading for the driveway is complete. Start-up and testing of equipment is underway. The 30-day demonstration period is underway and the new pump station will be tied into the existing distribution system by the end of July.

History:

As part of the FY 2016 CIP, the Crozet Water Treatment Plant was studied to expand the treatment capacity to secure future demand needs of the Crozet community. Prior to any plant expansion, it was determined that the finished water pumping facilities were in need of replacement. The existing pump station is very small and was constructed as part of the original plant construction in the late 1960s. The pumping equipment and controls are outdated, and reduce operational reliability and efficiency. The pump house is located in a low, poorly drained area near the ground storage clearwell, and drainage issues exist. Due

to the age and condition of pumps, electrical systems, building systems and controls, it has been determined that a full station replacement is necessary. An Alternatives Analysis Report was completed in June 2016.

Bids were received and opened for the project on March 7, 2017. The apparent low bidder was Anderson Construction, Inc. from Lynchburg, VA. The Board of Directors approved the contract bid award of $1,941,000 at the March 2017 meeting, a Notice of Award was issued on April 10, 2017, and a Notice to Proceed was issued on May 3, 2017.

The filter plant effluent line to the ground storage tank has been installed, tested, disinfected and placed into service. The existing generator and electrical lines have been relocated and placed into a temporary location. The pipeline and generator were relocated in order to make room for the new pump station foundation excavation. Partial removal of old, existing asbestos cement (transite) pipe was completed in July. The building is complete.

3. <u>Moores Creek AWRRF Roof Replacements</u>

Design Engineer:	Hazen and Sawyer
Construction Contractor	Triangle Roofing Services, Inc.
Construction Start:	March 2018
Percent Complete	95%
Base Construction Contract + Change Orders to Date = Current Value:	$818,000
Expected Completion:	September 2018
Total Capital Project Budget:	$1,264,000

<u>Current Status</u>:

All roof replacement work is now complete. Lightning protection systems have been installed in seven of the eight buildings. A change order to replace roof vents on Maintenance Building 1 and Sludge Pump Station No. 2 is being executed and a punch list for remaining work items is being generated.

<u>History:</u>

The majority of the buildings at the Moores Creek Advanced Water Resource Recovery Facility were constructed in 1981 and 1982 during a major expansion of the existing treatment plant. All buildings constructed at that time were built with a metal roof system. In 2014, deficiencies were identified in the roof at the Administration Building and the roof was replaced. The materials of the original roof at the Administration Building are the same as the roof material on the other buildings. Likewise, many of the buildings have started to experience leaks and structural deficiencies. As a result, the purpose of this project is to replace the roof systems at the following buildings at the Moores Creek AWRRF: Blower Building, Moores Creek Pump Station, Sludge Pump Station No. 2, Maintenance Building 1, and Maintenance Building 2. Following additional review of the conditions of various buildings located at the Moores Creek AWRRF, this project also now

includes replacement of the roof systems Sludge Pumping Building, the Primary Pump Building, and the Effluent Pump Building.

In December 2016, the Board of Directors authorized staff to enter into a work authorization with Hazen and Sawyer to design bidding documents to replace the identified roofs at Moores Creek AWRRF. An application was submitted to the Albemarle County Architectural Review Board and approval was obtained. Construction bids were received on September 7, 2017 to replace the metal roof on eight buildings and award of the project was approved by the Board at the September 2017 Board Meeting. A Notice of Award was provided to Triangle Roofing Services, Inc. on October 10, 2017.

4. <u>Sugar Hollow to Ragged Mountain Reservoir Transfer Flow Meter</u>

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	G.L. Howard
Construction Start:	July 2018
Percent Complete	5%
Base Construction Contract + Change Orders to Date = Current Value:	$41,000 (additional value to follow)
Expected Completion:	September 2018
Total Capital Project Budget:	$315,000

<u>Current Status</u>:

RWSA staff has clarified and refined the project's scope of work in order to completely demolish the existing Gatekeeper's House, utility structures, and sheds on the site, and this information has been forwarded to the contractor. The contractor is finalizing any modifications to the project's budget and confirming any permitting requirements based on this information. Once budget and permitting information is received from the contractor, a final Work Authorization will be developed with the contractor to cover the remaining aspects of the project. The initial Work Authorization covered the purchase of the project's long lead items. This project requires the Sugar Hollow to Ragged Mountain Reservoir transfer line to be out of service for approximately four (4) weeks. As such, any transfer line needs will be coordinated with the RWSA Water and Maintenance Departments.

<u>History:</u>

RWSA staff has worked with the design engineers to complete plan and profile design drawings for this project. The project will include installation of a flow meter on the 18-inch diameter Sugar Hollow Reservoir discharge pipe, and a control valve that can be operated remotely through the Observatory WTP SCADA system. The control valve will modulate the amount of flow being transferred between the two reservoirs, the flow meter will record data, and staff will be able to remotely monitor the data through the SCADA system. Additional work has been added to this project including replacement of an existing, original gate valve at the site, demolition of four existing small utility structures and sheds that have not been used in many years, demolition of the existing Gatekeeper's

House, and a separate control valve vault that will optimize the accuracy of the new flow meter by creating adequate separation distance between the meter and modulating control valve. The structures to be demolished and removed have been inspected and tested for asbestos containing materials and lead based paint. As a result, there will be some special abatement work required. Several long lead items were purchased by the contractor as a result of a recent Work Authorization. Some of the items purchased include the control valve, control valve vault, gate valve, and process piping.

5. <u>Piney Mountain Tank Rehabilitation</u>

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	Utility Service Co, Inc.
Construction Start:	April 2019
Percent Complete:	0%
Base Construction Contract + Change Orders to Date = Current Value:	$251,700 + $12,585 = $264,285
Expected Completion:	July 2019
Total Capital Project Budget:	$500,000

<u>Current Status</u>:

The Piney Mountain Tank Rehabilitation project will require a shutdown of the tank for over three months. Due to unforeseen complications with an extended tank shutdown and other ongoing construction activities in the North Rivanna Water System, construction of the Piney Mountain Tank repairs has been postponed until spring 2019. Utility Service Co., Inc will remain the general contractor for this project.

<u>History</u>:

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 meeting, the RWSA Board of Directors approved staff's recommendation of award to Utility Service Co., Inc., the apparent low bidder on the project.

6. Interceptor Sewer and Manhole Repair

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	5%
Base Construction Contract + Change Orders to Date = Current Value:	$1,244,337.19
Expected Completion:	2020
Total Capital Project Budget:	$1,962,389

Current Status:

Frazier Engineering continues to conduct condition assessment activities and has completed a preliminary review of previous CCTV results. Manhole inspections on various interceptors were completed and a report documenting the results is being developed. An initial work authorization with the contractor to perform additional CCTV investigations has been finalized and the contractor began work on June 25th, with completion expected by mid-August. 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.

7. Crozet Interceptor Pump Stations Bypass and Isolation Valves

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	TBD
Construction Start:	September 2018
Percent Completion:	0%
Base Construction Contract + Change Order to Date = Current Value:	TBD
Expected Completion Date:	November 2018
Total Capital Project Budget:	$720,000

Current Status:

The Contract Documents were advertised for bidding and bids were opened on July 10, 2018. Only one bid was received, but the value was well within the construction estimate included in the Capital Improvement Plan budget. The bid was evaluated and the design engineer has recommended awarding the project to the bidder, Anderson Construction, Inc. The recommendation to award the project is being brought to the Board this month.

History:

There are four pump stations located in the Crozet Interceptor system that help convey flow from the Crozet Area into the Morey Creek Interceptor and the rest of the urban collection system. These pump stations were constructed in the 1980s and provided no means of isolating each pump station from its downstream force main. This condition complicates maintenance-related activities as each time a pump station component needs to be serviced or replaced, the volume of wastewater within the force main must be addressed at the pump station as it drains back to the wet well. In addition, the Crozet Interceptor pump stations also have limited storage within their wet wells, and any reduction of down time as a result of dealing with the impacts of no isolation valves, decreases the amount of time available to work on the equipment. In order to alleviate this condition, temporary valves called "line stops" will be temporarily installed on the force mains downstream of the pump stations to allow enough time for a new isolation valve to be installed. Isolation valves will be located in order to provide the maximum amount of down time available based on current system conditions for future pump station maintenance activities. While line stops are in place, bypass connections will also be provided at each pump station. These will allow staff the option of bringing in bypass pumps for more significant pump station shutdowns required for maintenance activities or repairs for which the isolation valves alone cannot account.

