




Board of Directors Meeting


October 22, 2019


2:30pm



695 Moores Creek Lane | Charlottesville, Virginia 22902-9016

434.977.2970 

434.293.8858 

www.rivanna.org 

BOARD OF DIRECTORS

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

DATE: October 22, 2019

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

TIME: 2:30 p.m.

AGENDA

- 1. CALL TO ORDER**
- 2. MINUTES OF PREVIOUS BOARD MEETINGS**
 - a. Minutes of Regular Board Meeting on September 24, 2019*
- 3. RECOGNITION**
- 4. EXECUTIVE DIRECTOR'S REPORT**
- 5. ITEMS FROM THE PUBLIC**
- 6. RESPONSES TO PUBLIC COMMENTS**
- 7. CONSENT AGENDA**
 - a. Staff Report on Finance*
 - b. Staff Report on Ongoing Projects*
 - c. Staff Report on Operations*
 - d. Recommendation for Disposition of FY 2019 Year-End Results*
 - e. Approval of Capital Improvement Plan Amendment –Valve Repair-Replacement (Phase 2)*
 - f. Authorization of Professional Engineering Services for Additional Temporary Sewer Flow Metering – Frazier Engineering*
- 8. OTHER BUSINESS**
 - a. Presentation: Drought Update; Director of Engineering & Maintenance, Jennifer Whitaker*
 - b. Presentation: Series 2019 Refunding Revenue Bond; Director of Finance, Lonnie Wood*

c. Presentation: Corrosion Control Inhibitor Update; Director of Operations, Dave Tungate

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)



RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
September 24, 2019

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, September 24, 2019 at 2:58 p.m. in the 2nd floor conference room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Dr. Tarron Richardson, Kathy Galvin, Mike Gaffney, Dr. Liz Palmer, Jeff Richardson, Lauren Hildebrand.

Board Members Absent: Mr. Gary O'Connell.

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

Attorney(s) Present: Kurt Krueger, RWSA counsel

Also Present: Members of the public and media representatives.

1. CALL TO ORDER

Mr. Gaffney called the meeting to order at 2:58 p.m.

2. MINUTES OF PREVIOUS BOARD MEETINGS

a. Minutes of Regular Board Meeting on August 27, 2019

Mr. Gaffney invited members to comment or to offer changes.

Dr. Palmer moved that the Board approve the minutes of the August 27 meeting. The motion was seconded by Ms. Hildebrand and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

3. RECOGNITION

There were no recognitions.

4. EXECUTIVE DIRECTOR'S REPORT

Mr. Mawyer presented to the Board. He stated they continue to focus on the strategic plan goal of Communication and Collaboration and will have community outreach tomorrow with the United Way's Day of Caring, for which they will help to clean up Camp Holiday Trails. He stated he met with the Blue Ridge Homebuilders Association the previous day and discussed both solid waste and the long-range community water supply plan. He stated he attended the Virginia Association of Municipal Wastewater Agencies quarterly meeting during which they discussed the monitoring of the State's nutrient reduction requirements that are being drafted into

47 Phase 3 of the State's water improvement plan, which includes the cleanup of the Chesapeake
48 Bay. He indicated that wastewater treatment plants will be expected to do more to reduce
49 nutrients.

50
51 Mr. Mawyer informed the Board that staff is working on many programs to address the strategic
52 plan goal of Infrastructure and Master Planning, which includes master plans, easements, water
53 lines, and leases for the Observatory Water Treatment Plant. He stated an informational pre-bid
54 meeting will be held Thursday to generate interest in the upcoming Observatory and South
55 Rivanna WTP construction project. He stated they continue to work diligently on the wholesale
56 water meter project, for which they will install a meter today, next week they will correct a test
57 port, and they expect to have all five main meters calibrated in the coming weeks and to start
58 using the system next month. He stated they will report on the usage by the County and City one
59 month after the system has been in effect.

60
61 Mr. Mawyer stated that the Consent Agenda includes a request to reallocate and optimize staff
62 resources, a draft of general administrative procedures to provide structure and consistency to
63 some processes, the awarding of a nonprofessional services contract to address the removal of
64 large trees that may be floating against the dam and to provide investigative services, to
65 authorize professional engineering services to begin work on the Route 29 water pump station
66 design at Meeting Street and Airport Roads, and approval of the Observatory Water Treatment
67 Plant Raw Water Pumping and Piping Upgrade Cost and Capacity Allocation Agreement. He
68 stated that Mr. Tungate will address the Board about bio-solid waste disposal alternatives and
69 Mr. Krueger has worked with attorneys from the County, Service Authority, and City, who are
70 all on board to terminate the Buck Mountain Surcharge.

