Rivanna Water and Sewer Authority

Board of Directors Meeting

December 11, 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: **December 11, 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 November 13, 2018*

3. ***RECOGNITION***
   a. *Resolution of Appreciation for Robert Clouser, Water Operator*

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

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

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

7. ***CONSENT AGENDA***
   a. *Staff Report on Finance*
   b. *Staff Report on Ongoing Projects*
   c. *Staff Report on Operations*
   d. *Approval of Engineering Services, Term Contract for Professional Wastewater Treatment Plant Engineering Services*

8. ***OTHER BUSINESS***
   a. *Comprehensive Annual Financial Report Fiscal Year Ending June 30, 2018; Mr. Robert Huff, Robinson, Farmer, Cox Associates*
   b. *Presentation: Virtual Tours; Crozet Water System, South Rivanna and Observatory Water Treatment Plants; Executive Director, Bill Mawyer*

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

RIVANNA WATER & SEWER AUTHORITY

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RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
November 13, 2018

A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was held on Tuesday, November 13, 2018 at 2:15 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mike Murphy, Mike Gaffney, Jeff Richardson, Liz Palmer, Kathy Galvin, Lauren Hildebrand, and Gary O'Connell.

Board Members Absent: None.

Staff Present: Phil McKalips, David Rhoades, Bill Mawyer, Katie McIlwee, Liz Coleman, Tim Castillo, Lonnie Wood, Michelle Simpson, Scott Schiller, Victoria Fort, and Austin Marrs.

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

1. CALL TO ORDER
Mr. Gaffney called the regular meeting of the Board of Directors of the Rivanna Water and Sewer Authority at 2:21 p.m.

2. MINUTES OF PREVIOUS BOARD MEETINGS
a. Minutes of Regular Board Meeting on October 23, 2018

Mr. Mawyer noted that the date on the agenda should say "October 23, 2018."

Ms. Galvin moved to approve the RWSA Board meeting minutes of October 23, 2018. Dr. Palmer seconded the motion, which passed 7-0.

3. RECOGNITION
There were no recognitions presented.

4. EXECUTIVE DIRECTOR'S REPORT
Mr. Mawyer reported that Rivanna had completed its draft of the Observatory Water Treatment Plant lease, which includes two leases and an easement to cover the treatment plant and the Alderman Road Pump Station shared with UVA, as well as all the raw and finished water piping

and storage tanks. He stated that they had surveyed plats completed and sent to UVA Facilities, and Rivanna would meet with them on November 27 to receive their comments. Mr. Mawyer noted that this was an effort where the old lease had the City's water and sewer rates included in the lease, and everyone agreed that the two things should be separated. He clarified that it is a 99-year lease.

Mr. Krueger added that the advantage of this is taking a 1922 agreement that had been amended almost 15 times that was impossible to piece together, and dropping it into three consolidated documents.

Mr. Mawyer reported that Rivanna had executed easements for the Birdwood Water Line with the UVA Foundation after working for the last month on some of the finer details, and a construction contract had been awarded to E.C. Pace of Roanoke for $2.59 million, and that company was in the process of submitting its insurance and bonds. He stated that Rivanna would then issue a notice to proceed to them, and they were expected to start around November 26. Mr. Mawyer noted that RWSA staff would attend a Bellair Neighborhood Association meeting on November 15, and they have notified the Army Corps of Engineers that they were starting the construction project, as required by the permit.

Mr. Mawyer presented pictures that showed UVAF's work underway reconstructing the Birdwood Golf Course, and Rivanna needed to keep up with that pace. He stated that the eastern side of the property is where the waterline would go, and he noted the path of the one-mile water pipeline, which would follow the tree lined edge.

Mr. Gaffney asked how the $2.593 million differed from the original bids.

Mr. Mawyer responded that it was $22,500 less than the original bid, and the same original low bidder won the contract. He stated that the second low bidder – Garney of Chantilly, VA – was also second in the rebid, with their price going up $4,500 to $2.6 million. He stated that the winning bidder, E.C. Pace, was a family-owned business operating since 1926 and they seemed to be excited about the project.

Mr. Mawyer reported that there had been several community outreach initiatives with water and wastewater, showing groups around various plants, and Ms. Whitaker was helping the Town of Scottsville with an emergency action plan. He stated that Mr. O'Connell and his staff, along with RWSA staff, had met with Supervisor Ned Gallaway and ACSA Board member Kim Swanson to review the Rivanna budgeting process and provided an overview of expenses, what they were for, and how the budget was developed.

Dr. Palmer stated that she was eager to see what Scottsville ended up doing.

Ms. Whitaker stated that Scottsville had reached out to RWSA to start discussions about what type of work they do.

5. ITEMS FROM THE PUBLIC

There were no items from the public.

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6. RESPONSES TO PUBLIC COMMENTS

There were no responses to public comments.

7. CONSENT AGENDA

a. Staff Report on Ongoing Projects

b. Staff Report on Operations

c. Approval of Additional Employee Holidays

d. Approval of Board Meeting Schedule for Calendar 2019

e. Approval of Engineering Services, and Update on Award of Construction Contract – SFRR To RMR 36-Inch Raw Water Main; Phase 1 Birdwood Golf Course

Dr. Palmer moved to approve the Consent Agenda as presented. Ms. Galvin seconded the motion, which passed 7-0.

8. OTHER BUSINESS

Joint Session with RSWA Board

a. Presentation: Quarterly Strategic Plan Update; Katie McIlwee, Executive Coordinator and Communications Manager

Ms. McIlwee reported that there were 6 goals, 12 strategies, and 78 tactics for the first year of the strategic plan. She stated that overall, they were where they were expected to be, with overall plan completion at 52%.Most of the groups were in the “green,” with one group in the “yellow” and two groups in the “red.”

She stated that the Workforce Development goal team was in the green and had completed 64% of their first-year tactics. The master staffing plan was presented to the Board in August and they have been working with PVCC to develop manager training. She stated that some of the next steps were to continue reviewing the staffing master plan and develop a budget for new positions in the plan, and to continue to conduct training needs assessments for the workforce and develop a Development Plan Program for the workforce – to include things such as employee training, operators licenses, and the needs of each individual employee.

Ms. McIlwee reported that the Operational Optimization goal team was tracking slightly behind where they should be – they are in the yellow, but they can catch up quickly. She stated that they were completing the sealing of digester three and the corrosion inhibitor study, which will then be reviewed and an implementation plan will be developed.

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Mr. Mawyer stated that it was anticipated that the corrosion inhibitor study and recommendations would be presented to the Board within the next 4-6 months.

Ms. McIlwee stated that the next steps for the Communication and Collaboration goal team was to analyze the website statistics, using Google Analytics, to track hits on the website and see where pages needed to be streamlined, enhanced, and/or deleted. Analyzing the statistic will allow us to examine what information the public was seeking from the Rivanna website. She stated they needed to complete the internal employee portal to enhance internal communications with all employees. Ms. McIlwee noted that this goal team also collaborates with some of the other goal teams to help them achieve their objectives.

Dr. Palmer asked whether people frequently went through another point to get to the website, such as the City or County website.

Ms. McIlwee responded that typically it is a Google search for terms such as “Ivy MUC,” allowing the user to bypass the main page and go straight to the page returned in their search. She stated that some of the highest-hit pages with information relating to are Ivy MUC, HHW, and McIntire Recycling Center. She stated that pages, such as the Community Projects page, see very little traffic because they are buried or are not of general interest, whereas transfer station hours were more public facing.

Dr. Palmer stated that people were not really using websites anymore – they just Googled and used a link to go directly to the information – and she wondered if this was sufficient to disseminate all the information needed.

Ms. McIlwee explained that Rivanna would try to make the information users were searching for the most easier to find, and while there was a lot of good information on the website, it might crowd the more important information – so they would try to bring forward the more important items. She clarified that there were approximately 100 pages on the website, and the goal was to avoid having people click multiple times just to find something simple, like a fee schedule or a facility phone number.

Mr. Mawyer added that they also wanted to make sure there were pages that didn’t have to be updated frequently if people were not looking at it – versus other time-sensitive information.

Mr. Henry asked about the schedule for the employee portal.

Ms. McIlwee responded that it was hoped to be done by the end of the calendar year, as it was mostly complete, and she needed to coordinate with HR to make sure that frequently requested items and forms were on the site.

Ms. McIlwee reported that the Environmental Stewardship goal team was in the red – they had nine total tactics, with one being 100% complete and only two not started at all. She stated that they had decided to include an environmental stewardship column in the bimonthly employee newsletter, and that was part of the collaboration with the Communication and Collaboration goal team. She noted that they were also continuing to attend external meetings with

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environmental partners, and some of their next steps were continued coordination with the Communications and Collaboration goal team, as well as identifying and planning activities to engage employees in some of their green projects – which would involve development of a budget.

Ms. McIlwee reported that the Solid Waste Services goal team was also red, but their main barrier was the Ivy Master Plan – and once that was complete, the team could complete their other items. She noted that the goal team had three tactics 100% complete and was continuing to coordinate with UVA to develop the composting partnership at the Ivy MUC.

Ms. McIlwee reported that Infrastructure and Master Planning goal team was in the green and was completing the Asset Master Plan Awareness Training and program development workshops. She stated they were creating an inventory and analysis of all existing master plans and critical assets, in addition to looking at and identifying other areas where there may be need for a master plan.

Mr. Gaffney commented that he was impressed with the follow-through with the strategic plan, as it wasn’t one that just got shelved.

Ms. McIlwee responded that a lot of the goal teams meet regularly and keep their goals and tactics in mind.

Dr. Palmer asked what “increase internal environmental engagement” meant, under the Environmental Stewardship goal team.

Ms. McIlwee replied that this was Andrea Terry’s goal team, and her understanding was that it fed into the environmental stewardship tips in the employee newsletter and engaging the workforce in some of the green initiatives and other things her team did – communicating that with the rest of the workforce.

Mr. Mawyer stated that it also involved wastewater treatment and making sure it was environmentally friendly, as well as managing the chemicals used, ensuring that staff understood the importance of environmental stewardship.

Mr. Richardson commented that it was essentially leading by example to encourage practices that were good for the environment.

Ms. Galvin stated that it seemed to be cultivating a sense of mission within the organization, and at some point it would be internalized as such. She stated that in what she has read about leadership, it encourages staff to become innovators.

Mr. Mawyer agreed, stating that it was becoming increasingly woven into their organizational fabric, and staff was embracing it.

The RSWA Board adjourned its meeting at 2:41 p.m.; the RWSA Board continued its meeting.

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b. Presentation: Wet Weather Operations at Moores Creek AWWRF – David Tungate, Director of Operations and Tim Castillo, Wastewater Manager

Mr. Tungate reported that the RWSA had two pump stations that received the sewage at Moore's Creek – the Rivanna Pump Station and the Moores Creek Pump Station. He stated that Rivanna took about 65% of the flow, with Moores Creek taking about 35% of the flow. He stated that the Crozet Interceptor went to Moores Creek, and Rivanna took the north half of the City and the northern urban area. Mr. Tungate presented images showing the pump stations and noted their locations. Additional slides showed the screens and dumpsters for solids cleaned off of the screens. He brought a bag with material that came out of the chutes into the dumpster from screens, noting that the dumpster was pulled about every two weeks.

Mr. Tungate explained that there was also a grit removal system new this year, which took the solids – inorganic material such as sand and other grit, the size of coffee grounds – and filled the dumpster at the bottom. He stated that the grit is separated from the water and is cleaned, then ends up in the dumpster.

Mr. Castillo pointed out that with the previous process, the grit settled out in the EQ basins and personnel would have to go in every few years and remove it manually – and it prevented abrasive materials from wearing out pumps and other equipment.

Mr. Tungate stated that the waste material passed through the grit removal to the primary treatments, which are shown on the side of the building, and there were covers as well as an odor collection system. He noted that the odor collection system had a carbon filter, with air going through the odor control with water coming down, then a final scrubber that has really helped control the odors.

Ms. Galvin commented that the results had been amazing.

Staff clarified for Dr. Palmer that the cost had been $10 million.

Mr. Tungate pointed out the four secondary clarifiers were uncovered as shown and could be seen as you were driving out of the site, and the sand filters were by the Rivanna Pump Station on the left before you get to the bridge. He explained that they disinfected the water with UV disinfection before it went back into Moores Creek, and the effluent flume went into the creek with water that had been through the system and was aerated. Mr. Tungate noted that the outfall was visible to the left as you went over the bridge.

Mr. Mawyer commented that this was where the measured how much water was treated, and that was how they billed out.

Mr. Tungate noted that in the process of the primary and secondary, they did accumulate sludge – so there were centrifuges in the solids handling building, then the trailer got hauled to Waverly, VA for composting.

Dr. Palmer asked if they were reselling it, as she was thinking about the controversial biosolids.

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Mr. Mawyer responded that they composted our solids by mixing it with food products and sold it at McGill Environmental Facility in Waverly, VA.

Mr. Castillo clarified that they created a “premium compost product,” which was printed on the bags – and when staff visited there, the composting officials stated that the Washington Redskins used that material as their field base.

Dr. Palmer asked if it was heat-treated first.

Mr. Castillo responded that it did get heated.

Mr. Tungate stated that in addition to the wastewater solids, McGill Environmental also composts with the water treatment plant residuals from South Rivanna.

Mr. Castillo pointed out that the location of the screens and grit removal system, stating that all the flow from Moores Creek and Rivanna pump stations came to a point and joined – going through a screening process and also the flow equalization basins if they were online. He noted that there had been four million gallons of raw waste there, referencing an older picture where they were not covered, and into a biological treatment process – a modified Bardonpho process designed for removal of nitrogen and phosphorus. He stated that it then went into secondary clarifiers where the bugs dissolve the nutrients.

Mr. Castillo stated that they then slow the velocity down and the microorganisms settle out to the bottom, leaving clear water that then can be discharged. He stated that they return the biological population back to the aerobic process, where they then meet up with raw nutrients and continue to be processed. He noted that the normal treatment level is 20 million gallons per day. He stated that on July 31, there was a storm squall that deposited more than 4.75 inches of rainfall in a very short period of time, and that then infiltrated into the sewer collection system and came into the treatment facility. He referenced statistics on the rainfall events around the region, which ranged from 4-5 inches.

Mr. Castillo stated that there was a lot of flow coming into pump stations, so they made sure the screens were on manual at high speed to make sure they were screening and not blocking anything up, and along the roadway there was pipe that went to holding ponds – so anything above a 40 MGD flow rate was designed to go to the holding ponds. He noted that they operated with a 20/30/40 rule for operators: at 20 MGD, it is the normal biological process; anything from 20-30 MGD could be treated with three clarifiers, which was known as step feed and bypassed part of the biological process – and the wastewater was diluted and less concentrated in nutrients. He noted that this was part of the plant’s design in 2010, rather than having multiple basins all doing the Bardonpho process, which still met permit requirements but was less expensive. He stated that it didn’t require as much time and also saved the biological population of nitrofiers and phosphorus-consuming microorganisms.

Mr. Castillo stated that at 40 MGD, they had to put their fourth clarifier into service, and anything over 40 MGD goes into the holding basins.

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Mr. Gaffney asked if it was completely untreated water going into the holding ponds.

Mr. Castillo responded that the untreated wastewater was held for treatment at a later time, and he confirmed that it was less concentrated. He stated that it may be clean rainwater infiltrating into the sanitary sewer system, but once it's combined with wastewater it cannot be separated.

Mr. Mawyer added that the rainwater was not supposed to be in the sewer pipe at all.

Dr. Palmer asked Mr. Castillo to point out where the 30-40 MGD were expected to go.

Mr. Castillo pointed it out and stated that the additional secondary clarifier at a 40 MGD flow rate took the biologically treated wastewater and mixed it with clean water. He stated that 20 MGD went to primary treatment, over that it went into the step-feed bypass portion.

Mr. O'Connell asked how much the holding ponds held.

Mr. Castillo responded that it was 17 MG of total storage.

Mr. O'Connell asked if there was a larger number that was a maximum.

Mr. Castillo replied that storms generally came in as short-term storms, so the levels drop back down – but this particular event raised the level from 14.5 MGD to 80 MGD within just about two hours. He stated that the operators needed to quickly respond to make sure the various valves and tanks were open, and they also were monitoring the pump stations. He stated that there were control issues with one pump because the flow was coming in so fast, and they ended up having to put Rivanna Pump Station into manual with all pumps running. He noted that it was registering 120 MGD over a four-hour period of time.

Mr. Castillo pointed out that the operators opened up the step feed and the discharge line from the Rivanna Pump Station, and sent wastewater to the holding pond. He stated that as the Moores Creek Station was close to coming up, they sent some of that flow as well and ended up putting the flow equalization basins into service – which each store 4 MG. Mr. Castillo stated that because they were filling up the equalization basins, they were saving room in the holding ponds, and there was a tremendous amount of operational flexibility in the facility.

Mr. Castillo explained that when things started to stabilize, levels dropped from 60 MGD to 40 MGD, and at around 6 p.m., they started returning wastewater from the holding ponds back into the treatment facility to treat it throughout the day because they knew there would be more rain coming within 24 hours. He noted that the hydrograph worked exactly like this but stopped at 85 MGD. He stated the Rivanna Pump Station was being inundated so they decided to put the sixth pump in and put everything back within the channels – preventing further backups upstream within the collection system.

Dr. Palmer asked if they reached the capacity of this system with this storm event, without backups into the rest of the system.

Mr. Castillo confirmed that they did, noting that they only had approximately 18 inches of freeboard in the holding ponds at 6 p.m.

Ms. Galvin asked if they anticipated having to build a new holding pond.

Mr. Castillo responded that he didn't think so, as the facility was able to handle the event even though it was a big storm. He recounted some historical storm events, noting that in August 2008, a 5-10 inch rainfall caused overflows at Meadowcreek, Shenk's Branch, and Moores Creek – and the facility took in 24 MGD. Mr. Castillo stated that there was a 4.2-inch rainfall on July 7, 2008 and the sewer took in approximately 15 MG, with major overflow at Shenk's Branch. He stated that on May 8, 2008, there was a 2.4-inch rainfall event and the facility took in 25 MGD, with a major overflow at the Meadowcreek Interceptor.

Mr. Castillo reported that on May 18-19, 2018, there was a 6.1-inch rainfall event – with approximately 40 MG of wastewater taken in to be treated, with no overflows. He stated that the July 31 event, there was a 4.8-inch rainfall and the system treated 32 MG total, with no overflows. He stated that as they start investing in the infrastructure, they are removing bottlenecks so they are able to take in more wastewater – and he noted that one operator stated he had never seen levels that high in his 26 years of service. Mr. Castillo stated that the former peak at Rivanna Pump Station was a 25 MGD pump station, and they were now capping at 63 MGD. He stated that his goal was not to have any sanitary sewer overflows.

Dr. Palmer stated that there didn't seem to be as much rain with the May 30-31 event as there was in the western part of the County.

Mr. Castillo responded that they saw more flowing into the Moores Creek Pumping Station then they did on the Rivanna side.

Mr. Gaffney commented that it would be good to get an update on what has been accomplished on inflow and infiltration (I&I) in the City and what they have moving forward.

Mr. Mawyer responded that staff was working on that data, but anecdotally there had not been any overflows since making the infrastructure improvements.

Dr. Palmer stated that years ago they did the sewer master plan and figured out how much I&I to get out of the system, and she wondered how often that process needed to be repeated.

Ms. Hildebrand stated they were continually monitoring that.

Mr. Castillo added that the operators were always evaluating that, and it was less expensive to invest in the collection infrastructure than the treatment facilities.

Ms. Whitaker stated that the improvements started because they were having overflows and infrastructure issues, so the 2004-2006 study generated the first major regional agreement – which also encouraged a process that included master plan updating every 10 years, with the off-

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cycle 5 years including an evaluation of the flow meters. She stated that they received monthly flow meter data and were evaluating the systems through the annual CIP process.

Mr. Murphy stated that if he was interpreting the data correctly, they could normally process about 6-6.5 times what they typically did in a whole day, and he wondered how long they could do that for and whether it would break if they exceeded a certain amount of rainfall.

Mr. Castillo responded that there was 18 inches of freeboard left at 6 a.m. during the major storm event, which covered about 12 hours of flow at that extremely high rate – and the equalization basins had about a foot of freeboard as well. He stated that they would then have to go to the front gate of the Rivanna Pump Station and start manual back up to protect the system.

Mr. Krueger stated there was about a two-hour window in which they exceeded the 120 MGD level, so that averaged to about 10 MG coming in the plant during that two-hour period. He asked what the outflow was when they were treating water, in terms of discharge of treated water to Moores Creek.

Mr. Castillo replied that the maximum rate was 120 MGD.

Mr. Krueger noted that you would divide that by 24 to get an hourly rate.

Ms. Whitaker commented that when they did the plant upgrades for wet weather capacity, the idea was for an 85 MGD peak flow rate as what the plant could ideally handle and survive.

Mr. Mawyer stated that when they have normal flow and no rain, they run it through the whole plant and treat it – and when they have high rain that gets in the sewer system and doubles or triples flow, they have to divert it to the holding ponds. He stated that when the rain subsides, they then bring it back to the head of the plant and run it through.

Mr. Castillo stated that the subsiding happens much faster now that the I&I work on the various basins has been done.

Mr. Mawyer stated that some of the same theory applied in Crozet would mean a flow equalization tank would take it out of the pipes stored in the tank, then when the flow subsides it is released out of the tank back into the pipe.

Mr. Castillo stated that in 2016, there was 37-inches of rainfall over a 12-month period at Moores Creek; in 2017, there were 44 inches; and so far in 2018, there have been 69.74 inches of rainfall. He also stated that the Board had commended the operators for dealing with the flow event, and he wanted to note that the operators were out in the storm manually opening and closing valves to ensure everything was operating as it should.

Mr. Krueger commented that the highest rainfall in the parts of the system with the worst I&I would be the worst-case scenario.

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

There were none presented.

10. CLOSED MEETING

There was no closed meeting held.

11. ***ADJOURNMENT***

Dr. Palmer moved to adjourn the meeting. Ms. Galvin seconded the motion, which passed 7-0. The RWSA Board adjourned the meeting at 3:18 p.m.

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RIVANNA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS

<u>Resolution of Appreciation for Robert Clouser</u>

WHEREAS, Mr. Clouser has served in a number of positions, most recently as a Water Operator Class 2 in the Observatory Water Treatment Plant, for the Rivanna Water and Sewer Authority since November, 1997; and

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

WHEREAS, Mr. Clouser'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. Clouser 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. Clouser 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.

Michael Gaffney, Chairman
Kathleen Galvin
Lauren Hildebrand
Michael Murphy
Gary O'Connell
Liz Palmer
Jeff Richardson

RIVANNA WATER & SEWER AUTHORITY

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MEMORANDUM

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

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **EXECUTIVE DIRECTOR'S REPORT**

DATE: **DECEMBER 11, 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:

- Duane Houchens – Wastewater Operator Class 3 License

Birdwood Water Line

SP GOAL: Infrastructure and Master Planning

Construction of erosion control measures, as well as temporary access entrances and material staging areas, is underway. Installation of piping will begin in late January / February after the piping is manufactured and delivered. Staff will participate with UVAF staff in a monthly project update meeting with the residents of the Bellair subdivision.

Community Outreach

SP GOAL: Communication and Collaboration

During the recent drinking water issue experience by the Louisa Water Authority, our staff contacted Louisa Authority staff and offered equipment as well as any assistance needed. The Louisa Authority flushed the water distribution system in the area of concern, and all tests indicated the water met regulatory standards. The source of an unknown gas, which was found in trace amounts in one small section of water piping located near the Glen Mayre Shopping Center, has not been determined.

Andrea Terry, Water Resources Manager, spoke to a class from St. Anne's-Belfield School. Tim Castillo, Wastewater Department Manager, provided a tour of the Moores Creek Advanced Resources Recovery Facility to the same group. Tim also provided a tour to 4th year UVA

Chemical Engineering students who were interested in learning more about employment opportunities, and necessary job skills for public wastewater utilities.

Matt Bussell, Water Department Manager, provided a tour of the South Rivanna Water Treatment Plant to a group of educators from the Thomas Jefferson Soil and Water Conservation District.

Katie McIlwee, Communications Manager, along with representatives from ACSA and the City of Charlottesville, hosted the Imagine a Day Without Water awards ceremony for the student and teacher winners. Over 260 poster submissions were received from students, grades one through eight.





DEERE

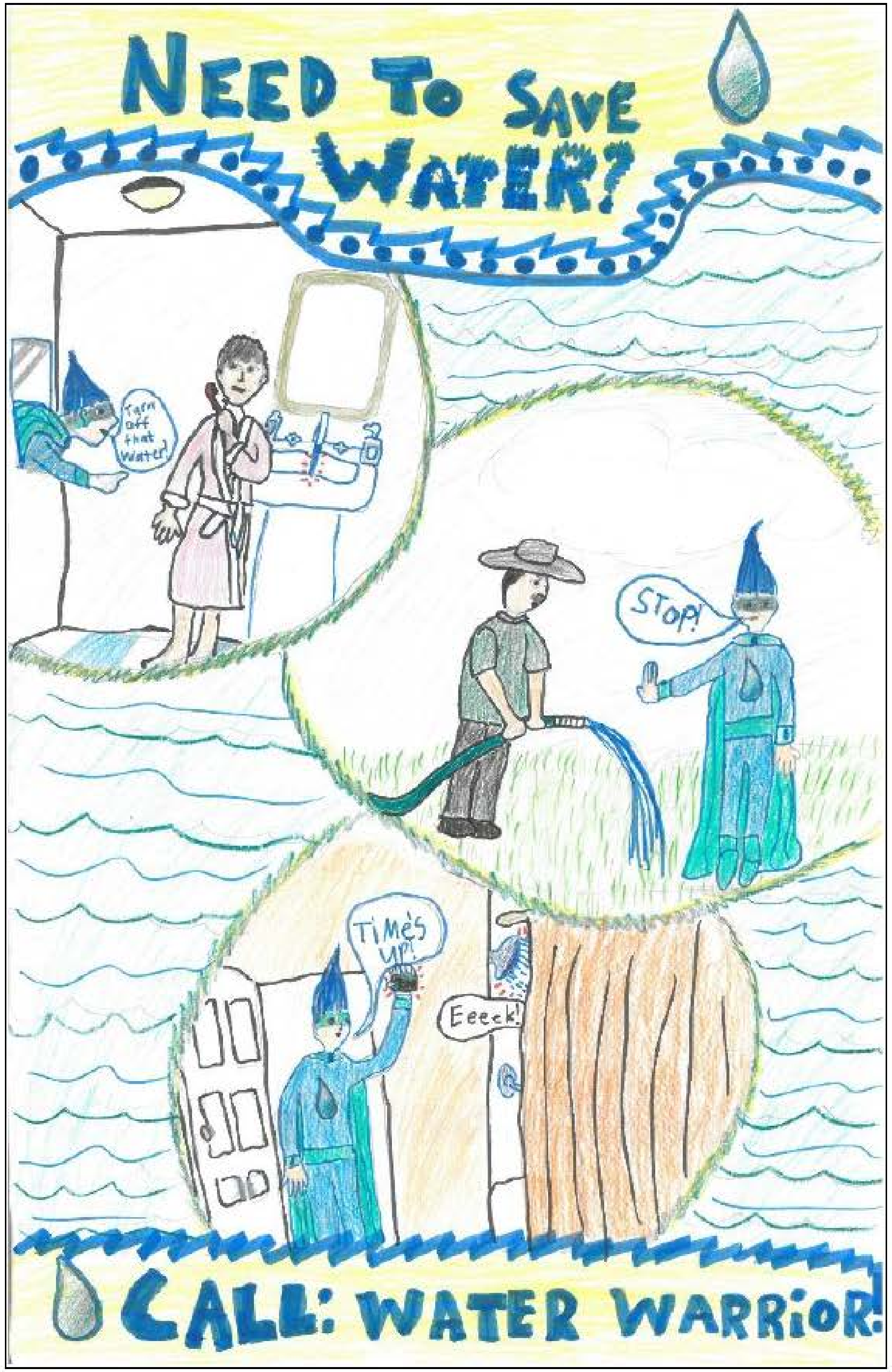

DEERE


DEERE
135G

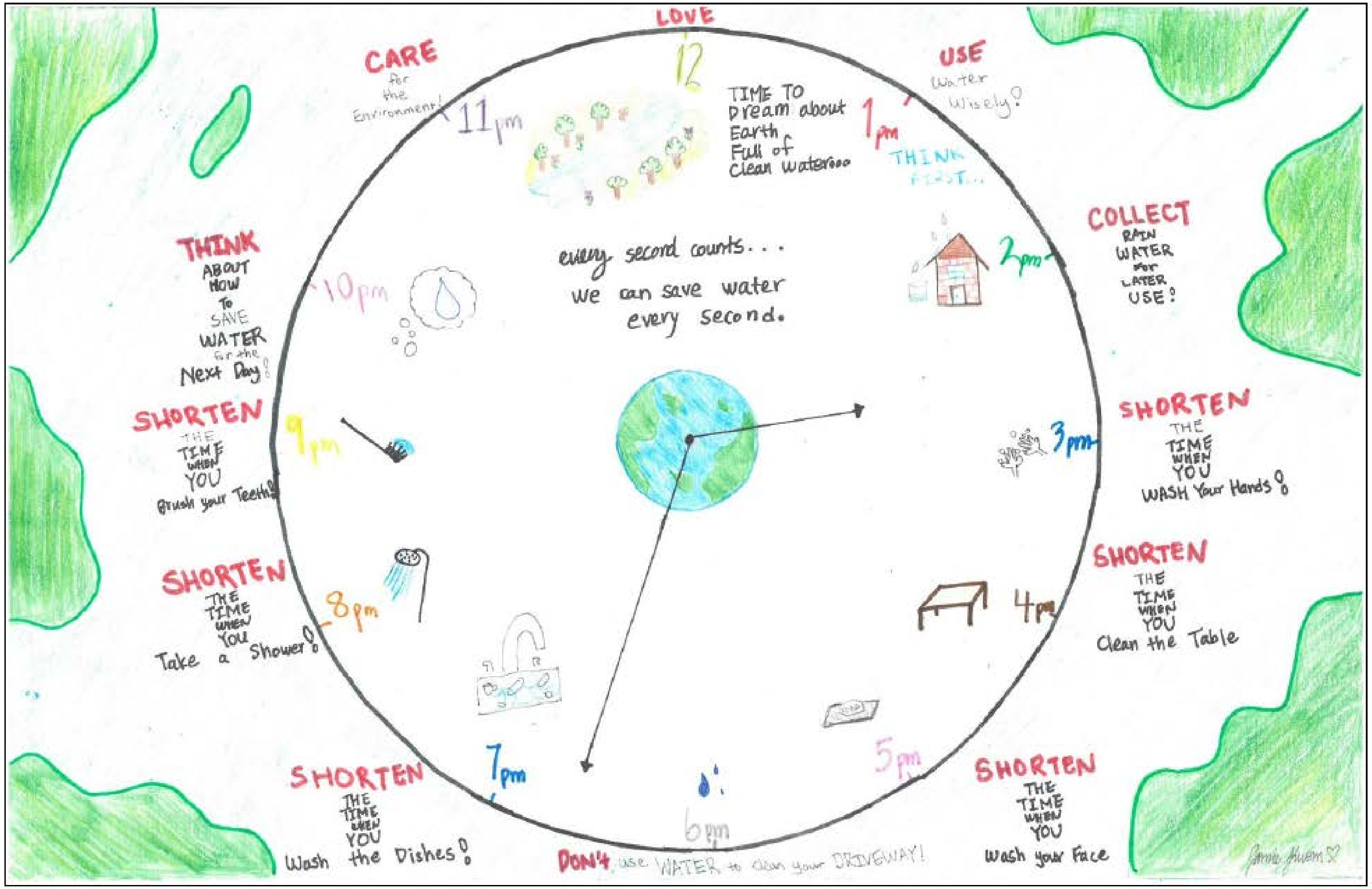

Rt. 208
Rt. 208
Rt. 33
Fredericksburg Ave
E Main St
Sheetz
Louisa True
Value Hardware
Food Lion
Domino's Pizza
Hardee's
CVS
Waverly Place
Apartments
McDonald's
Walgreens
E Main St
T-1007
T-1005
Carter St
Pizza Hut
E Main St
The Greens at
Tanyard Golf Course
Woodger Cir
T-1020
Barnstormer Cir
Holyhurst Ln
Quiet Ln
T-1022
Piedmont Metal
Fabricators

1st – 2nd Grade Winner:
Ben O'Hare, Johnson Elementary, Grade 2

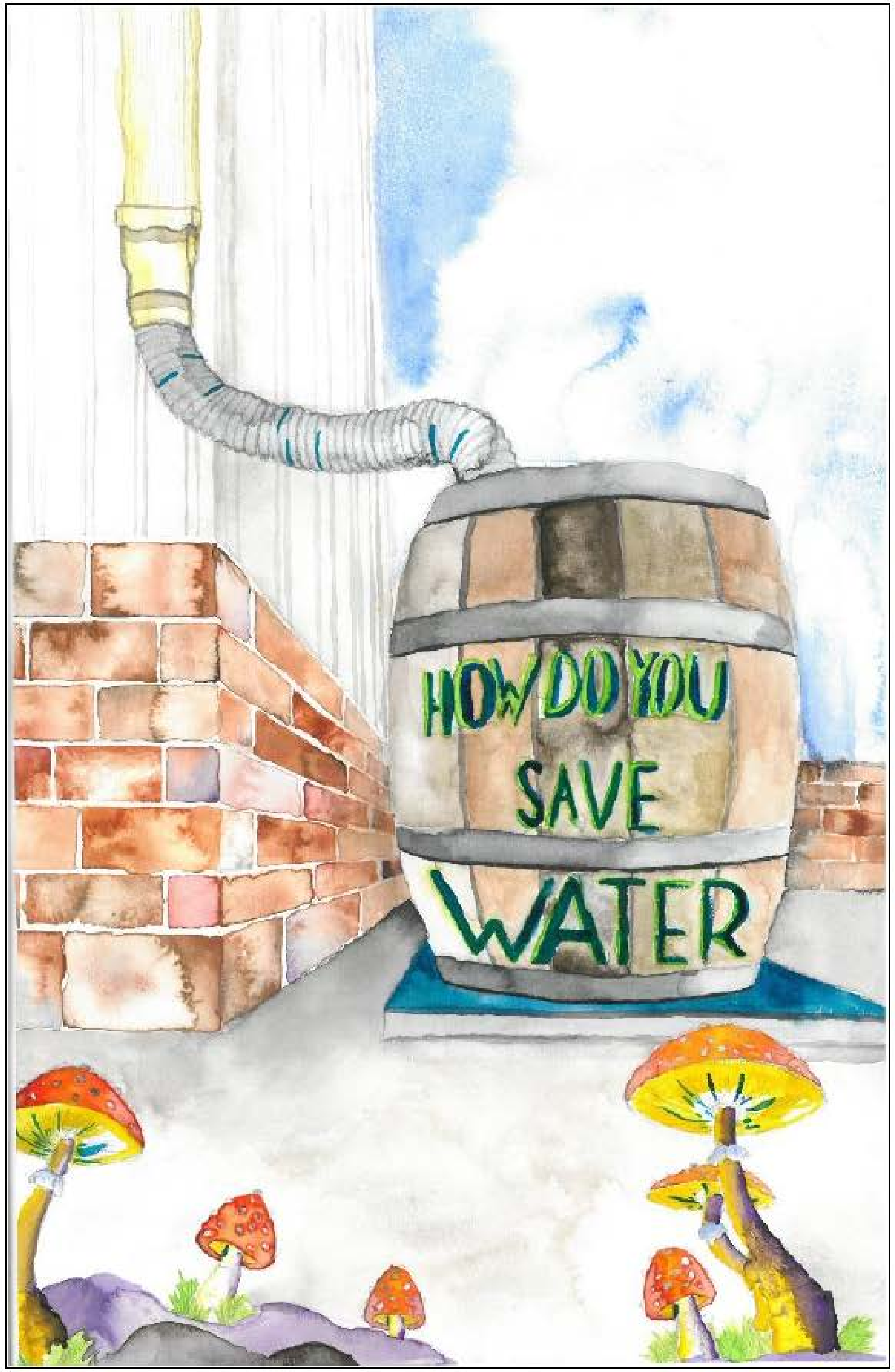
3rd – 4th Grade Winner: Rowan Powell, Woodbrook Elementary, Grade 4