8. 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
2018-01	Rivanna Interceptor – RVI-MH-32 Erosion Repair	$50,000
2018-05	North Rivanna Water Line – Along the North Rivanna River	$250,000
2018-06	South Rivanna Dam Apron and River Bank Repairs	$200,000

- 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. This repair will be scheduled sequentially with the Rivanna Interceptor manhole repair this summer.

- Rivanna Interceptor – RVI-MH-32 Erosion Repair

  During routine inspections of the Rivanna Interceptor, the Maintenance Department

observed some significant erosion around RVI-MH-32. A site meeting was held with the contractor and the City of Charlottesville to confirm the cause of the erosion and determine the preferred method of repair, as the repair will impact a section of the Rivanna Trail. The contractor has provided estimated pricing and a work authorization is being developed. This repair will be scheduled sequentially with the Crozet Sewer Force Main repair this summer.

- North Rivanna Water Line – Along the North Rivanna River

  Due to high river levels during the severe weather event on May 30, 2018, the river bank adjacent to the North Rivanna River line began to erode away. As a result, a bend in the existing water line near the river bank lost its support and two sections of existing pipe separated causing a significant leak in the North Rivanna Water System. Measures were taken to isolate the leak area and the temporary pump near Kohl's was hooked up to provide water to the North Rivanna System since it was isolated from the North Rivanna WTP as a result of this leak. Faulconer Construction was called in to address this emergency repair and approximately 200 linear feet of new pipe was installed around the area of concern. On June 15, 2018, the water line was placed back in service and river bank armoring in the area of the leak was completed on June 22, 2018. A field review is being performed to see if any addition river bank armoring may be beneficial at other locations to avoid similar issues.

- South Rivanna Dam Apron and River Bank Repairs

  Intense rainfall between May 30-31 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 will take place in late summer and fall of 2018 under RWSA's on-call construction contract. Repairs to the north and south concrete aprons will be designed by Schnabel Engineering and those services procured separately from the on-call contract.

9. Observatory WTP Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Construction Start:	October 2019
Completion:	December 2022
Total Capital Project Budget:	$18,630,000

Current Status:

The final PER will be completed by the end of July. Following completion of the PER, a Work Authorization with the design engineer will be developed for design, bidding and construction administration services. Design documents will be completed by May 2019.

History:

This project will consider the design and costs for upgrading the plant systems to achieve a consistent 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.

10. South Rivanna Water Treatment Plant Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Construction Start:	October 2019
Completion:	December 2022
Total Capital Project Budget:	$7,500,000

Current Status:

The final PER will be completed by the end of July. Following completion of the PER, a Work Authorization with the design engineer will be developed for design, bidding and construction administration services. Design documents will be completed by May 2019.

History:

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.

11. Crozet Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	August 2016
Project Status:	95% Design Complete
Construction Start:	November 2018
Completion:	December 2020
Total Capital Project Budget:	$7,000,000

Current Status:

Construction documents were completed in June 2018. Drawings and permit applications have been submitted to and reviewed by Albemarle County. Comments by the County have been addressed and the design package has been resubmitted for final approval. It is anticipated that the project will be advertised in August with a bid opening planned for September.

History:

This project was created to analyze the feasibility of increasing the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal is 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 can be improved by approximately 100% (to 2 mgd).

SEH completed a Preliminary Engineering Report (PER) for this project and some preliminary watershed data collection. In addition, raw water jar testing was performed to finalize the type of treatment parameters necessary for the upgrade work, and the testing results were incorporated into the PER. A new Work Authorization with SEH was executed to perform preliminary and final design documents, as well as construction administration services.

12. Interconnection Lower Sugar Hollow and Ragged Mountain Raw Water Mains

Design Engineer:	Dewberry Engineers
Project Start:	October 2017
Project Status:	Alternatives Evaluation
Construction Start:	October 2018
Completion:	January 2019
Total Capital Project Budget:	$225,000

Current Status:

A Work Authorization with Dewberry was executed to evaluate several alignment options and to identify the most suitable alignment. Feasible alignments and construction cost estimates have been submitted and the recommended alignment as well as the overall cost/benefit are being evaluated by RWSA staff.

History:

The two 18-inch water mains that supply water from Ragged Mountain Reservoir to Observatory Water Treatment Plant are 71 and 109 years old. The mains are interconnected at the top of the Ragged Mountain Dam, with one serving the 1920's Royal Pump Station and the other serving the more modern Stadium Road Pump Station. Both pump stations provide raw water to the Observatory Water Treatment Plant. This project will serve to interconnect the two raw water lines near the Route 29/Fontaine Avenue Intersection, which will provide improved reliability and operability in the event of raw water line breaks.

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

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2017
Project Status:	Preliminary Engineering Report
Completion:	2021
Total Capital Project Budget:	$2,295,000

Current Status:

The PER will be completed by August 2018. Preliminary design work began in November 2017. Property owners have been contacted to request permission to access properties for topographical surveying. The consultant is in the process of data collection and review, hydraulic modeling, and field evaluation of alignment options for the Preliminary Engineering Report. A recommendation for a tentative final alignment was presented at a community information meeting in June. Easement acquisition negotiations are anticipated by May 2019.

History:

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.

RWSA has negotiated a scope and fee with Michael Baker International for the routing study, preliminary design, plat creation and easement acquisition process.

14. Avon to Pantops Water Main

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2017
Project Status:	Preliminary Engineering Report
Construction Start:	2020
Completion:	2022
Total Capital Project Budget:	$13,000,000

Current Status:

Route alignment determination, hydraulic modeling, and preliminary design are underway. Additional modeling was completed to incorporate several new ACSA and City water projects, and potential upgrades related to VDOT work. Another stakeholder workshop will be held with the City and ACSA in mid-July to discuss the new model results and potential waterline corridors.

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.

15. Crozet Flow Equalization Tank

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	0% Design Complete
Construction Start:	2019
Completion:	2020
Total Capital Project Budget:	$3,300,000

Current Status:

A work authorization with Schnabel Engineering was finalized and a Project Kick-off Meeting was held on July 12, 2018. The first step in the project will be a data collection period followed by an evaluation of the existing Pump Station No. 4. Design documents are expected to be complete by February 2019.

History:

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.

16. Crozet Interceptor Pump Station Rebuilds

Design Engineer:	TBD
Project Start:	July 2018
Project Status:	0% Design Complete
Construction Start:	2019
Completion:	2023
Total Capital Project Budget:	$525,000

Current Status:

Staff is reviewing the overall scope of work for the project and will be coordinating 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.

17. Security Enhancements

Design Engineer:	TBD
Project Start:	July 2018
Project Status:	Preliminary Design
Construction Start:	2019
Completion:	2021
Total Capital Project Budget:	$2,400,000

Current Status:

Staff has been reviewing the final 2018 Risk Assessment (RA) Report and is using this information to facilitate an upcoming discussion among various RWSA personnel. The goal of this discussion is to develop an internal Security Committee. This committee will help RWSA prioritize the implementation of the VA's recommendations based upon their applicability to RWSA's raw and finished water systems, wastewater system, and internal capabilities. As the project's scope of work is refined through the internal Security Committee, a consultant will be selected to provide project assistance. As such, a Work Authorization will be developed by RWSA staff to begin the design process.

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 our water system in collaboration with the Albemarle County Service Authority (ACSA), City of Charlottesville (City), University of Virginia (UVA). A number of security improvements that could be applied to both our water system and our wastewater system 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.

18. Valve Repair – Replacement (Phase 2)

Design Engineer:	N/A
Project Start:	July 2018
Project Status:	Preliminary Design
Construction Start:	Spring 2019
Completion:	Summer 2020
Total Capital Project Budget:	$500,000

Current Status:

Preparation of design documents will be conducted in-house in coordination with ACSA and City staff. As such, staff has begun a thorough review of documents associated with Phase 1 of the Valve Repair-Replacement Project. Once all design documents have been finalized, a Request for Bids will be issued. Staff anticipates bidding taking place in Fall of 2018 with construction starting in Spring of 2019.