71
72 Mr. Mawyer emphasized that staff has been very busy and acknowledged the work of Jennifer
73 Whitaker, Lonnie Wood, Scott Schiller, Victoria Fort, Michelle Simpson, Andrea Terry, Liz
74 Coleman, and Dyon Vega. He observed that the weather has been dry, though they are not in a
75 drought, and the South Rivanna Dam continues to overflow at a trickle, which they are watching.
76 He pointed out that the northwest portion of the State has been abnormally dry while the middle
77 James area has seen normal stream flow and reservoir water levels, as of September 22, while
78 some other areas of Virginia are starting to experience below normal levels. He explained that,
79 should the water level at South Rivanna drop one foot below the dam, they would increase
80 production to the Observatory treatment plant. He stated they are currently making about
81 10M/gallons per day at South Rivanna and 2M/gallons per day at Observatory. They want to use
82 all the water at South Rivanna that they can since it has been overflowing, and should the water
83 level at South Rivanna drop they would increase production at Observatory to 4-5M/gallons per
84 day and reduce South Rivanna to 8M/gallons per day. He concluded his report and invited
85 questions.

86
87 Mr. Gaffney observed that Wintergreen has been under voluntary water restrictions for about 30
88 days.

89
90 Dr. Palmer observed that the weather report does not predict any precipitation for the coming
91 week.

Mr. Krueger interjected that the Board report indicates the Authority was seeking consent of the bond trustee to the joint resolution to terminate the surcharge, and stated that they actually have this now and are all set to go.

5. ITEMS FROM THE PUBLIC

Mr. Gaffney opened the Items from the Public portion of the meeting. As no one came forward to address the Board Mr. Gaffney closed this portion of the meeting.

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. Position Reclassification Request- Grounds Maintenance to Civil Engineer

e. General Administrative Procedures

f. Award of Nonprofessional Services Contract: On-Call Dam Maintenance Services - Bander Smith, Inc.

g. Authorization of Professional Engineering Services, Route 29 Water Pump Station and Water Main Project – Short Elliot Hendrickson Engineers

h. Approval of Observatory Water Treatment Plant, Raw Water Pumping and Piping Upgrade Cost and Capacity Allocation Agreement

Mr. Gaffney asked Board members if they would like to pull any items from the Consent Agenda.

Dr. Palmer referred to #12 under Ongoing Projects: Ragged Mountain to Observatory water treatment plant raw water line and raw water pump station. She quoted a portion from this section as follows: “The opportunity to integrate the Observatory water treatment plant raw water supply line with the proposed South Rivanna Reservoir to Ragged Mountain raw water main project is currently being investigated as part of the 50-year community water plan” She stated she thought it was a given that the pump station would serve both water lines.

Mr. Mawyer replied that the new pump station lies in between the Ragged Mountain Reservoir and the treatment plant and will replace the two existing pump stations, as the new one would be capable of pumping raw water from Ragged Mountain to Observatory, would also pump raw water from Ragged Mountain back to South Rivanna Reservoir, and is one of two pump stations envisioned for the South Rivanna to Ragged Mountain waterline project.

Dr. Palmer asked for confirmation that there will still be one pump station building and the pumps to transfer water from Ragged Mountain to S. Rivanna WTP will be put in later.

Mr. Mawyer confirmed this. He reminded the Board that it had previously requested updates be in bold and so they have provided project updates in bold in the Ongoing Projects Report.

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

8. OTHER BUSINESS

a. Presentation: Biosolids Disposal Alternatives; Dave Tungate, Director of Operations

b. Presentation and Approval: “Joint Resolution” to Terminate the Buck Mountain Surcharge; Lonnie Wood, Director of Finance and Administration

Mr. Tungate presented. He acknowledged that the Board discussed composting and biosolids disposal during today’s RSWA meeting. He noted that this is part of the strategic plan under Operational Optimization. He presented a photograph of the Moores Creek facility and explained that the sewage comes in from the Moores Creek and Rivanna pump stations and the sewage goes through the headworks. He reviewed the different steps of the treatment process and pointed out clarifiers, aeration basins, digesters, gravity thickeners, and centrifuge. He explained that biosolids are nutrient-rich organic materials resulting from the treatment of domestic sewage, which can be recycled as fertilizer to improve and maintain productive soil and to stimulate plant growth. He stated the Department of Environmental Quality regulates sewage sludge and biosolids, including the land application program.