5th – 6th Grade Winner: Jamie Kwon, Sutherland Middle, Grade 6



7th– 8th Grade Winner:
Bryce Yates, Charlottesville Catholic School, Grade 7



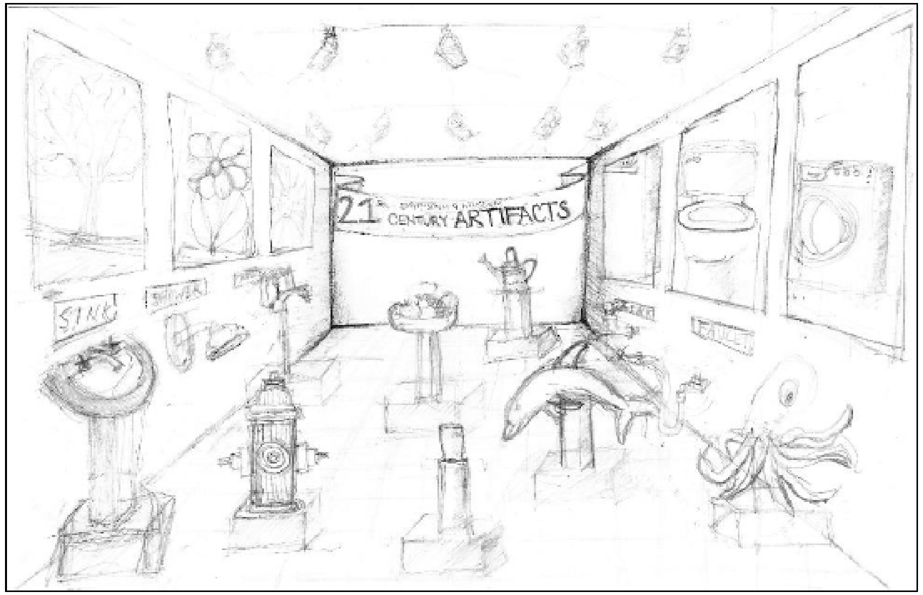
Fan Favorite:
Manan Jani, Agnor Hurt Elementary, Grade 5

Teacher Appreciation

Kimberly Taylor

Village School

Had 22 students submit artwork



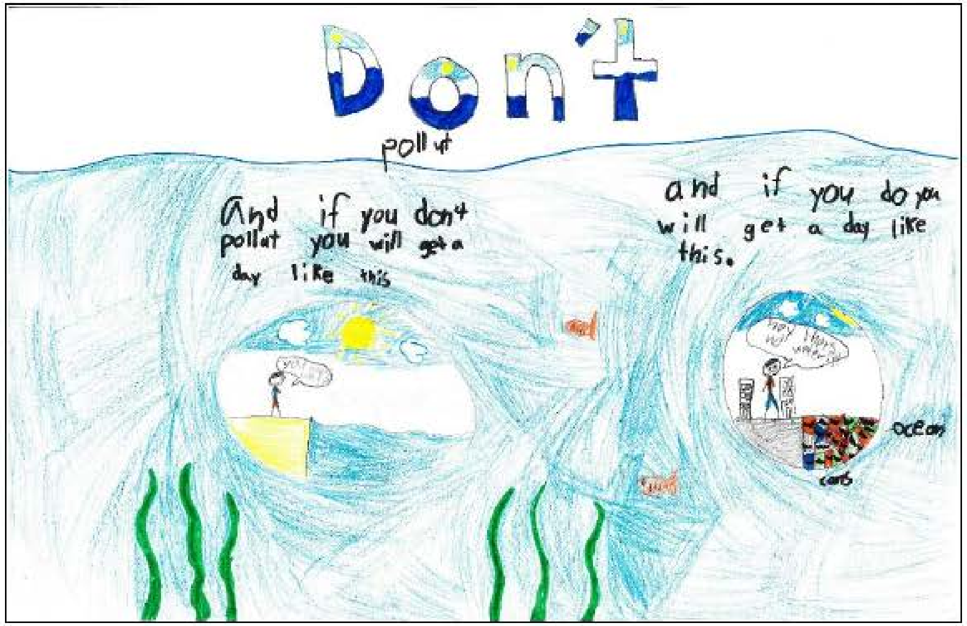
Sohie Freeman Ryang, Grade 7, Village School

Teacher Appreciation

Atlanta Hutchins

Crozet Elementary

Had 10 students submit artwork



Max Tungate, Grade 3, Crozet Elementary


Violet W
SAVE WATER
SAVE THE WATER
SAVE THE EARTH
NEED TO SAVE WATER?
ATHLETIC

RIVANNA WATER & SEWER AUTHORITY
695 MOORES CREEK LANE
CHARLOTTESVILLE, VA 22902-9016
TEL: 434.977.2970
FAX: 434.293.8858
WWW.RIVANNA.ORG

MEMORANDUM

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

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

REVIEWED: **BILL MAWYER, EXECUTIVE DIRECTOR**

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

DATE: **DECEMBER 11, 2018**

Urban Water flows and rate revenues are 9% over budget estimates for the first four months of this fiscal year, and Urban Wastewater flows and rate revenues are 31% over budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	$ 2,593,742	$ 3,438,144	$ 703,160	$ 6,735,046
Expenses	(2,369,268)	(2,559,660)	(722,340)	(5,651,268)
Surplus (deficit)	$ 224,474	$ 878,484	$ (19,180)	$ 1,083,778
Debt Service				
Revenues	$ 2,160,633	$ 2,956,536	$ 388,603	$ 5,505,772
Expenses	(2,124,786)	(2,863,249)	(387,485)	(5,375,520)
Surplus (deficit)	$ 35,847	$ 93,287	$ 1,118	$ 130,252
Total				
Revenues	$ 4,754,375	$ 6,394,680	$ 1,091,763	$ 12,240,818
Expenses	(4,494,054)	(5,422,909)	(1,109,825)	(11,026,788)
Surplus (deficit)	$ 260,321	$ 971,771	$ (18,062)	$ 1,214,030

Urban Wastewater received the annual Nutrient Exchange Credit of $104,060 and Albemarle County's annual septage receiving support of $109,441 in July.

Some expense categories are over the prorated year-to-date budget as follows, but should even out over the course of the year compared to budget estimates, unless otherwise noted:

A. Professional Services (Urban Water – page 2) – The Urban Water rate center incurred some unbudgeted expenditures for Engineering and Technical Services related to safe yield modeling. This rate center also went over the annual budget for legal fees related to the Observatory plant lease.

B. Other Services & Charges (Urban Water, Urban Wastewater, Engineering – pages 2, 5, 11) – July's payment of the annual property and liability insurance premium is causing Urban Water and Wastewater to be over budget in this category. Urban Water and Wastewater are also over budget on the cost of hauling biosolids off site to be composted. Urban Wastewater is over budget on odor control costs for the Crozet Interceptor/Pump Stations, and utilities are running high. The Engineering department is over budget due to late posting of an ACSA invoice for modeling services for the quarter ending in June 2018 that are not included in the FY 2019 budget.

C. Information Technology (Engineering – page 11) – The Engineering department paid $25,000 in July to renew an annual GIS computer software license agreement, as budgeted.

D. Operations & Maintenance (Urban Water, Crozet Water, Scottsville Water, Glenmore Wastewater, Lab, Engineering – pages 2, 3, 4, 6, 10, 11) – Urban Water paid about $200,000 for June's North Rivanna Waterline emergency repairs, and the annual lease payment for the Observatory WTP property was paid in September. Glenmore Wastewater went over the prorated budget on pump repairs. Crozet Water is over the prorated budget on algae treatment of the Beaver Creek Reservoir. The Lab and Engineering departments are over the prorated budget on vehicle and equipment repairs. However, we expect these expenses to level out as the year progresses. Scottsville Water purchased instrumentation equipment for the Red Hill Community Water System in October for about $10,000, which pushed this category over budget, but this cost will be billed to ACSA and recorded as revenue for this rate center.

E. Communications (Urban Water – page 2) -The annual payment to the County of Albemarle for Rivanna's share of the radio system maintenance cost was made in September.

F. Equipment Purchases (Urban Water, Scottsville Water – pages 2, 4) – Urban Water is slightly over the prorated budget but well within the annual budget in this category. Scottsville Water spent $50,000 in October for the unbudgeted purchase of a replacement flocculator.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018
Fiscal Year 2019

Consolidated Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 16,387,174	$ 5,462,391	$ 6,425,291	$ 962,899	17.63%
Lease Revenue		100,000	33,333	34,396	1,062	3.19%
Admin., Maint. & Engineering Revenue		462,000	154,000	157,470	3,470	2.25%
Other Revenues		528,084	176,028	264,485	88,457	50.25%
Interest Allocation		28,050	9,350	10,874	1,524	16.30%
Total Operating Revenues		**$ 17,505,308**	**$ 5,835,103**	**$ 6,892,516**	**$ 1,057,413**	**18.12%**
Expenses						
Personnel Cost		$ 8,429,784	$ 2,653,050	$ 2,498,210	$ 154,840	5.84%
Professional Services	A	710,250	236,750	200,396	36,354	15.36%
Other Services & Charges	B	2,814,735	938,245	1,162,139	(223,894)	-23.86%
Communications	E	143,105	47,702	70,285	(22,583)	-47.34%
Information Technology	C	341,450	113,817	71,988	41,828	36.75%
Supplies		43,920	14,640	14,751	(111)	-0.76%
Operations & Maintenance	D	3,719,660	1,239,887	1,349,154	(109,268)	-8.81%
Equipment Purchases	F	459,400	153,133	160,814	(7,680)	-5.02%
Depreciation		843,000	281,000	281,000	-	0.00%
Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 17,505,304**	**$ 5,678,223**	**$ 5,808,737**	**$ (130,514)**	**-2.30%**
Operating Surplus/(Deficit)		**$ 4**	**$ 156,879**	**$ 1,083,779**		

Debt Service Budget vs. Actual

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 14,852,531	$ 4,950,844	$ 4,950,840	$ (4)	0.00%
Use of Reserves for 2016 Bond DS	300,000	100,000	100,000	-	0.00%
Septage Receiving Support - County	109,440	36,480	109,441	72,961	200.00%
Buck Mountain Surcharge	118,600	39,533	65,600	26,067	65.94%
Buck Mountain Lease Revenue	1,600	533	-	(533)	-100.00%
Trust Fund Interest	46,400	15,467	47,562	32,095	207.51%
Reserve Fund Interest	344,000	114,667	232,328	117,661	102.61%
Total Debt Service Revenues	**$ 15,772,571**	**$ 5,257,524**	**$ 5,505,771**	**$ 248,248**	**4.72%**
Debt Service Costs					
Total Principal & Interest	$ 12,295,400	$ 4,098,467	$ 4,098,467	$ -	0.00%
Reserve Additions-Interest	343,000	114,333	232,328	(117,995)	-103.20%
Debt Service Ratio Charge	725,000	241,667	241,667	-	0.00%
Reserve Additions-CIP Growth	2,409,175	803,058	803,058	-	0.00%
Total Debt Service Costs	**$ 15,772,575**	**$ 5,257,525**	**$ 5,375,520**	**$ (117,995)**	**-2.24%**
Debt Service Surplus/(Deficit)	**$ (4)**	**$ (1)**	**$ 130,251**		

Summary

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 33,277,879	$ 11,092,626	$ 12,398,287	$ 1,305,661	11.77%
Total Expenses	33,277,879	10,935,748	11,184,257	(248,509)	-2.27%
Surplus/(Deficit)	**$ 0**	**$ 156,878**	**$ 1,214,030**		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Urban Water Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 7,034,788	$ 2,344,929	$ 2,563,140	$ 218,211	9.31%
Lease Revenue		70,000	23,333	24,385	1,052	4.51%
Miscellaneous		-	-	1,600	1,600	
Interest Allocation		12,000	4,000	4,616	616	15.41%
Total Operating Revenues		**$ 7,116,788**	**$ 2,372,263**	**$ 2,593,742**	**$ 221,479**	**9.34%**
Expenses						
Personnel Cost		$ 1,903,779	$ 601,448	$ 550,532	$ 50,916	8.47%
Professional Services	A	329,250	109,750	146,357	(36,607)	-33.36%
Other Services & Charges	B	582,700	194,233	217,424	(23,191)	-11.94%
Communications	E	64,200	21,400	30,221	(8,821)	-41.22%
Information Technology		65,300	21,767	14,201	7,566	34.76%
Supplies		5,000	1,667	2,417	(751)	-45.05%
Operations & Maintenance	D	1,570,660	523,553	621,695	(98,142)	-18.75%
Equipment Purchases	F	106,600	35,533	40,998	(5,464)	-15.38%
Depreciation		300,000	100,000	100,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 4,927,489	$ 1,609,351	$ 1,723,845	$ (114,494)	-7.11%
Allocation of Support Departments		2,189,298	693,041	645,423	47,618	6.87%
Total Operating Expenses		**$ 7,116,787**	**$ 2,302,392**	**$ 2,369,268**	**$ (66,876)**	**-2.90%**
Operating Surplus/(Deficit)		**$ 1**	**$ 69,871**	**$ 224,474**		

Debt Service Budget vs. Actual

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues					
Debt Service Rate Revenue	$ 5,863,271	$ 1,954,424	$ 1,954,424	$ 0	0.00%
Trust Fund Interest	18,000	6,000	16,314	10,314	171.90%
Reserve Fund Interest	184,000	61,333	124,296	62,962	102.66%
Buck Mountain Surcharge	118,600	39,533	65,600	26,067	65.94%
Lease Revenue	1,600	533	-	(533)	-100.00%
Total Debt Service Revenues	**$ 6,185,471**	**$ 2,061,824**	**$ 2,160,633**	**$ 98,810**	**4.79%**
Debt Service Costs					
Total Principal & Interest	$ 4,190,796	$ 1,396,932	$ 1,396,932	$ -	0.00%
Reserve Additions-Interest	184,000	61,333	124,296	(62,962)	-102.66%
Debt Service Ratio Charge	400,000	133,333	133,333	-	0.00%
Reserve Additions-CIP Growth	1,410,675	470,225	470,225	-	0.00%
Total Debt Service Costs	**$ 6,185,471**	**$ 2,061,824**	**$ 2,124,786**	**$ (62,962)**	**-3.05%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 35,847**		

Rate Center Summary

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Total Revenues	$ 13,302,259	$ 4,434,086	$ 4,754,375	$ 320,289	7.22%
Total Expenses	13,302,258	4,364,216	4,494,054	(129,838)	-2.98%
Surplus/(Deficit)	**$ 1**	**$ 69,871**	**$ 260,321**		
Costs per 1000 Gallons	2.09		1.91		
Thousand Gallons Treated	3,397,700	1,132,567	1,238,232	105,665	9.33%
or					
Flow (MGD)	9.309		10.067		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Crozet Water Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 957,384	$ 319,128	$ 319,128	$ -	0.00%
Lease Revenues		30,000	10,000	10,011	11	0.11%
Interest Allocation		1,700	567	656	89	15.68%
Total Operating Revenues		**$ 989,084**	**$ 329,695**	**$ 329,794**	**$ 100**	**0.03%**
Expenses						
Personnel Cost		$ 288,389	$ 91,131	$ 83,086	$ 8,045	8.83%
Professional Services		30,000	10,000	1,925	8,075	80.75%
Other Services & Charges		126,960	42,320	44,702	(2,382)	-5.63%
Communications		4,450	1,483	2,018	(535)	-36.06%
Information Technology		14,200	4,733	160	4,573	96.62%
Supplies		620	207	823	(616)	-298.03%
Operations & Maintenance	**D**	261,150	87,050	135,300	(48,250)	-55.43%
Equipment Purchases		26,450	8,817	2,249	6,568	74.50%
Depreciation		30,000	10,000	10,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 782,219	$ 255,741	$ 280,263	$ (24,522)	-9.59%
Allocation of Support Departments		206,863	65,493	60,759	4,734	7.23%
Total Operating Expenses		**$ 989,082**	**$ 321,234**	**$ 341,022**	**$ (19,788)**	**-6.16%**
Operating Surplus/(Deficit)		**$ 2**	**$ 8,461**	**$ (11,228)**		

Debt Service Budget vs. Actual

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 995,568	$ 331,856	$ 331,856	$ -	0.00%
Trust Fund Interest	1,800	600	1,665	1,065	177.45%
Reserve Fund Interest	6,700	2,233	4,588	2,355	105.44%
Total Debt Service Revenues	**$ 1,004,068**	**$ 334,689**	**$ 338,109**	**$ 3,420**	**1.02%**
Debt Service Costs					
Total Principal & Interest	$ 426,071	$ 142,024	$ 142,024	$ -	0.00%
Reserve Additions-Interest	6,700	2,233	4,588	(2,355)	-105.44%
Reserve Additions-CIP Growth	571,300	190,433	190,433	-	0.00%
Total Debt Service Costs	**$ 1,004,071**	**$ 334,690**	**$ 337,045**	**$ (2,355)**	**-0.70%**
Debt Service Surplus/(Deficit)	**$ (3)**	**$ (1)**	**$ 1,064**		

Rate Center Summary

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 1,993,152	$ 664,384	$ 667,903	$ 3,519	0.53%
Total Expenses	1,993,153	655,924	678,067	(22,143)	-3.38%
Surplus/(Deficit)	**$ (1)**	**$ 8,460**	**$ (10,164)**		
Costs per 1000 Gallons	5.02		4.79		
Thousand Gallons Treated	196,946	65,649	71,268	5,619	8.56%
Flow (MGD)	0.540		0.579		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Scottsville Water Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	*Budget FY 2019*	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues						
Operations Rate Revenue		$ 443,328	$ 147,776	$ 147,776	$ -	0.00%
Interest Allocation		750	250	293	43	17.03%
Total Operating Revenues		**$ 444,078**	**$ 148,026**	**$ 148,069**	**$ 43**	**0.03%**
Expenses						
Personnel Cost		$ 153,885	$ 48,648	$ 43,850	$ 4,797	9.86%
Professional Services		20,000	6,667	6,583	83	1.25%
Other Services & Charges		28,680	9,560	9,131	429	4.48%
Communications		3,210	1,070	1,405	(335)	-31.28%
Information Technology		7,000	2,333	80	2,253	96.57%
Supplies		750	250	-	250	100.00%
Operations & Maintenance	**D**	66,570	22,190	27,656	(5,466)	-24.63%
Equipment Purchases	**F**	14,000	4,667	50,433	(45,767)	-980.71%
Depreciation		20,000	6,667	6,667	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 314,095	$ 102,051	$ 145,806	$ (43,755)	-42.88%
Allocation of Support Departments		129,988	41,173	38,063	3,111	7.56%
Total Operating Expenses		**$ 444,083**	**$ 143,225**	**$ 183,869**	**$ (40,644)**	**-28.38%**
Operating Surplus/(Deficit)		**$ (5)**	**$ 4,801**	**$ (35,800)**		

Debt Service Budget vs. Actual

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Revenues					
Debt Service Rate Revenue	$ 129,280	$ 43,093	$ 43,092	$ (1)	0.00%
Trust Fund Interest	400	133	476	342	256.72%
Reserve Fund Interest	3,300	1,100	2,300	1,200	109.08%
Total Debt Service Revenues	**$ 132,980**	**$ 44,327**	**$ 45,868**	**$ 1,541**	**3.48%**
Debt Service Costs					
Total Principal & Interest	$ 129,680	$ 43,227	$ 43,227	$ -	0.00%
Reserve Additions-Interest	3,300	1,100	2,300	(1,200)	
Reserve Additions-CIP Growth	-	-	-	-	
Total Debt Service Costs	**$ 132,980**	**$ 44,327**	**$ 45,527**	**$ (1,200)**	**-2.71%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ 341**		

Rate Center Summary

	Budget FY 2019	*Budget Year-to-Date*	*Actual Year-to-Date*	*Budget vs. Actual*	*Variance Percentage*
Total Revenues	$ 577,058	$ 192,353	$ 193,936	$ 1,583	0.82%
Total Expenses	577,063	187,551	229,395	(41,844)	-22.31%
Surplus/(Deficit)	**$ (5)**	**$ 4,801**	**$ (35,459)**		
Costs per 1000 Gallons	23.70		32.32		
Thousand Gallons Treated	18,738	6,246	5,689	(557)	-8.92%
or					
Flow (MGD)	0.051		0.046		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Urban Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 7,277,082	$ 2,425,694	$ 3,170,382	$ 744,688	30.70%
Stone Robinson WWTP		28,084	9,361	7,532	(1,829)	-19.54%
Septage Acceptance		410,000	136,667	150,402	13,735	10.05%
Nutrient Credits		90,000	30,000	104,060	74,060	246.87%
Miscellaneous Revenue		-	-	891	891	
Interest Allocation		12,500	4,167	4,877	710	17.04%
Total Operating Revenues		**$ 7,817,666**	**$ 2,605,889**	**$ 3,438,144**	**$ 832,255**	**31.94%**
Expenses						
Personnel Cost		$ 1,282,792	$ 404,486	$ 379,804	$ 24,682	6.10%
Professional Services		54,000	18,000	-	18,000	100.00%
Other Services & Charges	B	1,816,225	605,408	791,809	(186,401)	-30.79%
Communications		10,430	3,477	6,319	(2,842)	-81.76%
Information Technology		57,250	19,083	1,859	17,224	90.26%
Supplies		2,700	900	201	699	77.69%
Operations & Maintenance		1,408,900	469,633	430,574	39,059	8.32%
Equipment Purchases		74,500	24,833	20,063	4,770	19.21%
Depreciation		470,000	156,667	156,667	(0)	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		$ 5,176,797	$ 1,702,487	$ 1,787,296	$ (84,809)	-4.98%
Allocation of Support Departments		2,640,868	836,236	772,363	63,873	7.64%
Total Operating Expenses		**$ 7,817,665**	**$ 2,538,724**	**$ 2,559,660**	**$ (20,936)**	**-0.82%**
Operating Surplus/(Deficit)		**$ 1**	**$ 67,165**	**$ 878,485**		

Debt Service Budget vs. Actual

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 7,854,820	$ 2,618,273	$ 2,618,272	$ (1)	0.00%
Use of Reserves for 2016 Bond DS	300,000	100,000	100,000	-	0.00%
Septage Receiving Support - County	109,440	36,480	109,441	72,961	200.00%
Trust Fund Interest	26,200	8,733	29,060	20,327	232.75%
Reserve Fund Interest	148,000	49,333	99,762	50,429	102.22%
Total Debt Service Revenues	**$ 8,438,460**	**$ 2,812,820**	**$ 2,956,536**	**$ 143,716**	**5.11%**
Debt Service Costs					
Total Principal & Interest	$ 7,539,261	$ 2,513,087	$ 2,513,087	$ -	0.00%
Reserve Additions-Interest	148,000	49,333	99,762	(50,429)	-102.22%
Debt Service Ratio Charge	325,000	108,333	108,333	-	0.00%
Reserve Additions-CIP Growth	426,200	142,067	142,067	-	0.00%
Total Debt Service Costs	**$ 8,438,461**	**$ 2,812,820**	**$ 2,863,249**	**$ (50,429)**	**-1.79%**
Debt Service Surplus/(Deficit)	**$ (1)**	**$ (0)**	**$ 93,286**		

Rate Center Summary

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 16,256,126	$ 5,418,709	$ 6,394,680	$ 975,971	18.01%
Total Expenses	16,256,126	5,351,544	5,422,909	(71,365)	-1.33%
Surplus/(Deficit)	**$ (0)**	**$ 67,165**	**$ 971,771**		
Costs per 1000 Gallons	2.31		1.73		
Thousand Gallons Treated	3,390,400	1,130,133	1,477,345	347,212	30.72%
or					
Flow (MGD)	9.289		12.011		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Operations Rate Revenue		$ 372,720	$ 124,240	$ 124,240	$ -	0.00%
Interest Allocation		600	200	238	38	19.10%
Total Operating Revenues		**$ 373,320**	**$ 124,440**	**$ 124,478**	**$ 38**	**0.03%**
Expenses						
Personnel Cost		$ 94,490	$ 29,796	$ 28,097	$ 1,699	5.70%
Professional Services		3,000	1,000	-	1,000	
Other Services & Charges		39,510	13,170	13,517	(347)	-2.64%
Communications		2,600	867	1,364	(498)	-57.41%
Information Technology		3,350	1,117	-	1,117	100.00%
Supplies		100	33	-	33	100.00%
Operations & Maintenance		121,450	40,483	35,788	4,696	11.60%
Equipment Purchases		2,900	967	800	167	17.24%
Depreciation		5,000	1,667	1,667	0	0.00%
Subtotal Before Allocations		$ 272,400	$ 89,100	$ 81,233	$ 7,867	8.83%
Allocation of Support Departments		100,915	31,988	29,720	2,268	7.09%
Total Operating Expenses		**$ 373,315**	**$ 121,088**	**$ 110,953**	**$ 10,135**	**8.37%**
Operating Surplus/(Deficit)		**$ 5**	**$ 3,352**	**$ 13,525**		

Debt Service Budget vs. Actual

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues					
Debt Service Rate Revenue	$ 1,586	$ 529	$ 528	$ (1)	-0.13%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	1,000	333	697	364	109.10%
Total Debt Service Revenues	**$ 2,586**	**$ 862**	**$ 1,225**	**$ (1)**	**-0.08%**
Debt Service Costs					
Total Principal & Interest	$ 1,586	$ 529	$ 529	$ -	0.00%
Reserve Additions-Interest	1,000	333	697	(364)	-109.10%
Total Debt Service Costs	**$ 2,586**	**$ 862**	**$ 1,226**	**$ (364)**	**-42.19%**
Debt Service Surplus/(Deficit)	**$ -**	**$ -**	**$ (1)**		

Rate Center Summary

	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Total Revenues	$ 375,906	$ 125,302	$ 125,703	$ 401	0.32%
Total Expenses	375,901	121,950	112,179	9,771	8.01%
Surplus/(Deficit)	**$ 5**	**$ 3,352**	**$ 13,525**		
Costs per 1000 Gallons	8.60		7.28		
Thousand Gallons Treated	43,412	14,471	15,232	761	**5.26%**
or					
Flow (MGD)	0.119		0.124		

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

Operating Budget vs. Actual

	Notes		Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Revenues										
Operations Rate Revenue		$	301,872	$	100,624	$	100,624	$	-	0.00%
Interest Allocation			500		167		195		28	16.83%
Total Operating Revenues		**$**	**302,372**	**$**	**100,791**	**$**	**100,819**	**$**	**28**	**0.03%**
Expenses										
Personnel Cost		$	94,515	$	29,805	$	28,097	$	1,708	5.73%
Professional Services			2,000		667		-		667	100.00%
Other Services & Charges			28,400		9,467		8,519		948	10.01%
Communications			2,630		877		1,683		(807)	-92.02%
Information Technology			2,350		783		-		783	100.00%
Supplies			100		33		446		(412)	-1236.53%
Operations & Maintenance			57,850		19,283		13,426		5,858	30.38%
Equipment Purchases			3,200		1,067		800		267	25.00%
Depreciation			18,000		6,000		6,000		-	0.00%
Subtotal Before Allocations		$	209,045	$	67,981	$	58,971	$	9,011	13.25%
Allocation of Support Departments			93,328		29,580		27,525		2,055	6.95%
Total Operating Expenses		**$**	**302,372**	**$**	**97,562**	**$**	**86,496**	**$**	**11,066**	**11.34%**
Operating Surplus/(Deficit)		**$**	**(0)**	**$**	**3,229**	**$**	**14,323**			

Debt Service Budget vs. Actual

		Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Revenues									
Debt Service Rate Revenue	$	8,006	$	2,669	$	2,668	$	(1)	-0.02%
Trust Fund Interest		-		-		48		48	
Reserve Fund Interest		1,000		333		685		352	105.58%
Total Debt Service Revenues	**$**	**9,006**	**$**	**3,002**	**$**	**3,401**	**$**	**399**	**13.29%**
Debt Service Costs									
Total Principal & Interest	$	8,006	$	2,669	$	2,669	$	-	0.00%
Reserve Additions-Interest		-		-		685		(685)	
Estimated New Principal & Interest		1,000		333		333		-	
Total Debt Service Costs	**$**	**9,006**	**$**	**3,002**	**$**	**3,687**	**$**	**(685)**	**-22.83%**
Debt Service Surplus/(Deficit)	**$**	**-**	**$**	**-**	**$**	**(286)**			

Rate Center Summary

		Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Total Revenues	$	311,378	$	103,793	$	104,220	$	427	0.41%
Total Expenses		311,378		100,564		90,183		10,381	10.32%
Surplus/(Deficit)	**$**	**(0)**	**$**	**3,229**	**$**	**14,037**			
Costs per 1000 Gallons		15.14				9.83			
Thousand Gallons Treated		19,966		6,655		8,799		2,144	**32.21%**
or									
Flow (MGD)		0.055				0.072			

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Administration

Operating Budget vs. Actual

	Notes		Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Revenues										
Payment for Services SWA		$	460,000	$	153,333	$	153,333	$	(0)	0.00%
Miscellaneous Revenue			2,000		667		2,603		1,936	290.41%
Total Operating Revenues		**$**	**462,000**	**$**	**154,000**	**$**	**155,936**	**$**	**1,936**	**1.26%**
Expenses										
Personnel Cost		$	1,796,150	$	562,864	$	549,994	$	12,870	2.29%
Professional Services			228,000		76,000		38,679		37,321	49.11%
Other Services & Charges			140,980		46,993		43,000		3,993	8.50%
Communications			20,280		6,760		9,231		(2,471)	-36.55%
Information Technology			138,500		46,167		25,374		20,792	45.04%
Supplies			21,000		7,000		9,047		(2,047)	-29.25%
Operations & Maintenance			60,400		20,133		9,754		10,379	51.55%
Equipment Purchases			27,500		9,167		4,521		4,646	50.68%
Depreciation			-		-		-		-	
Total Operating Expenses		**$**	**2,432,810**	**$**	**775,084**	**$**	**689,600**	**$**	**85,484**	**11.03%**

Department Summary

Net Costs Allocable to Rate Centers		**$**	**(1,970,810)**	**$**	**(621,084)**	**$**	**(533,664)**	**$**	**(87,420)**	**14.08%**
Allocations to the Rate Centers										
Urban Water	44.00%	**$**	**867,157**	**$**	**273,277**	**$**	**234,812**	**$**	**38,465**	
Crozet Water	4.00%	**$**	**78,832**		**24,843**		**21,347**		**3,497**	
Scottsville Water	2.00%	**$**	**39,416**		**12,422**		**10,673**		**1,748**	
Urban Wastewater	48.00%	**$**	**945,989**		**298,120**		**256,159**		**41,962**	
Glenmore Wastewater	1.00%	**$**	**19,708**		**6,211**		**5,337**		**874**	
Scottsville Wastewater	1.00%	**$**	**19,708**		**6,211**		**5,337**		**874**	
	100.00%	**$**	**1,970,810**	**$**	**621,084**	**$**	**533,664**	**$**	**87,420**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Maintenance

Operating Budget vs. Actual

	Notes		Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Revenues										
Miscellaneous Revenue			-		-		1,534		1,534	
Total Operating Revenues		**$**	**-**	**$**	**-**	**$**	**1,534**	**$**	**1,534**	
Expenses										
Personnel Cost		$	1,304,247	$	410,456	$	364,341	$	46,115	11.24%
Professional Services			-		-		-		-	
Other Services & Charges			17,500		5,833		7,919		(2,085)	-35.75%
Communications			17,325		5,775		10,300		(4,525)	-78.35%
Information Technology			6,500		2,167		2,625		(458)	-21.15%
Supplies			2,000		667		315		352	52.73%
Operations & Maintenance			64,300		21,433		24,678		(3,245)	-15.14%
Equipment Purchases			105,650		35,217		30,396		4,821	13.69%
Depreciation			-		-		-		-	
Total Operating Expenses		**$**	**1,517,522**	**$**	**481,548**	**$**	**440,574**	**$**	**40,974**	**8.51%**

Department Summary

Net Costs Allocable to Rate Centers		**$**	**(1,517,522)**	**$**	**(481,548)**	**$**	**(439,040)**	**$**	**(39,440)**	**8.19%**
Allocations to the Rate Centers										
Urban Water	30.00%	**$**	**455,256**	**$**	**144,464**	**$**	**131,712**	**$**	**12,752**	
Crozet Water	3.50%		**53,113**		**16,854**		**15,366**		**1,488**	
Scottsville Water	3.50%		**53,113**		**16,854**		**15,366**		**1,488**	
Urban Wastewater	56.50%		**857,400**		**272,074**		**248,057**		**24,017**	
Glenmore Wastewater	3.50%		**53,113**		**16,854**		**15,366**		**1,488**	
Scottsville Wastewater	3.00%		**45,526**		**14,446**		**13,171**		**1,275**	
	100.00%	**$**	**1,517,522**	**$**	**481,548**	**$**	**439,040**	**$**	**42,508**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Laboratory

Operating Budget vs. Actual

	Notes	Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
N/A						
Expenses						
Personnel Cost		$ 301,100	$ 94,714	$ 92,761	$ 1,953	2.06%
Professional Services		-	-	-	-	
Other Services & Charges		14,230	4,743	1,658	3,086	65.05%
Communications		800	267	400	(134)	
Information Technology		2,500	833	-	833	100.00%
Supplies		2,150	717	294	423	58.97%
Operations & Maintenance	D	53,500	17,833	25,727	(7,893)	-44.26%
Equipment Purchases		72,100	24,033	533	23,500	97.78%
Depreciation		-	-	-	-	
Total Operating Expenses		**$ 446,380**	**$ 143,140**	**$ 121,373**	**$ 21,767**	**15.21%**

Department Summary

		Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Net Costs Allocable to Rate Centers		**$ (446,380)**	**$ (143,140)**	**$ (121,373)**	**$ (21,767)**	**15.21%**
Allocations to the Rate Centers						
Urban Water	44.00%	**$ 196,407**	**$ 62,982**	**$ 53,404**	**$ 9,578**	
Crozet Water	4.00%	**17,855**	**5,726**	**4,855**	**871**	
Scottsville Water	2.00%	**8,928**	**2,863**	**2,427**	**435**	
Urban Wastewater	47.00%	**209,799**	**67,276**	**57,045**	**10,231**	
Glenmore Wastewater	1.50%	**6,696**	**2,147**	**1,821**	**327**	
Scottsville Wastewater	1.50%	**6,696**	**2,147**	**1,821**	**327**	
	100.00%	**$ 446,380**	**$ 143,140**	**$ 121,373**	**$ 21,767**	

Rivanna Water & Sewer Authority
Monthly Financial Statements - October 2018

Engineering

Operating Budget vs. Actual

		Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	Budget vs. Actual	Variance Percentage
Revenues						
Payment for Services SWA		$ -	$ -	$ -	$ -	
Total Operating Revenues		**$ -**	**$ -**	**$ -**	**$ -**	
Expenses						
Personnel Cost		$ 1,210,438	$ 379,704	$ 377,649	$ 2,055	0.54%
Professional Services		44,000	14,667	6,852	7,815	53.28%
Other Services & Charges	**B**	19,550	6,517	24,459	(17,942)	-275.33%
Communications		17,180	5,727	7,344	(1,617)	-28.24%
Information Technology	**C**	44,500	14,833	27,689	(12,855)	-86.66%
Supplies		9,500	3,167	1,208	1,959	61.86%
Operations & Maintenance	**D**	54,880	18,293	24,556	(6,263)	-34.24%
Equipment Purchases		26,500	8,833	10,021	(1,188)	-13.44%
Depreciation & Capital Reserve Transfers		-	-	-	-	
Total Operating Expenses		**$ 1,426,548**	**$ 451,740**	**$ 479,777**	**$ (28,036)**	**-6.21%**

Department Summary

Net Costs Allocable to Rate Centers		**$ (1,426,548)**	**$ (451,740)**	**$ (479,777)**	**$ 28,036**	**-6.21%**
Allocations to the Rate Centers						
Urban Water	47.00%	**$ 670,477**	**$ 212,318**	**$ 225,495**	**$ (13,177)**	
Crozet Water	4.00%	**57,062**	**18,070**	**19,191**	**(1,121)**	
Scottsville Water	2.00%	**28,531**	**9,035**	**9,596**	**(561)**	
Urban Wastewater	44.00%	**627,681**	**198,766**	**211,102**	**(12,336)**	
Glenmore Wastewater	1.50%	**21,398**	**6,776**	**7,197**	**(421)**	
Scottsville Wastewater	1.50%	**21,398**	**6,776**	**7,197**	**(421)**	
	100.00%	**$ 1,426,548**	**$ 451,740**	**$ 479,777**	**$ (28,036)**	

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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: DECEMBER 11, 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. Birdwood Raw Water Main
2. Crozet Water Treatment Plant Expansion
3. Crozet Interceptor Pump Stations Bypass & Isolation Valves
4. Wholesale Water Master Metering
5. Sugar Hollow Reservoir to Ragged Mountain Reservoir Transfer Flow Meter
6. Crozet Finished Water Pump Station
7. Interceptor Sewer & Manhole Repair
8. Urgent and Emergency Repairs
9. Piney Mountain Tank Rehabilitation (on hold until April 2019)

Design and Bidding

10. Observatory Water Treatment Plant Expansion
11. South Rivanna Water Treatment Plant Improvements
12. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
13. Crozet Flow Equalization Tank
14. Beaver Creek Dam Alterations
15. Beaver Creek Raw Water Pump Station and Hypolimnetic Oxygenation System
16. Crozet Interceptor Pump Station Rebuilds
17. Buck's Elbow & Crozet Waterball Tank Painting
18. Valve Repair – Replacement (Phase 2)

19. MCAWRRF Digester Sludge Storage Improvements
20. MCAWRRF Aluminum Slide Gate Replacements
21. Glenmore Secondary Clarifier Coating
22. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
23. Scottsville WTP – Finished Water Metering Improvements
24. Avon to Pantops Water Main (on hold until completion of the Urban Water Master Plan)

Planning and Studies

25. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
26. Urban Water Demand and Safe Yield Study
27. Urban Finished Water Infrastructure Master Plan
28. South Rivanna River Crossing and North Rivanna Transmission Main
29. Route 29 Pump Station
30. South Rivanna Hydropower Plant Decommissioning
31. Security Enhancements
32. Upper Schenks Branch Interceptor, Phase II
33. Engineering and Administration Building
34. Asset Management Plan

O&M Related Projects

35. NRWTP Raw Metering Improvements
36. NRWTP Sludge Lagoon Study and Needs Assessment
37. NRWTP High Service Pump Replacement
38. MCAWRRF Cogeneration System Analysis
39. SRWTP Future Site Development Analysis

1. Birdwood Raw Water Main

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	E.C. Pace
Construction Start:	November 2018
Percent Complete:	5%
Base Construction Contract + Change Orders to Date = Current Value:	$2,593,726
Expected Completion:	October 2019
Total Capital Project Budget:	$4,000,000

Current Status:

A Notice to Proceed was issued to the contractor on November 26, 2018, and a preconstruction conference was held on December 5, 2018. Surveying and installation of erosion control measures are underway. Water line installation will begin in January/February after piping is manufactured and delivered to the site.