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. Phase I of the Valve Repair-Replacement Project replaced several of these valves in the North Rivanna Finished Water System. Phase II will continue replacing inoperable and unrepairable valves in the North Rivanna Finished Water System, but it will also replace valves on the South Rivanna, Crozet, Pantops, and Southern Loop Finished Water Systems. Once these inoperable and unrepairable valves have been replaced, the focus will shift to replacing older isolation valves. 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.

19. 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:	Work Authorization in Progress
Construction Start:	2021
Completion:	2023
Total Capital Project:	$6,526,000

Current Status:

A Work Authorization is being negotiated with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process. A site evaluation study to recommend a location for the raw water pump station is currently being conducted under the South Rivanna River to Ragged Mountain Reservoir Water Line Right-of-Way Work Authorization with Baker.

History:

Raw water is transferred from the Ragged Mountain Reservoir (RMR) 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 million gallons per day (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 (SRR) 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.

20. <u>Beaver Creek Dam – New Raw Water Pump Station and Intake and Hypolimnetic Oxygenation System</u>

Design Engineer:	Hazen & Sawyer
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	$6,100,000

<u>Current Status</u>:

Staff has requested a Work Authorization (scope and fee) from Hazen and Sawyer for design of the Raw Water Pump Station and Intake and the Hypolimnetic Oxygenation System. Design is expected to begin in fall of 2018.

<u>History</u>:

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.

Following a Reservoir Water Quality and Management Study by DiNatale Water Consultants, several recommendations were made to improve water quality in the Beaver Creek Reservoir, including installation of a new outlet structure and installation of a hypolimnetic oxygenation system. The oxygenation system will reduce reliance on algaecide treatments by increasing dissolved oxygen in the reservoir. This system will be designed as part of the new raw water pump station and intake by Hazen and Sawyer, with assistance from DiNatale in preparing the system specifications.

21. South Rivanna Hydropower Plant Decommissioning

Consultant:	Gomez and Sullivan
Project Start:	October 2016
Project Status:	Exemption Surrender Process – Phase 2 Underway
Construction Start:	2019
Completion:	2020
Total Capital Project Budget:	$1,000,000

Current Status:

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, with submission of the application anticipated for August 2018.

History:

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.

22. Drinking Water Infrastructure Plan – Crozet Area

Design Engineer:	Hazen and Sawyer
Project Start:	June 2017
Project Status:	95% Complete
Completion:	Fall 2018
Total Capital Project Budget:	$300,000

Current Status:

Staff met with VDEQ and other State and Federal Agencies on March 12, 2018 to provide a pre-application project overview as well as Safe Yield and Minimum Instream Flow information. Additional information (as requested by DEQ) was provided on June 6, 2018. A presentation of the report finished were provided in an update to the Crozet Community Advisory Committee on June 20, 2018.

History:

The Crozet water service area continues to see expanded growth in the average and maximum day water demands. Discussion with county and ACSA officials have confirmed recent growth trends that water use is increasing in Crozet. While some projects ae currently underway to address the immediate need in Crozet, this project will develop a comprehensive mid and long-range plan (50 years) for the entire water system including; raw water supply, raw water pumping and conveyance, finished water treatment, finished water pumping, and finished water distribution and storage. Future water demand projections will be an important part of this project. At the June 27, 2017 Board Meeting, it was approved to award this planning project to the consulting engineering firm of Hazen and Sawyer. An Engineering Services Agreement was executed on July 5, 2017.

Numerous meetings with Albemarle County Community Development representatives were held in in 2017 and 2018. A meeting with the Crozet Community Advisory Committee was held on June 21, 2017 and again on June 20, 2018. The preliminary findings and results of the DWIP were presented.

23. Urban Water Demand Projection and Safe Yield Study

Design Engineer:	Hazen and Sawyer
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	N/A
Completion:	2019
Total Capital Project Budget:	$100,000

Current Status:

We have requested a scope and fee from Hazen and Sawyer for the first work authorization.

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.

24. <u>Urban Finished Water System Master Plan</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	N/A
Completion:	2019
Total Capital Project Budget:	$150,000

<u>Current Status</u>:

We have requested a scope and fee from Baker for the first work authorization. This project was originally slated for FY 2023, however, recent work on other urban water plant and water line projects has prompted the need for a comprehensive master plan sooner.

<u>History</u>:

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 under in preliminary engineering, design or construction. As such, staff have identified a need to develop a current and ongoing finished water master plan.

25. <u>MCAWRRF Digester Sludge Storage Improvements</u>

Design Engineer:	TBD
Project Start:	Fall 2018
Project Status:	Preliminary Design
Construction Start:	Spring 2019
Completion:	Fall 2019
Total Capital Project Budget:	$265,000

<u>Current Status</u>:

Preparation of construction documents will progress this Fall. Implementation of this work will commence after Digester No. 2 and No. 3 are both coated and back in service.

<u>History</u>:

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.

26. MCAWRRF Aluminum Slide Gate Replacements

Design Engineer:	N/A
Project Start:	August 2018
Project Status:	Preliminary Design
Construction Start:	March 2019
Completion:	June 2019
Total Capital Project Budget:	$470,000

Current Status:

Engineering staff is reviewing the technical nature of this work to determine if any engineering consulting services are needed.

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.

27. Glenmore Secondary Clarifier Coating

Design Engineer:	N/A
Project Start:	Fall 2018
Project Status:	Preliminary Design
Construction Start:	2019
Completion:	2019
Total Capital Project Budget:	$50,000

Current Status:

Engineering staff is reviewing the technical nature of this work to determine if any engineering consulting services are needed.

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 gasses, 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.

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

Design Engineer:	Schnabel Engineering
Project Start:	September 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2019
Completion:	2021
Total Capital Project Budget:	$940,000

Current Status:

Schnabel Engineering will be the designer on the project. Staff expects to proceed with design in fall of 2018 with construction to begin in 2019.

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.

29. South Rivanna River Crossing and North Rivanna Transmission Main

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	$5,340,000

Current Status:

Staff has begun negotiations with Michael Baker for the first work authorization for design services for this project.

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.

30. Route 29 Pump Station

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2021
Completion:	2022
Total Capital Project Budget:	$2,300,000

Current Status:

The 1.6-acre parcel of land for the pump station was identified in a 2008 design report prepared by Michael Baker. Negotiations with the property owner were not successful, and the property was acquired through condemnation proceedings authorized at the May 2017 RWSA Board Meeting. Final legal proceedings are anticipated to be completed by the end of 2018. Staff has begun negotiations with Michael Baker for the first work authorization for design services for this project.

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 condition. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport pressure zone.

31. Bucks Elbow Tank and Crozet Waterball Tank Painting

Design Engineer:	TBD
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2020
Completion:	2021
Total Capital Project Budget:	$1,200,000

Current Status:

Following selection of a consultant to complete the work, staff will begin negotiation of the first work authorization for design services for this project.

History:

The two million-gallon Bucks Elbow Ground Storage Tank provides finished water storage for the Crozet Area while the 50,000 gallon Crozet Waterball Tank serves as filter backwash storage at the Crozet Water Treatment Plant. Routine inspections of these tanks in 2012 indicated that the tanks would require recoating by 2020. The project includes recoating the interior and top-coating the exterior of both tanks as well as installation of an active mixing system at the Bucks Elbow Tank to decrease stratification and improve overall water quality in the Crozet area. Minor repairs and improvements to both tanks will also be included in this work. Construction of the tank improvements are expected to begin in spring of 2020.

32. Asset Management Plan

Design Engineer:	GHD, Inc.
Project Start:	July 2018
Project Status:	Work Authorization Under Negotiation
Completion:	2020
Total Capital Project Budget:	$500,000

Current Status:

A work authorization is being finalized with GHD to perform the first phase of the process which includes the development of an asset management framework and implementation roadmap.

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.

33. Engineering and Administration Building

Design Engineer:	Dewberry
Project Start:	April 2018
Project Status:	Space Needs Analysis
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	$3,000,000

Current Status:

An assessment of space needs for the departments housed within the existing Administration Building and Engineering Building has been completed and draft layouts for an expanded Administration Building have been developed. The layouts are being reviewed by a committee at RWSA to provide any additional comments before more detailed plans are developed.