Mr. Tungate stated that he brought in a sample of biosolids collected the previous day, after spending 14 days in the digester and passing through the centrifuge, and stated it does not have an odor. He presented a photograph of sewage sludge in the aeration basin. He next presented a photograph of the three anaerobic sludge digesters located to the left of the entrance road. He presented a photograph of the newer of two centrifuges, noting that polymer is added to the sludge after the anaerobic digester to thicken the sludge, after which it is spun in the centrifuge and then discharged through a chute and spread out in a truck trailer owned by the Authority, which is taken by a contractor to McGill Environmental. He stated that Rivanna produces approximately 14,000 tons annually of Class B biosolids, which have a higher level of detectable pathogens than Class A. He stated the current contract expires January 31, 2020 and their annual transportation and disposal cost for the use of McGill Environmental disposal service is approximately \$600,000 - \$700,000/year.

Dr. Palmer asked which sewage treatment plants produce Class A biosolids and what makes the process different.

Mr. Tungate replied that it is heated longer.

185 Dr. Palmer asked if they use biological heating or add heat.

186
187 Mr. Tungate replied that they add heat to the digesters to maintain 100°F temperature for 15 days
188 and then take the sludge and store it in a small storage tank from which it is pumped to the
189 centrifuge.

190
191 Mr. Gaffney asked what the temperature is for Class A.

192
193 Mr. Tungate did not have this information but offered to find out.

194
195 Dr. Palmer wondered why some treatment plants produce Class A instead of Class B, since it is
196 going to get composted.

197
198 Mr. Tungate replied that not all biosolids are composted, as some are land-applied, some are
199 land-filled, and some get incinerated.

200
201 Mr. Tungate presented a map and pointed out the route taken by trucks to go from the Moores
202 Creek facility to Waverly. He next offered alternatives to their current contract with McGill. He
203 stated they could contract with one of two area full-service disposal providers, Synigrow or
204 Nutriblend, to compost, land-apply, landfill, and/or incinerate the material, at the discretion of
205 the provider.

206
207 Mr. Tungate presented biosolids transportation and disposal costs for 2017: 12,945 tons at
208 \$46.95/ton; and noted that the contract allows for escalator costs to account for factors such as
209 increases in diesel fuel costs. He stated they could continue to compost at \$50/ton, a landfill –
210 land-apply option would run \$30 - \$35/ton for 14,000 tons, which would save \$245K/year,
211 landfill only would cost \$35 - \$40/ton, with potential savings of \$175K/year. He stressed that
212 these are only estimates obtained from discussions with partners and that a procurement process
213 would determine the actual costs. He asked for Board guidance and invited questions.

214
215 Ms. Hildebrand asked if there is an advantage from any additional scenarios to produce Class A
216 biosolids.

217
218 Mr. Tungate stated it would take some extra treatment steps, which they can investigate.

219
220 Mr. Gaffney asked what this would change and if there is a closer location to which they could
221 take the biosolids.

222
223 Mr. Tungate responded that they didn't price out that option and that they would use the same
224 landfill.

225
226 Mr. Mawyer interjected that if they were to landfill or land-apply they would not want to incur
227 the additional expense to make Class A, which would be appropriate if they were to sell it in
228 bags to residents, since it contains fewer pathogens than Class B. He recalled that RWSA used to
229 have a sales program for compost made from Class B biosolids.

231 Dr. Palmer pointed out that if they were to create Class A biosolids and sell them they would be
232 competing with Class B for use in fields, which is cheaper than Class A.

233
234 Ms. Hildebrand added that the Class A treatment scenario would be most appropriate for direct
235 resale, since it has fewer vectors and pathogens.

236
237 Dr. Palmer noted that some Board of Supervisor members are very much against land application
238 of biosolids.

239
240 Mr. Gaffney asked if the City and County would be opposed to land-apply – landfill or landfill-
241 only, as opposed to composting.