History:

RWSA and the UVA Foundation wish to expedite construction of the portion of the 36-inch raw water main through the Birdwood property. This would enable pipeline work to proceed just ahead of the planned golf course reconstruction project to prevent subsequent disruption to the property and adjacent neighbors, as well as increased water line construction costs. The golf course reconstruction project is planned to be underway in November 2018. This work includes installation of approximately 6,100 linear feet of 36-inch raw water main along the eastern property boundary of the golf course.

2. Crozet Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Orders Construction Co.
Construction Start:	December 2018
Percent Completion:	0%
Base Construction Contract + Change Order to Date = Current Value:	$7,170,000
Expected Completion Date:	December 2020
Total Project Budget:	$8,500,000

Current Status:

A Notice of Award has been issued and the contractor is in the process of securing bonds and insurance. A preconstruction meeting was held on November 15, 2018. A Notice to Proceed will be issued as soon as bonds and insurance are finalized. The contractor plans to start working on-site in February 2019.

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% (from 1 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.

3. Crozet Interceptor Pump Stations Bypass and Isolation Valves

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	Anderson Construction
Construction Start:	September 2018
Percent Completion:	20%
Base Construction Contract + Change Order to Date = Current Value:	$361,820
Expected Completion Date:	January 2019

Total Capital Project Budget: $720,000

Current Status:

The contractor has begun excavation work at two of the pump stations, with piping work to begin in the first week of December.

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. Contract Documents were advertised for bidding and bids were opened on July 10, 2018. A Notice of Award was provided to Anderson Construction on August 6, 2018.

4. Wholesale Water Master Metering

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	97%
Base Construction Contract + Change Orders to Date = Current Value:	$2,228,254 - $284,104.24 = $1,944,149.76
Expected Completion Date:	March 2019
Total Capital Project Budget:	$3,200,000

Current Status:

Three water treatment plant flow meters, and all 25 distribution system flow meters have been installed. Of those 25 meters, 18 are currently functional and 7 are experiencing reporting errors due to either hardware or programming issues. Our consultant, meter representatives and staff have found practical solutions for all identified issues, and expect to implement these solutions by the end of the calendar year. Following meter calibration by an independent consultant in early 2019, staff anticipates having a fully functioning metering system by March 2019.

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.

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.

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

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	G.L. Howard
Construction Start:	October 2018
Percent Complete	15%
Base Construction Contract + Change Orders to Date = Current Value:	$354,905
Expected Completion:	February 2019
Total Capital Project Budget:	$383,241

<u>Current Status</u>:

A Demolition Permit was issued for the Sugar Hollow Gatekeeper's House by Albemarle County during the week of November 12, 2018. All asbestos has been removed by the asbestos removal subcontractor, and demolition of the Gatekeeper's House is underway. Once the Gatekeeper's House has been demolished, the remaining outbuildings on site will be demolished, and improvements to the Sugar Hollow to Ragged Mountain Reservoir transfer line will begin. This project requires the Sugar Hollow to Ragged Mountain Reservoir transfer line to be out of service.

<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 the initial Work Authorization. A subsequent Work Authorization covering the purchase of all remaining materials, construction and demolition was issued to the contractor on September 28, 2018. The Notice to Proceed (NTP) was issued to the contractor on October 1, 2018.

6. 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:	$1,949,386
Expected Completion Date:	January 2019
Total Capital Project Budget:	$2,600,000

Current Status:

Start-up and testing of equipment continues. Operations and Maintenance Manuals have been distributed and training has been completed. The new pump station will be put into service at the conclusion of the demonstration period. Due to a malfunction of one of two pumps, the 30-day demonstration period will be re-started this month once the repairs are complete. A number of punch list items have already been completed and following completion of the demonstration period, the existing pump station will be demolished.

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 was 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 was 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.

7. Interceptor Sewer and Manhole Repair

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast

Construction Start: November 2017
Percent Complete: 10%
Base Construction Contract +
Change Orders to Date = Current Value: $1,244,337.19
Expected Completion: 2020
Total Capital Project Budget: $1,941,000

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 begun and completion is expected this winter as some additional cleaning of interceptor sections will be required to complete the investigation in easement areas with difficult access conditions. Initial results from the investigation have been provided to Frazier Engineering for review. A condition assessment report for a portion of the Morey Creek Interceptor has been completed with rehabilitation work to follow. 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.

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
2018-07	Stillhouse Water Line Emergency Repair – Georgetown Rd	$30,000
2017-03	Crozet Sewer Force Main Air Release Valve Repair	$135,000
2018-01	Rivanna Interceptor – RVI-MH-32 Erosion Repair	$50,000
2018-06	South Rivanna Dam Apron and River Bank Repairs	$200,000

- Stillhouse Water Line Emergency Repair – Georgetown Rd

  On Sunday, November 25, 2018, RWSA was notified by the ACSA that there was an apparent water line leak on Georgetown Road near the intersection with Old Forge Road in the vicinity of our 12” Stillhouse Water Line. RWSA personnel responded, confirmed that it was our water line, and began preparing and mobilizing for the repair. In coordination with the ACSA, a shutdown procedure was determined, and impacted customers were notified. The water line was repaired and placed back into service on Monday morning and traffic control was removed by mid-day. Asphalt and concrete repairs are being coordinated with contractors to bring surface features back to pre-existing conditions.

- Crozet Sewer Force Main Air Release Valve Repair

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

- 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 winter.

- South Rivanna Dam Apron and River Bank Repairs

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

9. Piney Mountain Tank Rehabilitation (on hold until April 2019)

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

Current Status:

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.

History:

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

The project was advertised for bid on November 28, 2017 and bids were opened on January 9, 2018. At its January meeting, the RWSA Board of Directors approved staff's recommendation of award to Utility Service Co., Inc., the apparent low bidder on the project.

10. Observatory Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	25% Design
Construction Start:	October 2019
Completion:	2023
Approved Capital Budget:	$18,630,000
Current Project Estimate:	$19,700,000

Current Status:

A project kickoff meeting with staff was held on November 14, 2018. 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. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

11. South Rivanna Water Treatment Plant Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	25% Design
Construction Start:	October 2019
Completion:	December 2022
Approved Capital Budget:	$7,500,000
Current Project Estimate:	$15,000,000

Current Status:

A project kickoff meeting with staff was held on November 13, 2018. Design documents will be completed by May 2019. Project scope and budget have increased to address treatment system and building needs identified during the PER phase.

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. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

12. 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:	2022
Completion:	2025
Approved Capital Budget:	$6,526,000
Current Project Estimate:	$18,000,000

Current Status:

A Work Authorization is being executed with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process for this portion of the project. 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.

13. Crozet Flow Equalization Tank

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	25% Design
Construction Start:	2019
Completion:	2020
Approved Capital Budget:	\$3,300,000
Current Project Estimate:	\$4,860,000

Current Status:

A geotechnical analysis and report, field survey work, and existing pump station evaluation have all been completed as part of the design process. Design documents will be completed 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.

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

14. Beaver Creek Dam Alterations

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	5% Design
Construction Start:	2021
Completion:	2023
Approved Capital Budget:	$8,830,000
Current Project Estimate:	$15,000,000

Current Status:

A Preliminary Engineering Report has been completed for the selected design alternative. Schnabel Engineering is beginning final design of the dam improvements this month. Staff anticipates the project will bid in fall of 2020 with construction to begin in 2021.

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

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

15. Beaver Creek Raw Water Pump Station, Intake and Hypolimnetic Oxygenation System

Design Engineer:	Hazen & Sawyer
Project Start:	August 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2021
Completion:	2023
Approved Capital Budget:	$6,100,000
Current Project Estimate:	$8,000,000

Current Status:

Staff is negotiating a Work Authorization (scope and fee) with Hazen and Sawyer for site selection work for the new Raw Water Pump Station and permitting for the Pump Station, Intake, and Beaver Creek Dam Upgrades. This work is expected to begin in December 2018.

History:

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

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.

16. Crozet Interceptor Pump Station Rebuilds

Design Engineer:	TBD
Project Start:	July 2018
Project Status:	25% Design
Construction Start:	2019
Completion:	2023
Total Capital Project Budget:	$525,000

Current Status:

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

History:

The Crozet Interceptor Pump Stations were constructed in the 1980's and many of the components are still original. The project will include the replacement of pumps and valves at Pump Station No. 2 in order to improve pumping capabilities at this location and provide spare parts for the pumps at Pump Station No. 1. This work will also include roof replacements at all four pump stations, siding replacement for the wet well enclosure at Pump Station No. 3, and installation of a new water well at Pump Station No. 3. Components of this project will be coordinated and timed to properly coincide with the Crozet Flow Equalization Tank project.

17. Bucks Elbow Tank and Crozet Waterball Tank Painting

Design Engineer:	TBD
Project Start:	Summer 2019
Project Status:	Work Authorization Under Negotiation
Construction Start:	Spring 2021
Completion:	Summer 2021
Approved Capital Budget:	$1,200,000
Current Project Estimate:	$1,330,000

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. Construction for this project is scheduled to begin in Spring 2021, following completion of the Crozet WTP Expansion in October 2020.

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 2021.

18. Valve Repair – Replacement (Phase 2)

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

Current Status:

The Bidding Phase for the project is ongoing, as a Request for Bids (RFB) was issued on November 6, 2018. A Pre-Construction Conference was held on November 19, 2018. An Addendum will be issued on November 30, 2018. Staff anticipates making a bid award recommendation at the January 2019 Board Meeting, 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. In addition, valves that are identified in the condition assessment as being inoperable and repairable will be repaired as a part of the project. Phase 1 of the Valve Repair-Replacement Project replaced several inoperable and unrepairable valves in the North Rivanna Finished Water System. Phase 2 will continue replacing inoperable and unrepairable valves in the North Rivanna Finished Water System, but it will also replace (and potentially repair) valves on the South Rivanna, Crozet, Pantops, and Southern Loop Finished Water Systems. Once all specified valves have been repaired/replaced in Phase 2, the focus will shift to replacing older isolation valves in subsequent phases. Numerous valves in the North Rivanna and South Rivanna Finished Water Systems are 50+ years old and replacing these valves will enhance the resiliency and reliability of the two systems.

19. MCAWRRF Digester Sludge Storage Improvements

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

Current Status:

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

History:

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

20. MCAWRRF Aluminum Slide Gate Replacements

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018

Project Status:	5% Design
Construction Start:	March 2019
Completion:	July 2019
Total Capital Project Budget:	$470,000

Current Status:

A project kick-off meeting was held in November and preliminary design is underway.

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.

21. Glenmore Secondary Clarifier Coating

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	Fall 2018
Project Status:	Preliminary Design
Construction Start:	2019
Completion:	2019
Approved Capital Budget:	$50,000
Current Project Estimate:	$110,000

Current Status:

Engineering staff is developing specifications and negotiating a fee with Lyttle Utilities for a change order to their MCAWRRF Digester Coating project for blasting and coating both clarifiers.

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.

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

Design Engineer:	Schnabel Engineering
Project Start:	December 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2019
Completion:	2021
Approved Capital Budget:	$940,000
Current Project Estimate:	$1,140,000

Current Status:

Design will begin in the winter 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.

23. Scottsville WTP – Finished Water Metering Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	September 2018
Project Status:	25% Design
Construction Start:	February 2019
Completion:	May 2019
Total Capital Project Budget:	$145,000

Current Status:

SEH has begun preliminary design work and final design documents are anticipated to be complete in December 2018.

History:

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

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

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

Current Status:

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

History:

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

25. 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 is expected to be completed by the end of December 2018. Easement acquisition negotiations will begin 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.

Baker is now completing the routing study. Preliminary design, plat creation and the acquisition of easements will take place as soon as the final route determination has been made. Property owners have been contacted to request permission to access properties for topographical surveying which will take place following completion of the PER. A recommendation for a tentative final alignment was presented at a community information meeting in June 2018.

26. Urban Water Demand and Safe Yield Study

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	10% complete
Completion:	August 2019
Total Capital Project Budget:	$154,000

Current Status:

A work authorization with Hazen and Sawyer has been executed and data is being compiled from RWSA, ACSA and the City.

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.

27. Urban Finished Water Infrastructure Master Plan

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2018
Project Status:	5% complete
Completion:	January 2020
Total Capital Project Budget:	$253,000

Current Status:

A project kick-off meeting is anticipated this month.

History:

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

28. South Rivanna River Crossing and North Rivanna Transmission Main

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

Current Status:

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

History:

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

29. Route 29 Pump Station

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2019
Project Status:	Planning
Construction Start:	2021
Completion:	2022
Total Capital Project Budget:	$2,300,000

Current Status:

Design of the pump station will begin in the summer of 2019.

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.

30. 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

Approved Capital Budget: $400,000
Current Project Estimate: $750,000

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. As part of the application, a draft decommissioning plan has been developed and is being reviewed by RWSA. Due to a recent significant wet weather event, returning the 72-inch diameter penstock to a reservoir drain is being considered. Modifications to the decommissioning plan may be necessary as a result.

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.

31. Security Enhancements

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

Current Status:

RWSA Engineering staff has begun addressing priority items discussed during the meeting it held with RWSA Operations staff in October 2018 and determining which portions of the project will require additional input from various RWSA departments. A meeting was held among RWSA Engineering and IT staff and ACSA to discuss how access control and intrusion detection systems have been implemented into that utility's day-to-day operations. Meetings with additional utilities and organizations will be conducted to gain additional perspective on access control and other security measures. It is expected that an access control system will be selected by RWSA staff and implemented into the CZWTP Expansion Project as an initial measure. As the project's scope of work is refined, a consultant will be selected to provide project assistance where needed.

History:

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

32. Upper Schenks Branch Interceptor, Phase II

Design Engineer:	Frazier Engineering, P.A.
Project Start:	TBD
Project Status:	Planning
Construction Start:	TBD
Completion:	TBD
Approved Capital Budget:	$4,485,000
Current Project Estimate:	$3,985,000

Current Status:

Discussions are underway to determine an alignment for the replacement sewer line, generally located between the McIntire Recycling Center and Preston Avenue along McIntire Road.

History:

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

Ext, and the section though the Route 250 Interchange.

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

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 layouts for an expanded Administration Building have been developed along with a draft final report. The report and layouts are being reviewed by a committee at RWSA to provide any additional comments before the documents are finalized.

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. Asset Management Plan

Design Consultant:	GHD, Inc.
Project Start:	July 2018

Project Status:	15% Complete (Phase 1)
Completion:	2020
Total Capital Project Budget:	$500,000

Current Status:

As part of the first phase, a kick-off meeting with GHD was held on October 12, 2018, Asset Management awareness training was held on November 7, 2018 and the Asset Management Program Development Workshop was held on November 8, 2018. The Gap Assessment process has begun and related workshops are being scheduled.

History:

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

O&M Related Projects

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

#	Project Description	Total Approx. Value
35	NRWTP Raw Water Metering Improvements	$135,000
36	NRWTP Sludge Lagoon Study and WTP Needs Assessment	$60,100
37	NRWTP High Service Pump Replacement	$200,000
38	MCAWRRF Cogeneration System Analysis	$48,300
39	SRWTP Future Site Development Analysis	$15,000

- NRWTP Raw Water Metering Improvements

The NRWTP is permitted to provide up to 2.0 MGD of potable drinking water to RWSA customers located in the Urban service area. After water is pumped from the raw water pump station on the North Fork Rivanna River, the raw water flow is metered by an orifice plate, or insert style meter, prior to entering the rap mix chamber. The meter is located behind the existing powdered activated carbon feed system and is difficult to access. In addition, RWSA recognizes that the accuracy of this style of meter is reduced by laying length conditions in comparison to modern magnetic flow meters which have been installed at other locations. RWSA is working with SEH to develop contract documents to have a magnetic flow meter installed on the raw water line in an exterior below grade vault. Bidding is expected in January 2019 and construction to be completed by June 2019.

- <u>NRWTP Sludge Lagoon Study and WTP Needs Assessment</u>

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

- <u>NRWTP High Service Pump Replacement</u>

  The two existing high service pumps at the NRWTP were installed when the plant was originally constructed in 1974 and as a result have reached the end of their serviceable lives. Due to excessive maintenance needs and concerns regarding their reliability, RWSA is working with SEH to develop quote packages for the procurement of the pumps and then installation. Quotes have been received for the procurement of the pumps and a subsequent quote for installation is upcoming with work anticipated to begin in January 2019.

- <u>MCAWRRF Cogeneration System Analysis</u>

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

- <u>SRWTP Future Site Development Analysis</u>

  As future water demands increase, facility expansions and additions at the SRWTP site are proposed to continue. At some point in the future RWSA has plans to increase the capacity at the SRWTP to 16 MGD along with preliminary plans for a 41 MGD raw water pump station and a 25 MGD pretreatment facility associated with the future transfer of raw water from the South Rivanna Reservoir to the Ragged Mountain Reservoir. With property development activity increasing near the plant, the intent of this analysis is to confirm what approximate space would be needed to meet the plant's future needs in order to better determine future property requirements. The analysis is expected to be complete by December 2018.

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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 NOVEMBER 2018

DATE: DECEMBER 11, 2018

WATER OPERATIONS:

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

Water Treatment Plant	*Average Daily Production (MGD)*	*Total Monthly Production (MG)*	*Maximum Daily Production in the Month (MGD)*
Observatory	1.71	51.30	2.56 (11/29/18)
South Rivanna	6.09	182.76	7.57 (11/02/18)
North Rivanna	0.35	10.62	0.43 (11/09/18)
Urban Total	8.15	244.68	9.48 (11/02/18)
Crozet	0.501	15.03	0.676 (11/04/18)
Scottsville	0.047	1.42	0.067 (11/25/18)
RWSA Total	8.70	261.13	---

- All RWSA water treatment facilities were in regulatory compliance during the month of November.

Status of Reservoirs (as of December 6, 2018):

- Urban Reservoirs: 100 % of Total Useable Capacity
- Ragged Mountain Reservoir is full (100%)
- Sugar Hollow Reservoir is full (100%)
- 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 November 2018. Performance of the WRRFs in November 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	14.1	<QL	10	1.5	22	0.13	2.0
Glenmore	0.200	1.8	15	3.0	30	0.04	NL
Scottsville	0.107	2.3	25	3.1	30	0.17	NL
Stone Robinson	0.002	2.0	30	5.0	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 November 2018:

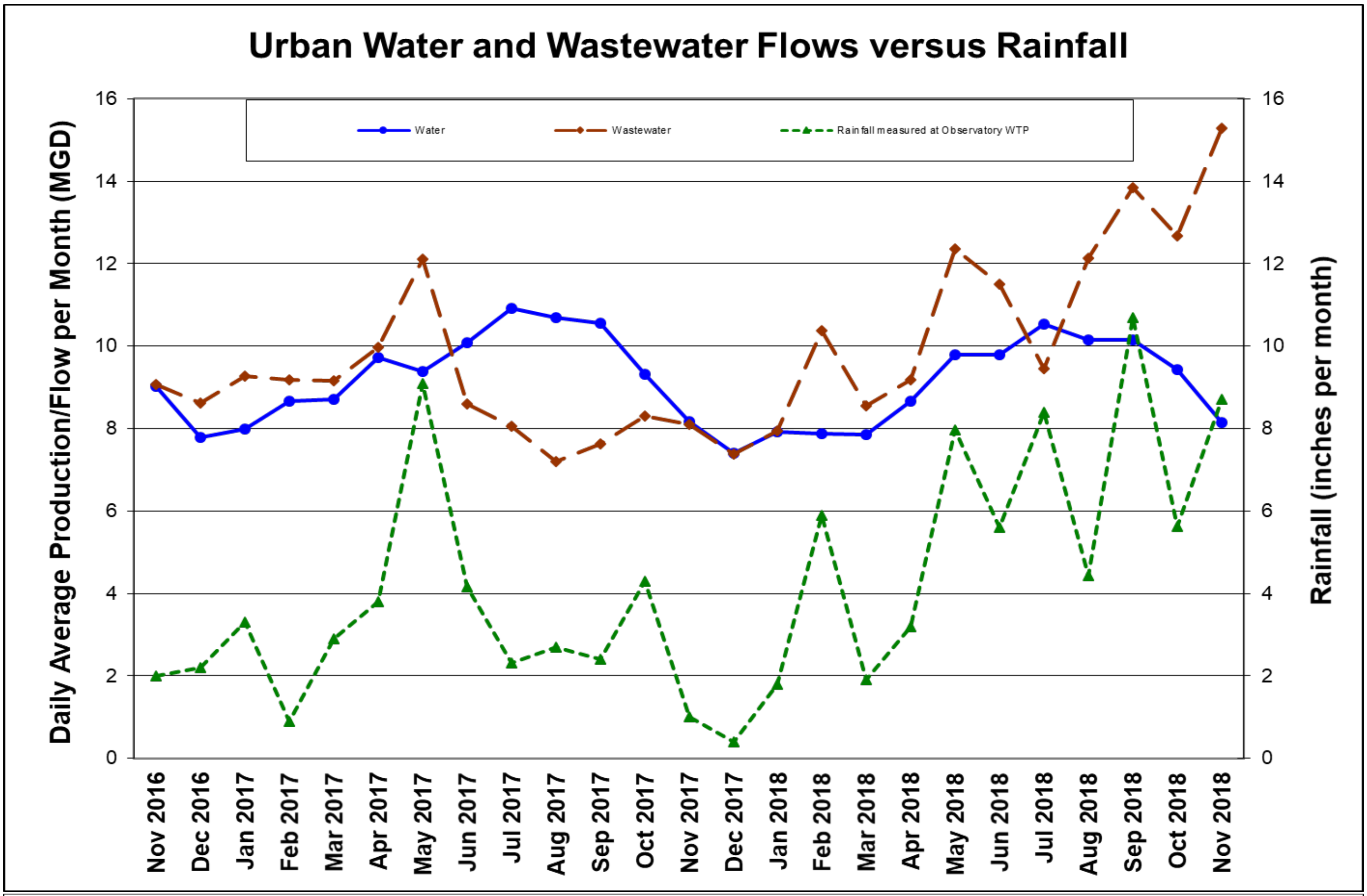
State Annual Allocation (lb./yr.)		***Average Monthly Allocation (lb./mo.)****	***Moores Creek Discharge (lb./mo.)***	***Performance as % of Average Allocation****
Nitrogen	282,994	23,583	7743	33%
Phosphorous	18,525	1,544	587	38%

*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



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)
0
2
4
6
8
10
12
14
16
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
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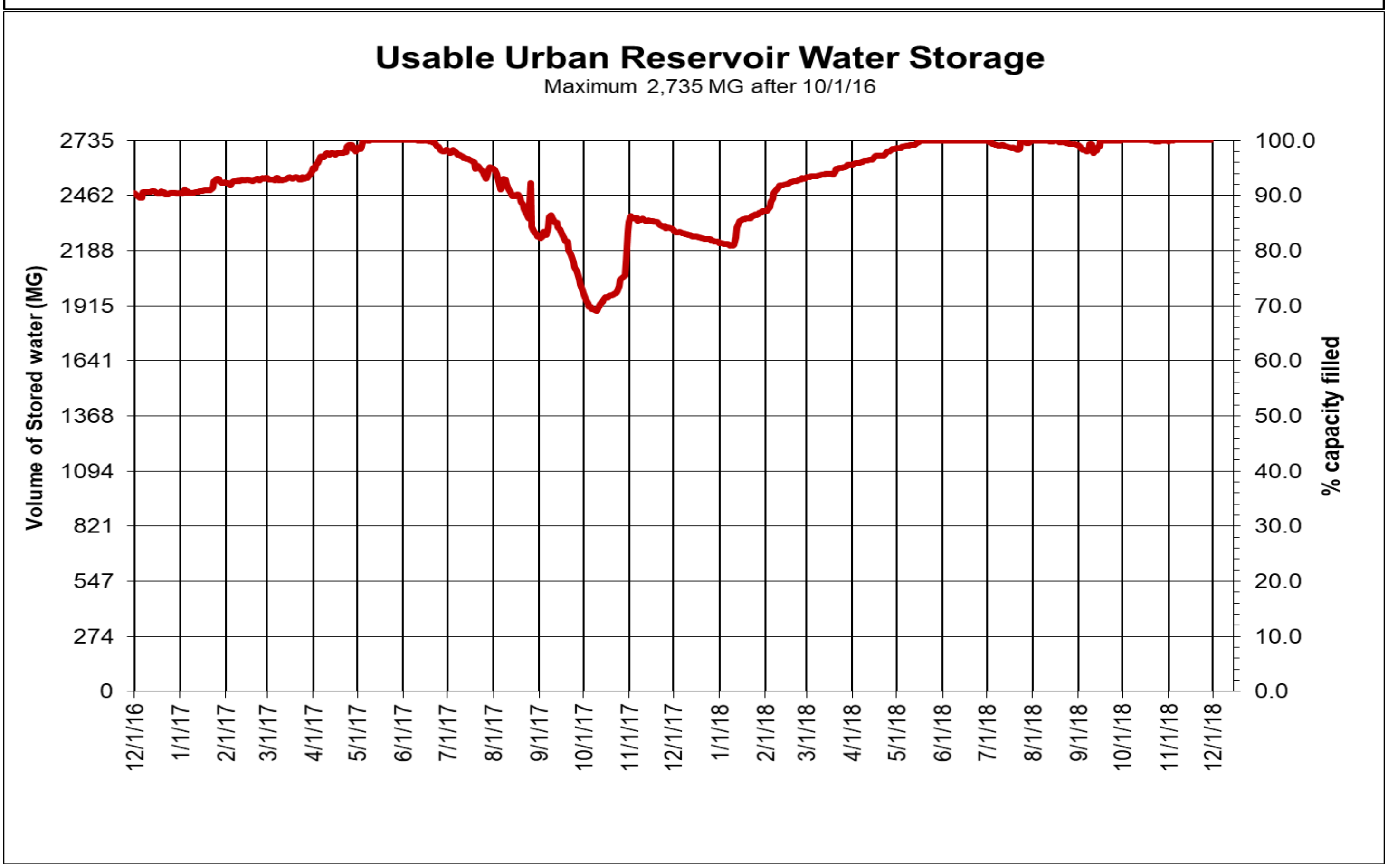

Usable Urban Reservoir Water Storage
Maximum 2,735 MG after 10/1/16
Volume of Stored water (MG)
% capacity filled
2735
2462
2188
1915
1641
1368
1094
821
547
274
0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
12/1/16
1/1/17
2/1/17
3/1/17
4/1/17
5/1/17
6/1/17
7/1/17
8/1/17
9/1/17
10/1/17
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9/1/18
10/1/18
11/1/18
12/1/18

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MEMORANDUM

TO: **RIVANNA WATER AND SEWER AUTHORITY BOARDS OF DIRECTORS**

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

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

SUBJECT: **ENGINEERING SERVICES - TERM CONTRACT FOR PROFESSIONAL WASTEWATER TREATMENT PLANT ENGINEERING SERVICES**

DATE: **DECEMBER 11, 2018**

RWSA entered into its first term contracts for professional wastewater treatment plant engineering services in January of 2014. Over the course of those initial contracts, staff recognized the value of multiple contracts to cover various projects and needs where a particular firm's specified area of expertise could be appropriately utilized. RWSA staff has procured these services again in an effort to continue that broad range of services and expertise. A Request for Proposals (RFP #18-03) was developed and advertised with proposals due on November 20, 2018. As outlined in the Virginia Public Procurement Act, these services were procured via competitive negotiation. The RFP also included the option for RWSA to select more than one firm in order to account for availability and differences in project type, experience, and size.

RWSA received seven proposals. Based on the qualifications of the firms and their proposed project team, responsiveness to the scope of services, professional competence, qualifications, depth of key personnel, firm's experience with similar projects, and quality of previous work performed for RWSA and/or other clients; it was determined that Hazen & Sawyer, Short Elliot Hendrickson, Inc., GHD, Inc., and Wiley|Wilson were the most meritorious candidates and that selection of four firms would be in the best interest of RWSA. All four firms are well-qualified to provide a diverse range of professional engineering services related to our wastewater treatment plants. Work tasks may include items such as a Master Plan for our Moores Creek AWRRF, design and installation of a new mechanical thickener at the MCAWRRF, grinder and air control improvements at the Scottsville WRRF, and influent pump and VFD improvements at the Glenmore WRRF. Each contract will be awarded for one (1) year, with the option for up to four (4) additional one (1) year renewals for a total contract length not to exceed five (5) years.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute an Engineering Services Agreement with Hazen & Sawyer, Short Elliot Hendrickson, Inc., GHD, Inc., and Wiley|Wilson for a Term Contract for Professional Wastewater Treatment Plant Engineering Services. Staff also requests the Board to authorize the Executive Director to execute future work authorizations under the contract prepared as necessary in accordance with all Term Agreement requirements as stated in the request for proposal and the Virginia Public Procurement Act, to the extent that funding for such authorizations is within the Board's approved budget.

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MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: COMPREHENSIVE ANNUAL FINANCIAL REPORT FISCAL YEAR ENDING JUNE 30, 2018

DATE: DECEMBER 11, 2018

The Authority's Comprehensive Annual Financial Report for the fiscal year ending June 30, 2018 is included with your Board packet. A large part of preparing the financial statements involves having the financial reports audited for the purposes of obtaining an opinion from an independent Certified Public Accountant as to the accuracy of the information presented in the report.

The audit also reviews internal accounting controls and tests for compliance with relevant laws and regulations as a function of expressing the firm's opinion on the financial information. I am pleased to inform you that the Authority received an unqualified opinion, which is the highest opinion that the financial statements are materially accurate and fairly presented.

Mr. Robert Huff, a principal of the Charlottesville office of Robinson, Farmer, Cox Associates, will be at the meeting to give a brief review of the audit and discuss any audit findings the firm may have. I would also like to thank Kathy Ware, Accountant, who performed much of the detailed work in the preparation of this report, and the entire administrative staff for their assistance during the audit.

This report will be submitted to the Certification Program of the Government Finance Officers Association.

Attachment: Comprehensive Annual Financial Report

RIVANNA
WATER & SEWER AUTHORITY

COMPREHENSIVE ANNUAL FINANCIAL REPORT
YEARS ENDED JUNE 30, 2018 AND 2017

SERVING

CHARLOTTESVILLE & ALBEMARLE COUNTY, VIRGINIA

Front Cover Photograph

Sugar Hollow Reservoir
Photo taken by Bethany Houchens, RWSA employee

RIVANNA WATER & SEWER AUTHORITY
CHARLOTTESVILLE, VIRGINIA

COMPREHENSIVE ANNUAL FINANCIAL REPORT

YEARS ENDED JUNE 30, 2018 AND 2017

Prepared By:

Department of Finance and Administration

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RIVANNA WATER & SEWER AUTHORITY

Comprehensive Annual Financial Report
Fiscal Years Ended June 30, 2018 and 2017

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RIVANNA WATER & SEWER AUTHORITY

Comprehensive Annual Financial Report
Fiscal Years Ended June 30, 2018 and 2017

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BOARD MEMBERS

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Maurice Jones, Vice-Chairman

Doug Walker, Secretary/Treasurer

Lauren Hildebrand

Dr. Liz A. Palmer

Kathleen Galvin

Gary B. O'Connell

EXECUTIVE DIRECTOR

William I. Mawyer, Jr., P.E.

DIRECTOR OF FINANCE/ADMINISTRATION

Lonzy E. Wood, III

GENERAL COUNSEL

McGuire Woods, LLP
Charlottesville, Virginia

TRUSTEE AND ESCROW AGENT

Bank of New York Mellon
New York, New York

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October 12, 2018

To the Board of Directors
Rivanna Water and Sewer Authority
Charlottesville, Virginia

The Comprehensive Annual Financial Report (CAFR) of the Rivanna Water and Sewer Authority (Authority) for the fiscal year ended June 30, 2018 is submitted herewith. This report has been prepared in conformity with the reporting and accounting standards promulgated by the Government Accounting Standards Board and the Financial Accounting Standards Board and with the accounting and reporting standards for enterprise funds set out by the Government Finance Officers Association of the United States and Canada, with such modifications as apply to our status as an independently chartered corporation.

Based upon a comprehensive framework of internal control that it has established for this purpose, management assumes responsibility for the completeness and reliability of the information contained in this report. The objective of internal control is to provide reasonable, rather than absolute, assurance that the financial statements are free of material misstatements, because the cost of each internal control should not outweigh the potential benefit.

Management's discussion and analysis (MD&A) immediately follows the independent auditors' report and provides a narrative introduction, overview, and analysis of the basic financial statements. MD&A complements this letter of transmittal and should be read in conjunction with it.

ORGANIZATION AND SERVICES PROVIDED

The Rivanna Water and Sewer Authority is a regional non-profit public corporation and political subdivision of the Commonwealth of Virginia chartered in 1972 under the Virginia Water and Waste Authorities Act (1950, as amended), that supplies drinking water to and treats the sewage of Charlottesville (City) and certain areas of Albemarle County (County). The Authority is a wholesale agency and bills monthly both Charlottesville and the Albemarle County Service Authority, which handle retail distribution of water and collection of sewage in their respective service areas.

The Authority is charged to acquire, finance, construct, operate and maintain facilities for the impoundment, production, storage, treatment and transmission of potable water and for the interception, treatment and discharge of wastewater. The Authority operates under the terms of a Service Agreement signed June 12, 1973 by the officers of the Charlottesville City Council, the Albemarle County Board of Supervisors, the Albemarle County Service Authority and the Rivanna Water and Sewer Authority. The Authority has determined that it is not part of the reporting entity of either the City of Charlottesville or the County of Albemarle and will not be included in the financial report of either (see Note 1 to the Financial Statements).