History:

RWSA currently has its administrative headquarters in two buildings on the grounds of the MCAWRRF. The two-story Administration Building was constructed in the early 1980's and houses offices, IT server space, meeting space, and a full-service laboratory. The second building is a series of four trailers installed in between 2003-2010 that house the engineering department. The Administration Building is located at the head of the wastewater treatment plant and is surrounded by underground piping and process functions that may conflict with existing parking and/or the building in a future expansion. There is currently a need to house additional staff; increase office and meeting space; plan for the replacement of the trailers; bring IT server workrooms to modern standards; and provide classroom space for education outreach. Staff has procured a consultant to perform a space needs analysis and provide recommendations on how to address future building needs.

34. Beaver Creek Dam Alterations

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	Preliminary Design and Community Outreach
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	$14,900,000

Current Status:

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. Staff expects completion of a Preliminary Engineering Report in fall of 2018 and final design to begin in late 2018.

History:

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 preliminary design work for this project is being completed under Schnabel's term contract.

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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 2018**

DATE: **JULY 24, 2018**

WATER OPERATIONS:

The average daily/monthly total water distributed for June 2018 was as follows:

Water Treatment Plant	*Average Daily Production (MGD)*	*Total Monthly Production (MG)*	*Maximum Daily Production in the Month (MGD)*
Observatory	1.64	49.18	---
South Rivanna	7.95	238.62	---
North Rivanna	0.21*	6.17	---
Urban Total	9.80	293.97	11.63 (6/30/18)
Crozet	0.59	17.88	0.751 (6/17/18)
Scottsville	0.046	1.38	0.078(6/6/18)
RWSA Total	10.44	313.23	---

- All RWSA water treatment facilities were in regulatory compliance during the month of June.
- * North Rivanna water treatment plant only ran for 15 days in June due to flooding impacts

Status of Reservoirs (as of July 19, 2018):

- Urban Reservoirs: 98.6 % of Total Useable Capacity
- Ragged Mountain Reservoir is -0.13 feet (99%)
- Sugar Hollow Reservoir is – 1.77 (92%)
- 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 the month of June 2018. Performance of the WRRFs in Jun was as follows compared to the respective VADEQ 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	11.7	1.5	10	0.9	22	0.01	2.0
Glenmore	0.151	2.5	15	4.0	30	0.06	NL
Scottsville	0.095	1.8	25	2.4	30	0.11	NL
Stone Robinson	0.001	2	30	3	30	NR	NL

NR = Not Required
NL = No Limit
<QL: Less than analytical method quantitative level (2 ppm for CBOD, and 1 ppm for TSS) is reported as zero.

Nutrient discharges at the Moores Creek AWRRF were as follows for June 2018:

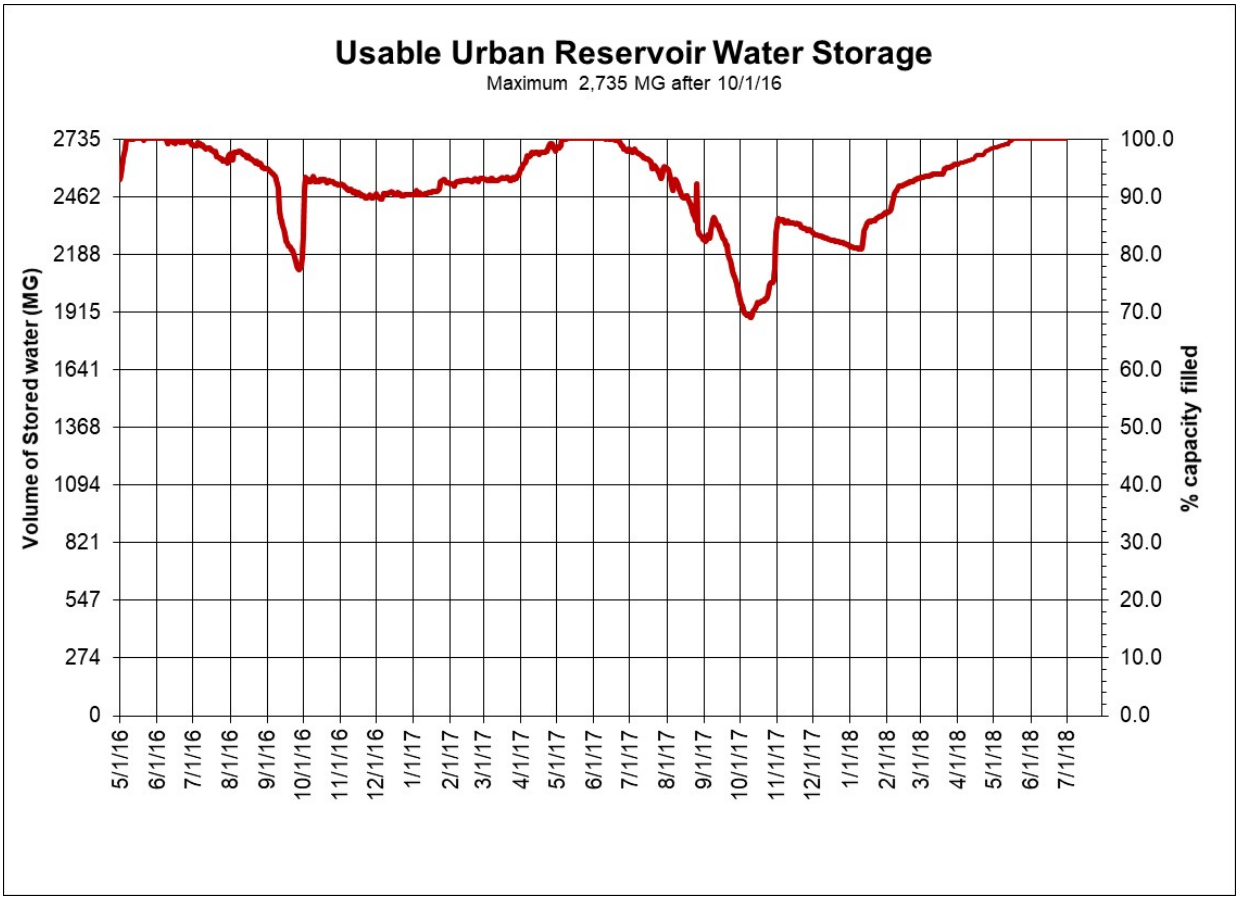
State Annual Allocation (lb./yr.)		*Average Monthly Allocation (lb./mo.)**	*Moores Creek Discharge (lb./mo.)*	*Performance as % of Average Allocation**
Nitrogen	282,994	23,583	5709	24%
Phosphorous	18,525	1,544	282	18%