242
243 Dr. Palmer replied that she suspected that with the Board of Supervisors' new climate change
244 initiatives they would prefer composting.

245
246 Mr. Gaffney pointed out the potential savings of \$250K.

247
248 Dr. Palmer remarked that it will depend upon what price they place on greenhouse gas
249 emissions.

250
251 Mr. Gaffney suggested they hold a work session.

252
253 Dr. Palmer agreed.

254
255 Mr. Gaffney asked for the typical length of time of a contract with a hauler.

256
257 Mr. Tungate replied that the contract has been renewed since 2015 and they are now required to
258 place it out for bid. He stated that in the past they have done one-year contracts with two or three
259 renewals.

260
261 Mr. Krueger clarified that they must commit to at least a one-year contract and can have options
262 to renew.

263
264 Mr. Mawyer pointed out that with a longer term commitment you tend to get a better price than
265 with a one-year contract.

266
267 Mr. Gaffney emphasized that since the City and County want to hold a work session on this topic
268 they can't lock up a contract for too long a period. He estimates it will take about two years for
269 them to make a decision so a contract up to two years would be appropriate.

270
271 Dr. Palmer suggested a one-year contract with options to renew.

272
273 Mr. Krueger pointed out that they would likely receive a better price from McGill if they were to
274 commit to two, three, or five years.

276 Dr. Palmer stated she can bring this matter up for discussion with the Board of Supervisors,
277 though she believes she knows what the answer will be as the Board does not support using the
278 landfill option to save \$175K and will not support land application. She pointed out that the
279 savings will be shared with the City.

280
281 Mr. Mawyer added that it is a 50/50 cost sharing component with the City, based on current
282 retail flows.

283
284 Dr. Palmer remarked that with their climate initiative they are not going to want to replace
285 composting with landfill.

286
287 Mr. Gaffney proposed they seek a two-year contract with three one-year renewal options.

288
289 Ms. Galvin agreed with this proposal, as City Council is not prepared to conduct an exhaustive
290 review of this and has an RFP out, for what will be a more regional approach.

291
292 Mr. Mawyer pointed out that, under the middle hybrid option of land-apply/landfill, they may
293 have to landfill the material during some winter months when there is snow cover, though they
294 have quantities that must be disposed of almost every day. He added that Department of
295 Environmental Quality has a list of approved sites that can accept biosolids for land application.

296
297 Ms. Galvin pointed out that the City has less agricultural surface area.

298
299 Mr. Tungate added that biosolids from other municipalities are applied in Albemarle County.

300
301 Ms. Hildebrand remarked that there would have to be very large tracts of land that have a need
302 for nutrients.

303
304 Dr. Palmer recognized that this is a political issue and also has health-related aspects. She stated
305 there are those on the Board of Supervisors who don't believe DEQ should allow for land
306 application of biosolids, though she acknowledged that she does not know enough about the
307 pathogens to be able to speak to this.

308
309 Mr. Mawyer reminded the Board that in 2010 it considered the same question and decided to not
310 allow land application of Rivanna biosolids. He stated they can continue to compost for a couple
311 of years and see where it goes from there.

312
313 Dr. Palmer remarked that they may find a private company that wants to do this and they just
314 don't know how this is going to evolve.

315
316 Mr. Mawyer remarked that Harrisonburg-Rockingham Regional Sewer Authority (HRRSA) has
317 a large wastewater treatment plant and land applies 100% of its biosolids.

318
319 Mr. Tungate added that HRRSA has just begun a new treatment process and produces Class A
320 biosolids.

Mr. Richardson attempted to summarize the Board's position. He stated he has heard that the Board would explore going from Class B to Class A biosolids.

Mr. Gaffney added that they need to learn what the Board of Supervisors thinks, since if they still don't want to do land-applied then it doesn't make sense to spend more money to treat it.

Mr. Mawyer informed the Board that he will present on the matter of terminating the Buck Mountain surcharge. He reminded the Board that staff presented to the Board in June on this issue. He reminded them that they acquired 1,300 acres for the proposed Buck Mountain Reservoir, found the James Spiny Mussel, they could not construct a water supply reservoir, and have used 600 acres preserved as a mitigation effort for the environmental impacts of the Ragged Mountain Reservoir Dam project.