ORGANIZATION AND SERVICES PROVIDED: (CONTINUED)

The Authority is governed by a seven-member Board of Directors (Board). The Board appoints an Executive Director, who manages Authority operations under their direction. The Authority is now organized in administration, laboratory, engineering, maintenance, water, and wastewater departments. The Authority operates and maintains five water treatment plants and three wastewater treatment plants and the associated water storage facilities, pump stations, transmission mains and interceptor sewers. Retail distribution of water and collection of wastewater is performed by the Authority's two customers: the City of Charlottesville's Public Utilities Division and the Albemarle County Service Authority.

JOINT ADMINISTRATION

By mutual agreement of the respective Boards of Directors, the Authority currently shares administrative staff and office space with the Rivanna Solid Waste Authority, which is billed monthly for its portion of the costs. Administrative procedures were implemented to ensure proper segregation of funds, purchasing activity, personnel, and similar matters. In general, the Rivanna Solid Waste Authority adopted existing Authority administrative policies, procedures and regulations for its own use. The Authorities also agreed adopted and administer joint Safety Regulations and a joint Safety Program.

ECONOMIC CONDITION AND PROSPECTS

The University of Virginia provides a significant buffer against large swings in the economy of our service area. In addition, the Charlottesville urban area is a major retail trade center for the surrounding region. Housing growth remains steady. Although most growth occurs in County developments, in-filling in Charlottesville continues. Both Charlottesville and Albemarle County enjoy low unemployment rates, steady economic growth and high bond ratings.

A ten-year compilation analysis report dated September 2018 by the Charlottesville Regional Chamber of Commerce examining employment in the Greater Charlottesville Region concluded that combined private and public-sector employment grew by 10%, or 11,551 jobs, from 2007 to 2017, compared to a 4.3% increase in Virginia outside of the region. In 2017, 76% of jobs within the Region were located in the City of Charlottesville and Albemarle County, and the other 24% are reported in the Counties of Fluvanna, Greene, Louisa, Nelson, and Orange.

The Charlottesville-Albemarle area attracts many visitors to its historic sites, and the wine industry has been popular and has served to help benefit the tourism sector of the regional economy. The travel and tourism industry make a vital contribution to the local economy.

The University of Virginia’s capital projects will continue to be the impetus of growth for water and sewer services. Our current Capital Improvement Program, as discussed below, reflects the Authority's response to the current and projected service burden on our facilities and to the need to respond to regulatory requirements.

LONG-TERM FINANCIAL PLANNING

The Authority expects continued growth in demand for water supply and sewage disposal services as well as changing regulations. Our current five-year Capital Improvement Program (CIP) for Fiscal years 2019-2023 is heavily driven by regulatory changes in the future for water quality standards including the requirements of the Disinfectant By-product Rule (DPBR). This rule regulates maximum contaminant level for total trihalomethanes (THMs) and haloacetic acids (HAAs) in drinking water. The long-term goal is to finance most of these projects with revenue bonds; however, the Authority has targeted using a significant portion of cash reserves to fund its current $154 million CIP. For details, please refer to the MD&A.

MAJOR INITIATIVES

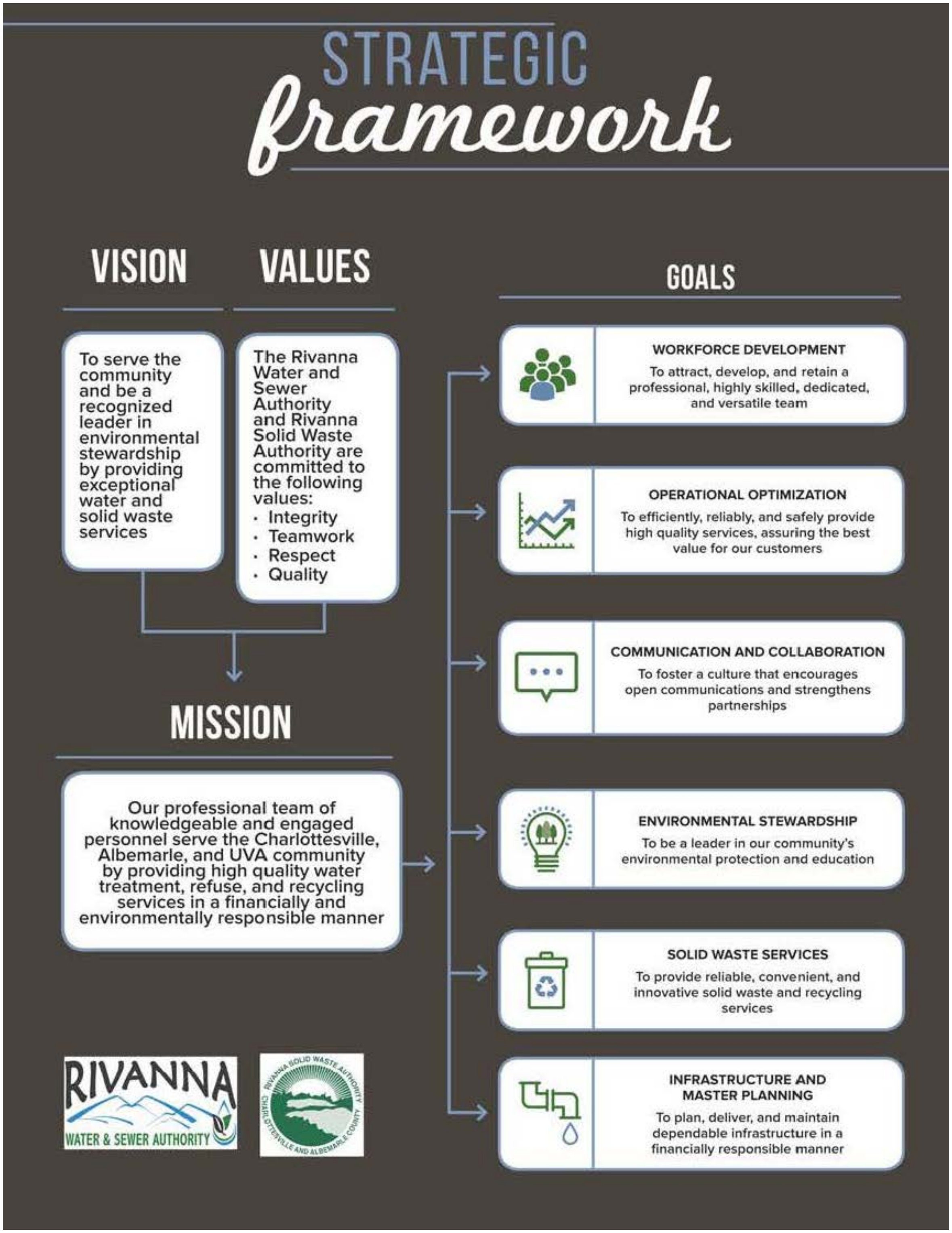
The Urban Water GAC and Water Treatment Plant Improvements project is currently the largest capital project underway in the water department, with a $30 million capital budget targeted for completion in FY 2019. The Rivanna Pump Station and Tunnel is the largest capital project in progress in the wastewater system, with an estimated cost of $32 million was completed this year.

As mentioned previously, The DPBR regulations are requiring the water plants to undergo major capital upgrades to install Granular Activated Carbon (GAC) treatment systems. These systems carry significant capital costs as well as significant operating costs in the future. Over the past few years, the Authority has been investing many of its resources in the wastewater systems to control and reduce inflow and infiltration into the systems from heavy rain events. This was an environmental and regulatory objective which is nearly complete with the construction of the Rivanna Pump Station. Now we are addressing the water infrastructure of the Authority with many upgrades to the treatment and transmission systems planned for the next 5 to 10 years.

The Crozet water service area continues to see expanded growth in the average and maximum daily demand. Discussions with Albemarle County planning staff and ACSA have confirmed recent growth trends and indicate that the rate of growth in Crozet is increasing. In addition to these issues, the Beaver Creek Dam that serves the Crozet system will need to have a major upgrade currently estimated at $15 million. The current spillway is not sufficient to meet dam safety regulations. While several projects are currently underway to address the immediate need in Crozet, it is now necessary to develop a comprehensive mid-range and long-range plan 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.

One non-capital project related major initiative taken on during the year was a strategic planning process that was designed to assure a shared vision of Rivanna's ultimate goals, a collective understanding of the available resources, the principles upon which strategies are based, and acceptance of the direction and urgency of the strategic and operating plans, which will be integrated into the way Rivanna is operated on a day-to-day basis.

MAJOR INITIATIVES: (CONTINUED)



The board approved the Strategic Plan in November 2017, and now leadership and staff are working to identify strategies with the eventual implementation of those strategies in the coming years. This is a continuous program of assessing our plan and mission with progress towards achieving our identified goals.

BUDGETARY CONTROLS AND FINANCIAL POLICIES

The Authority is required by the Service Agreement to adopt an annual budget for setting wholesale rates as well as for fiscal guidance to staff. Separate fiscal year budgets are currently prepared for six rate centers to include direct costs and allocations of administrative, engineering, maintenance, lab and debt service expenses. Until the Service Agreement was amended in August 2015, projections of flows and expenses were used to calculate rates per thousand gallons for the two Urban rate centers and flat monthly charges for the other rate centers to cover both operating and debt service costs. Actual flows vary each year from the flows estimated when the rates were set, due to unpredictable weather conditions. Effective with the October 2015 billing, RWSA began charging a fixed monthly rate for the Urban rate center debt service costs while continuing to charge operations rates per thousand gallons. This was a very positive change, because RWSA is required to make fixed debt service payments each fiscal year, and it is important to have a fixed revenue source to pay those expenses.

A proposed budget for each fiscal year is prepared by the Authority Directors and the Executive Director and submitted to the Board of Directors, usually in February, with a public hearing held on the proposed rates in April or May. All budget items lapse at the end of the fiscal year except capital commitments. It should be noted that the budget is prepared for internal use and does not reflect the accrual basis of accounting. An example of this is that principal payments on debt are shown as an expense.

Budgetary compliance is monitored and reported to the Board by the Director of Finance & Administration and the Executive Director. Projections of both revenues and expenses are understood to reflect anticipated service levels and to incorporate a variety of economic, climatic, and demographic forecasts. Variances from budget line items are examined at least monthly to assure a reasonable relation between actual costs and actual service levels, emergencies, or economic conditions. The Authority Board of Directors adopted in August 2011 certain financial policies that help guide the capital and operating budgeting process by defining reserves, reserve goals, uses of discretionary funds, and setting financial targets on debt and capital funding.

The Authority's accounting records are maintained on the accrual basis of accounting. Under this method, revenues are recognized when earned and expenses are recorded when incurred, without regard to receipt or payment of cash. Current controls provide reasonable assurance that the Authority's assets are properly recorded and protected and that the financial data may be used with confidence in the preparation of historical reports and projections. Accounting control is maintained by segregation of duties and data security systems in all areas of record keeping, disbursements, and purchasing authority. These controls are reviewed regularly by staff and are evaluated as part of the annual financial audit (see Annual Audit section below).

ANNUAL AUDIT

The Code of Virginia, the June 12, 1973 Service Agreement, the Trust Agreement and its Supplements require an annual audit of the books and records of the Authority. The opinion of our independent certified public accountants is included in the Financial Section.

AWARDS

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to Rivanna Water and Sewer Authority for its comprehensive annual financial report for the fiscal year ended June 30, 2017. To be awarded a Certificate of Achievement, a governmental unit must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

ACKNOWLEDGEMENTS

The help of the Authority's staff and of our certified public accountants is gratefully acknowledged. Such help and the Board of Directors' support and commitment to financial reporting excellence are essential to the preparation of this report.

Respectfully submitted,

Lonzy E. Wood, III
Director of Finance and Administration

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Rivanna Water & Sewer Authority

Virginia

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2017

Christopher P. Morrill

Executive Director/CEO

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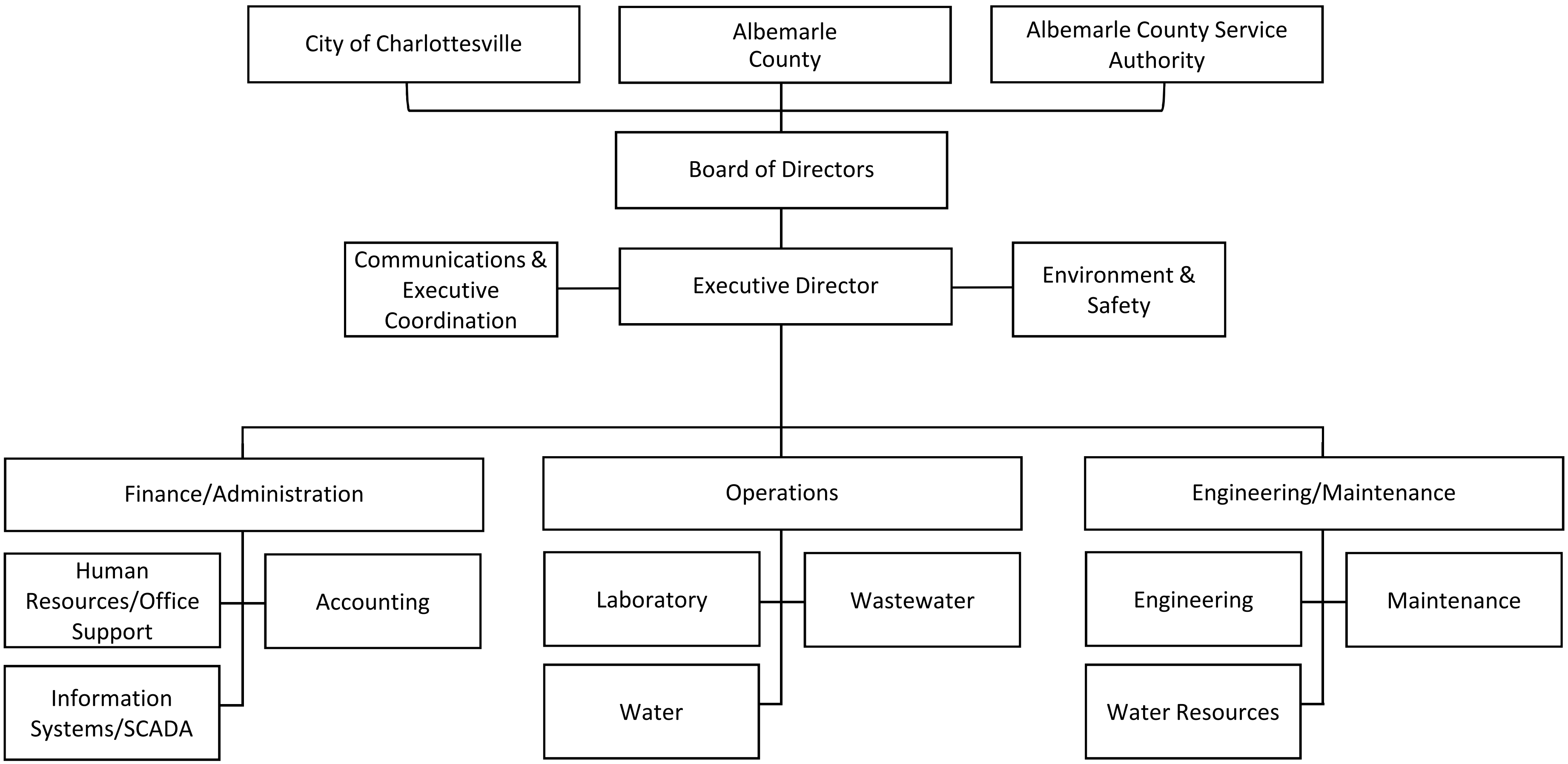
Rivanna Water & Sewer Authority

Organizational Chart



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Independent Auditors' Report

To the Board of Directors
Rivanna Water & Sewer Authority
Charlottesville, Virginia

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities of Rivanna Water & Sewer Authority, as of and for the years ended June 30, 2018 and 2017, and the related notes to the financial statements, which collectively comprise the Authority's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the *Specifications for Audits of Authorities, Boards, and Commissions,* issued by the Auditor of Public Accounts of the Commonwealth of Virginia. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities of Rivanna Water & Sewer Authority, as of June 30, 2018 and 2017, and the respective changes in financial position, and cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Change in Accounting Principles

As described in Note 17 to the financial statements, in 2018, the Authority adopted new accounting guidance, GASB Statement Nos. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions,* and 85, *Omnibus 2017.* Our opinion is not modified with respect to this matter.

Restatement of Beginning Balances

As described in Note 17 to the financial statements, in 2018, the Authority restated beginning balances to reflect the requirements of GASB Statement No. 75. Our opinion is not modified with respect to this matter.

Comparative Information

As described in Note 17 to the financial statements, GASB Statement No. 75 was implemented prospectively resulting in a restatement of beginning net position. In the year of implementation, comparative information for the net OPEB liability and related information as computed under GASB 75 standards was unavailable. Therefore, the 2017 amounts related to other postemployment benefits have not been restated to reflect the requirements of GASB Statement No. 75. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, and schedules related to pension and OPEB funding on pages 17-27, 94-96, and 97-100 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Rivanna Water & Sewer Authority's basic financial statements. The introductory section and statistical section, are presented for purposes of additional analysis and are not a required part of the basic financial statements. The schedule of expenditures of federal awards is presented for purposes of additional analysis as required by Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, and is also not a required part of the basic financial statements.

The schedule of expenditures of federal awards are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, schedules and the schedule of expenditures of federal awards are fairly stated in all material respects in relation to the basic financial statements as a whole.

The introductory and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated October 12, 2018, on our consideration of Rivanna Water & Sewer Authority's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Rivanna Water & Sewer Authority's internal control over financial reporting and compliance.

Robinson, Farmer, Cox Associates

Charlottesville, Virginia
October 12, 2018

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To the Board of Directors
Rivanna Water & Sewer Authority
Charlottesville, Virginia

As management of the Rivanna Water & Sewer Authority (the Authority), we offer readers of our financial statements this narrative overview and analysis of the financial activities of the Authority for the fiscal year ended June 30, 2018. We encourage readers to consider the information presented here in conjunction with additional information that we have furnished in our letter of transmittal, which can be found on pages 3 through 8 of this report.

Overview of the Financial Statements:

This discussion and analysis is intended to serve as an introduction to the Authority's basic financial statements. Since the Authority is engaged only in business-type activities, its basic financial statements are comprised of only two components: 1) enterprise fund financial statements and 2) notes to the financial statements. This report also contains required supplementary information in addition to the basic financial statements themselves.

Enterprise fund financial statements. The enterprise fund financial statements are designed to provide readers with a broad overview of the Authority's finances, in a manner similar to a private-sector business.

The statement of net position presents information on the Authority's assets, deferred outflows of resources, liabilities, and deferred inflow of resources with the difference reported as net position. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the Authority is improving or deteriorating.

The statement of revenues, expenses, and changes in net position presents information showing how the Authority's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of the cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g. earned but unused vacation leave).

The basic enterprise fund financial statements can be found on pages 30 through 32 of this report.

Notes to the financial statements. The notes provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes to the financial statements can be found on pages 33 through 90 of this report.

Required supplementary information. This report also includes required supplementary information concerning the Authority's progress in funding its obligation to provide pension and other postemployment benefits to its employees. It is located immediately following the notes to financial statements.

Change in accounting principle. In FY 2018, the Authority adopted new accounting guidance, GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, and restated beginning balances pursuant to the requirements of GASB Statement No. 75. See Notes 12 and 17 for more information.

Financial Highlights:

- The Authority's total net position increased consistently the last two years by $5.8 million in FY 2018 and by $6.1 million in FY 2017.

- Capital assets net of accumulated depreciation increased by $11.9 million this year and by $30.4 million last year due to a robust capital improvement program. Net capital assets have increased roughly 20 percent over the last 3 years.

- Total liabilities decreased by $8.2 million in FY 2018 and increased by $13 million in FY 2017 related to revenue bond payable balances and pension liabilities.

- Total operating expenses increased 3.3% this year and 6.6% last year due to increases in utility costs and depreciation.

Financial Analysis:

The Authority's assets and deferred outflows exceeded its liabilities and deferred inflows (net position) by $147.5 million at fiscal year end June 30, 2018. Of this amount, $29.4 million (unrestricted net position) may be used to meet the Authority's normal ongoing operating obligations to customers and creditors while $3.5 million of net position is restricted for the bondholders. Total net position increased 4% to 5% in each of the past two years. The net investment in capital assets increased by $9.2 million this year and by $4.3 million last year due to major expenditures on infrastructure construction projects. The largest portion of the Authority's net position (78%) reflects its investment in capital assets, net of depreciation and related debt outstanding that was used to acquire those assets.

The Authority uses these capital assets to provide services to its customers; consequently, these assets are not available for future spending. Although the Authority's investment in capital assets is reported net of related debt, the resources needed to repay this debt are derived from the revenue generating capability of these capital assets and not from the capital assets themselves.

	Net Position		
	2018	**2017**	**2016**
Current and other assets	$ 47,155,939	$ 60,323,302	$ 72,609,632
Capital assets	275,756,421	263,852,256	233,412,702
Total assets	$ 322,912,360	$ 324,175,558	$ 306,022,334
Deferred outflows of resources	$ 1,315,467	$ 1,874,215	$ 1,298,582
Noncurrent liabilities	$ 164,657,769	$ 170,711,501	$ 157,803,972
Current liabilities	11,447,549	13,574,665	13,418,468
Total liabilities	$ 176,105,318	$ 184,286,166	$ 171,222,440
Deferred inflows of resources	$ 565,983	$ -	$ 443,880
Net position:			
Net investment in capital assets	$ 114,620,746	$ 105,412,275	$ 101,129,762
Restricted for bond covenants	3,536,710	3,729,350	3,335,539
Unrestricted	29,399,070	32,621,982	31,189,295
Total net position	$ 147,556,526	$ 141,763,607	$ 135,654,596

Financial Analysis: (Continued)

Operating revenues increased by $694,000 this year compared to a $384,000 increase last year. Metered water sales increased 2% over last year's charges; however, this was roughly $218,000 less than our budgeted targets. The shortfall in budgeted revenues was due to water conservation efforts during a drought earlier in the fiscal year. For FY 2017, there was a 6% increase in revenues over the previous year which was close to budget targets. Wastewater service charge revenues increased 3% over FY 2017 revenue, but again this was $244,000 below budget targets due to a drier than normal year related to the drought. FY 2017 wastewater revenues decreased 2% from the previous year (FY 2016 was a very wet year) yet was slightly over budgeted targets.

Total operating expenses increased by $680,000, or 3.3%, for FY 2018 primarily due to several costly sewer line maintenance items costing $330,000 more than normal and depreciation expense increased $393,000. There was a $1.3 million increase in operating expenses in FY 2017, largely due to higher employee benefit costs, new staff positions and accruals of pension and early retirement obligations. Fluctuations in interest expense are primarily caused by the capitalization of interest paid during the construction phase of capital projects. Key elements of these changes are explained further in the Review of Operations section.

	Changes in Net Position		
	2018	2017	2016
Revenues:			
Operating revenues			
Metered water sales	$ 14,034,080	$ 13,753,977	$ 13,014,328
Wastewater service charges	14,858,101	14,444,159	14,799,741
Nonoperating revenues			
Investment earnings	525,039	296,433	369,675
Buck Mountain revenue	125,900	115,700	84,000
Administrative reimbursement	436,329	328,000	299,000
Other revenues	302,920	305,763	370,173
Total revenues	$ 30,282,369	$ 29,244,032	$ 28,936,917
Expenses:			
Operating expenses			
Personnel costs	$ 7,385,978	$ 7,483,807	$ 6,155,243
Professional services	738,823	885,072	602,891
Other services and charges	3,341,421	2,764,905	2,607,118
Operations and maintenance	4,169,065	4,214,246	4,710,701
Depreciation expense	5,805,362	5,411,996	5,396,029
Nonoperating expenses			
Interest expense	2,643,801	2,248,229	4,027,843
Debt issuance costs	-	126,766	556,438
Total expenses	$ 24,084,450	$ 23,135,021	$ 24,056,263
Change in net position	$ 6,197,919	$ 6,109,011	$ 4,880,654
Net position, beginning of year, as restated	141,358,607	135,654,596	130,773,942
Net position, end of year	$ 147,556,526	$ 141,763,607	$ 135,654,596

Capital Asset and Debt Administration:

Capital Assets - The Authority's investment in capital assets net of accumulated depreciation increased 5% in the current year and 13% in the prior year because of costs incurred on major water and wastewater construction projects in both years. Construction costs of $17.6 million were incurred this year, and there are still many capital projects in progress with accumulated costs totaling $54.1 million. More detailed information on the Authority's capital assets is presented in Notes 4 and 5 of the notes to the financial statements and is addressed further Review of Operations section below.

Capital Asset and Debt Administration: (Continued)

The various categories of capital assets net of depreciation at the end of the past three fiscal years are as follows:

	2018	2017	2016
Land and improvements	$ 10,604,850	$ 10,604,850	$ 10,604,850
Buildings and operating equipment	210,801,446	180,753,567	173,175,985
Trucks and autos	200,137	148,252	116,905
Office equipment	1,001	3,003	5,005
Construction in progress	54,148,987	72,342,584	49,509,957
Total capital assets, net	$ 275,756,421	$ 263,852,256	$ 233,412,702

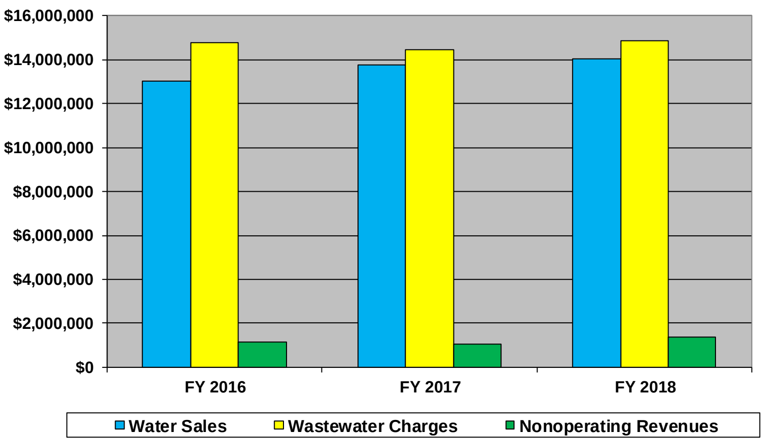
Major capital asset activity for the current fiscal year included:

Urban Water GAC/Water Treatment Plant Improvements	$ 5,797,104
Moores Creek AWRRF Odor Control-Phase 2	2,482,605
Crozet WTP Finished Water Pump Station	1,672,097
Rivanna Pump Station and Tunnel	1,423,901
MCAWRRF Second Centrifuge	981,745
Rt. 29 Pipeline-VDOT Betterment	876,063
MCAWRRF Roof Replacements	747,932
Crozet Water GAC/Water Treatment Plant Improvements	585,229
Crozet WTP Expansion	419,958
Wholesale Water Master Metering-Urban	409,445
Scottsville Water Granular Activated Carbon	352,874
Crozet Drinking Water Infrastructure Plan	245,223
Moores Creek Bridge Repairs	223,807
Route 29 Pumping Station Site Acquisition	209,981
Avon to Pantops Water Main	126,861
Observatory WTP Improvements	112,360
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	98,533
Crozet Pump Station Two Automatic Bar Screens	65,575
Beaver Creek Dam Alterations	57,985
Interceptor Sewer & Manhole Repair	52,104
Other	228,840
Capitalized Interest	2,271,708
Retainage on Construction in Progress	(1,823,351)
Total Current Year Construction Costs and Adjustments	$ 17,618,579

Long-Term Debt - At the end of the current fiscal year, the Authority had $168 million in bonds outstanding, which is a decrease of $5 million. This change is the net of $2 million of bond proceeds drawn on Revenue Bond Series 2014A to help fund the Rivanna Interceptor and Pump Station projects and $7 million of principal repayments on all bonds. Bond 2014A is a Virginia Revolving Loan Fund debt instruments which acts like a construction loan in which the proceeds stay with the State until the construction costs are paid to the contractor, and only the amount drawn is recognized as outstanding debt. More detailed information regarding the Authority's long-term debt is presented in Note 6 of the notes to the financial statements.

Review of Operations:

Revenues



Total operating revenues increased 2.5% or $694,000 in Fiscal Year 2018 compared to the previous year revenues. The budget for FY 2018 estimated total operating revenues for the year at $29.4 million, which was a $1.5 million increase and was built into the rates set by the Board of Directors. Therefore, despite water and sewer revenues being greater than the previous levels, revenues charged were roughly $462,000 less than budget targets. The region experienced sudden drought conditions later in the summer of 2017. This prompted the Authority to call for voluntary drought restriction on consumption in early October. This was followed quickly by the City of Charlottesville and the County of Albemarle enacting mandatory drought restrictions. Fortunately, the weather conditions changed in the region's favor and restrictions were formally lifted in late November. The Authority treated roughly 146 million gallons less wastewater in FY 2018 than the previous year and produced 159 million gallons less potable water in FY 2018 in the urban systems (which revenues are related to in terms of treatment).

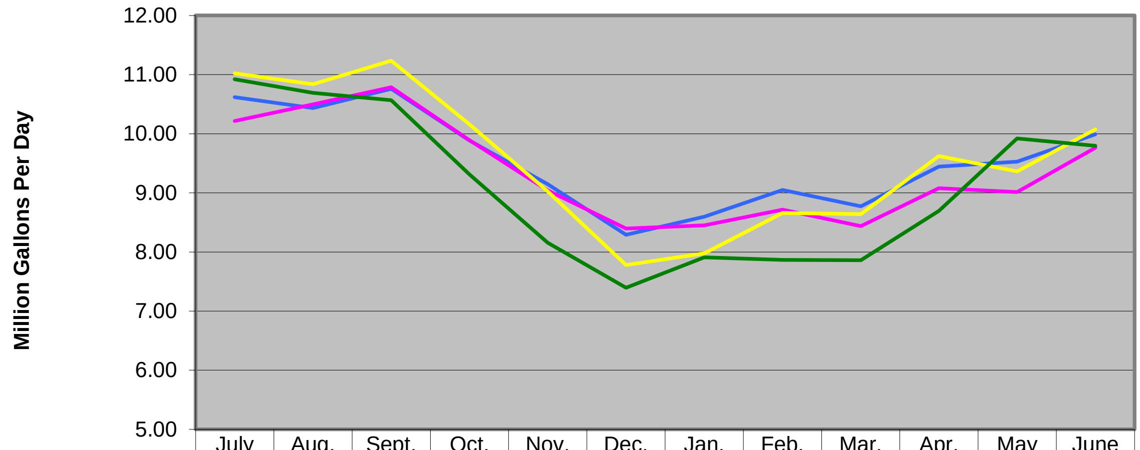
The capital program has been the single largest driver to the Authority's revenue requirements, especially for wastewater rates for the past several years. Over the past three years, the Authority has invested over $72 million in capital infrastructure. Most of that investment was financed with long-term debt. Roughly $3.5 million of this spending was funded through cash reserves. As shown in the chart below, FY 2018 Urban debt service rates remain fairly steady. There was a shift in the City charge for wastewater mainly due to a shift in the allocation of costs based on flows. Operating rates and related costs for water are being affected by the GAC project which has significant yearly costs for the granular carbon used in the new treatment process at all 5 plants.

Urban Rates		Water			Wastewater		
Operations Rates - City & ACSA ($ per 1,000 gallons):							
	FY 2016	$	1.713	10.8%	$	1.789	-2.3%
	FY 2017	$	1.833	7.0%	$	1.835	2.6%
	FY 2018	$	1.969	7.4%	$	1.951	6.3%
Debt Service Rates ($ per month):							
City:	FY 2016	$	158,099	-23.2%	$	333,645	7.0%
	FY 2017	$	162,968	3.1%	$	369,037	10.6%
	FY 2018	$	160,039	-1.8%	$	392,841	6.5%
ACSA:	FY 2016	$	279,864	-10.9%	$	232,493	-6.0%
	FY 2017	$	284,031	1.5%	$	222,280	-4.4%
	FY 2018	$	285,439	0.5%	$	222,550	0.1%

Review of Operations: (Continued)

Flows in the two urban rate centers are the single largest determining factor in the revenues billed to our two customers. The graphs below show the flows for the year compared to the last two years and the five-year average. As mentioned before, flows were lower this past year which did affect revenue targets.

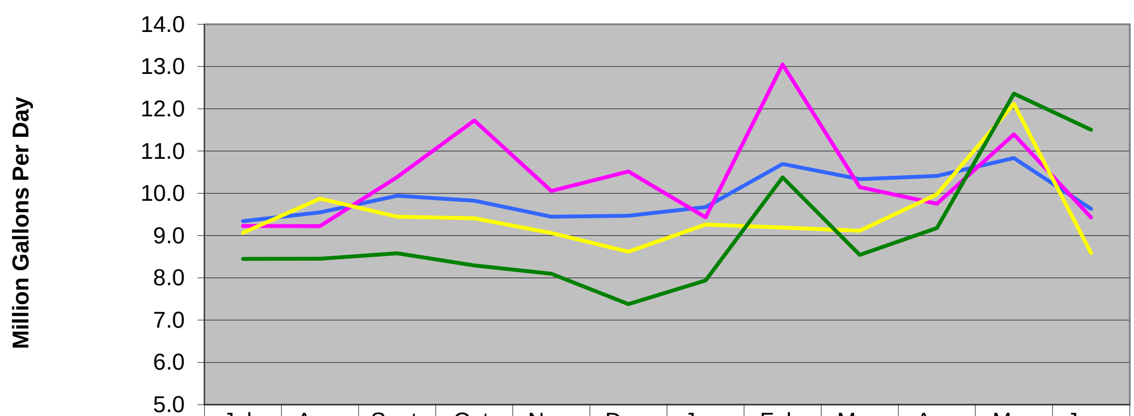
Urban Water Flows



	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

Urban Water flows have trended close to the five-year average and are more predictable to estimate than wastewater flows. Urban Wastewater flows (below) were affected by the drought conditions earlier in the fiscal year, but flows rebounded to a more normal pattern later in the year. As you can see, for FY 2016, flows were erratic compared to the trend due to weather patterns that can significantly affect metered flows and revenues. Because of this, it is very difficult to predict the revenues and charges to our customers for wastewater services from one year to the next.

Urban Wastewater Flows



	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

Review of Operations: (Continued)

Total expenses increased by $949,000 for FY 2018 and was capital project driven. Total interest payments decreased by about 7% from $5.8 million in FY 2017 to $5.4 million this year due to an interest rate reduction from 2.93% to 2.05% in October 2016 on five outstanding Virginia Resources Authority bonds and due to declining principal balances. Nearly half (42% to 45%) of the interest paid in those years was capitalized as part of the cost of capital projects during the construction period instead of being expensed as interest. $2.7 million of interest was capitalized in FY 2017 and $2.3 million in FY 2018. Interest expense should increase next year as projects are completed. And with every new capital project being completed, depreciation expense will increase as it did in FY 2018 by nearly $400,000.

Direct operating costs in certain categories experienced increases in FY 2018. Utility costs were driven up by $100,000 by the new Rivanna Pump Station and the Phase II - Odor Control projects startups as they neared completion during the year. There were also several sewer and water line repairs this year that cost roughly $332,000 more in FY 2018 compared to the previous year. Overall, operating costs were 2% higher for FY 2018.

Change in Expenses FY 2018 vs. FY 2017:

	FY 2018	FY 2017	Change	
Direct Operating*	$ 15,635,287	$ 15,348,030	$ 287,257	2%
Depreciation	5,805,362	5,411,996	393,366	7%
Interest	2,643,801	2,248,229	395,572	18%
Debt issuance costs	-	126,766	(126,766)	-100%
	$ 24,084,450	$ 23,135,021	$ 949,429	4%

* - Personnel, Chemicals, Operations & Maintenance, Utilities

Cash balances have been stable for the past few years, maintaining a strong debt service coverage ratio the past several years. (See Table 8 in the Statistical Section.) Unrestricted cash and investments, which represents total discretionary reserves balances, for FY 2018 were at $33 million. This was a roughly $4.4 million drop in reserves because we are using more cash funding for capital expenditures. For the past decade, the Authority slowly built cash reserves for rate stabilization, unforeseen maintenance issues and support for an aggressive capital replacement program through its rate setting policies. The Board of Directors supports the need for a strong cash position to mitigate unforeseen costs in an aging infrastructure and to better handle wide fluctuations in flow. Rate stabilization reserves totaled $2 million at June 30, 2018. Recognizing the increase in debt service obligations over the years, the executive management wisely continues to emphasize the need to maintain adequate reserves to mitigate a decline in revenues in the event of a drought and provide financial flexibility as issues are managed that periodically face the Authority. Below is a chart showing discretionary reserves, which have remained steady for the past five years.