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

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 2,735 MG after 10/1/16
Volume of Stored water (MG)
% capacity filled
2735
2462
2188
1915
1641
1368
1094
821
547
274
0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
5/1/16
6/1/16
7/1/16
8/1/16
9/1/16
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12/1/16
1/1/17
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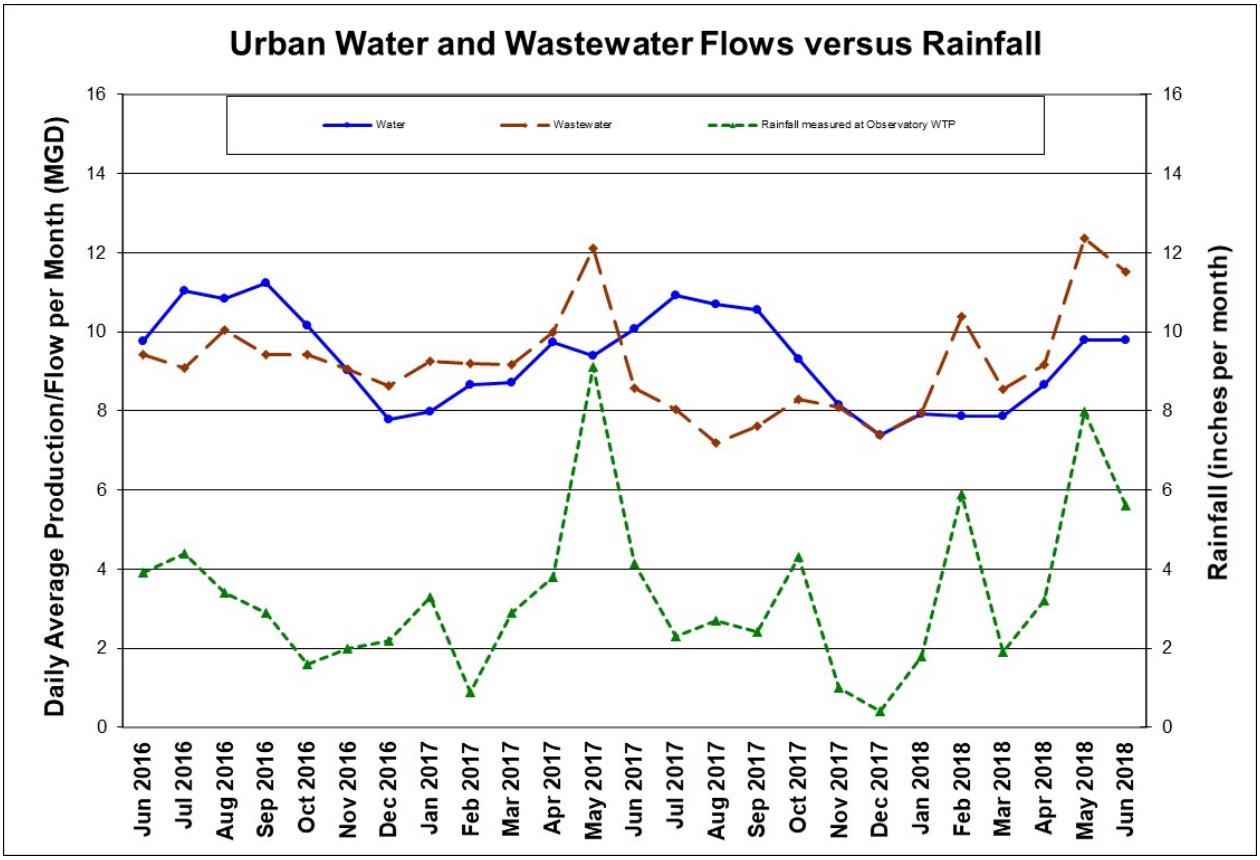
Urban Water and Wastewater Flows versus Rainfall
Water
Wastewater
Rainfall measured at Observatory WTP
Daily Average Production/Flow per Month (MGD)
Rainfall (inches per month)
16
14
12
10
8
6
4
2
0
Jun 2016
Jul 2016
Aug 2016
Sep 2016
Oct 2016
Nov 2016
Dec 2016
Jan 2017
Feb 2017
Mar 2017
Apr 2017
May 2017
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

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MEMORANDUM

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

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

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

SUBJECT: **CONSTRUCTION CONTRACT AWARD – CROZET INTERCEPTOR SYSTEM PUMP STATION IMPROVEMENTS; ANDERSON CONSTRUCTION**

DATE: **JULY 24, 2018**

There are four pump stations located in the Crozet Interceptor system that help convey wastewater flow from the Crozet area into the Morey Creek Interceptor and the rest of the urban collection system. These pump stations were constructed in the 1980s and provided no means of isolating each pump station from its downstream force main. This condition complicates maintenance-related activities as each time a pump station component needs to be serviced or replaced, the volume of wastewater within the force main must be addressed at the pump station as it drains back to the wet well. In addition, the Crozet Interceptor Pump Stations also have limited storage within their wet wells, and any reduction of down time as a result of dealing with the impacts of no isolation valves, decreases the amount of time available to work on the equipment. In order to alleviate this condition, the Crozet Interceptor System Pump Station Improvements project was developed to allow for not only the installation of isolation valves but also bypass connections at each station. The isolation valve locations will provide the maximum amount of down time available based on current system conditions for future pump station maintenance activities and the bypass connections will allow staff the option of bringing in bypass pumps for more significant pump station shutdowns required for maintenance activities or repairs that the isolation valves alone cannot account for.

Bids for the project were opened on July 10, 2018 and only one bid was received at a value of $361,820 from Anderson Construction, Inc. While only one bid was received, it was well within the construction estimate included in the Capital Improvement Plan budget. The design consultant, JMT, reviewed the bid documents submitted by Anderson Construction, Inc. and verified that the documents are acceptable. JMT has recommended awarding the construction project to Anderson Construction, Inc.

Board Action Requested:

RWSA staff recommends that the Board of Directors award the construction contract for the Crozet Interceptor System Pump Station Improvements Project (RFB No. 346) to Anderson Construction, Inc. in the amount of $361,820. Staff further requests the Board of Directors authorize the Executive Director to execute the contract with Anderson Construction, Inc. and to approve any change orders to the contract, only when necessary for the completion of this project, provided the total amount of all change orders does not exceed 10% of the awarded price.

South Rivanna Dam - Gates and Meter

Investigation, Operational Changes and Path Forward

RIVANNA
WATER & SEWER AUTHORITY

Presented By:

Jennifer Whitaker, Director of Engineering & Maintenance

July 24, 2018

South Rivanna Dam

- Built mid-1960's
- 700 feet long
- 70 feet tall
- Federal jurisdiction
- 1988 hydropower addition
- Part of water supply
- 1282 MG total storage
- 883 MG useable storage

South Tower & Gate

North Tower & Gate

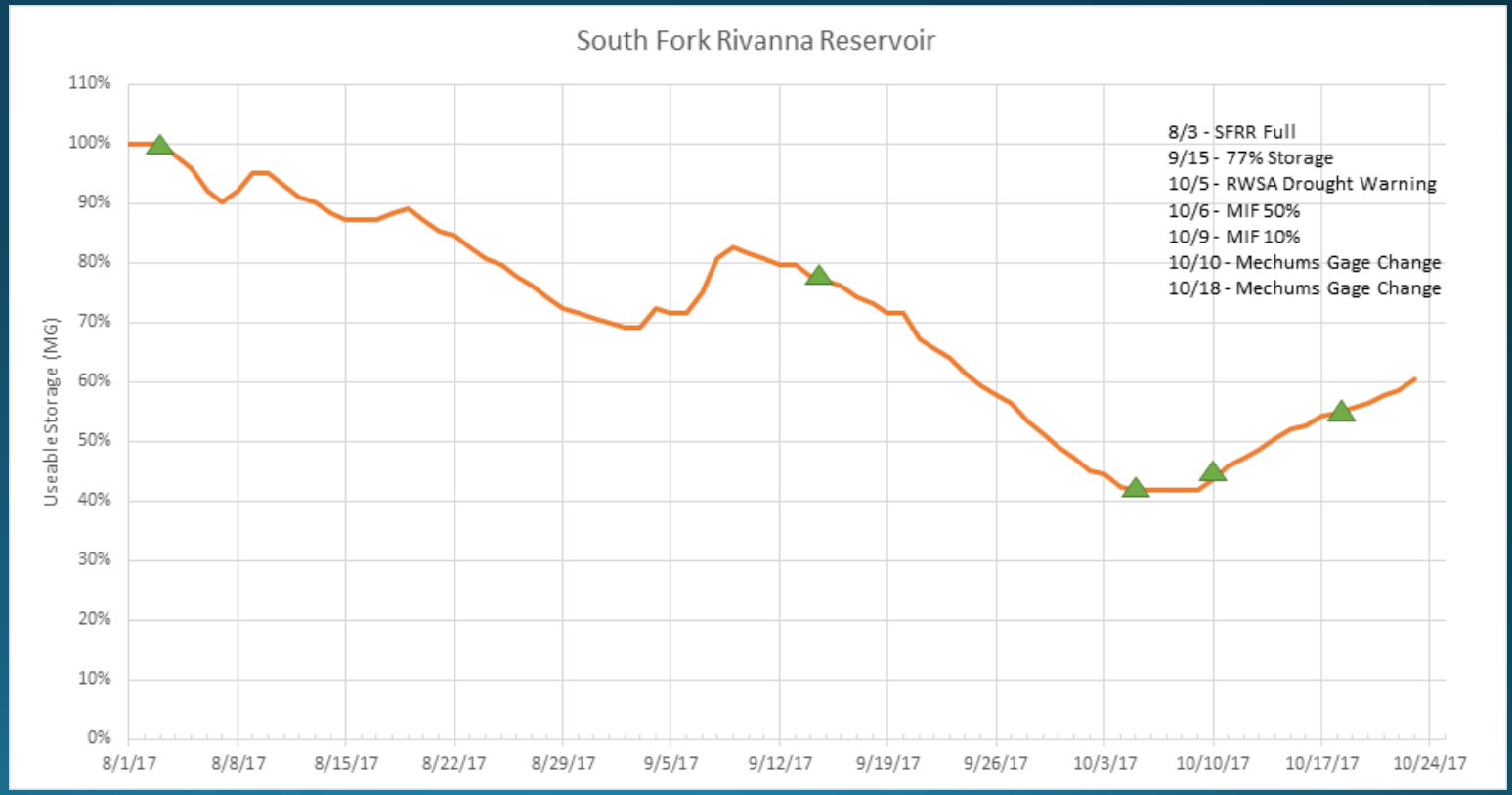
North Mud Gate Outlet

South Mud Gate Outlet


Hydropower Outlet
South Mud Gate Outlet
South Tower & Gate
North Tower & Gate
North Mud Gate Outlet