Mr. Mawyer stated the 1983 agreement between the City and Service Authority asked Rivanna to buy the property and the City and Service Authority committed to the imposition of a Buck Mountain Surcharge for every new water connection in the City or County, with these funds to be transferred to Rivanna to help pay for the bonds, which they have been for the last 36 years. He stated the bonds have been paid off, they feel that it is time to terminate the surcharge, and a joint resolution has been drafted by Mr. Krueger, after conferring with City, County, and Service Authority attorneys. He continued that, should the Board approve the resolution, it would then be taken up by the Board of Supervisors, City Council, and Service Authority. He stated the surcharge fee is about \$230 for a 5/8" lot residential connection and increases with larger meter sizes.

Mr. Krueger emphasized that they can't say exactly when the bonds have been paid off, due to the way they were refinanced before Lonnie came on board, and there is no way to trace it, though they all know that at this point it has been paid. He stated they need to certify to the bond trustee that the elimination of the surcharge would not have an impact on the Authority's ability to pay its bond debt and operational costs, which has been certified by the engineer.

Dr. Palmer moved that the Board approve the joint resolution to terminate the Buck Mountain surcharge. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

There were none presented.

10. CLOSED MEETING

There was no closed meeting held.

11. ADJOURNMENT

At 3:35 p.m., Mr. Richardson moved that the Board adjourn the meeting. The motion was seconded by Ms. Galvin and passed unanimously (6-0). Mr. O'Connell was absent from the meeting and the vote.



MEMORANDUM

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

FROM: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: EXECUTIVE DIRECTOR'S REPORT

DATE: OCTOBER 22, 2019

STRATEGIC PLAN GOAL: COMMUNICATION AND COLLABORATION

Community Outreach

Andrea Terry, Water Resources Manager, participated in the Rivanna Renaissance Conference. She was asked to speak about blue green algae. Andrea also spoke to a group of children from the Boys and Girls Club about our local water supply, and attended the Rivanna River Flow Fest and set up an information table with the ACSA and the City.

Rob Haacke, Wastewater Manager, gave a tour to a group of graduate students from UVA's Darden School.

Bill Mawyer and David Tungate, Director of Operations, attended a Virginia Biosolids Council meeting in Richmond, VA. The annual meeting included EPA and DEQ presentations on industry trends, PFAS, and pending regulations.

Bill, David, Phil McKalips, and David Rhoades toured the McGill Environmental composting facility in Waverly, VA. This is where we send our biosolids and compostable food waste.

David Tungate gave a presentation on Client Expectations at a technical conference in Ohio.

STRATEGIC PLAN GOAL: INFRASTRUCTURE AND MASTER PLANNING

Observatory Water Treatment Plant Lease

Working with UVA management, we have developed a draft lease to be reviewed with the Board.

Wholesale Water Master Metering

20 of 25 meters are functional. Calibration verification was performed on all 5 remaining meters last week. The system should be substantially completed and placed into operation in October, with an initial water usage report in November.

STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT

Flu shots will be available to staff of October 24th.

Employee Appreciation Day will be celebrated on October 31st.



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY
BOARD OF DIRECTORS

FROM: LONNIE WOOD, DIRECTOR OF FINANCE AND
ADMINISTRATION

REVIEWED: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: SEPTEMBER MONTHLY FINANCIAL SUMMARY – FY 2020

DATE: OCTOBER 22, 2019

Urban Water flow and rate revenues are 18% over budget estimates for the first quarter of this fiscal year, and Urban Wastewater flow and rate revenues are 4% over budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	\$ 2,308,832	\$ 2,301,246	\$ 566,052	\$ 5,176,130
Expenses	(1,814,737)	(2,040,898)	(480,488)	(4,336,123)
Surplus (deficit)	<u>\$ 494,095</u>	<u>\$ 260,348</u>	<u>\$ 85,564</u>	<u>\$ 840,007</u>
Debt Service				
Revenues	\$ 1,750,344	\$ 2,288,589	\$ 376,861	\$ 4,415,794
Expenses	(1,697,424)	(2,182,958)	(374,552)	(4,254,934)
Surplus (deficit)	<u>\$ 52,920</u>	<u>\$ 105,631</u>	<u>\$ 2,309</u>	<u>\$ 160,860</u>
Total				
Revenues	\$ 4,059,176	\$ 4,589,835	\$ 942,913	\$ 9,591,924
Expenses	(3,512,161)	(4,223,856)	(855,040)	(8,591,057)
Surplus (deficit)	<u><u>\$ 547,015</u></u>	<u><u>\$ 365,979</u></u>	<u><u>\$ 87,873</u></u>	<u><u>\$ 1,000,867</u></u>

Urban Wastewater received the annual Nutrient Exchange Credit of \$78,763 and billed Albemarle County for the 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. Personnel Costs (Urban Water, Urban Wastewater, Administration, Engineering – pages 2, 5, 8, 11) – The annual contributions to health savings accounts and wages paid to summer interns are causing this category to exceed the prorated budget for the year and will even out as the fiscal year progresses.