Over the last several years, financial policies have been adopted and revised as needed to formally support this philosophy. The Authority generally targets to have 60 days of working capital, which is roughly $5.4 million. The Capital fund cash had been accumulating in previous fiscal years according to the Capital Improvement Plan; however, during the past two years the Authority has used a large portion of the capital fund to pay project costs that are not fully financed with existing construction fund bond proceeds. The Authority has a financial policy goal of funding 10% of our total capital program costs with cash reserves. Over the last ten years, the Authority has used capital cash to fund roughly $30.3 million in projects.

Review of Operations: (Continued)

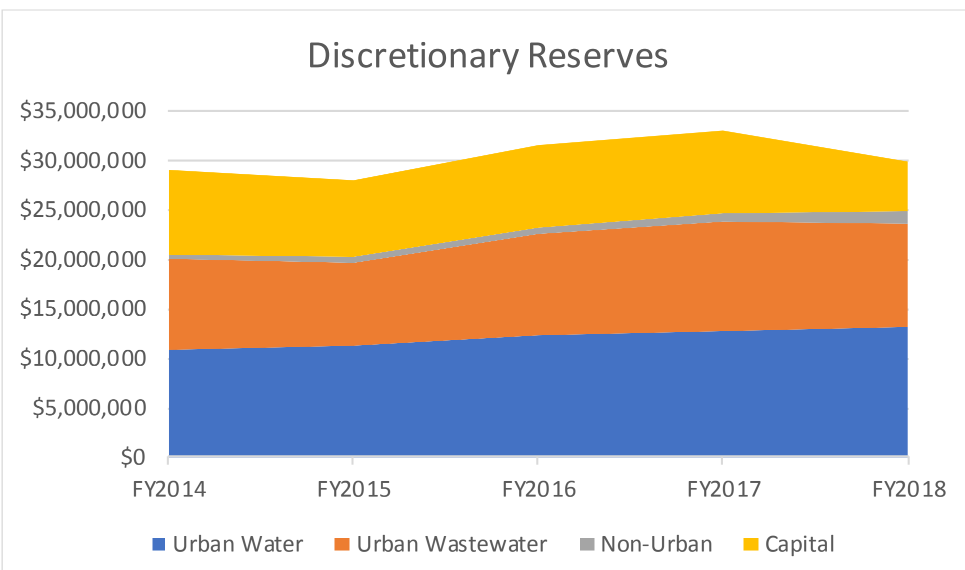
Capital Improvements & Long-Term Trends –

The Authority generally updates the five-year projection of our Capital Improvement Plan (CIP) annually. The following table shows the changes in the CIP adopted in June 2018 compared to the previously adopted capital plan:

Changes in Capital Improvement Plan (CIP)			
FY 2017-2021	$	135,870,454	Previously adopted CIP
		(37,323,246)	Budgets for completed or closed projects
		32,043,827	Adjustments on existing projects
		23,311,000	New project budgets added
FY 2019-2023	$	153,902,035	Total 5-year CIP

The total five-year CIP is estimated at $153.9 million in capital spending needs through the year 2023. Of this amount, roughly $34 million is work-in-progress (nearly 23%) and has already been expended and funded at year end. There is $11.2 million in available bond proceeds to fund future capital work and $7.7 million in the capital fund to fund the CIP. The future funding needs will be roughly $97 million in additional debt (revenue bonds) to be issued and $4.1 million in future reserves to be placed in the capital fund.

Several years ago, with the support of the City of Charlottesville Utilities Division and the ACSA, the Authority initiated a comprehensive plan to improve the wastewater collection and treatment infrastructure to address issues with inflow and infiltration. A goal developed among the three agencies to reduce rainwater inflow and infiltration into the sewer system by 25% by 2020 was driving many of our capital projects in the past. One of the last projects was the Rivanna Pump Station and Tunnel which was completed this year. This project cost $31.5 million and included the construction of a tunnel that is 1,620 feet long and 8 feet in diameter. It was one of the largest projects ever undertaken by the Authority.



Review of Operations: (Continued)

With many of the wastewater related infrastructure project addressing capacity and renewal needs, the Authority's capital planning is shifting to the water treatment and distribution systems. Some systems are new, like the $30 million upgrade for the Granular Activated Carbon (GAC) filtration. The GAC project is affecting all 5 water treatment plants by installing new final filtration systems that will help meet the requirements related to the Disinfection Byproduct Rule required by the State Department of Health. This project is a major challenge as each plant is being effectively taken apart and put back together with the new systems and must continue to produce high quality treated water at all times during the construction period.

GAC Pressure Tank Installation

Review of Operations: (Continued)

GAC Pressure Vessels – South Rivanna

The Crozet growth area of the County has placed demand needs on the entire system (which is separate from the Urban System) requiring several projects into the future. The Crozet plant has not seen a major upgrade since its original construction in 1966. A Drinking Water Infrastructure Plan was implemented in FY 2018 to help with planning and coordination on supply, treatment, distribution, storage and raw water conveyance.

New Crozet Finished Water Pump Station

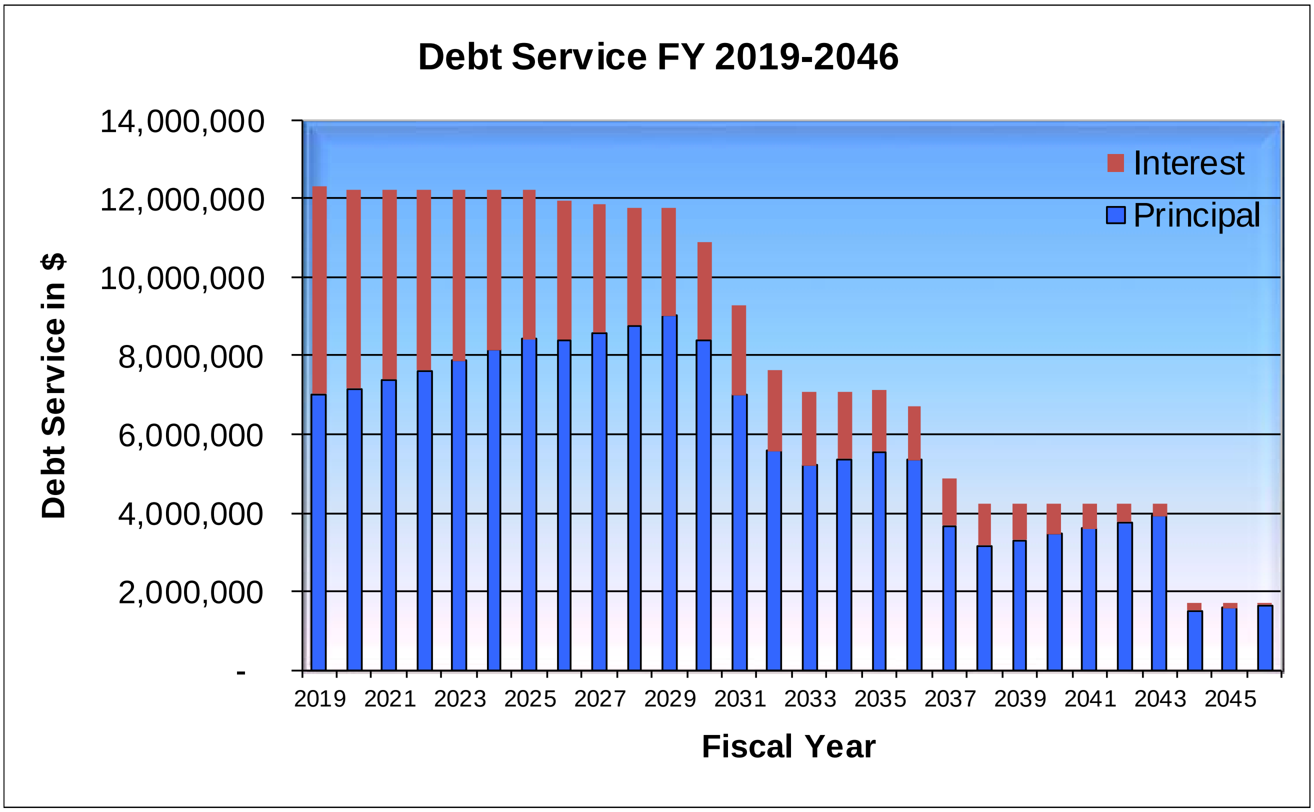
Crozet Plant

One of these projects that is needed for capacity, which began in FY2018, is the Finished Water Pump Station. The current pump station was the original to the design of the current plant with numerous operational impediments that needed attention before the plant was completed.

Review of Operations: (Continued)

Despite the significant infrastructure needs identified in the CIP, the Authority is positioned to provide for these needs by using more cash up front for projects and having a debt and rate structure (and a system for increasing debt charges to our customers) that will accommodate more debt in the future. The Authority has been slowly but consistently implementing rate increases to pay for such infrastructure needs in 5-year increments. This practice encourages the creation of reserves for capital spending until a project is started and partially financed with debt proceeds.

As shown in the following graph, which represents debt service payments on existing debt, the Authority has a fairly consistent to a declining debt structure for the next 12 years with large declines thereafter. Additionally, the rates are currently programmed to generate $15.5 million annually in debt service revenues; however, the water and wastewater capital needs will require additional rate increases in the future to maintain solid cash positions and fund future debt service needs.



Requests for Information:

This financial report is designed to provide a general overview of the Authority's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Finance Department at 695 Moores Creek Lane, Charlottesville, Virginia 22902-9016.

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Basic Financial Statements

Statement of Net Position
At June 30, 2018 and 2017

	At June 30,	
	2018	**2017**
ASSETS		
Current assets:		
Cash and cash equivalents (Note 1)	$ 32,962,035	$ 26,411,859
Investments (Note 3)	1,267	10,048,635
Restricted cash and cash equivalents	7,349,678	17,194,342
Accounts receivable	2,674,276	2,461,718
Unbilled accounts receivable	44,000	41,200
Prepaid expenses	94,739	135,604
Total current assets	$ 43,125,995	$ 56,293,358
Noncurrent assets:		
Restricted assets:		
Cash and cash equivalents	$ 2,101,015	$ 2,043,103
Investments (Note 3)	1,928,929	1,986,841
Total restricted assets	$ 4,029,944	$ 4,029,944
Capital assets: (Note 4)		
Land and improvements	$ 10,604,850	$ 10,604,850
Buildings and operating equipment	298,496,204	262,667,240
Trucks and autos	1,281,934	1,212,729
Office equipment	93,659	93,659
Less accumulated depreciation	(88,869,213)	(83,068,806)
Subtotal net capital assets	$ 221,607,434	$ 191,509,672
Construction in progress (Note 5)	54,148,987	72,342,584
Total net capital assets	$ 275,756,421	$ 263,852,256
Total noncurrent assets	$ 279,786,365	$ 267,882,200
Total assets	$ 322,912,360	$ 324,175,558
DEFERRED OUTFLOWS OF RESOURCES		
Deferred charge on refunding	$ 701,491	$ 749,345
Deferred outflows - pension (Note 8)	580,464	1,124,870
Deferred outflows - OPEB - group life insurance (Note 12)	33,512	-
Total deferred outflows of resources	$ 1,315,467	$ 1,874,215

The accompanying notes to financial statements are an integral part of this statement.

Statement of Net Position (Continued)
At June 30, 2018 and 2017

	At June 30,	
	2018	**2017**
LIABILITIES		
Current liabilities:		
Accounts payable and other accrued expenses	$ 2,199,504	$ 2,570,085
Compensated absences - current portion (Note 7)	323,000	366,000
Other long-term obligation (Note 9)	123,637	69,593
Revenue bonds - current portion (Note 6)	3,980,819	3,694,342
Subtotal current liabilities	$ 6,626,960	$ 6,700,020
Current liabilities (payable from restricted assets):		
Retainage payable	$ 442,816	$ 2,266,167
Accrued interest payable	1,341,064	1,379,128
Revenue bond principal - current portion (Note 6)	3,036,709	3,229,350
Subtotal current liabilities (payable from restricted assets)	$ 4,820,589	$ 6,874,645
Total current liabilities	$ 11,447,549	$ 13,574,665
Noncurrent liabilities:		
Compensated absences (net of current portion) (Note 7)	$ 115,227	$ 32,473
Net OPEB liability (Note 12)	376,000	-
Other long-term obligation (Note 9)	364,289	413,475
Net pension liability (Note 8)	2,923,583	4,168,792
Revenue bonds (net of current portion) (Note 6)	160,878,670	166,096,761
Total noncurrent liabilities	$ 164,657,769	$ 170,711,501
Total liabilities	$ 176,105,318	$ 184,286,166
DEFERRED INFLOWS OF RESOURCES		
Deferred inflows - pension (Note 8)	$ 523,983	$ -
Deferred inflows - OPEB - group life insurance (Note 12)	42,000	-
Total deferred inflows of resources	$ 565,983	$ -
NET POSITION		
Net Position:		
Net investment in capital assets	$ 114,620,746	$ 105,412,275
Restricted for bond covenants	3,536,710	3,729,350
Unrestricted	29,399,070	32,621,982
Total net position	$ 147,556,526	$ 141,763,607

Statement of Revenues, Expenses, and Changes in Net Position
Years Ended June 30, 2018 and 2017

	Year Ended June 30, 2018	Year Ended June 30, 2017
Operating revenues:		
Metered water sales	$ 14,034,080	$ 13,753,977
Wastewater service charges	14,858,101	14,444,159
Total operating revenues	$ 28,892,181	$ 28,198,136
Operating expenses:		
Personnel costs	$ 7,385,978	$ 7,483,807
Professional services	738,823	885,072
Other services and charges	3,341,421	2,764,905
Operations and maintenance	4,169,065	4,214,246
Depreciation	5,805,362	5,411,996
Total operating expenses	$ 21,440,649	$ 20,760,026
Operating income	$ 7,451,532	$ 7,438,110
Nonoperating revenues (expenses):		
Investment earnings	$ 525,039	$ 296,433
Buck Mountain revenue	125,900	115,700
Administrative reimbursement	436,329	328,000
Other revenues	302,920	305,763
Interest expense	(2,643,801)	(2,248,229)
Debt issuance costs	-	(126,766)
Total nonoperating revenues (expenses)	$ (1,253,613)	$ (1,329,099)
Change in net position	$ 6,197,919	$ 6,109,011
Net position, beginning of year, as restated	141,358,607	135,654,596
Net position, end of year	$ 147,556,526	$ 141,763,607

The accompanying notes to financial statements are an integral part of this statement.

Statement of Cash Flows
Years Ended June 30, 2018 and 2017

	Year Ended June 30, 2018	Year Ended June 30, 2017
Cash flows from operating activities:		
Receipts from customers and users	$ 29,541,972	$ 28,897,979
Payments to suppliers of goods and services	(7,949,169)	(8,257,239)
Payments to and on behalf of employees for services	(7,487,933)	(7,078,552)
Net cash provided by (used for) operating activities	$ 14,104,870	$ 13,562,188
Cash flows from capital and related financing activities:		
Additions to capital assets	$ (17,941,791)	$ (33,360,786)
Principal payments on bonds	(6,904,880)	(6,120,712)
Proceeds of bonds, net of issue costs, premiums	2,340,222	19,206,714
Debt issuance costs	-	(126,766)
Interest payments	(5,465,317)	(5,791,961)
Net cash provided by (used for) capital and related financing activities	$ (27,971,766)	$ (26,193,511)
Cash flows from investing activities:		
(Purchase) of investments	$ (66,927)	$ (1,028,660)
Sale of investments	10,044,022	-
Maturity of investments	3,986	2,484
Interest and dividends received	649,239	365,854
Net cash provided by (used for) investing activities	$ 10,630,320	$ (660,322)
Increase (decrease) in cash and cash equivalents	$ (3,236,576)	$ (13,291,645)
Cash and cash equivalents at beginning of year (including $19,237,445 and $32,500,432, respectively reported in restricted accounts)	45,649,304	58,940,949
Cash and cash equivalents at end of year (including $9,450,693 and $19,237,445, respectively reported in restricted accounts)	$ 42,412,728	$ 45,649,304
Reconciliation of operating income (loss) to net cash provided by (used for) operating activities:		
Operating income	$ 7,451,532	$ 7,438,110
Adjustments to reconcile operating income (loss) to net cash provided by (used for) operating activities:		
Depreciation	5,805,362	5,411,996
Buck Mountain revenue	125,900	115,700
Other nonoperating revenues	739,249	633,763
Changes in operating assets and liabilities:		
(Increase) decrease in receivables	(215,358)	(49,620)
Increase (decrease) in net OPEB liability	(53,000)	(45,406)
Increase (decrease) in compensated absences	39,754	14,475
Increase (decrease) in other long-term obligation	4,858	483,068
Increase (decrease) in net pension liability	(1,245,209)	1,187,539
(Increase) decrease in deferred outflows of resources - pension	544,406	(643,240)
Increase (decrease) in deferred inflows of resources - pension	523,983	(443,880)
(Increase) decrease in deferred outflows of resources - OPEB	(9,512)	-
Increase (decrease) in deferred inflows of resources - OPEB	42,000	-
(Increase) decrease in prepaid expenses	40,865	1,061
Increase (decrease) in operating payables and accrued expenses	310,040	(541,378)
Net cash provided by (used for) operating activities	$ 14,104,870	$ 13,562,188
Noncash investing, capital and financing activities:		
Increase (decrease) in fair value of investments	$ (124,200)	$ (171,743)
(Increase) decrease in retainage payable for capital projects	1,823,351	(1,015,627)

The accompanying notes to financial statements are an integral part of this statement.

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Note 1−Summary of Significant Accounting Policies:

In the interest of efficient water quality management for the upper Rivanna River Basin, the Rivanna Water and Sewer Authority was formed on June 7, 1972 as a joint venture of the City of Charlottesville, the Albemarle County Service Authority, and the County of Albemarle, pursuant to the Virginia Water and Waste Authorities Act (1950 as amended). The Authority is responsible for acquiring, financing, constructing and maintaining facilities for the improvement, treatment, storage and transmission of potable water, and for the interception, treatment and discharge of wastewater for the City and County. The Authority operates under the terms of a Service Agreement among the Authority, the Albemarle County Service Authority, the City of Charlottesville, and the County of Albemarle which was signed June 12, 1973.

A. Financial Reporting Entity

The Rivanna Water & Sewer Authority was established according to the Agreement mentioned above for the purposes stated. The participating entities are City of Charlottesville, County of Albemarle, and Albemarle County Service Authority. The City of Charlottesville and the Albemarle County Service Authority have an ongoing financial responsibility to the Authority because a covenant to pay the Authority's rates and charges is included in the operating agreement.

The Authority's governing body is comprised of three members appointed by the County, three members appointed by the City, and one member who is jointly appointed by the City and County. Therefore, none of the participants appoints a voting majority of board members.

The Authority is perpetual. No participating government has access to its resources or surpluses, nor is any participant liable for the Authority's debts or deficits. The Authority also has the ability to finance its capital projects through user charges or the sale of revenue bonds.

Based on the above representations, the Rivanna Water & Sewer Authority has been determined to be a joint venture of the City of Charlottesville, County of Albemarle and Albemarle County Service Authority. The Authority is not a component unit of any of the participating governments. There are no component units to be included within the Authority's financial statements.

For purposes of reporting entity disclosure, it should be noted that a separate entity, the Rivanna Solid Waste Authority, provides garbage and refuse transfer and disposal services to the City of Charlottesville and Albemarle County. Although certain administrative employees provide services to both Authorities, each Authority is operationally and legally independent.

B. Basis of Accounting

Rivanna Water & Sewer Authority operates as an enterprise fund, uses the flow of economic resources measurement focus and its accounts are maintained on the accrual basis of accounting. Under this method, revenues are recognized when earned, and expenses are recorded as liabilities when incurred, without regard to receipt or payment of cash. The Authority accrues revenue for services rendered but not yet billed at the end of the fiscal year. The Authority accounts have been audited by an independent firm annually since its founding in accordance with the requirements of the Service Agreement, dated June 12, 1973, among the Authority, the City of Charlottesville, Albemarle County, and Albemarle County Service Authority.

Note 1−Summary of Significant Accounting Policies: (Continued)

B. Basis of Accounting (Continued)

The Authority distinguishes *operating* revenues and expenses from *nonoperating* items. Operating revenues and expenses generally result from providing services and producing and delivering goods in connection with the Authority's principal ongoing operations. The principal operating revenues of the Authority are charges to customers for sales and services. Operating expenses include the cost of sales and services, administrative expenses, and depreciation on capital assets. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses.

C. Accounts Receivable

Accounts receivable are stated at book value utilizing the direct write-off method for immaterial uncollectible accounts.

D. Basic Financial Statements

Since the Authority is only engaged in business-type activities, it is required to present only the financial statements required for enterprise funds. For the Authority, the basic financial statements and required supplementary information consist of:

- Management's discussion and analysis
- Enterprise fund financial statements
  - Statement of Net Position
  - Statement of Revenues, Expenses, and Changes in Net Position
  - Statement of Cash Flows
  - Notes to the Financial Statements
- Required Supplementary Information
  - Schedule of Changes in Net Pension Liability and Related Ratios
  - Schedule of Employer Contributions-Pension Plan
  - Notes to Required Supplementary Information-Pension Plan
  - Schedule of Authority's Share of Net OPEB Liability-Group Life Insurance Program
  - Schedule of Employer Contribution-Group Life Insurance Program
  - Notes to Required Supplementary Information-Group Life Insurance Program

Note 1−Summary of Significant Accounting Policies: (Continued)

E. Capital Assets

Capital assets, which include property, plant, equipment, and infrastructure assets (e.g., roads, bridges, sidewalks, and similar items), are reported in the financial statements. Capital assets are defined by the Authority as assets with an initial, individual cost of more than $5,000 (amount not rounded) and an estimated useful life in excess of one year. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at acquisition value at the date of donation.

The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend its useful life are not capitalized.

Major outlays for capital assets and improvements are capitalized as projects are constructed. Interest incurred during the construction phase of capital assets of business-type activities is included as part of the capitalized value of the assets constructed. The Authority capitalized interest in the amount of $2,271,708 and $2,713,381 for the years ended June 30, 2018 and 2017, respectively.

Property, plant, equipment and infrastructure are depreciated using the straight-line method over the following estimated useful lives:

Assets	Years
Buildings & operating equipment	5 to 50
Trucks & autos	5 to 10
Office equipment	5 to 10
Data processing equipment	5

F. Cash and Cash Equivalents

The Authority's cash and cash equivalents consist of demand deposits, certificates of deposit, short-term U.S. Governmental obligations, and other investments with an original maturity of three months or less from the date of acquisition, all of which are readily convertible to known amounts of cash.

G. Investments

Money market investments, participating interest-earning investment contracts (repurchase agreements) that have a remaining maturity at time of purchase of one year or less, nonparticipating interest-earning investment contracts (nonnegotiable certificates of deposit (CDs) and external investment pools) are measured at amortized cost. All other investments are reported at fair value.

Note 1−Summary of Significant Accounting Policies: (Continued)

H. Budgets and Budgetary Accounting

A budget is prepared for information, fiscal planning purposes, and to provide the basis for setting wholesale rates, in accordance with the requirements of the Service Agreement, dated June 12, 1973, among the Authority, the City of Charlottesville, Albemarle County, and the Albemarle County Service Authority. Rates charged by the six rate centers are not subjected to regulatory scrutiny but may be changed at any time by the Authority's Board of Directors, if necessary, in order to adjust revenues. None of the participating entities are required to approve the budget. The budget is adopted as a planning document and is not a legal control on expenses.

I. Inventory

Consumption of materials and supplies is recorded as an expense when used. No inventory amounts are recorded as an asset, as available inventories are not significant.

J. Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

K. Net Position

Net position is the difference between assets and deferred outflows of resources and liabilities and deferred inflows of resources. Net investment in capital assets represents capital assets, reduced by accumulated depreciation and by any outstanding debt, deferred outflows of resources and increased by deferred inflows of resources related to the acquisition, construction or improvement of those assets. Restricted net position represents restricted assets reduced by liabilities and deferred inflows of resources related to those assets. The balance in the replacement reserve is presented as restricted net position.

L. Restricted Assets

Certain proceeds of the Authority’s revenue bonds and certain resources set aside for their repayment are classified as restricted assets on the statement of net position, because they are maintained in separate bank accounts, and their use is limited by applicable bond covenants. The “revenue bond general operating reserve” is used to report resources set aside to subsidize potential deficiencies from the Authority’s operation that could adversely affect debt service payments. The “revenue bond payment account” is used to segregate resources accumulated for debt service payments over the next twelve months. The “debt service reserve” is used to report resources set aside to make up potential future deficiencies in the revenue bond payment account. The “repair and replacement reserve” is used to report resources set aside to meet unexpected contingencies or to fund asset renewals and replacements.

Note 1−Summary of Significant Accounting Policies: (Continued)

M. Long-Term Obligations

Bond premiums and discounts are amortized over the life of the bonds. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are expensed as incurred.

N. Reclassification

Certain amounts in previously issued financial statements have been restated to conform to the current year's classifications.

O. Deferred Inflows and Outflows of Resources

In addition to assets, the statement of net position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, deferred outflows of resources, represents a consumption of net position that applies to a future period(s) and so will not be recognized as an outflow of resources (expense) until then. The Authority has three types of items that qualify for reporting in this category. One type is the deferred charge on refunding reported in the statement of net position. A deferred charge on refunding results from the difference in the carrying value of refunded debt and its reacquisition price. This amount is deferred and amortized over the shorter of the life of the refunded or refunding debt. Another type of deferred outflow is comprised of certain items related to the measurement of the net pension liability. It is comprised of contributions to the pension plan made during the current year and subsequent to the net pension liability measurement date, which will be recognized as a reduction of the net pension liability next fiscal year, differences between expected and actual experience, and net difference between projected and actual pension plan earnings. A third type of deferred outflow is related to the Group Life Insurance Program (GLI OPEB Plan). It consists of employer contributions to the OPEB plan in the current year and subsequent to the OPEB liability measurement date, which will be recognized as a reduction of the net GLI OPEB liability next fiscal year, and changes in proportionate share between measurement dates.

In addition to liabilities, the statement of net position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, deferred inflows of resources, represents an acquisition of net position that applies to a future period(s) and so will not be recognized as an inflow of resources (revenue) until that time. The Authority has two types of items that qualify for reporting in this category. Items related to the measurement of the net pension liability that are reported as deferred inflows of resources include differences between expected and actual experience, changes in assumptions, and the net difference between projected and actual earnings on pension plan investments. Deferred inflows of resources related to the measurement of the net GLI OPEB liability include differences between expected and actual experience, the net difference between projected and actual earnings on GLI OPEB plan investments, and changes in assumptions.

For more detailed information regarding deferred outflows and inflows of resources related to the pension plan, refer to Note 8. For more information on those related to the GLI OPEB Plan, refer to Note 12.

Note 1−Summary of Significant Accounting Policies: (Continued)

P. Net Position Flow Assumption

Sometimes the Authority will fund outlays for a particular purpose from both restricted (e.g., restricted bond or grant proceeds) and unrestricted resources. In order to calculate the amounts to report as restricted net position and unrestricted net position in the financial statements, a flow assumption must be made about the order in which the resources are considered to be applied. It is the Authority's policy to consider restricted net position to have been depleted before unrestricted net position is applied.

Q. Pensions

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the Authority's Retirement Plan and the additions to/deductions from the Authority's Retirement Plan's net fiduciary position have been determined on the same basis as they were reported by the Virginia Retirement System (VRS). For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

R. Other Postemployment Benefits (OPEB)

Group Life Insurance

The Virginia Retirement System (VRS) Group Life Insurance (GLI) Program is a multiple employer cost sharing plan. It provides coverage to state employees, teachers, and employees of participating political subdivisions. The GLI Program was established pursuant to §51.1-500 et seq. of the Code of Virginia, as amended, and which provides the authority under which benefit terms are established or may be amended. The GLI Program is a defined benefit plan that provides a basic group life insurance benefit for employees of participating employers. For purposes of measuring the net GLI Program OPEB liability, deferred outflows of resources and deferred inflows of resources related to the GLI OPEB, and GLI OPEB expense, information about the fiduciary net position of the VRS GLI Program OPEB and the additions to/deductions from the VRS GLI OPEB's net fiduciary position have been determined on the same basis as they were reported by VRS. In addition, benefit payments are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.

Note 2−Acquisition of Water and Wastewater Facilities:

Under the terms of the Service Agreement (See Note 1), the Authority agreed to purchase certain water production, transmission and storage facilities and wastewater interception and treatment facilities from the City and the Albemarle County Service Authority. The agreement provides that the sale be consummated ten years from the date of the agreement or at such later time as the debts, if any, attributed to each such facility have been paid or provision is made for their payment, and that the Authority will lease the facility until such time as the sale is consummated. The purchase price is the fair value of the facilities as of June 12, 1973, as determined by all payments paid by the Authority during the term of lease applicable to the principal retired on the debt of such facilities. In accordance with generally accepted accounting principles, the aforementioned agreement has been treated as an installment purchase of the facilities, with the purchase price being discounted at an annual rate of 6% for ten years.

Note 2−Acquisition of Water and Wastewater Facilities: (Continued)

The following tabulation reflects the agreed upon purchase price and accounting thereof:

Fair value as of June 12, 1973:		
Facilities acquired from City of Charlottesville	$	6,128,124
Facilities acquired from Albemarle County Service Authority		3,604,384
Total purchase price	$	9,732,508
Add: Interest portion of rental payments not applied to principal reduction		1,154,074
Total contracts payable	$	10,886,582
Less: Interest included in contract price computed at annual rate of 6% for 10 years		4,940,705
Asset carrying value	$	5,945,877

The contracts payable have been reduced by the amount of the annual rental payments on the facilities as outlined in the following tabulation:

	City of Charlottesville	Albemarle County Service Authority
Contracts payable, June 12, 1973	$ 6,354,634	$ 4,531,948
Rental payments and contract adjustments in prior fiscal years	$ 1,760,676	$ 3,680,395
Total rental payments	$ 1,760,676	$ 3,680,395
Final payment on facilities with no outstanding debt as of June 30, 1983	4,593,958	851,553
Total payments	$ 6,354,634	$ 4,531,948
Contracts payable, June 30, 2018	$ -	$ -

The total annual rental payments over the initial ten year agreement were not sufficient to retire the contracts payable to the Albemarle County Service Authority. The deferred interest was amortized over the initial ten year period of the agreement and was fully amortized as of June 30, 1983.

Depreciation has been based upon the engineer's estimates of useful lives remaining as of the valuation date (June 12, 1973). Depreciation expense on these facilities amounted to $53,080 and $64,918 for the years ended June 30, 2018 and 2017, respectively.

Note 3−Deposits and Investments:

Deposits

Deposits with banks are covered by the Federal Deposit Insurance Corporation (FDIC) and collateralized in accordance with the Virginia Security for Public Deposits Act (the “Act”) Section 2.2-4400 et. seq. of the Code of Virginia. Under the Act, banks and savings institutions holding public deposits in excess of the amount insured by the FDIC must pledge collateral to the Commonwealth of Virginia Treasury Board. Financial Institutions may choose between two collateralization methodologies and depending upon that choice, will pledge collateral that ranges in the amounts from 50% to 130% of excess deposits. Accordingly, all deposits are considered fully collateralized.

Investments

Statutes authorize the Authority to invest in obligations of the United States or agencies thereof, obligations of the Commonwealth of Virginia or political subdivisions thereof, obligations of the International Bank for Reconstruction and Development (World Bank), the Asian Development Bank, the African Development Bank, “prime quality” commercial paper and certain corporate notes, banker’s acceptances, repurchase agreements and the State Treasurer’s Local Government Investment Pool (LGIP).

The Authority does not have a formal investment policy that addresses credit risk or interest rate risk.

Credit Risk of Debt Securities

The Authority’s rated debt investments as of June 30, 2018 and 2017 were rated by Standard & Poor’s and the ratings are presented below using Standard & Poor’s rating scale.

Authority's Rated Debt Investments' Values - 2018

	Fair Quality Ratings		
Rated Debt Investments	**AAAm**	**AA+**	**AA+f**
U.S. Agencies Securities	$ 3,148	$ -	$ -
Local Government Investment Pool	15,293,860	-	-
VML/VACo Virginia Investment Pool	10,120,432	-	1,267
Virginia State Non-Arbitrage Pool	2,971,904	-	-
U.S. Treasury Notes & Bonds	-	1,925,780	-
U.S. Treasury & Agency Money Market Funds	6,215,861	-	-
Total	$ 34,605,205	$ 1,925,780	$ 1,267

Authority's Rated Debt Investments' Values - 2017

	Fair Quality Ratings		
Rated Debt Investments	**AAA**	**AA+**	**AAf**
U.S. Agencies Securities	$ 7,741	$ -	$ -
Local Government Investment Pool	15,982,637	-	-
VML/VACo Virginia Investment Pool	-	-	10,048,635
Virginia State Non-Arbitrage Pool	12,567,350	-	-
U.S. Treasury Notes & Bonds	-	1,979,100	-
U.S. Treasury & Agency Money Market Funds	4,676,244	-	-
Total	$ 33,233,972	$ 1,979,100	$ 10,048,635

Note 3−Deposits and Investments: (Continued)

Interest Rate Risk

Investment Maturities (in years) - 2018

Investment Type	Fair Value	Less Than 1 Year	1-5 Years	6-10 Years
U.S. Agencies Securities	$ 3,148	$ -	$ -	$ 3,148
Local Government Investment Pool	15,293,860	15,293,860	-	-
VML/VACo Virginia Investment Pool	10,121,699	10,121,699	-	-
Virginia State Non-Arbitrage Pool	2,971,904	2,971,904	-	-
U.S. Treasury & Agency Money Market Funds	6,215,861	6,215,861	-	-
U.S. Treasury Notes & Bonds	1,925,780	-	1,925,780	-
Total	$ 36,532,252	$ 34,603,324	$ 1,925,780	$ 3,148

Investment Maturities (in years) - 2017

Investment Type	Fair Value	Less Than 1 Year	1-5 Years	6-10 Years
U.S. Agencies Securities	$ 7,741	$ -	$ -	$ 7,741
Local Government Investment Pool	15,982,637	15,982,637	-	-
VML/VACo Virginia Investment Pool	10,048,635	10,048,635	-	-
Virginia State Non-Arbitrage Pool	12,567,350	12,567,350	-	-
U.S. Treasury & Agency Money Market Funds	4,676,244	4,676,244	-	-
U.S. Treasury Notes & Bonds	1,979,100	-	1,979,100	-
Total	$ 45,261,707	$ 43,274,866	$ 1,979,100	$ 7,741

External Investment Pools

The Authority invests in the Virginia Investment Pool ("VIP") which is sponsored by VML/VACo Finance and is professionally managed under the governance of the VIP Board of Trustees. The VIP investment strategy is to preserve capital, and it only invests in instruments allowable by the Code of Virginia. The Authority owns shares of the VIP and not the underlying instruments held by the VIP.

The fair value of the positions in the external investment pools (Local Government Investment Pool, State Non-Arbitrage Pool and VML/VACo Virginia Investment Pool) is the same as the value of the pool shares. As LGIP and SNAP are not SEC registered, regulatory oversight of the pools rest with the Virginia State Treasury. LGIP and SNAP are amortized cost basis portfolios under the provisions of GASB Statement No. 79. There are no withdrawal limitations or restrictions imposed on participants in LGIP and SNAP. The VML/VACo Virginia Investment Pool has a limit of two withdrawals per month.