South Rivanna Reservoir - Fall 2017

	Reservoir Capacity	Level (feet)
October 5th	42%	-6.9
October 18th*	54%	-5.2



Mitigation Measures Implemented

1. Mandatory water restrictions to reduce demand
2. Operational changes:
   - Decreased water treatment at the South Rivanna plant
   - Increased water treatment at the Observatory

	SRWTP	OWTP
Typical	8 mgd	2 mgd
October 5th	5 mgd	5 mgd

3. Identified leaks of 3 mgd through gates. Reduced that to 0.5 mgd
4. Refined SCADA flow meter calculation methodology
5. Coordinated with DEQ and reduced required release to the river

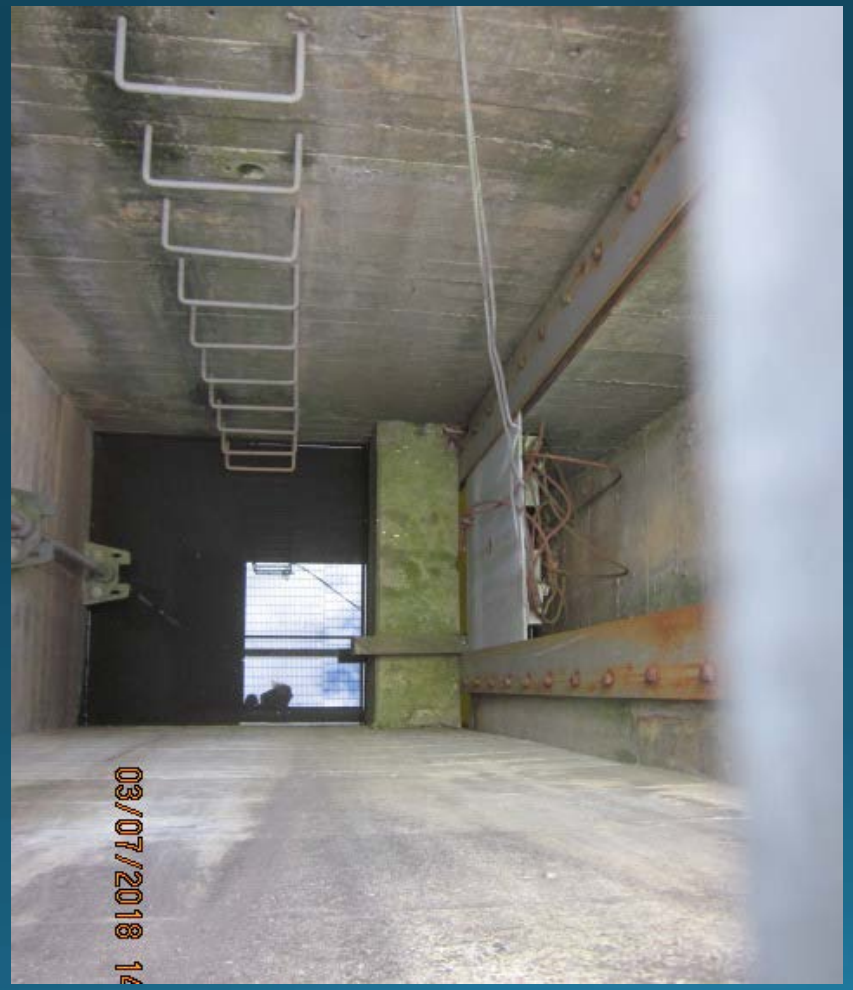
Investigations - Gates

- Three Gates:
  1. North Mud Gate
  2. South Mud Gate
  3. Hydropower

- The North Mudgate and the Hydropower gate, constructed in 1966, were releasing about 3 mgd.
- This release was decreased to 0.5 mgd, via the addition of ground clay/bentonite and mulch to the upstream side of the gates, thereby sealing the leak