Note 4−Capital Assets:

Details of changes in capital assets for the year ended June 30, 2018 are as follows:

	Balance July 1, 2017	Increases	Decreases	Balance June 30, 2018
Capital assets not being depreciated:				
Land and improvements	$ 10,604,850	$ -	$ -	$ 10,604,850
Construction in progress	72,342,584	17,618,579	35,812,176	54,148,987
Total capital assets not being depreciated	$ 82,947,434	$ 17,618,579	$ 35,812,176	$ 64,753,837
Other capital assets:				
Buildings & operating equipment:				
Water system	$ 93,050,994	$ 2,590,812	$ -	$ 95,641,806
Wastewater system	169,155,788	33,221,365	11,132	202,366,021
Support departments	460,458	16,787	(11,132)	488,377
Subtotal	$ 262,667,240	$ 35,828,964	$ -	$ 298,496,204
Accumulated depreciation	(81,913,673)	(5,781,085)	-	(87,694,758)
Total	$ 180,753,567	$ 30,047,879	$ -	$ 210,801,446
Trucks and autos:				
Water system	$ 174,725	$ -	$ 650	$ 174,075
Wastewater system	201,875	-	4,305	197,570
Support departments	836,129	74,160	-	910,289
Subtotal	$ 1,212,729	$ 74,160	$ 4,955	$ 1,281,934
Accumulated depreciation	(1,064,477)	(22,275)	(4,955)	(1,081,797)
Total	$ 148,252	$ 51,885	$ -	$ 200,137
Office equipment:				
Water system	$ 2,715	$ -	$ -	$ 2,715
Wastewater system	2,714	-	-	2,714
Support departments	88,230	-	-	88,230
Subtotal	$ 93,659	$ -	$ -	$ 93,659
Accumulated depreciation	(90,656)	(2,002)	-	(92,658)
Total	$ 3,003	$ (2,002)	$ -	$ 1,001
Capital assets, net	$ 263,852,256	$ 47,716,341	$ 35,812,176	$ 275,756,421

Note 4−Capital Assets: (Continued)

Details of changes in capital assets for the year ended June 30, 2017 are as follows:

	Balance July 1, 2016	Increases	Decreases	Balance June 30, 2017
Capital assets not being depreciated:				
Land and improvements	$ 10,604,850	$ -	$ -	$ 10,604,850
Construction in progress	49,509,957	35,796,478	12,963,851	72,342,584
Total capital assets not being depreciated	$ 60,114,807	$ 35,796,478	$ 12,963,851	$ 82,947,434
Other capital assets:				
Buildings & operating equipment:				
Water system	$ 91,643,002	$ 1,407,992	$ -	$ 93,050,994
Wastewater system	157,614,102	11,541,686	-	169,155,788
Support departments	488,264	19,489	47,295	460,458
Subtotal	$ 249,745,368	$ 12,969,167	$ 47,295	$ 262,667,240
Accumulated depreciation	(76,569,383)	(5,391,585)	(47,295)	(81,913,673)
Total	$ 173,175,985	$ 7,577,582	$ -	$ 180,753,567
Trucks and autos:				
Water system	$ 174,725	$ -	$ -	$ 174,725
Wastewater system	179,255	22,620	-	201,875
Support departments	822,780	27,136	13,787	836,129
Subtotal	$ 1,176,760	$ 49,756	$ 13,787	$ 1,212,729
Accumulated depreciation	(1,059,855)	(18,409)	(13,787)	(1,064,477)
Total	$ 116,905	$ 31,347	$ -	$ 148,252
Office equipment:				
Water system	$ 2,715	$ -	$ -	$ 2,715
Wastewater system	2,714	-	-	2,714
Support departments	88,230	-	-	88,230
Subtotal	$ 93,659	$ -	$ -	$ 93,659
Accumulated depreciation	(88,654)	(2,002)	-	(90,656)
Total	$ 5,005	$ (2,002)	$ -	$ 3,003
Capital assets, net	$ 233,412,702	$ 43,403,405	$ 12,963,851	$ 263,852,256

Note 5−Construction in Progress:

Details of construction in progress for the year ended June 30, 2018 are as follows:

	Balance July 1, 2017	Cost of Construction	Expense/ Transfer to Capital Assets	Balance June 30, 2018
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	$ 25,249	$ 98,533	$ -	$ 123,782
Observatory WTP Improvements	1,042,198	112,360	-	1,154,558
Interconnect Lower SH and RM Raw Water Mains	-	8,076	-	8,076
Sugar Hollow to Ragged Mtn Res Transfer Flow Meter	6,953	8,358	-	15,311
Route 29 Pumping Station Site Acquisition	832,187	209,981	-	1,042,168
Urban Water GAC/Water Treatment Plant Improvements	18,292,018	5,797,104	-	24,089,122
Wholesale Water Master Metering-Urban	2,270,371	409,445	-	2,679,816
Piney Mountain Tank Rehabilitation	-	51,185	-	51,185
Rt. 29 Pipeline-VDOT Betterment	1,714,749	876,063	2,590,812	-
Avon to Pantops Water Main	-	126,861	-	126,861
South Rivanna Hydropower Plant Decommisioning	82,332	16,293	-	98,625
South Rivanna WTP Improvements	-	46,891	-	46,891
Beaver Creek Dam Alterations	133,886	57,985	-	191,871
Crozet Water GAC/Water Treatment Plant Improvements	2,665,401	585,229	-	3,250,630
Crozet WTP Expansion	90,419	419,958	-	510,377
Crozet WTP Finished Water Pump Station	395,663	1,672,097	-	2,067,760
Crozet Drinking Water Infrastructure Plan	-	245,223	-	245,223
Scottsville Water Granular Activated Carbon	1,216,510	352,874	-	1,569,384
Schenks Branch Interceptor	-	11,187	-	11,187
Rivanna Pump Station and Tunnel	30,040,496	1,423,901	31,464,397	-
Interceptor Sewer & Manhole Repair	124,330	52,104	-	176,434
Crozet Interceptor	180,715	1,010	-	181,725
Crozet Flow Equalization Tank	37,356	42,736	-	80,092
Crozet Pump Station Two Automatic Bar Screens	-	65,575	65,575	-
Crozet Interceptor PS Bypass Isolation Valves	-	18,334	-	18,334
Moores Creek Bridge Repairs	37,391	223,807	-	261,198
Moores Creek AWRRF Odor Control-Phase 2	6,669,061	2,482,605	-	9,151,666
MCAWRRF Roof Replacements	61,492	747,932	-	809,424
MCAWRRF Second Centrifuge	172,974	981,745	-	1,154,719
Radio Upgrades	3,567	24,770	-	28,337
Capitalized Interest	3,981,099	2,271,708	1,691,392	4,561,415
Retainage on Construction in Progress	2,266,167	(1,823,351)	-	442,816
Total	$ 72,342,584	$ 17,618,579	$ 35,812,176	$ 54,148,987

Cost of construction includes interest capitalized during the fiscal year, where applicable. For the years ended June 30, 2018 and 2017, capitalized interest was $2,271,708 and $2,713,381, respectively.

Note 5−Construction in Progress: (Continued)

Details of construction in progress for the year ended June 30, 2017 are as follows:

	Balance July 1, 2016	Cost of Construction	Expense/ Transfer to Capital Assets	Balance June 30, 2017
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W	$ 25,249	$ -	$ -	$ 25,249
South Rivanna Reservoir Dredging	127,558	-	127,558	-
Observatory Water Treatment Plant Improvements	422,978	619,220	-	1,042,198
Sugar Hollow to Ragged Mtn. Res. Transfer Flow Meter	-	6,953	-	6,953
Route 29 Pumping Station Site Acquisition	466,416	365,771	-	832,187
Stillhouse Tank Repairs and System Improvements	51,398	311,068	362,466	-
Urban Water GAC/WTP Improvements	10,107,128	8,184,890	-	18,292,018
Wholesale Water Master Metering-Urban	747,124	1,523,247	-	2,270,371
Route 29 Pipeline - VDOT Betterment	1,235	1,713,514	-	1,714,749
South Rivanna Hydropower Plant Decommisioning	58,552	23,780	-	82,332
South Rivanna WTP Leaf Screen	-	430,818	430,818	-
South Rivanna WTP Filter Press Rehabilitation	-	165,242	165,242	-
Beaver Creek Dam Alterations	133,886	-	-	133,886
Crozet Water GAC/WTP Improvements	935,045	1,730,356	-	2,665,401
Crozet Ground Storage Tank Repairs and Upgrades	30,921	284,818	315,739	-
Crozet Water Treatment Plant Expansion	-	90,419	-	90,419
Crozet Water Treatment Finished Water Pump Station	-	395,663	-	395,663
Scottsville Water GAC	330,665	885,845	-	1,216,510
Meadowcreek Interceptor Improvements	3,943,171	179,741	4,122,912	-
Shenks Branch Interceptor	4,691,219	1,557,296	6,248,515	-
New Rivanna Pump Station and Tunnel	22,502,522	7,537,974	-	30,040,496
Interceptor Sewer & Manhole Repair	123,330	1,000	-	124,330
Crozet Interceptor Sewer & Manhole Repair	180,715	-	-	180,715
Comprehensive Sanitary Sewer Model and Study Update	348,127	9,943	358,070	-
Crozet Flow Equalization Tank	-	37,356	-	37,356
Moores Creek Bridge Repairs	30,741	6,650	-	37,391
MCAWRRF Administration Building Repairs	-	38,591	38,591	-
MCAWRRF Odor Control-Phase 2	927,380	5,741,681	-	6,669,061
MCAWRRF Roof Replacements	-	61,492	-	61,492
MCAWRRF Second Centrifuge	12,399	160,575	-	172,974
Radio Upgrades	-	3,567	-	3,567
Capitalized Interest	2,061,658	2,713,381	793,940	3,981,099
Retainage on Construction in Progress	1,250,540	1,015,627	-	2,266,167
	$ 49,509,957	$ 35,796,478	$ 12,963,851	$ 72,342,584

Note 6−Long-Term Obligations:

A. Changes in Long-Term Obligations

The following is a summary of long-term obligation transactions for the year ended June 30, 2018:

	Balance July 1, 2017	Issuances	Retirements	Balance June 30, 2018	Due Within One Year
Revenue bonds payable	$ 165,018,638	$ 2,340,222	$ (6,904,880)	$ 160,453,980	$ 7,017,528
Add (less) amounts:					
For issuance premiums	8,001,815	-	(559,597)	7,442,218	-
Total revenue bonds	$ 173,020,453	$ 2,340,222	$ (7,464,477)	$ 167,896,198	$ 7,017,528
VERIP liability	$ 483,068	$ 79,850	$ (74,992)	$ 487,926	$ 123,637
Compensated absences	$ 398,473	$ 380,221	$ (340,467)	$ 438,227	$ 323,000
Net OPEB liablity*	$ 429,000	$ 13,000	$ (66,000)	$ 376,000	$ -
Net pension liability	$ 4,168,792	$ 1,878,258	$ (3,123,467)	$ 2,923,583	$ -
Totals	$ 178,499,786	$ 4,691,551	$ (11,069,403)	$ 172,121,934	$ 7,464,165

* Balance as of July 1, 2017 restated resulting from implementation of GASB 75, refer to Note 17.

The following is a summary of long-term obligation transactions for the year ended June 30, 2017:

	Balance July 1, 2016	Issuances	Retirements	Balance June 30, 2017	Due Within One Year
Revenue bonds payable	$ 151,932,636	$ 19,206,714	$ (6,120,712)	$ 165,018,638	$ 6,923,692
Add (less) amounts:					
For issuance premiums	8,579,614	-	(577,799)	8,001,815	-
Total revenue bonds	$ 160,512,250	$ 19,206,714	$ (6,698,511)	$ 173,020,453	$ 6,923,692
Net OPEB liability	$ 45,406	$ -	$ (45,406)	$ -	$ -
VERIP liability	$ -	$ 483,068	$ -	$ 483,068	$ 69,593
Compensated absences	$ 383,998	$ 388,974	$ (374,499)	$ 398,473	$ 366,000
Net pension liability	$ 2,981,253	$ 2,151,540	$ (964,001)	$ 4,168,792	$ -
Totals	$ 163,922,907	$ 22,230,296	$ (8,082,417)	$ 178,070,786	$ 7,359,285

Note 6−Long-Term Obligations: (Continued)

B. Details of Long-Term Obligations

	Total Amount	Amount Due Within One Year
Revenue Bonds		
Water and Sewer System Revenue Bonds - Series of 2005A - On November 10, 2005, the Authority issued $2,340,929 in bonds for purposes of financing the Moores Creek wastewater pre-treatment project. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that these obligations will be repaid from revenue generated by the Authority and are backed by a restricted cash account.		
The bond resolution provides a redemption schedule with an interest only payment due in April 2007 and semi-annual payments of principal and interest of $79,670 from October 2007 through October 2026. The bonds bear interest at 3%.	$ 1,187,687	$ 124,636
$24,000,000 Regional Water and Sewer System Revenue Bond - Series 2009A - On August 1, 2009 the Authority issued $24,000,000 in bonds for purposes of financing the Moores Creek Wastewater Treatment Plant upgrades, including the Enhanced Nutrient Removal project. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.		
The bond resolution provided a redemption schedule with an interest only payment due in April 2011 and semi-annual payments of principal and 3.35% interest of $843,077 from October 2011 through October 2030. The interest rate was reduced to 2.65% on October 1, 2014, which reduced the semi-annual payments to $802,099.	16,974,889	1,162,012
$15,179,718 Regional Water and Sewer System Revenue Bond - Series 2010A - On June 29, 2010 the Authority issued $15,179,718 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system, including the replacement of the Meadow Creek Sanitary Sewer Interceptor together with related expenses. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.		
The bond resolution provided a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of $513,715 from October 2012 through October 2030. Effective October 1, 2016, the interest rate was reduced to 2.05%, reducing semi-annual payments to $481,261.	10,566,204	749,737

Note 6−Long-Term Obligations: (Continued)

B. Details of Long-Term Obligations (Continued)

	Total Amount	Amount Due Within One Year
$6,982,662 Regional Water and Sewer System Revenue Bond - Series 2011A - On March 17, 2011 the Authority issued $6,982,662 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's sewer system including improvements necessary to address the wet weather flows at the Moores Creek Wastewater Treatment Plant. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.		
The bond resolution provides a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of $236,308 from October 2012 through October 2031. Effective October 1, 2016, the interest rate was reduced to 2.05%, reducing semi-annual payments to $221,804.	$ 5,208,329	$ 338,564
$1,017,338 Regional Water and Sewer System Revenue Bond - Series 2011B - On March 17, 2011 the Authority issued $1,017,338 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's sewer system including improvements necessary to address the wet weather flows at the Moores Creek Wastewater Treatment Plant. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.		
The bond resolution provided a redemption schedule with an interest only payment due in April 2012 and semi-annual payments of principal and 2.93% interest of $34,429 from October 2012 through October 2031. The interest rate was reduced to 2.05% as of October 1, 2016, reducing semi-annual payments to $31,666.	743,565	48,335
$4,241,488 Regional Water and Sewer System Revenue Bond - Series 2011D - On September 9, 2011 the Authority issued $4,241,488 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account.		
The bond resolution provided a redemption schedule with an interest only payment due in October 2012 and semi-annual payments of principal and 2.93% interest of $143,541 from April 2013 through April 2032. The interest rate was reduced to 2.05% effective October 1, 2016, and the semi-annual payments were reduced to $134,475.	3,258,767	203,181

Note 6−Long-Term Obligations: (Continued)

B. Details of Long-Term Obligations (Continued)

	Total Amount	Amount Due Within One Year
$443,937 Regional Water and Sewer System Revenue Bond - Series 2011E - On September 9, 2011 the Authority issued $443,937 in bonds for purposes of financing the acquisition, construction and equipping of improvements to the Authority's water and sewer system. These bonds are secured by a supplemental trust agreement between the Authority and trustee for the bondholders. This agreement states that the obligation will be repaid from revenue generated by the Authority and is backed by a restricted cash account. The bond resolution provided a redemption schedule with an interest only payment due in October 2012 and semi-annual payments of principal and interest of $15,024 from April 2013 through April 2032. The interest rate was reduced to 2.05% effective October 1, 2016, and the semi-annual payments were reduced to $13,997.	$ 339,201	$ 21,149
$25,100,000 Water and Sewer System Revenue and Refunding Bonds, Series 2012A - On June 13, 2012, the Authority issued $25,100,000 in Revenue and Refunding Bonds for purposes of financing various water and sewer capital projects and to refund Series 2001 bond with an outstanding amount of $5,490,000 and Series 2003 bond with an outstanding amount of $4,827,000. The bonds were issued at a premium in the amount of $3,706,939. The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from October 1, 2012 through October 1, 2042. The bonds bear interest at an annual rate ranging from 2.125% to 5.125%. The Authority refunded the 2001 and 2003 Series bonds to reduce its total debt service payments over the next 13 years by $4.93 million and to obtain a net economic gain (difference between the present values of the debt service payments on the old and new debt) of $1,079,384 after applying existing reserve funds of $3.55 million.	19,070,000	645,000

Note 6−Long-Term Obligations: (Continued)

B. Details of Long-Term Obligations (Continued)

	Total Amount	Amount Due Within One Year
$26,240,000 Water and Sewer System Revenue and Refunding Bonds, Series 2012B - On October 30, 2012, the Authority issued $26,240,000 in Revenue and Refunding Bonds for purposes of financing various water and sewer capital projects including the design, development and construction of a new dam; the implementation of wetlands and streambank mitigation plans and costs of issuance. The bonds were issued at a premium in the amount of $646,250.		
The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2013 through October 1, 2042. The bonds bear interest at an annual rate ranging from 2.125% to 4.0%. Total payments due each year range from $1,337,000 to $1,342,000. The bonds are subject to federal arbitrage regulations.	$ 23,345,000	$ 630,000
$29,043,290 Water and Sewer Revenue Bonds, Series 2014A - On March 28, 2014, the Authority issued $29,043,290 in revenue bonds for purposes of financing capital improvements and capacity upgrades of the Rivanna Interceptor and pump station at Moores Creek Wastewater Treatment Plant.		
The bond resolution provides a redemption schedule with interest and principal of $941,168 due semi-annually from April 1, 2017 through April 1, 2036. An interest only payment is due on October 1, 2016. The bonds bear interest at an annual rate of 2.45%. As of June 30, 2017 the Authority had requested draw down of bond proceeds in the amount of $26,703,384. All proceeds have been received as of June 30, 2018.	27,179,308	1,224,724
$1,189,672 Water and Sewer Revenue Bonds, Series 2015A - On June 17, 2015, the Authority issued $1,189,672 in revenue bonds for purposes of financing capital improvements including replacing the final phase of the Schenks Branch Interceptor.		
The bond resolution provides a redemption schedule with an interest payment due October 1, 2016 and interest and principal payments of $35,296 due semi-annually from April 1, 2017 through April 1, 2036. The bonds bear interest at an annual rate of 1.5%. As of June 30, 2017 the Authority had requested draw down of bond proceeds in the amount of $1,189,356. All proceeds have been received as of June 30, 2018.	1,107,030	54,190

Note 6−Long-Term Obligations: (Continued)

B. Details of Long-Term Obligations (Continued)

	Total Amount	Amount Due Within One Year
$44,495,000 Taxable Water and Sewer System Revenue and Refunding Bonds, Series 2015B - On November 18, 2015, the Authority issued $44,495,000 in Revenue and Refunding Bonds for purposes of financing various water capital projects and to refund Series 2005B bond with an outstanding amount of $20,455,000. The bonds were issued at a premium in the amount of $5,329,294. The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2016 through October 1, 2045 for total payments of $1.7 to $3.3 million per year. The bonds bear interest at an annual rate ranging from 3.094% to 5.125%. The Authority refunded the 2005B Series bonds to reduce its total debt service payments over the next 20 years by $4.45 million and to obtain a net economic gain (difference between the present values of the debt service payments on the old and new debt) of $3.51 million.	$ 41,870,000	$ 1,410,000
$10,000,000 Tax Regional Water and Sewer Revenue Bonds, Series 2016 - On December 8, 2016, the Authority issued $10,000,000 in revenue bonds for purposes of financing various capital improvements. The bond resolution provides a redemption schedule with interest due semi-annually and principal due annually from April 1, 2017 through October 1, 2036. The bonds bear interest at an annual rate of 2.35%. Total debt service payments are approximately $627,000 per year.	9,604,000	406,000
Total Revenue Bonds	$ 160,453,980	$ 7,017,528
Issuance premiums (discounts)	$ 7,442,218	$ -
VERIP liability	$ 487,926	$ 123,637
Compensated absences	$ 438,227	$ 323,000
Net OPEB liability	$ 376,000	$ -
Net pension liability	$ 2,923,583	$ -
Total	$ 172,121,934	$ 7,464,165

Note 6−Long-Term Obligations: (Continued)

C. Annual Amortization of Long-Term Debt

The annual requirements to amortize all long-term debt outstanding as of June 30, 2018 are as follows:

Year Ending June 30,	Revenue Bonds Interest	Revenue Bonds Principal
2019	$ 5,277,870	$ 7,017,528
2020	5,052,921	7,165,510
2021	4,828,588	7,385,577
2022	4,595,607	7,613,974
2023	4,340,582	7,875,760
2024-2028	17,711,409	42,297,735
2029-2033	11,472,144	35,196,043
2034-2038	6,915,185	23,111,853
2039-2043	3,135,163	18,065,000
2044-2046	347,847	4,725,000
Total	$ 63,677,316	$ 160,453,980

D. Prior Year Defeasance of Debt

In prior years, the Authority defeased certain revenue bonds by placing the proceeds of new bonds in an irrevocable trust to provide for all future debt service payments on the old bonds. Accordingly, the trust account assets and the liability for the defeased bonds are not included in the Authority's financial statements.

Note 7−Compensated Absences:

Authority employees earn vacation leave each month at a scheduled rate in accordance with the years of service and sick leave at the rate of eight hours per month. Accumulated unpaid vacation leave amounts are accrued when incurred. At June 30, 2018 and 2017, the liability for accrued vacation leave was $438,227 and $398,473, respectively.

Note 8−Pension Plan:

Plan Description

Name of Plan:	Virginia Retirement System (VRS)
Identification of Plan:	Agent Multiple-Employer Pension Plan
Administering Entity:	Virginia Retirement System (VRS)

All full-time, salaried permanent employees of the Authority are automatically covered by a VRS Retirement Plan upon employment. This is an agent multiple-employer plan administered by the Virginia Retirement System (the System) along with plans for other employer groups in the Commonwealth of Virginia. Members earn one month of service credit for each month they are employed and for which they and their employer pay contributions to VRS. Members are eligible to purchase prior service, based on specific criteria as defined in the Code of Virginia, as amended. Eligible prior service that may be purchased includes prior public service, active military service, certain periods of leave, and previously refunded service.

The System administers three different benefit structures for covered employees – Plan 1, Plan 2, and Hybrid. Each of these benefit structures has different eligibility criteria. The specific information for each plan and the eligibility for covered groups within each plan are set out in the table below:

RETIREMENT PLAN PROVISIONS		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
About Plan 1 Plan 1 is a defined benefit plan. The retirement benefit is based on a member's age, creditable service and average final compensation at retirement using a formula.	**About Plan 2** Plan 2 is a defined benefit plan. The retirement benefit is based on a member's age, creditable service and average final compensation at retirement using a formula.	**About the Hybrid Retirement Plan** The Hybrid Retirement Plan combines the features of a defined benefit plan and a defined contribution plan. • The defined benefit is based on a member's age, creditable service and average final compensation at retirement using a formula. • The benefit from the defined contribution component of the plan depends on the member and employer contributions made to the plan and the investment performance of those contributions.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

<table>
<tr><th colspan="3">RETIREMENT PLAN PROVISIONS (CONTINUED)</th></tr>
<tr><th>PLAN 1</th><th>PLAN 2</th><th>HYBRID RETIREMENT PLAN</th></tr>
<tr><td>About Plan 1 (Cont.)</td><td>About Plan 2 (Cont.)</td><td>About the Hybrid Retirement Plan (Cont.)
• In addition to the monthly benefit payment payable from the defined benefit plan at retirement, a member may start receiving distributions from the balance in the defined contribution account, reflecting the contributions, investment gains or losses, and any required fees.</td></tr>
<tr><td>Eligible Members
Employees are in Plan 1 if their membership date is before July 1, 2010, and they were vested as of January 1, 2013, and they have not taken a refund.

Hybrid Opt-In Election
VRS non-hazardous duty covered Plan 1 members were allowed to make an irrevocable decision to opt into the Hybrid Retirement Plan during a special election window held January 1 through April 30, 2014.

The Hybrid Retirement Plan’s effective date for eligible Plan 1 members who opted in was July 1, 2014.

If eligible deferred members returned to work during the election window, they were also eligible to opt into the Hybrid Retirement Plan.</td><td>Eligible Members
Employees are in Plan 2 if their membership date is on or after July 1, 2010, or their membership date is before July 1, 2010, and they were not vested as of January 1, 2013.

Hybrid Opt-In Election
Eligible Plan 2 members were allowed to make an irrevocable decision to opt into the Hybrid Retirement Plan during a special election window held January 1 through April 30, 2014.

The Hybrid Retirement Plan’s effective date for eligible Plan 2 members who opted in was July 1, 2014.

If eligible deferred members returned to work during the election window, they were also eligible to opt into the Hybrid Retirement Plan.</td><td>Eligible Members
Employees are in the Hybrid Retirement Plan if their membership date is on or after January 1, 2014. This includes:
• Political subdivision employees*
• Members in Plan 1 or Plan 2 who elected to opt into the plan during the election window held January 1-April 30, 2014; the plan’s effective date for opt-in members was July 1, 2014.

*Non-Eligible Members
Some employees are not eligible to participate in the Hybrid Retirement Plan. They include:
• Political subdivision employees who are covered by enhanced benefits for hazardous duty employees.</td></tr>
</table>

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Hybrid Opt-In Election (Cont.) Members who were eligible for an optional retirement plan (ORP) and had prior service under Plan 1 were not eligible to elect the Hybrid Retirement Plan and remain as Plan 1 or ORP.	**Hybrid Opt-In Election (Cont.)** Members who were eligible for an optional retirement plan (ORP) and have prior service under Plan 2 were not eligible to elect the Hybrid Retirement Plan and remain as Plan 2 or ORP.	***Non-Eligible Members (Cont.)** Those employees eligible for an optional retirement plan (ORP) must elect the ORP plan or the Hybrid Retirement Plan. If these members have prior service under Plan 1 or Plan 2, they are not eligible to elect the Hybrid Retirement Plan and must select Plan 1 or Plan 2 (as applicable) or ORP.
Retirement Contributions Employees contribute 5% of their compensation each month to their member contribution account through a pre-tax salary reduction. Member contributions are tax-deferred until they are withdrawn as part of a retirement benefit or as a refund. The employer makes a separate actuarially determined contribution to VRS for all covered employees. VRS invests both member and employer contributions to provide funding for the future benefit payment.	**Retirement Contributions** Employees contribute 5% of their compensation each month to their member contribution account through a pre-tax salary reduction.	**Retirement Contributions** A member's retirement benefit is funded through mandatory and voluntary contributions made by the member and the employer to both the defined benefit and the defined contribution components of the plan. Mandatory contributions are based on a percentage of the employee's creditable compensation and are required from both the member and the employer. Additionally, members may choose to make voluntary contributions to the defined contribution component of the plan, and the employer is required to match those voluntary contributions according to specified percentages.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Creditable Service Creditable service includes active service. Members earn creditable service for each month they are employed in a covered position. It also may include credit for prior service the member has purchased or additional creditable service the member was granted. A member's total creditable service is one of the factors used to determine their eligibility for retirement and to calculate their retirement benefit. It also may count toward eligibility for the health insurance credit in retirement, if the employer offers the health insurance credit.	**Creditable Service** Same as Plan 1.	**Creditable Service** **<u>Defined Benefit Component:</u>** Under the defined benefit component of the plan, creditable service includes active service. Members earn creditable service for each month they are employed in a covered position. It also may include credit for prior service the member has purchased or additional creditable service the member was granted. A member's total creditable service is one of the factors used to determine their eligibility for retirement and to calculate their retirement benefit. It also may count toward eligibility for the health insurance credit in retirement, if the employer offers the health insurance credit. **<u>Defined Contribution Component:</u>** Under the defined contribution component, creditable service is used to determine vesting for the employer contribution portion of the plan.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Vesting Vesting is the minimum length of service a member needs to qualify for a future retirement benefit. Members become vested when they have at least five years (60 months) of creditable service. Vesting means members are eligible to qualify for retirement if they meet the age and service requirements for their plan. Members also must be vested to receive a full refund of their member contribution account balance if they leave employment and request a refund. Members are always 100% vested in the contributions that they make.	**Vesting** Same as Plan 1.	**Vesting** **Defined Benefit Component:** Defined benefit vesting is the minimum length of service a member needs to qualify for a future retirement benefit. Members are vested under the defined benefit component of the Hybrid Retirement Plan when they reach five years (60 months) of creditable service. Plan 1 or Plan 2 members with at least five years (60 months) of creditable service who opted into the Hybrid Retirement Plan remain vested in the defined benefit component. **Defined Contribution Component:** Defined contribution vesting refers to the minimum length of service a member needs to be eligible to withdraw the employer contributions from the defined contribution component of the plan. Members are always 100% vested in the contributions that they make.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Vesting (Cont.)	**Vesting (Cont.)**	**Vesting (Cont.)** **Defined Contributions Component: (Cont.)** Upon retirement or leaving covered employment, a member is eligible to withdraw a percentage of employer contributions to the defined contribution component of the plan, based on service. • After two years, a member is 50% vested and may withdraw 50% of employer contributions. • After three years, a member is 75% vested and may withdraw 75% of employer contributions. • After four or more years, a member is 100% vested and may withdraw 100% of employer contributions. Distribution is not required by law until age 70½.
Calculating the Benefit The Basic Benefit is calculated based on a formula using the member's average final compensation, a retirement multiplier and total service credit at retirement. It is one of the benefit payout options available to a member at retirement.	**Calculating the Benefit** See definition under Plan 1.	**Calculating the Benefit** **Defined Benefit Component:** See definition under Plan 1. **Defined Contribution Component:** The benefit is based on contributions made by the member and any matching contributions made by the employer, plus net investment earnings on those contributions.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Calculating the Benefit (Cont.) An early retirement reduction factor is applied to the Basic Benefit if the member retires with a reduced retirement benefit or selects a benefit payout option other than the Basic Benefit.	**Calculating the Benefit (Cont.)**	**Calculating the Benefit (Cont.)**
Average Final Compensation A member's average final compensation is the average of the 36 consecutive months of highest compensation as a covered employee.	**Average Final Compensation** A member's average final compensation is the average of their 60 consecutive months of highest compensation as a covered employee.	**Average Final Compensation** Same as Plan 2. It is used in the retirement formula for the defined benefit component of the plan.
Service Retirement Multiplier **VRS:** The retirement multiplier is a factor used in the formula to determine a final retirement benefit. The retirement multiplier for non-hazardous duty members is 1.70%. **Sheriffs and regional jail superintendents:** The retirement multiplier for sheriffs and regional jail superintendents is 1.85%. **Political subdivision hazardous duty employees:** The retirement multiplier of eligible political subdivision hazardous duty employees other than sheriffs and regional jail superintendents is 1.70% or 1.85% as elected by the employer.	**Service Retirement Multiplier** **VRS:** Same as Plan 1 for service earned, purchased or granted prior to January 1, 2013. For non-hazardous duty members the retirement multiplier is 1.65% for creditable service earned, purchased or granted on or after January 1, 2013. **Sheriffs and regional jail superintendents:** Same as Plan 1. **Political subdivision hazardous duty employees:** Same as Plan 1.	**Service Retirement Multiplier** **Defined Benefit Component:** **VRS:** The retirement multiplier for the defined benefit component is 1.00%. For members who opted into the Hybrid Retirement Plan from Plan 1 or Plan 2, the applicable multipliers for those plans will be used to calculate the retirement benefit for service credited in those plans. **Sheriffs and regional jail superintendents:** Not applicable. **Political subdivision hazardous duty employees:** Not applicable. **Defined Contribution Component:** Not applicable.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Normal Retirement Age **VRS:** Age 65. **Political subdivisions hazardous duty employees:** Age 60.	**Normal Retirement Age** **VRS:** Normal Social Security retirement age. **Political subdivisions hazardous duty employees:** Same as Plan 1.	**Normal Retirement Age** **<u>Defined Benefit Component:</u>** **VRS:** Same as Plan 2. **Political subdivisions hazardous duty employees:** Not applicable. **<u>Defined Contribution Component:</u>** Members are eligible to receive distributions upon leaving employment, subject to restrictions.
Earliest Unreduced Retirement Eligibility **VRS:** Age 65 with at least five years (60 months) of creditable service or at age 50 with at least 30 years of creditable service. **Political subdivisions hazardous duty employees:** Age 60 with at least five years of creditable service or age 50 with at least 25 years of creditable service.	**Earliest Unreduced Retirement Eligibility** **VRS:** Normal Social Security retirement age with at least five years (60 months) of creditable service or when their age and service equal 90. **Political subdivisions hazardous duty employees:** Same as Plan 1.	**Earliest Unreduced Retirement Eligibility** **<u>Defined Benefit Component:</u>** **VRS:** Normal Social Security retirement age and have at least five years (60 months) of creditable service or when their age and service equal 90. **Political subdivisions hazardous duty employees:** Not applicable. **<u>Defined Contribution Component:</u>** Members are eligible to receive distributions upon leaving employment, subject to restrictions.
Earliest Reduced Retirement Eligibility **VRS:** Age 55 with at least five years (60 months) of creditable service or age 50 with at least 10 years of creditable service.	**Earliest Reduced Retirement Eligibility** **VRS:** Age 60 with at least five years (60 months) of creditable service.	**Earliest Reduced Retirement Eligibility** **<u>Defined Benefit Component:</u>** **VRS:** Age 60 with at least five years (60 months) of creditable service.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

<table>
<tr><th colspan="3">RETIREMENT PLAN PROVISIONS (CONTINUED)</th></tr>
<tr><th>PLAN 1</th><th>PLAN 2</th><th>HYBRID RETIREMENT PLAN</th></tr>
<tr>
<td>Earliest Reduced Retirement Eligibility (Cont.)

Political subdivisions hazardous duty employees: 50 with at least five years of creditable service.</td>
<td>Earliest Reduced Retirement Eligibility (Cont.)

Political subdivisions hazardous duty employees:
Same as Plan 1.</td>
<td>Earliest Reduced Retirement Eligibility (Cont.)

Political subdivisions hazardous duty employees:
Not applicable.

<u>Defined Contribution Component:</u>
Members are eligible to receive distributions upon leaving employment, subject to restrictions.</td>
</tr>
<tr>
<td>Cost-of-Living Adjustment (COLA) in Retirement
The Cost-of-Living Adjustment (COLA) matches the first 3% increase in the Consumer Price Index for all Urban Consumers (CPI-U) and half of any additional increase (up to 4%) up to a maximum COLA of 5%.

<u>Eligibility:</u>
For members who retire with an unreduced benefit or with a reduced benefit with at least 20 years of creditable service, the COLA will go into effect on July 1 after one full calendar year from the retirement date.

For members who retire with a reduced benefit and who have less than 20 years of creditable service, the COLA will go into effect on July 1 after one calendar year following the unreduced retirement eligibility date.</td>
<td>Cost-of-Living Adjustment (COLA) in Retirement
The Cost-of-Living Adjustment (COLA) matches the first 2% increase in the CPI-U and half of any additional increase (up to 2%), for a maximum COLA of 3%.

<u>Eligibility:</u>
Same as Plan 1.</td>
<td>Cost-of-Living Adjustment (COLA) in Retirement
<u>Defined Benefit Component:</u>
Same as Plan 2.

<u>Defined Contribution Component:</u>
Not applicable.

<u>Eligibility:</u>
Same as Plan 1 and Plan 2.</td>
</tr>
</table>

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Cost-of-Living Adjustment (COLA) in Retirement (Cont.) **Exceptions to COLA Effective Dates:** The COLA is effective July 1 following one full calendar year (January 1 to December 31) under any of the following circumstances: • The member is within five years of qualifying for an unreduced retirement benefit as of January 1, 2013. • The member retires on disability. • The member retires directly from short-term or long-term disability under the Virginia Sickness and Disability Program (VSDP). • The member is involuntarily separated from employment for causes other than job performance or misconduct and is eligible to retire under the Workforce Transition Act or the Transitional Benefits Program. • The member dies in service and the member's survivor or beneficiary is eligible for a monthly death-in-service benefit. The COLA will go into effect on July 1 following one full calendar year (January 1 to December 31) from the date the monthly benefit begins.	**Cost-of-Living Adjustment (COLA) in Retirement (Cont.)** **Exceptions to COLA Effective Dates:** Same as Plan 1.	**Cost-of-Living Adjustment (COLA) in Retirement (Cont.)** **Exceptions to COLA Effective Dates:** Same as Plan 1 and Plan 2.

Note 8−Pension Plan: (Continued)

Plan Description (Continued)

RETIREMENT PLAN PROVISIONS (CONTINUED)		
PLAN 1	**PLAN 2**	**HYBRID RETIREMENT PLAN**
Disability Coverage Members who are eligible to be considered for disability retirement and retire on disability, the retirement multiplier is 1.7% on all service, regardless of when it was earned, purchased or granted.	**Disability Coverage** Members who are eligible to be considered for disability retirement and retire on disability, the retirement multiplier is 1.65% on all service, regardless of when it was earned, purchased or granted.	**Disability Coverage** Employees of political subdivisions (including Plan 1 and Plan 2 opt-ins) participate in the Virginia Local Disability Program (VLDP) unless their local governing body provides an employer-paid comparable program for its members. Hybrid members (including Plan 1 and Plan 2 opt-ins) covered under VLDP are subject to a one-year waiting period before becoming eligible for non-work-related disability benefits.
Purchase of Prior Service Members may be eligible to purchase service from previous public employment, active duty military service, an eligible period of leave or VRS refunded service as creditable service in their plan. Prior creditable service counts toward vesting, eligibility for retirement and the health insurance credit. Only active members are eligible to purchase prior service. Members also may be eligible to purchase periods of leave without pay.	**Purchase of Prior Service** Same as Plan 1.	**Purchase of Prior Service** **Defined Benefit Component:** Same as Plan 1, with the following exceptions: • Hybrid Retirement Plan members are ineligible for ported service. **Defined Contribution Component:** Not applicable.

Note 8−Pension Plan: (Continued)

Pension Plan Data

Information about the VRS Political Subdivision Retirement Plan is also available in the separately issued VRS 2017 Comprehensive Annual Financial Report (CAFR). A copy of the 2017 VRS CAFR may be downloaded from the VRS website at http://www.varetire.org/Pdf/Publications/2017-annual-report.pdf, or by writing to the System's Chief Financial Officer at P.O. Box 2500, Richmond, VA 23218-2500.

Employees Covered by Benefit Terms

As of the June 30, 2016 actuarial valuation, the following employees were covered by the benefit terms of the pension plan:

	2018	2017
Inactive members or their beneficiaries currently receiving benefits	52	51
Inactive members:		
Vested inactive members	16	16
Non-vested inactive members	20	17
Inactive members active elsewhere in VRS	36	33
Total inactive members	72	66
Active members	75	78
Total covered employees	199	195

Contributions

The contribution requirement for active employees is governed by §51.1-145 of the Code of Virginia, as amended, but may be impacted as a result of funding options provided to political subdivisions by the Virginia General Assembly. Employees are required to contribute 5.00% of their compensation toward their retirement. Prior to July 1, 2012, all or part of the 5.00% member contribution may have been assumed by the employer. Beginning July 1, 2012 new employees were required to pay the 5% member contribution. In addition, for existing employees, employers were required to begin making the employee pay the 5.00% member contribution. This could be phased in over a period of up to 5 years and the employer is required to provide a salary increase equal to the amount of the increase in the employee-paid member contribution.

The Authority's contractually required employer contribution rate for the years ended June 30, 2018 and 2017 was 9.62% of covered employee compensation. This rate was based on an actuarially determined rate from an actuarial valuation as of June 30, 2015.

This rate, when combined with employee contributions, was expected to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. Contributions to the pension plan from the Authority were $438,760 and $423,477 for the years ended June 30, 2018 and June 30, 2017, respectively.

Note 8−Pension Plan: (Continued)

Net Pension Liability

The Authority's net pension liability was measured as of June 30, 2017. The total pension liability used to calculate the net pension liability was determined by an actuarial valuation performed as of June 30, 2016, using updated actuarial assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2017.

Actuarial Assumptions – General Employees

The total pension liability for General Employees in the Authority's Retirement Plan was based on an actuarial valuation as of June 30, 2016, using the Entry Age Normal actuarial cost method and the following assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2017.

Inflation	2.5%
Salary increases, including inflation	3.5% – 5.35%
Investment rate of return	7.0%, net of pension plan investment expense, including inflation*

* Administrative expenses as a percent of the market value of assets for the last experience study were found to be approximately 0.06% of the market assets for all of the VRS plans. This would provide an assumed investment return rate for GASB purposes of slightly more than the assumed 7.0%. However, since the difference was minimal, and a more conservative 7.0% investment return assumption provided a projected plan net position that exceeded the projected benefit payments, the long-term expected rate of return on investments was assumed to be 7.0% to simplify preparation of pension liabilities.

Mortality rates:

Largest 10 – Non-Hazardous Duty: 20% of deaths are assumed to be service related

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

Note 8−Pension Plan: (Continued)

Actuarial Assumptions – General Employees (Continued)

All Others (Non 10 Largest) – Non-Hazardous Duty: 15% of deaths are assumed to be service related

Pre-Retirement:

RP-2014 Employee Rates to age 80, Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:

RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:

RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Largest 10 – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

All Others (Non 10 Largest) – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

Note 8−Pension Plan: (Continued)

Long-Term Expected Rate of Return

The long-term expected rate of return on pension System investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension System investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimate of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class (Strategy)	Target Allocation	Arithmetic Long-Term Expected Rate of Return	Weighted Average Long-Term Expected Rate of Return
Public Equity	40.00%	4.54%	1.82%
Fixed Income	15.00%	0.69%	0.10%
Credit Strategies	15.00%	3.96%	0.59%
Real Assets	15.00%	5.76%	0.86%
Private Equity	15.00%	9.53%	1.43%
Total	100.00%		4.80%
		Inflation	2.50%
		*Expected arithmetic nominal return	7.30%

* The above allocation provides a one-year return of 7.30%. However, one-year returns do not take into account the volatility present in each of the asset classes. In setting the long-term expected return for the system, stochastic projections are employed to model future returns under various economic conditions. The results provide a range of returns over various time periods that ultimately provide a median return of 6.83%, including expected inflation of 2.50%.

Note 8−Pension Plan: (Continued)

Discount Rate

The discount rate used to measure the total pension liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that System member contributions will be made per the VRS Statutes and the employer contributions will be made in accordance with the VRS funding policy at rates equal to the difference between actuarially determined contribution rates adopted by the VRS Board of Trustees and the member rate. Through the fiscal year ending June 30, 2019, the rate contributed by the employer for the Rivanna Water & Sewer Authority Retirement Plan will be subject to the portion of the VRS Board-certified rates that are funded by the Virginia General Assembly. From July 1, 2019 on, participating employers are assumed to contribute 100% of the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees. Therefore the long-term expected rate of return was applied to all periods of projected benefit payments to determine the total pension liability.

Changes in Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at June 30, 2016	$ 21,391,101	$ 17,222,309	$ 4,168,792
Changes for the year:			
Service cost	$ 398,833	$ -	$ 398,833
Interest	1,465,426	-	1,465,426
Differences between expected and actual experience	(123,760)	-	(123,760)
Assumption changes	(241,172)		(241,172)
Contributions - employer	-	423,473	(423,473)
Contributions - employee	-	237,015	(237,015)
Net investment income	-	2,098,047	(2,098,047)
Benefit payments, including refunds of employee contributions	(912,902)	(912,902)	-
Administrative expenses	-	(12,137)	12,137
Other changes	-	(1,862)	1,862
Net changes	$ 586,425	$ 1,831,634	$ (1,245,209)
Balances at June 30, 2017	$ 21,977,526	$ 19,053,943	$ 2,923,583

Note 8−Pension Plan: (Continued)

Changes in Net Pension Liability: (Continued)

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at June 30, 2015	$ 20,075,349	$ 17,094,096	$ 2,981,253
Changes for the year:			
Service cost	$ 420,980	$ -	$ 420,980
Interest	1,376,398	-	1,376,398
Differences between expected and actual experience	343,405	-	343,405
Contributions - employer	-	448,728	(448,728)
Contributions - employee	-	216,819	(216,819)
Net investment income	-	298,454	(298,454)
Benefit payments, including refunds of employee contributions	(825,031)	(825,031)	-
Administrative expenses	-	(10,631)	10,631
Other changes	-	(126)	126
Net changes	$ 1,315,752	$ 128,213	$ 1,187,539
Balances at June 30, 2016	$ 21,391,101	$ 17,222,309	$ 4,168,792

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Authority using the discount rate of 7.00%, as well as what the Authority's net pension liability would be if it were calculated using a discount rate that is one percentage point lower (6.00%) or one percentage point higher (8.00%) than the current rate:

	Rate		
Rivanna Water & Sewer Authority's Net Pension Liability	1% Decrease (6.00%)	Current Discount (7.00%)	1% Increase (8.00%)
2018	$ 5,648,515	$ 2,923,583	$ 642,315
	Rate		
	(6.00%)	(7.00%)	(8.00%)
2017	$ 6,836,718	$ 4,168,792	$ 1,935,785

Note 8−Pension Plan: (Continued)

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

For the year ended June 30, 2018, the Authority recognized pension expense of $261,940. At June 30, 2018, the Authority reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 141,704	$ 82,090
Changes in assumptions	-	159,969
Net difference between projected and actual earnings on pension plan investments	-	281,924
Employer contributions subsequent to the measurement date	438,760	-
Total	$ 580,464	$ 523,983

For the year ended June 30, 2017, the Authority recognized pension expense of $520,853. At June 30, 2017, the Authority reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 257,484	$ -
Net difference between projected and actual earnings on pension plan investments	443,909	-
Employer contributions subsequent to the measurement date	423,477	-
Total	$ 1,124,870	$ -

Note 8−Pension Plan: (Continued)

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions: (Continued)

$438,760 reported as deferred outflows of resources related to pensions resulting from the Authority's contributions subsequent to the measurement date will be recognized as a reduction of the Net Pension Liability in the year ended June 30, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense in future reporting periods as follows:

Year ended June 30		
2019	$	(193,023)
2020		(6,968)
2021		(1,927)
2022		(180,361)
2023		-
Thereafter		-

$423,477 reported as deferred outflows of resources related to pensions resulting from the Authority's contributions subsequent to the measurement date will be recognized as a reduction of the Net Pension Liability in the year ended June 30, 2018. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense in future reporting periods as follows:

Year ended June 30		
2018	$	(120,166)
2019		(110,212)
2020		(292,580)
2021		(178,435)
Thereafter		-

Note 9−Voluntary Early Retirement Incentive Program:

Rivanna Water and Sewer Authority has a Voluntary Early Retirement Incentive Program (VERIP) which provides for monthly payments to eligible employees for a period of up to five years after early retirement or until age 65, whichever comes first. Participants in the VERIP must be regular full-time employees eligible for early or full retirement under the provisions of the Virginia Retirement System (VRS) who have been employed by the Authority for 10 of the last 13 years prior to retirement. Employees retiring under the disability provisions of VRS and/or Social Security are not eligible for the VERIP. VERIP participants receive a stipend equal to the difference between (1) the annual VRS retirement benefit amount as reduced for early VRS retirement if appropriate and (2) the recomputed annual VRS benefit with the addition of the lesser of five more years of service or the number of additional years needed to reach age 65. The stipend is paid on a monthly basis. The participant may also receive a monthly payment equal to the amount of the Board's contribution toward an employee's health insurance, for as long as the employee is covered by VERIP benefits. Applications for the VERIP must be submitted to the Executive Director for approval. The Authority's estimated VERIP liability as of June 30, 2018 and 2017 was $487,926 and $483,068, respectively. The amount payable within the next year is $123,637.

Note 10−Risk Management:

The Authority is exposed to various risks of loss related to torts; theft of, damage to and destruction of assets; errors and omissions; injuries to employees; and natural disasters. The Authority joined together with other local governments in the Commonwealth to form the Virginia Association of Counties Group Self-Insurance Risk Pool, a public entity risk pool currently operating as a common risk management and insurance program for member governments. The Authority pays an annual premium to the pool for its workers compensation coverage, property and liability insurance. The Agreement for Formation of the association provides that the association will be self-sustaining through member premiums. Settled claims have not exceeded pool coverage in any of the past three fiscal years.

Note 11−Other Postemployment Benefits−Health Insurance:

The Authority previously provided post-retirement healthcare benefits for employees who were eligible under a single-employer defined benefit plan. The Plan and benefits have been terminated. Therefore, the Authority has no assets or liabilities to report as of June 30, 2017 or subsequent years.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan):

Plan Description

All full-time, salaried permanent employees of the state agencies, teachers, and employees of participating political subdivisions are automatically covered by the VRS Group Life Insurance Program upon employment. This is a cost-sharing multiple-employer plan administered by the Virginia Retirement System (the System), along with pensions and other OPEB plans, for public employer groups in the Commonwealth of Virginia.

In addition to the Basic Group Life Insurance benefit, members are also eligible to elect additional coverage for themselves as well as a spouse or dependent children through the Optional Group Life Insurance Program. For members who elect the optional group life insurance coverage, the insurer bills employers directly for the premiums. Employers deduct these premiums from members' paychecks and pay the premiums to the insurer. Since this is a separate and fully insured program, it is not included as part of the Group Life Insurance Program OPEB.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Plan Description: (Continued)

The specific information for Group Life Insurance Program OPEB, including eligibility, coverage and benefits is set out in the table below:

GROUP LIFE INSURANCE PROGRAM PLAN PROVISIONS

Eligible Employees

The Group Life Insurance Program was established July 1, 1960, for state employees, teachers and employees of political subdivisions that elect the program, including the following employers that do not participate in VRS for retirement:

- City of Richmond
- City of Portsmouth
- City of Roanoke
- City of Norfolk
- Roanoke City School Board

Basic group life insurance coverage is automatic upon employment. Coverage ends for employees who leave their position before retirement eligibility or who take a refund of their member contributions and accrued interest.

Benefit Amounts

The benefits payable under the Group Life Insurance Program have several components.

- **Natural Death Benefit** - The natural death benefit is equal to the employee's covered compensation rounded to the next highest thousand and then doubled.
- **Accidental Death Benefit** – The accidental death benefit is double the natural death benefit.
- **Other Benefit Provisions** – In addition to the basic natural and accidental death benefits, the program provides additional benefits provided under specific circumstances. These include:
    - Accidental dismemberment benefit
    - Safety belt benefit
    - Repatriation benefit
    - Felonious assault benefit
    - Accelerated death benefit option

Reduction in Benefit Amounts

The benefit amounts provided to members covered under the Group Life Insurance Program are subject to a reduction factor. The benefit amount reduces by 25% on January 1 following one calendar year of separation. The benefit amount reduces by an additional 25% on each subsequent January 1 until it reaches 25% of its original value.

Minimum Benefit Amount and Cost-of-Living Adjustment (COLA)

For covered members with at least 30 years of creditable service, there is a minimum benefit payable under the Group Life Insurance Program. The minimum benefit was set at $8,000 by statute. The amount is increased annually based on the VRS Plan 2 cost-of-living adjustment and is currently $8,111.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Contributions

The contribution requirements for the Group Life Insurance Program are governed by §51.1-506 and §51.1-508 of the Code of Virginia, as amended, but may be impacted as a result of funding provided to state agencies and school divisions by the Virginia General Assembly. The total rate for the Group Life Insurance Program was 1.31% of covered employee compensation. This was allocated into an employee and an employer component using a 60/40 split. The employee component was 0.79% (1.31% x 60%) and the employer component was 0.52% (1.31% x 40%). Employers may elect to pay all or part of the employee contribution; however, the employer must pay all of the employer contribution. Each employer's contractually required employer contribution rate for the year ended June 30, 2018 was 0.52% of covered employee compensation. This rate was based on an actuarially determined rate from an actuarial valuation as of June 30, 2015. The actuarially determined rate, when combined with employee contributions, was expected to finance the costs of benefits payable during the year, with an additional amount to finance any unfunded accrued liability. Contributions to the Group Life Insurance Program from the entity were $25,512 and $24,197 for the years ended June 30, 2018 and June 30, 2017, respectively.

GLI OPEB Liabilities, GLI OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to the Group Life Insurance Program OPEB

At June 30, 2018, the entity reported a liability of $376,000 for its proportionate share of the Net GLI OPEB Liability. The Net GLI OPEB Liability was measured as of June 30, 2017 and the total GLI OPEB liability used to calculate the Net GLI OPEB Liability was determined by an actuarial valuation as of that date. The covered employer's proportion of the Net GLI OPEB Liability was based on the covered employer's actuarially determined employer contributions to the Group Life Insurance Program for the year ended June 30, 2017 relative to the total of the actuarially determined employer contributions for all participating employers. At June 30, 2017, the participating employer's proportion was .02503% as compared to .02450% at June 30, 2016.

For the year ended June 30, 2018, the participating employer recognized GLI OPEB expense of $5,000. Since there was a change in proportionate share between measurement dates, a portion of the GLI OPEB expense was related to deferred amounts from changes in proportion.

At June 30, 2018, the employer reported deferred outflows of resources and deferred inflows of resources related to the GLI OPEB from the following sources:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ -	$ 9,000
Net difference between projected and actual earnings on GLI OPEB program investments	-	14,000
Change in assumptions	-	19,000
Changes in proportion	8,000	-
Employer contributions subsequent to the measurement date	25,512	-
Total	$ 33,512	$ 42,000

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

GLI OPEB Liabilities, GLI OPEB Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to the Group Life Insurance Program OPEB: (Continued)

$25,512 reported as deferred outflows of resources related to the GLI OPEB resulting from the employer's contributions subsequent to the measurement date will be recognized as a reduction of the Net GLI OPEB Liability in the fiscal year ending June 30, 2019. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to the GLI OPEB will be recognized in the GLI OPEB expense in future reporting periods as follows:

Year Ended June 30		
2019	$	(8,820)
2020		(8,820)
2021		(8,820)
2022		(5,200)
2023		(2,340)
Thereafter		-

Actuarial Assumptions

The total GLI OPEB liability was based on an actuarial valuation as of June 30, 2016, using the Entry Age Normal actuarial cost method and the following assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2017.

Inflation	2.5%
Salary increases, including inflation:	
General state employees	3.5% – 5.35%
Teachers	3.5%-5.95%
SPORS employees	3.5%-4.75%
VaLORS employees	3.5%-4.75%
JRS employees	4.5%
Locality - General employees	3.5%-5.35%
Locality - Hazardous Duty employees	3.5%-4.75%
Investment rate of return	7.0%, net of investment expenses, including inflation*

*Administrative expenses as a percent of the market value of assets for the last experience study were found to be approximately 0.06% of the market assets for all of the VRS plans. This would provide an assumed investment return rate for GASB purposes of slightly more than the assumed 7.0%. However, since the difference was minimal, and a more conservative 7.0% investment return assumption provided a projected plan net position that exceeded the projected benefit payments, the long-term expected rate of return on investments was assumed to be 7.0% to simplify preparation of OPEB liabilities.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – General State Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males set back 1 year, 85% of rates; females set back 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year; females set back 1 year with 1.5% increase compounded from ages 70 to 85.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males 115% of rates; females 130% of rates.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 25%

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – Teachers

Pre-Retirement:
RP-2014 White Collar Employee Rates to age 80, White Collar Healthy Annuitant Rates at ages 81 and older projected with scale BB to 2020.

Post-Retirement:
RP-2014 White Collar Employee Rates to age 49, White Collar Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males 1% increase compounded from ages 70 to 90; females set back 3 years with 1.5% increase compounded from ages 65 to 70 and 2.0% increase compounded from ages 75 to 90.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; 115% of rates for males and females.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – SPORS Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020 and reduced margin for future improvement in accordance with experience
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 85%

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – VaLORS Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020 and reduced margin for future improvement in accordance with experience
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 50% to 35%

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – JRS Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males set back 1 year, 85% of rates; females set back 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year; females set back 1 year with 1.5% compounding increase from ages 70 to 85.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males 115% of rates; females 130% of rates.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Decreased rates at first retirement eligibility
Withdrawal Rates	No change
Disability Rates	Removed disability rates
Salary Scale	No change

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – Largest Ten Locality Employers – General Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages and extended final retirement age from 70 to 75
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – Non-Largest Ten Locality Employers – General Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 95% of rates; females 105% of rates.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 3 years; females 1.0% increase compounded from ages 70 to 90.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years, 110% of rates; females 125% of rates.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages and extended final retirement age from 70 to 75
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – Largest Ten Locality Employers – Hazardous Duty Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered retirement rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Increased disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 70%

Mortality Rates – Non-Largest Ten Locality Employers – Hazardous Duty Employees

Pre-Retirement:
RP-2014 Employee Rates to age 80, Healthy Annuitant Rates to 81 and older projected with scale BB to 2020; males 90% of rates; females set forward 1 year.

Post-Retirement:
RP-2014 Employee Rates to age 49, Healthy Annuitant Rates at ages 50 and older projected with scale BB to 2020; males set forward 1 year with 1.0% increase compounded from ages 70 to 90; females set forward 3 years.

Post-Disablement:
RP-2014 Disability Mortality Rates projected with scale BB to 2020; males set forward 2 years; unisex using 100% male.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Actuarial Assumptions: (Continued)

Mortality Rates – Non-Largest Ten Locality Employers – Hazardous Duty Employees: (Continued)

The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period from July 1, 2012 through June 30, 2016. Changes to the actuarial assumptions as a result of the experience study are as follows:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age and service year
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 60% to 45%

Net GLI OPEB Liability

The net OPEB liability (NOL) for the Group Life Insurance Program represents the program's total OPEB liability determined in accordance with GASB Statement No. 74, less the associated fiduciary net position. As of June 30, 2017, NOL amounts for the Group Life Insurance Program is as follows (amounts expressed in thousands):

		Group Life Insurance OPEB Program
Total GLI OPEB Liability	$	2,942,426
Plan Fiduciary Net Position		1,437,586
Employers' Net GLI OPEB Liability (Asset)	$	1,504,840
Plan Fiduciary Net Position as a Percentage of the Total GLI OPEB Liability		48.86%

The total GLI OPEB liability is calculated by the System's actuary, and each plan's fiduciary net position is reported in the System's financial statements. The net GLI OPEB liability is disclosed in accordance with the requirements of GASB Statement No. 74 in the System's notes to the financial statements and required supplementary information.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Long-Term Expected Rate of Return

The long-term expected rate of return on the System's investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of System's investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimate of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class (Strategy)	Target Allocation	Arithmetic Long-term Expected Rate of Return	Weighted Average Long-term Expected Rate of Return
Public Equity	40.00%	4.54%	1.82%
Fixed Income	15.00%	0.69%	0.10%
Credit Strategies	15.00%	3.96%	0.59%
Real Assets	15.00%	5.76%	0.86%
Private Equity	15.00%	9.53%	1.43%
Total	100.00%		4.80%
		Inflation	2.50%
		*Expected arithmetic nominal return	7.30%

*The above allocation provides a one-year return of 7.30%. However, one-year returns do not take into account the volatility present in each of the asset classes. In setting the long-term expected return for the system, stochastic projections are employed to model future returns under various economic conditions. The results provide a range of returns over various time periods that ultimately provide a median return of 6.83%, including expected inflation of 2.50%.

Discount Rate

The discount rate used to measure the total GLI OPEB liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that member contributions will be made per the VRS guidance and the employer contributions will be made in accordance with the VRS funding policy at rates equal to the difference between actuarially determined contribution rates adopted by the VRS Board of Trustees and the member rate. Through the fiscal year ending June 30, 2019, the rate contributed by the entity for the GLI OPEB will be subject to the portion of the VRS Board-certified rates that are funded by the Virginia General Assembly. From July 1, 2019 on, employers are assumed to contribute 100% of the actuarially determined contribution rates. Based on those assumptions, the GLI OPEB's fiduciary net position was projected to be available to make all projected future benefit payments of eligible employees. Therefore the long-term expected rate of return was applied to all periods of projected benefit payments to determine the total GLI OPEB liability.

Note 12−Group Life Insurance (GLI) Program (OPEB Plan): (Continued)

Sensitivity of the Employer's Proportionate Share of the Net GLI OPEB Liability to Changes in the Discount Rate

The follow presents the employer's proportionate share of the net GLI OPEB liability using the discount rate of 7.00%, as well as what the employer's proportionate share of the net GLI OPEB liability would be if it were calculated using a discount rate that is one percentage point lower (6.00%) or one percentage point higher (8.00%) than the current rate:

	Rate		
	1% Decrease (6.00%)	Current Discount (7.00%)	1% Increase (8.00%)
Authority's proportionate share of the Group Life Insurance Program Net OPEB Liability	$ 490,000	$ 376,000	$ 290,000

Group Life Insurance Program Fiduciary Net Position

Detailed information about the Group Life Insurance Program's Fiduciary Net Position is available in the separately issued VRS 2017 Comprehensive Annual Financial Report (CAFR). A copy of the 2017 VRS CAFR may be downloaded from the VRS website at http://www.varetire.org/Pdf/Publications/2017-annual-report.pdf, or by writing to the System's Chief Financial Officer at P.O. Box 2500, Richmond, VA, 23218-2500.

Note 13−Related Parties:

Rivanna Solid Waste Authority (RSWA) and Rivanna Water and Sewer Authority (RWSA) share office space and administrative staff. Procedures are in place to ensure proper segregation of funds, purchasing activity, personnel and similar matters. RSWA pays RWSA monthly for its share of joint administrative expenses, which totaled $409,000 in FY 2018 and $328,000 in FY 2017 and for leachate acceptance and treatment of $1,563 in FY 2018 and $732 in FY 2017. Rivanna Solid Waste Authority billed Rivanna Water & Sewer Authority $51,889 for hauling and tipping fees in FY 2018 and $58,060 in the previous year. RSWA owed RWSA $36,867 and $22,331 at June 30, 2018 and 2017, respectively.

Note 14−Construction Commitments:

Rivanna Water and Sewer Authority had the following significant construction contract commitments for capital projects as of June 30, 2018:

Project		Incurred To Date		Remaining Commitment
Interceptor Sewer & Manhole Repair	$	23,596	$	1,264,575
S. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line R/W		98,395		542,870

The Authority had the following significant construction contract commitments for capital projects as of June 30, 2017:

Project		Incurred To Date		Remaining Commitment
Rivanna Pump Station and Tunnel	$	25,272,154	$	1,553,973
Urban & Rural GAC/WTP Improvements		19,459,980		5,796,430
Wholesale Water Master Metering		1,963,426		962,267
MCAWRRF Odor Control - Phase 2 and MCAWRRF Bridge Repairs		5,323,374		2,790,499
Crozet WTP Finished Water Pump Station		195,985		1,744,015

These contracts give the Authority the right to terminate the contract for any reason.

Note 15−Fair Value Measures:

Fair value for investments is determined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. The three-level fair value hierarchy prioritizes the inputs used to measure fair value. This hierarchy requires entities to maximize the use of observable inputs and minimize the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.

- Level 2 — Significant observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data.

- Level 3 — Significant unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

Note 15−Fair Value Measures: (Continued)

The Authority is providing the following information related to its investments:

	Total June 30, 2018	Fair Value Measurements at Reporting Date Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Agencies Securities	$ 3,148	$ 3,148	$ -	$ -
U.S. Treasury & Agency Money Market Funds	6,215,861	6,215,861	-	-
U.S. Treasury Notes & Bonds	1,925,780	1,925,780	-	-
Total by fair value level	$ 8,144,789	$ 8,144,789	$ -	$ -

Investments measured at the net asset value (NAV)

VML/VACo Virginia Investment Pool	$ 10,121,699
Total measured at the NAV	$ 10,121,699

	Total June 30, 2017	Fair Value Measurements at Reporting Date Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Agencies Securities	$ 7741	$ 7741	$ -	$ -
U.S. Treasury & Agency Money Market Funds	4,676,244	4,676,244	-	-
U.S. Treasury Notes & Bonds	1,979,100	1,979,100	-	-
Total by fair value level	$ 6,663,085	$ 6,663,085	$ -	$ -

Investments measured at the net asset value (NAV)

VML/VACo Virginia Investment Pool	$ 10,048,635
Total measured at the NAV	$ 10,048,635

Note 16−Upcoming Financial Reporting Pronouncements:

Statement No. 83, *Certain Asset Retirement Obligations*, addresses accounting and financial reporting for certain asset retirement obligations (AROs). An ARO is a legally enforceable liability associated with the retirement of a tangible capital asset. A government that has legal obligations to perform future asset retirement activities related to its tangible capital assets should recognize a liability based on the guidance in this Statement. This Statement establishes criteria for determining the timing and pattern of recognition of a liability and a corresponding deferred outflow of resources for AROs. The requirements of this Statement are effective for reporting periods beginning after June 15, 2018.

Statement No. 84, *Fiduciary Activities*, establishes criteria for identifying fiduciary activities of all state and local governments. The focus of the criteria generally is on (1) whether a government is controlling the assets of the fiduciary activity and (2) the beneficiaries with whom a fiduciary relationship exists. Separate criteria are included to identify fiduciary component units and postemployment benefit arrangements that are fiduciary activities. This Statement describes four fiduciary funds that should be reported, if applicable: (1) pension (and other employee benefit) trust funds, (2) investment trust funds, (3) private-purpose trust funds, and (4) custodial funds. This Statement also provides for recognition of a liability to the beneficiaries in a fiduciary fund when an event has occurred that compels the government to disburse fiduciary resources. The requirements of this Statement are effective for reporting periods beginning after December 15, 2018.

Statement No. 87, *Leases*, increases the usefulness of governments' financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this Statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources, thereby enhancing the relevance and consistency of information about governments' leasing activities. The requirements of this Statement are effective for reporting periods beginning after December 15, 2019.

Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*, clarifies which liabilities governments should include when disclosing information related to debt. It defines debt for purposes of disclosure in notes to financial statements as a liability that arises from a contractual obligation to pay cash (or other assets that may be used in lieu of cash) in one or more payments to settle an amount that is fixed at the date the contractual obligation is established. The Statement requires that additional essential information related to debt be disclosed in notes to financial statements, including unused lines of credit; assets pledged as collateral for the debt; and terms specified in debt agreements related to significant events of default with finance-related consequences, significant termination events with finance-related consequences, and significant subjective acceleration clauses. For notes to financial statements related to debt, it requires that existing and additional information be provided for direct borrowings and direct placements of debt separately from other debt. The requirements of this Statement are effective for reporting periods beginning after June 15, 2018.

Note 16−Upcoming Financial Reporting Pronouncements: (Continued)

Statement No. 89, *Accounting for Interest Cost Incurred Before the End of a Construction Period*, enhances the relevance and comparability of information about capital assets and the cost of borrowing for a reporting period and simplifies accounting for interest cost incurred before the end of a construction period. Such interest cost includes all interest that previously was accounted for in accordance with the requirements of paragraphs 5-22 of Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, which are superseded by this Statement. This Statement requires that interest cost incurred before the end of a construction period be recognized as an expense in the period in which the cost is incurred for financial statements prepared using the economic resources measurement focus. As a result, interest cost incurred before the end of a construction period will not be included in the historical cost of a capital asset reported in a business-type activity or enterprise fund. This Statement also reiterates that in financial statements prepared using the current financial resources measurement focus, interest cost incurred before the end of a construction period should be recognized as an expenditure on a basis consistent with governmental fund accounting principles. The requirements of this Statement are effective for reporting periods beginning after December 15, 2019.

Management is currently evaluating the impact these standards will have on the financial statements when adopted.

Note 17−Restatement of Beginning Net Position:

The Authority implemented the financial reporting provisions of Governmental Accounting Standards Board Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions* during the fiscal year ended June 30, 2018. This Statement establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources, and expense/expenditures related to postemployment benefits other than pensions (other postemployment benefits or OPEB). Note disclosure and required supplementary information requirements about OPEB are also addressed. The requirements of this Statement will improve accounting and financial reporting by state and local governments for OPEB. In addition, the Authority implemented Governmental Accounting Standards Board Statement No. 85, *Omnibus 2017* during the fiscal year ended June 30, 2018. This Statement addresses practice issues identified during implementation and application of certain GASB statements for a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits (OPEB)). The implementation of these Statements resulted in the following restatement of net position:

	Amount
Net Position as of July 1, 2017, previously reported	$ 141,763,607
OPEB liability restated as of July 1, 2017 - group life insurance	(405,000)
Net Position as of July 1, 2017, as restated	$ 141,358,607

Required Supplementary Information

RIVANNA WATER & SEWER AUTHORITY

Schedule of Changes in Net Pension Liability and Related Ratios
For the Years Ended June 30, 2015 through June 30, 2018

	2017	2016	2015	2014
Total pension liability				
Service cost	$ 398,833	$ 420,980	$ 397,302	$ 408,618
Interest	1,465,426	1,376,398	1,308,253	1,243,939
Differences between expected and actual experience	(123,760)	343,405	43,130	-
Changes in assumptions	(241,172)	-	-	-
Benefit payments, including refunds of employee contributions	(912,902)	(825,031)	(725,341)	(742,220)
Net change in total pension liability	$ 586,425	$ 1,315,752	$ 1,023,344	$ 910,337
Total pension liability - beginning	21,391,101	20,075,349	19,052,005	18,141,668
Total pension liability - ending (a)	$ 21,977,526	$ 21,391,101	$ 20,075,349	$ 19,052,005
Plan fiduciary net position				
Contributions - employer	$ 423,473	$ 448,728	$ 434,762	$ 428,309
Contributions - employee	237,015	216,819	230,505	204,334
Net investment income	2,098,047	298,454	754,877	2,256,556
Benefit payments, including refunds of employee contributions	(912,902)	(825,031)	(725,341)	(742,220)
Administrative expense	(12,137)	(10,631)	(10,246)	(12,143)
Other	(1,862)	(126)	(160)	119
Net change in plan fiduciary net position	$ 1,831,634	$ 128,213	$ 684,397	$ 2,134,955
Plan fiduciary net position - beginning	17,222,309	17,094,096	16,409,699	14,274,744
Plan fiduciary net position - ending (b)	$ 19,053,943	$ 17,222,309	$ 17,094,096	$ 16,409,699
Authority's net pension liability - ending (a) - (b)	$ 2,923,583	$ 4,168,792	$ 2,981,253	$ 2,642,306
Plan fiduciary net position as a percentage of the total pension liability	86.70%	80.51%	85.15%	86.13%
Covered payroll	$ 4,613,774	$ 4,403,235	$ 4,232,146	$ 4,087,133
Authority's net pension liability as a percentage of covered payroll	63.37%	94.68%	70.44%	64.65%

This schedule is intended to report information for 10 years. Information prior to the 2014 valuation is not available. However, additional years will be included as they become available.

RIVANNA WATER & SEWER AUTHORITY

Schedule of Employer Contributions - Pension Plan
For the Years Ended June 30, 2009 through June 30, 2018

Fiscal Year	Contractually Required Contribution (1)	Contributions in Relation to Contractually Required Contribution (2)	Contribution Deficiency (Excess) (3)	Employer's Covered Payroll (4)	Contributions as a % of Covered Payroll (5)
2018	$ 438,760	$ 438,760	$ -	$ 4,868,672	9.01%
2017	423,477	423,477	-	4,613,774	9.18%
2016	451,771	451,771	-	4,403,235	10.26%
2015	435,295	435,295	-	4,232,146	10.29%
2014	428,317	428,317	-	4,087,133	10.48%
2013	426,490	426,490	-	4,078,576	10.46%
2012	308,088	308,088	-	3,885,089	7.93%
2011	297,182	297,182	-	3,747,565	7.93%
2010	237,625	237,625	-	3,765,849	6.31%
2009	236,823	236,823	-	3,753,142	6.31%

Changes of benefit terms – There have been no actuarially material changes to the System benefit provisions since the prior actuarial valuation. The 2014 valuation includes Hybrid Retirement Plan members for the first time. The hybrid plan applies to most new employees hired on or after January 1, 2014 and not covered by enhanced hazardous duty benefits. Because this is a fairly new benefit and the number of participants was relatively small, the impact on the liabilities as of the measurement date of June 30, 2017 are not material.