Gate Configuration in the Dam

Dam



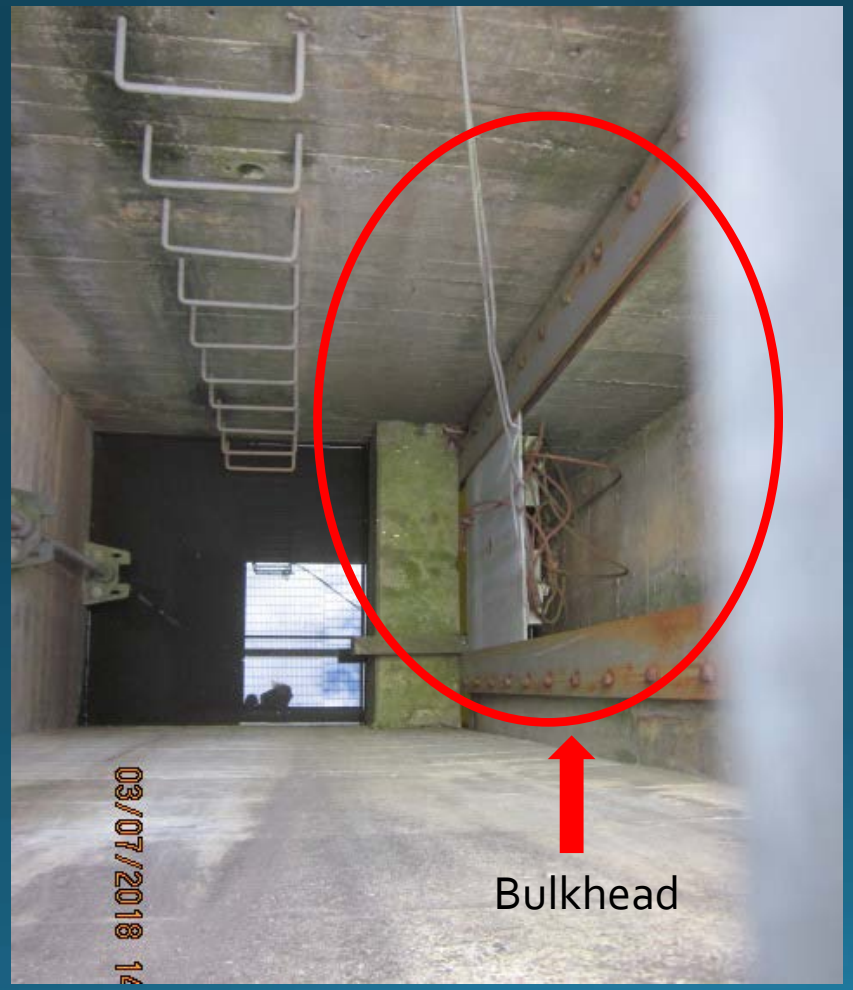
Flow

Flow

Reservoir

Gate Configuration in the Dam

Dam



Flow

Flow

Reservoir

Gate Configuration in the Dam

Dam

Flow

Flow

Reservoir

Investigations - Gates

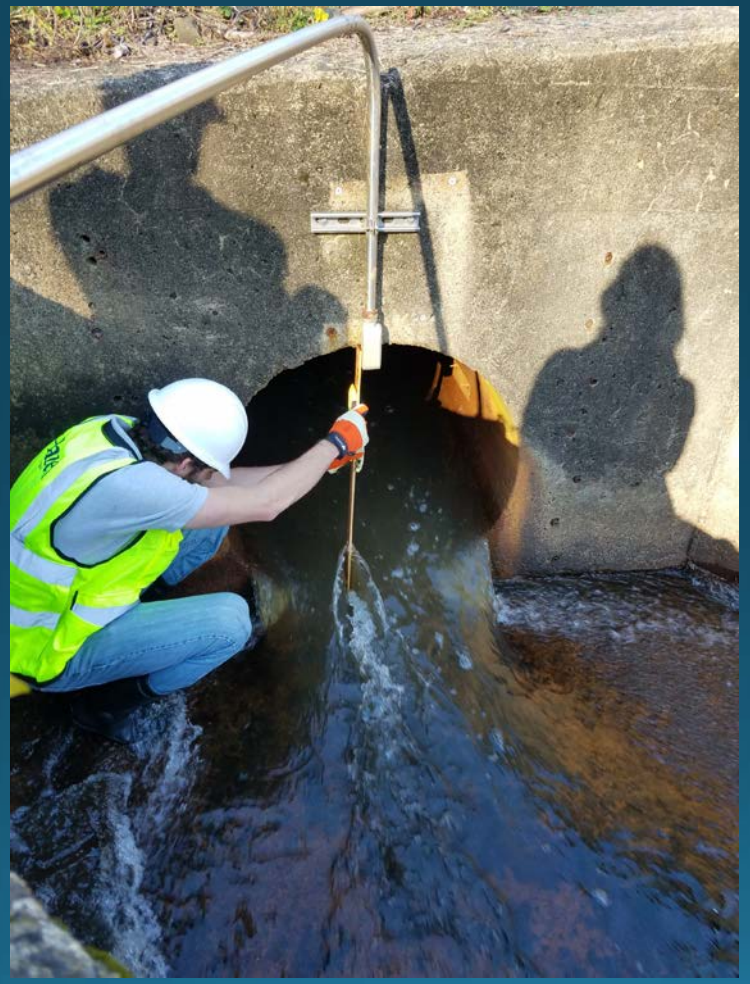
- Three Gates:
  1. North Mud Gate
  2. South Mud Gate
  3. Hydropower

- The South Mudgate, also constructed in 1966, serves as the primary in stream release point, when water is not passing over the spillway

- A new meter was installed in the South Mudgate outlet September 2016. Installation of the meter was certified by the on-site manufacturer's representative.

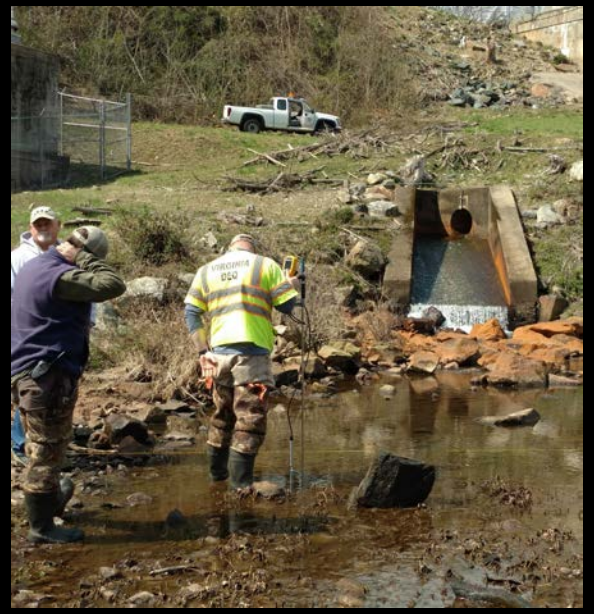
Investigations of South Gate & Meter

- Consultant performed field measurement of flow and compared measurements to meter readings from SCADA
- Determined that meter was not accurate at high flow rates, further investigation would be required to accurately measure flow through this conduit
- RWSA contacted DEQ for specialized support in downstream measuring flow to calibrate the meter



DEQ Streamflow Measurement

- DEQ has staff certified and responsible for Surface Water Investigations throughout the state
- Performed streamflow measurements downstream of South Mudgate on April 11-12, 2018
- Equipment included acoustic doppler velocity meter and Price double A Meter



DEQ Streamflow Measurement

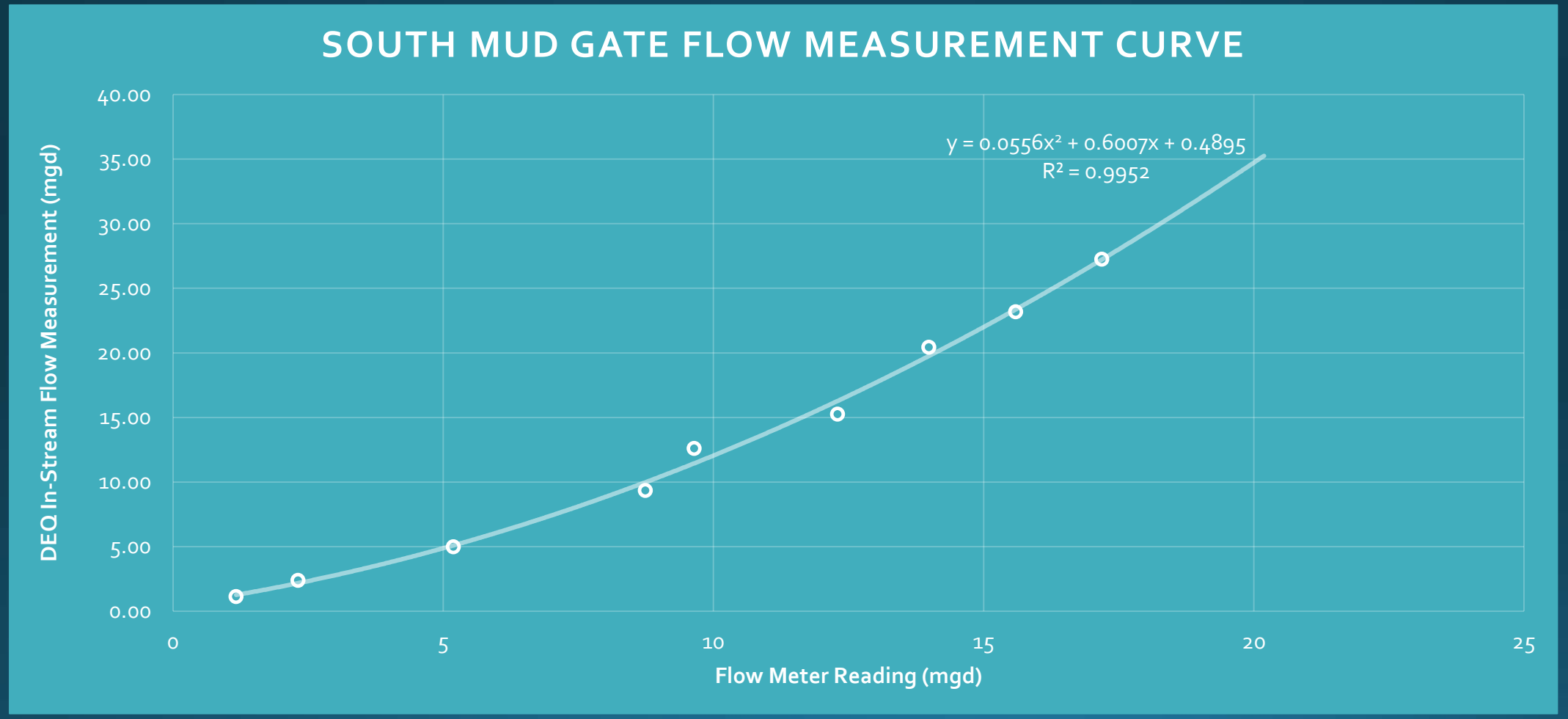
- Measurements taken at several release rates as monitored on SCADA. Streamflow measurements then compared to the SCADA data.
- Developed a curve to calibrate the existing meter in the mud gate conduit.