Changes of assumptions – The following changes in actuarial assumptions were made effective June 30, 2016 based on the most recent experience study of the System for the four-year period ending June 30, 2016:

Largest 10 – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

All Others (Non 10 Largest) – Non-Hazardous Duty:

Mortality Rates (pre-retirement, post-retirement healthy, and disabled)	Updated to a more current mortality table - RP-2014 projected to 2020
Retirement Rates	Lowered rates at older ages and changed final retirement from 70 to 75
Withdrawal Rates	Adjusted rates to better fit experience at each year age and service through 9 years of service
Disability Rates	Lowered rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

RIVANNA WATER & SEWER AUTHORITY

Schedule of Authority's Share of Net OPEB Liability
Group Life Insurance Program
For the Year Ended June 30, 2018

Date (1)	Employer's Proportion of the Net GLI OPEB Liability (Asset) (2)	Employer's Proportionate Share of the Net GLI OPEB Liability (Asset) (3)	Employer's Covered Payroll (4)	Employer's Proportionate Share of the Net GLI OPEB Liability (Asset) as a Percentage of Covered Payroll (3)/(4) (5)	Plan Fiduciary Net Position as a Percentage of Total GLI OPEB Liability (6)
2017	0.02503%	$ 376,000	$ 4,613,774	8.15%	48.86%

Schedule is intended to show information for 10 years. Information prior to the 2017 valuation is not available. However, additional years will be included as they become available.

RIVANNA WATER & SEWER AUTHORITY

Schedule of Employer Contributions
Group Life Insurance Program
For the Years Ended June 30, 2017 through June 30, 2018

Date	Contractually Required Contribution (1)	Contributions in Relation to Contractually Required Contribution (2)	Contribution Deficiency (Excess) (3)	Employer's Covered Payroll (4)	Contributions as a % of Covered Payroll (5)
2018	$ 25,512	$ 25,512	$ -	$ 4,868,672	0.52%
2017	24,197	24,197	-	4,613,774	0.52%

Schedule is intended to show information for 10 years. Information prior to 2017 is unavailable. However, additional years will be included as they become available.

Notes to Required Supplementary Information
Group Life Insurance Program
For the Year Ended June 30, 2018

Changes of benefit terms – There have been no actuarially material changes to the System benefit provisions since the prior actuarial valuation.

Changes of assumptions – The following changes in actuarial assumptions were made effective June 30, 2016 based on the most recent experience study of the System for the four-year period ending June 30, 2016:

General State Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered rates at older ages and changed final retirement
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 25%

Teachers

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered rates at older ages and changed final retirement
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change

SPORS Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 85%

VaLORS Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted rates to better fit experience at each year age and
Disability Rates	Adjusted rates to better fit experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 50% to 35%

Notes to Required Supplementary Information
Group Life Insurance Program
For the Year Ended June 30, 2018 (Continued)

JRS Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Decreased rates at first retirement eligibility
Withdrawal Rates	No change
Disability Rates	Removed disability rates
Salary Scale	No change

Largest Ten Locality Employers - General Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages and extended final
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 20%

Non-Largest Ten Locality Employers - General Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages and extended final
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Lowered disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 14% to 15%

Largest Ten Locality Employers - Hazardous Duty Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Lowered retirement rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Increased disability rates
Salary Scale	No change
Line of Duty Disability	Increased rate from 60% to 70%

Non-Largest Ten Locality Employers - Hazardous Duty Employees

Mortality Rates (pre-retirement, post-retirement	Updated to a more current mortality table - RP-2014 projected
Retirement Rates	Increased age 50 rates and lowered rates at older ages
Withdrawal Rates	Adjusted termination rates to better fit experience at each age
Disability Rates	Adjusted rates to better match experience
Salary Scale	No change
Line of Duty Disability	Decreased rate from 60% to 45%

Statistical Section

Sources:

Unless otherwise noted, the information in these tables is derived from the comprehensive annual financial reports for the relevant year.

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RIVANNA WATER & SEWER AUTHORITY **Table 1**

Net Position by Component
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Net investment in capital assets	$ 114,620,746	$ 105,412,275	$ 101,129,762	$ 99,020,753	$ 93,538,673	$ 87,302,949	$ 86,135,840	$ 77,662,172	$ 62,172,653	$ 47,324,770
Restricted	3,536,710	3,729,350	3,335,539	2,940,314	2,870,788	2,782,090	3,173,804	3,048,111	2,522,530	3,230,185
Unrestricted	29,399,070	32,621,982	31,189,295	28,812,875	32,388,908	31,510,133	24,483,936	23,156,625	26,697,587	20,419,274
Total net position	$ 147,556,526	$ 141,763,607	$ 135,654,596	$ 130,773,942	$ 128,798,369	$ 121,595,172	$ 113,793,580	$ 103,866,908	$ 91,392,770	$ 70,974,229

RIVANNA WATER & SEWER AUTHORITY **Table 2**

Changes in Net Position
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Operating revenues:										
Metered water sales	$ 14,034,080	$ 13,753,977	$ 13,014,328	$ 12,555,666	$ 11,353,630	$ 11,728,840	$ 11,058,083	$ 10,895,551	$ 10,746,260	$ 9,867,555
Wastewater service charges	14,858,101	14,444,159	14,799,741	13,625,855	14,620,353	13,889,105	12,807,628	11,069,488	12,701,859	9,671,122
Total operating revenues	$ 28,892,181	$ 28,198,136	$ 27,814,069	$ 26,181,521	$ 25,973,983	$ 25,617,945	$ 23,865,711	$ 21,965,039	$ 23,448,119	$ 19,538,677
Operating expenses:										
Personnel costs	$ 7,385,978	$ 7,483,807	$ 6,155,243	$ 5,878,175	$ 5,756,273	$ 5,928,994	$ 5,879,080	$ 5,525,332	$ 5,428,691	$ 5,449,513
Professional services	738,823	885,072	602,891	473,193	418,858	282,427	336,166	338,814	238,975	210,710
Other services and charges	3,341,421	2,764,905	2,607,118	2,532,408	2,683,136	2,430,718	2,463,176	2,341,123	2,137,741	2,291,946
Operations and maintenance	4,169,065	4,214,246	4,710,701	3,991,590	3,543,311	3,383,574	3,201,971	2,415,211	2,412,752	2,515,504
Depreciation	5,805,362	5,411,996	5,396,029	4,983,753	4,662,094	3,601,730	2,965,612	2,962,912	2,966,823	2,906,351
Total operating expenses	$ 21,440,649	$ 20,760,026	$ 19,471,982	$ 17,859,119	$ 17,063,672	$ 15,627,443	$ 14,846,005	$ 13,583,392	$ 13,184,982	$ 13,374,024
Operating income	$ 7,451,532	$ 7,438,110	$ 8,342,087	$ 8,322,402	$ 8,910,311	$ 9,990,502	$ 9,019,706	$ 8,381,647	$ 10,263,137	$ 6,164,653
Nonoperating revenues (expenses):										
Investment earnings	$ 525,039	$ 296,433	$ 369,675	$ 82,083	$ 92,839	$ 157,526	$ 124,832	$ 120,623	$ 149,587	$ 418,585
Buck Mountain revenue	125,900	115,700	84,000	74,900	89,000	78,000	68,200	52,400	93,300	90,300
Administrative reimbursement	436,329	328,000	299,000	265,000	257,000	257,000	276,000	277,000	418,000	420,000
Other revenues	302,920	305,763	370,173	337,148	251,373	225,034	214,908	256,541	110,396	140,205
Interest expense	(2,643,801)	(2,248,229)	(4,027,843)	(3,608,072)	(2,336,245)	(2,552,331)	(1,830,696)	(2,607,502)	(2,107,381)	(2,090,583)
Debt issuance costs	-	(126,766)	(556,438)	(59,273)	(61,081)	(580,404)	-	-	-	-
Amortization expense	-	-	-	-	-	-	-	(86,827)	(39,525)	(39,995)
Total nonoperating revenues (expenses)	$ (1,253,613)	$ (1,329,099)	$ (3,461,433)	$ (2,908,214)	$ (1,707,114)	$ (2,415,175)	$ (1,146,756)	$ (1,987,765)	$ (1,375,623)	$ (1,061,488)
Income before capital grants and contributions	$ 6,197,919	$ 6,109,011	$ 4,880,654	$ 5,414,188	$ 7,203,197	$ 7,575,327	$ 7,872,950	$ 6,393,882	$ 8,887,514	$ 5,103,165
Capital grants	$ -	$ -	$ -	$ -	$ -	$ 226,265	$ 3,003,552	$ 6,080,256	$ 11,531,027	$ 970,169
Change in net position	$ 6,197,919	$ 6,109,011	$ 4,880,654	$ 5,414,188	$ 7,203,197	$ 7,801,592	$ 10,876,502	$ 12,474,138	$ 20,418,541	$ 6,073,334

RIVANNA WATER & SEWER AUTHORITY **Table 3**

Revenues by Source
Last Ten Fiscal Years

Fiscal Years Ended June 30,	Operating Revenues			Nonoperating Revenues				Other	
	Water Sales	Wastewater Service Charges	Total Operating Revenues	Investment Earnings	Buck Mountain Revenue	Other Revenue	Total Nonoperating Revenues	Capital Grants and Contributions	Total Revenues
2009	$ 9,867,555	$ 9,671,122	$ 19,538,677	$ 418,585	$ 90,300	$ 560,205	$ 1,069,090	$ 970,169	$ 21,577,936
2010	10,746,260	12,701,859	23,448,119	149,587	93,300	528,396	771,283	11,531,027	35,750,429
2011	10,895,551	11,069,488	21,965,039	120,623	52,400	533,541	706,564	6,080,256	28,751,859
2012	11,058,083	12,807,628	23,865,711	124,832	68,200	490,908	683,940	3,003,552	27,553,203
2013	11,728,840	13,889,105	25,617,945	157,526	78,000	482,034	717,560	226,265	26,561,770
2014	11,353,630	14,620,353	25,973,983	92,839	89,000	508,373	690,212	-	26,664,195
2015	12,555,666	13,625,855	26,181,521	82,083	74,900	602,148	759,131	-	26,940,652
2016	13,014,328	14,799,741	27,814,069	369,675	84,000	669,173	1,122,848	-	28,936,917
2017	13,753,977	14,444,159	28,198,136	296,433	115,700	633,763	1,045,896	-	29,244,032
2018	14,034,080	14,858,101	28,892,181	525,039	125,900	739,249	1,390,188	-	30,282,369

RIVANNA WATER & SEWER AUTHORITY **Table 4**

Water and Wastewater Rates and Flows
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Rates:			***Note 1**							
			(7/1-10/31/15)							
Urban Water - City (per 1,000 gallons)	***	***	$ 2.756	$ 2.663	$ 2.341	$ 2.443	$ 2.403	$ 2.438	$ 2.461	$ 2.285
Urban Water - ACSA (per 1,000 gallons)	***	***	$ 3.795	$ 3.687	$ 3.333	$ 3.465	$ 3.439	$ 3.305	$ 3.320	$ 2.983
Crozet Water (per month)	$ 133,901	$ 124,149	$ 111,330	$ 91,942	$ 84,630	$ 82,916	$ 60,853	$ 50,712	$ 52,315	$ 50,226
Scottsville Water (per month)	$ 45,140	$ 43,382	$ 49,012	$ 41,343	$ 41,047	$ 36,280	$ 31,665	$ 32,834	$ 32,089	$ 31,421
Urban Wastewater - City (per 1,000 gallons)	***	***	$ 3.954	$ 3.822	$ 3.593	$ 3.565	$ 3.179	$ 2.878	$ 2.784	$ 2.466
Urban Wastewater - ACSA (per 1,000 gallons)	***	***	$ 3.560	$ 3.435	$ 3.463	$ 3.732	$ 3.348	$ 3.048	$ 3.063	$ 2.722
Glenmore Wastewater (per month)	$ 29,494	$ 26,694	$ 25,211	$ 24,451	$ 24,189	$ 23,436	$ 23,246	$ 21,806	$ 22,968	$ 24,606
Scottsville Wastewater (per month)	$ 24,410	$ 21,941	$ 21,425	$ 28,879	$ 28,295	$ 27,619	$ 26,579	$ 25,603	$ 25,216	$ 25,968

*Note 1:
The Fiscal Year 2016 Urban Water and Urban Wastewater rates were revised from the above stated rates to the following rates, effective 11/1/15-6/30/16:
In FY 2016, the Board of Directors amended the Service Agreement to go from a rate per 1,000 gallons to a fixed monthly charge for all debt service costs.
Urban rates are stated below along with prior years' rates restated below as fixed monthly charges for comparison purposes based on estimated flows.
***Urban Rates:

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Urban Water:										
Operations - City & ACSA (per 1,000 gallons)	$ 1.969	$ 1.833	$ 1.713	$ 1.683	$ 1.462	$ 1.320	$ 1.315	$ 1.288	$ 1.230	$ 1.164
Debt Service - City (per month)	$ 160,039	$ 162,968	$ 158,099	$ 148,549	$ 133,156	$ 173,354	$ 177,435	$ 177,607	$ 190,117	$ 172,725
Debt Service - ACSA (per month)	$ 285,439	$ 284,031	$ 279,864	$ 269,379	$ 251,418	$ 282,114	$ 267,054	$ 265,358	$ 274,962	$ 258,714
Urban Wastewater:										
Operations - City & ACSA (per 1,000 gallons)	$ 1.951	$ 1.835	$ 1.789	$ 1.768	$ 1.827	$ 1.869	$ 1.734	$ 1.637	$ 1.583	$ 1.549
Debt Service - City (per month)	$ 392,841	$ 369,037	$ 333,645	$ 310,678	$ 272,220	$ 254,371	$ 224,549	$ 192,848	$ 180,084	$ 149,600
Debt Service - ACSA (per month)	$ 222,550	$ 222,280	$ 232,493	$ 223,598	$ 214,771	$ 228,557	$ 189,209	$ 165,411	$ 181,570	$ 156,571

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Flows (in million gallons per day):										
Urban Water	9.100	9.535	9.359	9.540	9.618	9.647	9.454	9.569	9.352	9.344
Crozet Water	0.532	0.544	0.541	0.546	0.566	0.503	0.450	0.436	0.420	0.384
Scottsville Water	0.045	0.050	0.048	0.049	0.056	0.053	0.049	0.056	0.077	0.077
	9.677	10.129	9.948	10.135	10.240	10.203	9.953	10.061	9.849	9.805
Urban Wastewater	9.083	9.483	10.352	9.481	10.566	9.719	10.014	9.442	11.158	9.307
Glenmore Wastewater	0.120	0.107	0.107	0.101	0.114	0.121	0.122	0.137	0.125	0.115
Scottsville Wastewater	0.056	0.053	0.071	0.050	0.066	0.050	0.054	0.054	0.083	0.064
	9.259	9.643	10.530	9.632	10.746	9.890	10.190	9.633	11.366	9.486

RIVANNA WATER & SEWER AUTHORITY **Table 5**

Ten Largest Customers
Current Year and Nine Years Ago

	Fiscal Year 2018 (Current Year)			
	Water Revenue		Wastewater Revenue	
	Amount	%	Amount	%
Albemarle County Service Authority	$ 8,778,168	62.55%	$ 6,511,326	43.82%
City of Charlottesville	$ 5,255,912	37.45%	$ 7,909,935	53.24%
Others	$ -	0.00%	$ 436,840	2.94%
	$ 14,034,080	100.00%	$ 14,858,101	100.00%

	Fiscal Year 2009 (Nine Years Ago)			
	Water Revenue		Wastewater Revenue	
	Amount	%	Amount	%
Albemarle County Service Authority	$ 5,657,415	57.33%	$ 4,659,854	48.18%
City of Charlottesville	$ 4,210,140	42.67%	$ 4,757,032	49.19%
Others	$ -	0.00%	$ 254,236	2.63%
	$ 9,867,555	100.00%	$ 9,671,122	100.00%

Note: The Authority's two wholesale customers, which are both governmental entities, provided 100% of water revenue and 97% of wastewater revenue in FY 2018 and FY 2009. The remaining wastewater revenue came from septage acceptance customers. Due to lack of materiality, the number of customers by type that provide that revenue is not presented here.

RIVANNA WATER & SEWER AUTHORITY **Table 6**

Expenses by Type
Last Ten Fiscal Years

Fiscal Years Ended June 30,	Operations	Depreciation	Interest and Amortization	Bond Issuance Costs	Total
2009	$ 10,467,673	$ 2,906,351	$ 2,130,578	$ -	$ 15,504,602
2010	10,218,159	2,966,823	2,146,906	-	15,331,888
2011	10,620,480	2,962,912	2,694,329	-	16,277,721
2012	11,880,393	2,965,612	1,830,696	-	16,676,701
2013	12,025,713	3,601,730	2,552,331	580,404	18,760,178
2014	12,401,578	4,662,094	2,336,245	61,081	19,460,998
2015	12,875,366	4,983,753	3,608,072	59,273	21,526,464
2016	14,075,953	5,396,029	4,027,843	556,438	24,056,263
2017	15,348,030	5,411,996	2,248,229	126,766	23,135,021
2018	15,635,287	5,805,362	2,643,801	-	24,084,450

RIVANNA WATER & SEWER AUTHORITY **Table 7**

Outstanding Debt by Type
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Revenue bonds payable	$ 167,896,198	$ 173,020,453	$ 160,512,250	$ 124,670,205	$ 125,680,526	$ 127,548,686	$ 103,834,145	$ 73,831,274	$ 57,250,353	$ 44,350,079
Total outstanding debt	$ 167,896,198	$ 173,020,453	$ 160,512,250	$ 124,670,205	$ 125,680,526	$ 127,548,686	$ 103,834,145	$ 73,831,274	$ 57,250,353	$ 44,350,079
Debt per capita	$ 1,092	$ 1,125	$ 1,057	$ 834	$ 851	$ 872	$ 719	$ 517	$ 406	$ 319
Debt as a percentage of personal income	1.8%	1.8%	1.7%	1.4%	1.5%	1.5%	1.4%	1.0%	0.8%	0.6%

Notes:
Debt per capita was calculated based on population figures for the calendar year (CY) ending within the fiscal year (FY) obtained from U.S. Department of Commerce - Bureau of Economic Analysis for the City of Charlottesville and County of Albemarle. See Table 9.

Debt as a percentage of personal income was calculated based on personal income for the CY ending within the FY obtained from U.S. Department of Commerce - Bureau of Economic Analysis for the City of Charlottesville and County of Albemarle. See Table 9.

RIVANNA WATER & SEWER AUTHORITY **Table 8**

Revenue Bond Debt Service Coverage
Last Ten Fiscal Years

Fiscal Years Ended June 30,		Gross Revenue (1)		Direct Operating Expense (2)		Net Available		Required Debt Service Payments (3)	Coverage
2009	$	20,607,767	$	10,467,673	$	10,140,094	$	5,591,120	1.8X
2010		24,219,402		10,218,159		14,001,243		5,592,641	2.5X
2011		22,671,603		10,620,480		12,051,123		6,962,703	1.7X
2012		24,549,651		11,880,393		12,669,258		6,724,261	1.9X
2013		26,335,505		12,025,713		14,309,792		8,234,169	1.7X
2014		26,664,195		12,401,578		14,262,617		9,089,702	1.6X
2015		26,940,652		12,875,366		14,065,286		9,094,732	1.5X
2016		28,936,917		14,075,953		14,860,964		9,567,370	1.6X
2017		29,244,032		15,348,030		13,896,002		11,912,673	1.2X
2018		30,282,369		15,635,287		14,647,082		12,370,197	1.2X

(1) Excluding grant revenue
(2) Excluding depreciation expense
(3) Including payments on revenue bonds and excluding any refunding since the payments were not required to be made in that year

RIVANNA WATER AND SEWER AUTHORITY **Table 9**

Demographic Data for the Service Area
City of Charlottesville & Albemarle County, Virginia
Last Ten Calendar Years

Calendar Year	Population (2)	Personal Income (thousands of $) (2)	Per Capita Personal Income ($) (2)	Unemployment Rate (1)
2008	139,211	7,235,166	51,973	3.4%
2009	141,125	6,869,941	48,680	5.8%
2010	142,751	7,172,019	50,241	6.5%
2011	144,344	7,549,474	52,302	5.9%
2012	146,344	8,301,835	56,728	5.5%
2013	147,662	8,124,880	55,023	5.0%
2014	149,540	8,686,777	58,090	4.6%
2015	151,788	9,210,232	60,678	3.9%
2016	153,790	9,375,633	60,964	3.6%
2017	not available	not available	not available	3.3%

(1) Virginia Employment Commission - Virginia Workforce Connection - for Charlottesville Metropolitan Service Area
(2) U.S. Department of Commerce - Bureau of Economic Analysis - for City of Charlottesville and Albemarle County

RIVANNA WATER & SEWER AUTHORITY **Table 10**

Principal Employers in the Charlottesville Area
Current Year and Nine Years Ago

Employer	Fourth Quarter of 2017 Number of Employees	Fourth Quarter of 2017 Rank	Fourth Quarter of 2008 Number of Employees	Fourth Quarter of 2008 Rank
University of Virginia/ Blue Ridge Hospital	1,000 & over	1	1,000 & over	1
University of Virginia Medical Center	1,000 & over	2	1,000 & over	2
County of Albemarle	1,000 & over	3	1,000 & over	3
Sentara Health Care	1,000 & over	4		
Martha Jefferson Hospital			1,000 & over	4
UVA Health Services Foundation	1,000 & over	5	1,000 & over	7
City of Charlottesville	1,000 & over	6	1,000 & over	5
Charlottesville City School Board	500-999	7	500-999	8
State Farm Mutual Automobile Insurance	500-999	8	1,000 & over	6
U.S. Department of Defense	500-999	9		
Servicelink Management Com Inc	500-999	10		
Northrop Grumman Corporation			500-999	9
Aramark Campus LLC			500-999	10

Source: Virginia Employment Commission, Quarterly Census of Employment and Wages
- for Charlottesville Metropolitan Service Area (MSA)

Each employer's percentage of total employment is not available.

RIVANNA WATER & SEWER AUTHORITY **Table 11**

Number of Employees by Indentifiable Activity
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Number of budgeted full-time equivalent positions:										
Water (4)	25	23	23	23	22	23	23	23	23	27
Wastewater	16	17	17	17	17	18	18	15	16	25
Maintenance (1)	16	16	17	17	17	16	16	15	14	
Grounds crew maintenance (2)										2
Operations Management (4)	1	2	2	2	2	2	2	2	2	2
Administration & IT (3)	16	15	13	12	12	12	12	12	13	13
Laboratory	3	3	3	3	3	3	3	3	3	3
Engineering	11	9	9	9	9	9	9	9	11	11
Total	88	85	84	83	82	83	83	79	82	83

(1) Maintenance includes mechanics and maintenance workers for Water and Wastewater.

(2) Grounds crew maintenance positions worked approximately 60% on wastewater department maintenance and 40% on water department maintenance. Beginning in FY 2010, grounds crew maintenance positions are included in Maintenance.

(3) Administration staff is shared with Rivanna Solid Waste Authority.

(4) The Water Resources Manager was reclassified from Operations Management to Engineering effective in fiscal year ended June 30, 2018.

RIVANNA WATER & SEWER AUTHORITY **Table 12**

Operating and Capital Indicators
Last Ten Fiscal Years

	Fiscal Years Ended June 30,									
	2018	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Water										
Size of watershed (square miles)	766	766	766	766	766	766	766	766	766	766
Raw water safe yield (mgd)										
Urban system	18.8	18.8	18.8	12.8	12.8	12.8	12.8	12.8	12.8	12.80
Rural system	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.40
Miles of pipelines	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.3	64.30
Number of treatment plants	5	5	5	5	5	5	5	5	5	5
Number of pumping stations	7	7	7	7	7	7	7	7	7	7
Number of reservoirs	4	4	4	4	4	4	4	4	4	4
Number of finished water storage tanks	11	11	11	11	11	11	11	11	11	11
Maximum treatment capacity (mgd)	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750	22.750
Water treated (mgd)	9.677	10.129	9.948	10.135	10.240	10.203	9.953	10.061	9.849	9.805
Unused capacity (mgd)	13.073	12.621	12.802	12.615	12.510	12.547	12.797	12.689	12.901	12.945
Percentage of capacity utilized	42.54%	44.52%	43.73%	44.55%	45.01%	44.85%	43.75%	44.22%	43.29%	43.10%
Wastewater										
Miles of pipelines	37	37	37	37	37	37	37	37	37	37
Number of treatment plants	4	4	4	4	4	4	5	5	5	5
Number of pumping stations	7	7	7	7	7	7	7	7	7	7
Maximum treatment capacity (mgd)	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945	15.945
Wastewater treated (mgd)	9.259	9.643	10.561	9.632	10.746	9.890	10.190	9.633	11.366	9.486
Unused capacity (mgd)	6.686	6.302	5.384	6.313	5.199	6.055	5.755	6.312	4.579	6.459
Percentage of capacity utilized	58.07%	60.48%	66.23%	60.41%	67.39%	62.03%	63.91%	60.41%	71.28%	59.49%

Notes: mgd = millions of gallons per day
Safe yield is a measure of raw water resources during a drought of record.

RIVANNA WATER & SEWER AUTHORITY **Table 13**

Schedule of Insurance in Force
June 30, 2018

Type Coverage/Company Name	Coverage		Annual Premium
Commercial Property Virginia Association of Counties 07/01/17-07/01/18	$ 180,664,193	Property Value and Business Income/ Extra Expense	$ 75,027
Worker's Compensation Virginia Association of Counties 07/01/17-07/01/18	$ 1,000,000	Each Occurrence	$ 66,214
Comprehensive Automobile Virginia Association of Counties 07/01/17-07/01/18	$ 10,000,000		$ 17,835
General Liability Virginia Association of Counties 07/01/17-07/01/18	$ 10,000,000	Each Occurrence	$ 12,398
Public Officials Liability Virginia Association of Counties 07/01/17-07/01/18	$ 10,000,000		$ 5,825
Crime Coverage Virginia Association of Counties 07/01/17-07/01/18	$ 500,000		$ 1,075

RIVANNA WATER & SEWER AUTHORITY **Table 14**

Miscellaneous Statistical Data
Albemarle County Service Authority

Year of Incorporation: 1964

Type of Entity:
Independent authority created pursuant to the "Virginia Water & Waste Authorities Act", Section 15.1-1239, Code of Virginia (1950), as amended

Number of water connections	19,738
Number of sewer connections	16,764
Miles of water lines	349
Miles of sewer lines	293
Number of fire hydrants	2,650

Rates (effective FY 2018) per 1,000 gallons metered consumption

Water

Residential Water Rates and all irrigation usage:	
Level 1 (0-3,000 gallons per month)	$4.11
Level 2 (3,001-6,000 gallons per month)	$8.22
Level 3 (6,001-9,000 gallons per month)	$12.33
Level 4 (over 9,000 gallons per month)	$16.44
Non-Residential and Multi-Family Residential Water Rate (except irrigation water)	$7.93
Wastewater	$8.67

Ten Largest Customers in FY 2018

	Water			Wastewater		
	Billed (in gallons)	**Rank**	**Percentage of Total**	**Billed (in gallons)**	**Rank**	**Percentage of Total**
Old Salem Apartments	22,024,900	1	1.31%	22,024,900	1	1.56%
Southwood Mobile Homes	21,981,000	2	1.31%	14,428,521	10	1.02%
University of Virginia	21,915,500	3	1.30%	21,494,400	2	1.52%
Westminster Canterbury	20,980,000	4	1.25%	20,109,000	3	1.42%
County of Albemarle	20,746,300	5	1.23%			
Martha Jefferson Hospital	20,359,500	6	1.21%			
ACRJ	19,643,000	7	1.17%	18,185,000	5	1.29%
Trophy Chs/Landmark/SEMF Charleston	19,498,775	8	1.16%	19,498,775	4	1.38%
Abbington Crossing	17,871,300	9	1.06%	17,871,300	6	1.27%
Turtle Creek Apartments	16,979,100	10	1.01%	16,889,800	7	1.20%
Four Seasons Apts.				16,029,000	9	1.14%
Westgate Apartments				16,438,000	8	1.16%
	201,999,375		12.02%	182,968,696		12.96%

Miscellaneous Statistical Data
City of Charlottesville, Virginia

Date of incorporation	1888
Date present charter adopted	1976
Form of government	Council Manager
Area	10.4 square miles
Miles of streets	158.45
Number of water customers	14,639
Number of sewer customers	14,528
Miles of water lines	183
Miles of sanitary sewer lines	171
Number of fire hydrants	1088
Bond Rating	AAA/Aaa

Rates FY 2018 per 1,000 cubic feet:

Water	
May - Sept.	$ 62.78
Oct. - Apr.	$ 48.29
Wastewater	$ 74.83

Ten Largest Customers in Fiscal Year 2018:

	Water			**Wastewater**		
	Water Consumption (in cubic feet)	**Billed Revenue**	**Percentage of Total Revenue**	**Wastewater Treated (in cubic feet)**	**Billed Revenue**	**Percentage of Total Revenue**
University of Virginia	63,493,643	$ 1,777,817	18.13%	44,228,348	$ 2,743,488	20.89%
Pepsi Cola	4,185,760	239,748	2.45%	980,260	73,371	0.56%
Charlottesville Redevelopment and Housing	2,977,587	164,663	1.68%	2,977,587	224,385	1.71%
City of Charlottesville	2,372,611	139,919	1.43%	1,722,862	131,346	1.00%
Woodard Properties	2,047,302	125,931	1.28%	2,038,584	155,935	1.19%
Omni Charlottesville Hotel	1,607,500	94,246	0.96%	1,379,557	103,251	0.79%
City Schools	1,313,767	75,752	0.77%	1,060,616	79,698	0.61%
Pavilion UVA	1,262,980	73,144	0.75%	1,231,540	92,188	0.70%
Madison Loft	1,025,230	58,475	0.60%	1,025,230	76,751	0.58%
Neighborhood Properties	995,726	60,806	0.62%	994,032	75,393	0.57%
	81,282,106	$ 2,810,501	28.67%	57,638,616	$ 3,755,806	28.60%

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Independent Auditors' Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

To the Board of Directors
Rivanna Water & Sewer Authority
Charlottesville, Virginia

We have audited, in accordance with the auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States; and the *Specifications for Audits of Authorities, Boards, and Commissions,* issued by the Auditor of Public Accounts of the Commonwealth of Virginia, the financial statements of the business-type activities of Rivanna Water & Sewer Authority as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise Rivanna Water & Sewer Authority's basic financial statements and have issued our report thereon dated October 12, 2018.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered Rivanna Water & Sewer Authority's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control. Accordingly, we do not express an opinion on the effectiveness of Rivanna Water & Sewer Authority's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Rivanna Water & Sewer Authority's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Robinson, Farmer, Cox Associates
Charlottesville, Virginia
October 12, 2018

Independent Auditors' Report on Compliance For Each Major Program and on Internal Control over Compliance Required by the Uniform Guidance

To the Board of Directors
Rivanna Water & Sewer Authority
Charlottesville, Virginia

Report on Compliance for Each Major Federal Program

We have audited the Rivanna Water & Sewer Authority's compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on each of the Rivanna Water & Sewer Authority's major federal programs for the year ended June 30, 2018. Rivanna Water & Sewer Authority's major federal programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations, and the terms and conditions of its federal awards applicable to its federal programs.

Auditors' Responsibility

Our responsibility is to express an opinion on compliance for each of the Rivanna Water & Sewer Authority's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the Rivanna Water & Sewer Authority's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the Rivanna Water & Sewer Authority's compliance.

Opinion on Each Major Federal Program

In our opinion, the Rivanna Water & Sewer Authority complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2018.

Report on Internal Control over Compliance

Management of the Rivanna Water & Sewer Authority is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the Rivanna Water & Sewer Authority's internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the Rivanna Water & Sewer Authority's internal control over compliance.

A *deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Robinson, Farmer, Cox Associates

Charlottesville, Virginia
October 12, 2018

RIVANNA WATER & SEWER AUTHORITY

Schedule of Expenditures of Federal Awards
Year Ended June 30, 2018

Federal Grantor/Pass-Through Grantor/Program or Cluster Title	Federal CFDA Number	Pass-Through Entity Identifying Number	Federal Expenditures
Environmental Protection Agency			
Pass-through payment:			
Virginia Department of Environmental Quality			
Capitalization Grants for Clean Water State Revolving Funds	66.458	51000114	$ 2,339,906
Total Environmental Protection Agency			$ 2,339,906
Total expenditures of federal awards			$ 2,339,906

Note 1- Basis of Presentation:

The accompanying schedule of expenditures of federal awards (the Schedule) includes the federal grant activity of Rivanna Water & Sewer Authority under programs of the federal government for the year ended June 30, 2018. The information in this Schedule is presented in accordance with reporting requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Because the Schedule presents only a selected portion of operations of Rivanna Water & Sewer Authority, it is not intended to and does not present the financial position, changes in net position, or cash flows of Rivanna Water & Sewer Authority.

Note 2 – Basis of Accounting

(1) Expenditures reported on the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in OMB Circular A-87, *Cost Principles for State, Local, and Indian Tribal Governments*, wherein certain types of expenditures are not allowable or are limited as to reimbursement.
(2) Pass-through entity identifying numbers were not available for presentation.

Note 3 – Subrecipients

No awards were passed through subrecipients.

Note 4 – De Minimis Cost Rate

The Authority did not elect to use the 10-percent de minimis indirect cost rate allowed under Uniform Guidance.

Note 5 – Relationship to Financial Statements

Federal expenditures, revenues and capital contributions are reported in the Authority's financial statements as follows:

Loan proceeds	$ 2,339,906
Total federal expenditures per the Schedule of Expenditures of Federal Awards	$ 2,339,906

Schedule of Findings and Questioned Costs
Year Ended June 30, 2018

Section I - Summary of Auditors' Results

Financial Statements

Type of auditors' report issued:	Unmodified
Internal control over financial reporting:	
Material weakness(es) identified?	No
Significant deficiency(ies) identified?	None reported
Noncompliance material to financial statements noted?	No

Federal Awards

Internal control over major programs:	
Material weakness(es) identified?	No
Significant deficiency(ies) identified?	None Reported
Type of auditors' report issued on compliance for major programs:	Unmodified
Any audit findings disclosed that are required to be reported in accordance with 2 CFR section 200.516(a)?	No

Identification of major programs:

CFDA #	Name of Federal Program or Cluster
66.458	Capitalization Grants for Clean Water State Revolving Funds

Dollar threshold used to distinguish between Type A and Type B programs	$750,000
Auditee qualified as low-risk auditee?	No

Section II - Financial Statement Findings

There are no financial statement findings to report.

Section III - Federal Award Findings and Questioned Costs

There are no federal award findings and questioned costs to report.

Section IV - Prior Year Audit Findings

There were no prior year audit findings.

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MEMORANDUM

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

FROM: **BILL MAWYER, EXECUTIVE DIRECTOR**

SUBJECT: **VIRTUAL TOURS; CROZET WATER SYSTEM, SOUTH RIVANNA AND OBSERVATORY WATER TREATMENT PLANTS**

DATE: **DECEMBER 11, 2018**

During the GAC celebrations at our Water Treatment Plants earlier this summer, several Board Members suggested we create virtual tours of major water treatment facilities included in our Capital Improvement Plan. The intent of these films is to provide visual and narrated information to local Boards, Councils and interested community groups about the magnitude, scope and condition of these facilities, especially as we move forward with major renovation and upgrade projects.

Through the efforts of staff to prepare informative and narrative scripts, and with the help of a skilled drone operator, we have completed short films of our three largest water treatment plants including views of the associated reservoirs, dams and related infrastructure. These films highlight the Crozet Water Treatment Plant, which is currently under renovation and being upgraded to increase production capacity from 1 to 2 mgd to support the growing Crozet community. The Beaver Creek reservoir, which provides source water for the Crozet water system, is included in the overview since major modifications to the dam will begin in 2020. Also provided are films of our two largest urban water treatment plants, South Rivanna and Observatory. These plants will undergo major renovations from 2019 – 2023, and the Observatory plant will be upgraded to increase production capacity from 7.7 to 10 mgd to provide growth, redundancy and resiliency for our urban water system. The current cost estimates for these projects totals approximately $66 million.

<u>Board Action Requested:</u>

These films are provided only for informational purposes, and no action is requested.