DEQ Streamflow Measurement

Flow Meter (mgd)	DEQ Reading (mgd)	% difference
1.2	1.1	3
2.3	2.4	-4
5.2	5.	4
8.7	9.4	7
9.6	12.6	-31
12.3	15.3	-24
14	20.4	-46
15.6	23.2	-49
17.2	27.3	-59

- Measurements taken at several release rates as monitored on SCADA
- Streamflow measurements then compared to the SCADA data
- Developed a curve to calibrate the existing meter in the mud gate conduit
- Flow measurement adjustments in SCADA to account for real-world hydraulics

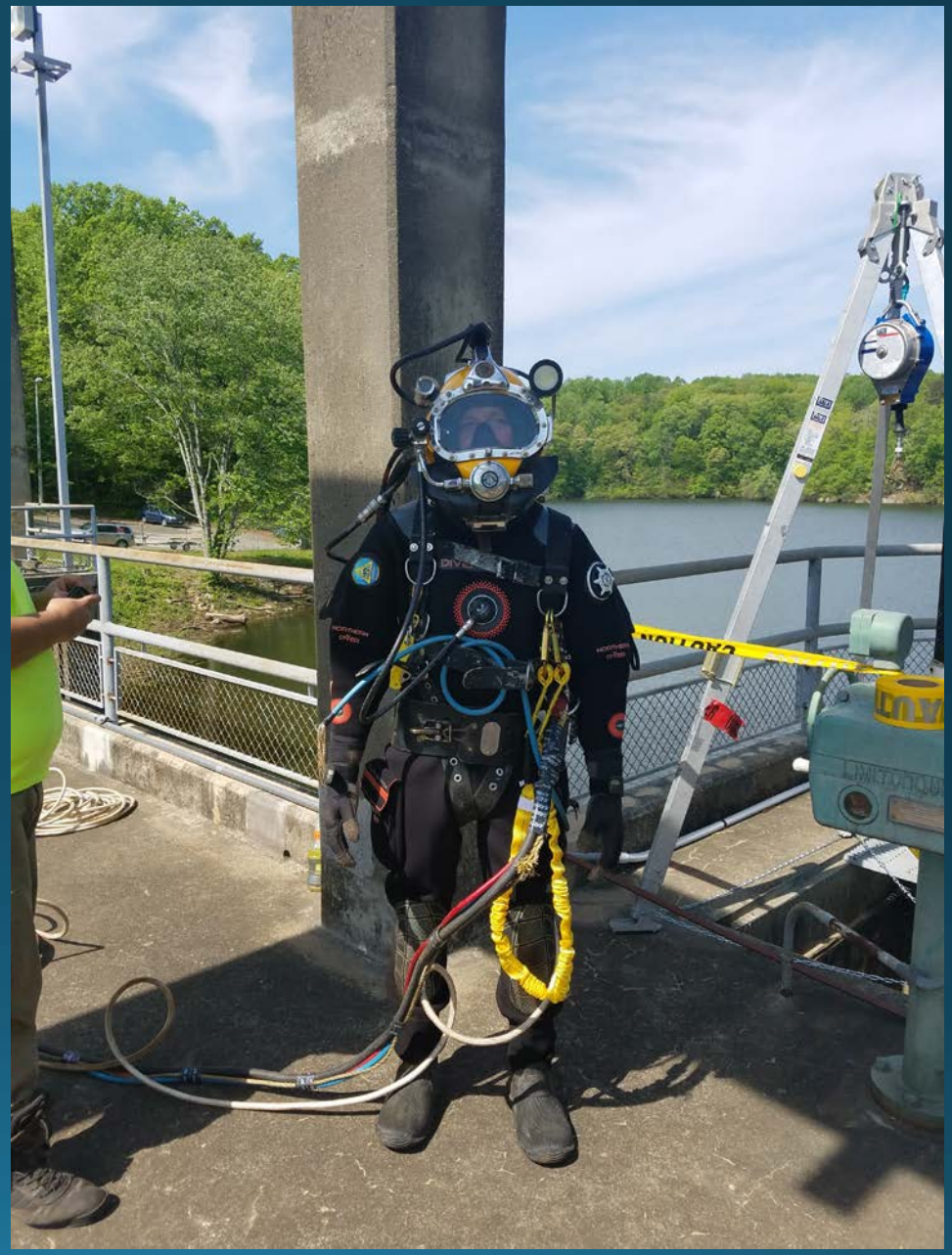
DEQ Streamflow Measurement



Schnabel Mud Gate Dive Inspection

- Dive Team Investigation
- The north gate was not accessible due to high water levels and safety concerns
- The south gate found to have some damaged components. The majority of leakage was observed on the bottom side of the gate, indicating a bad seat.
- Bulkhead guides in fair condition and likely usable to dewater the mud gate chamber for repairs.
- Schnabel estimates a replacement cost ranging from $300,000 to $325,000 to replace the two gates, with higher costs representing work performed by a diver in a submerged condition.
- Refurbishing the existing gates may be possible at a lower cost depending on the condition of the gates once removed.


ZION
Underwater Everythin



Hydro Current and Future Work

- Leakage identified through 72-inch sluice gate during turbine inspections
- Leakage resolved during Fall 2017
- Surrender Application to FERC (anticipated for August 2018)
- Will include Decommissioning Plan
- Includes removal of the existing 72-inch sluice gate and replacement with a gasketed plate/bulkhead

Summary

- The Hydropower facility is no longer leaking downstream and will be permanently sealed in the future
- The North Mudgate is temporarily sealed
- The South Mudgate Meter has been calibrated and will be adjusted via the calibration curve
- More accurate method of calculating total daily meter flow in SCADA
- Working with DEQ to re-establish the South Fork Rivanna river gaging station – which will allow for more frequent future meter calibrations
- Evaluating the cost / benefit of replacing North and South mudgates

Capital Construction Update

RIVANNA
WATER & SEWER AUTHORITY

Presented By:

Scott Schiller, Engineering Manager

July 24, 2018

Granular Activated Carbon

Chlorine Contract Tank-SR

Lime Feed-SR

Intermediate Pump Station- OB

Chemical Addition -CZ

GAC Bldg.-NR

- GAC Addition to all 5 Water Plants
- Early Results Indicate Reduction in DBPs
- Ancillary Improvements at All Plants

- Ulliman Schutte Construction
- Complete – May 2018
- Budget $29 M

Moores Creek Odor Control

Headworks & Grit Covers

Grit Removal

- New Grit Facility, Covers Over Headworks and Primary Clarifiers
- New Bio- Scrubber
- Enclosed Solids Handling
- EQ Tank Bypass and Removal of Post-Digestion Clarifiers

- MEB General Contractors
- Complete – May 2018
- Budget $10.4 M

Covered Sludge Trailers

Clarifier Covers

Bio-Air Scrubber

Crozet Finished Water Pump Station

- New, Higher Capacity Pump Station (1 mgd vs. 1.6 mgd)
- Original 1960's
- Designed for Expansion
- Anderson Construction, Inc.
- 90% Complete
- Complete – Sept 2018
- Budget $2.6 M

Moores Creek Roofing


Sludge PS #2


Vehicle Shop


Maintenance Building


Blower Building


Effluent PS

- New Roofs / Lightening Protection on 8 Buildings
- Original Roofs 1981-1982
- Triangle Roofing Services
- 95% Complete
- Complete – Sept 2018
- Budget $1.264 M


Sludge PS #1


Primary PS

Moore Creek PS

Ivy MUC – Transfer Station

Front Entrance

Collection Hopper

- New Solid Waste Transfer Station
- Albemarle Co. Funded
- 11,600 sq. feet
- Contractor - Lantz Construction
- 85% Complete
- Complete – August 2018
- Budget $3.06 M

Exterior – Side Access

Tipping Floor

Wholesale Water Metering

Ivy Road Site

Endpoint through Lid

Rt.29 E./ Hydraulic N. Site

- 25 New Meter Vaults around City Boundary
- Contractors - Linco, Inc. & Faulconer Construction
- 95% Complete
- Complete – Sept 2018
- Budget $3.6 M

Trader Joe's Site

Moores Creek 2nd Centrifuge

- Add a Second Centrifuge to Solids Handling Building
- Demo & Remove Disused Equipment
- Improve Redundancy, Operational Efficiency and Odor Control
- Change Order to Odor Control Project MEB General Contractors
- Complete May 2018
- Budget $1.29 M

Moores Creek Digester Coating

- Internally Seal the Roof of Digesters
- Successfully Pilot Tested Digester No. 1
- Improve Odor Control, Gas Collection and Structural Degradation
- Contractor - Lyttle Utilities, Inc.
- Digester No.1 Complete April 2018
- Budget $1.54 M
- Will Complete Digesters 2 & 3 in the near future