- B. Professional Services (Urban Water – page 2) – Urban Water has spent more than the total annual amount budgeted for legal fees related to the Observatory plant lease and Buck Mountain land issues.
- C. Other Services and Charges (Urban Water – page 2) – Urban Water is over the prorated budget due to the \$15,000 annual contribution to the Rivanna Conservation Alliance related to watershed management, and utilities are running high. These are budgeted items, so the budget vs. actual will likely even out over the fiscal year.
- D. Communications (Urban Water – page 2) - The annual payment to the County of Albemarle for Rivanna's share of the radio system maintenance cost has pushed the Urban Water rate center over the prorated budget. This is a budgeted item, so the budget vs. actual will even out over the fiscal year.
- E. Information Technology (Administration, Engineering – pages 8, 11) – Administration paid \$25,000 for the annual ArcGIS software license agreement, and Engineering made a \$15,000 purchase of a mobile form application for GIS software. These are budgeted items, so the budget vs. actual will even out over the fiscal year.
- F. Operations & Maintenance (Glenmore Wastewater, Administration – pages 6, 8) – Glenmore Wastewater is over the prorated budget on equipment maintenance and repair costs. The Administration department paid \$12,600 in July for some heating and air conditioning work in the Administration building.
- G. Equipment Purchases (Urban Water – page 2) – Urban Water is over the prorated budget for small equipment purchases.

Attachments

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019
Fiscal Year 2020

Consolidated
Revenues and Expenses Summary

<i>Budget</i>	<i>Budget</i>	<i>Actual</i>	<i>Budget</i>	<i>Variance</i>
<i>FY 2020</i>	<i>Year-to-Date</i>	<i>Year-to-Date</i>	<i>vs. Actual</i>	<i>Percentage</i>

Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 17,381,293	\$ 4,345,323	\$ 4,736,552	\$ 391,228	9.00%
Lease Revenue	100,000	25,000	27,375	2,375	9.50%
Admin., Maint. & Engineering Revenue	478,000	119,500	125,054	5,554	4.65%
Other Revenues	562,478	140,620	399,288	258,669	183.95%
Use of Reserves	667,000	166,750	-	(166,750)	-100.00%
Interest Allocation	31,500	7,875	12,915	5,040	64.00%
Total Operating Revenues	\$ 19,220,271	\$ 4,805,068	\$ 5,301,184	\$ 496,116	10.32%

Expenses

Personnel Cost	A	\$ 8,760,078	\$ 2,068,357	\$ 2,102,936	\$ (34,580)	-1.67%
Professional Services	B	666,050	166,513	153,753	12,759	7.66%
Other Services & Charges	C	2,980,612	745,153	739,717	5,436	0.73%
Communications	D	142,593	35,648	50,410	(14,762)	-41.41%
Information Technology	E	352,750	88,188	86,730	1,458	1.65%
Supplies		46,180	11,545	5,757	5,788	50.13%
Operations & Maintenance	F	5,069,478	1,267,370	1,023,769	243,600	19.22%
Equipment Purchases	G	359,550	89,888	87,355	2,532	2.82%
Depreciation		843,000	210,750	210,750	-	0.00%
Reserve Transfers		-	-	-	-	
Total Operating Expenses		\$ 19,220,291	\$ 4,683,410	\$ 4,461,178	\$ 222,232	4.75%
Operating Surplus/(Deficit)		\$ (20)	\$ 121,658	\$ 840,006		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 15,861,022	\$ 3,965,256	\$ 3,965,256	\$ 1	0.00%
Septage Receiving Support - County	109,440	27,360	109,441	82,081	300.00%
Buck Mountain Surcharge	125,900	31,475	69,600	38,125	121.13%
Buck Mountain Lease Revenue	1,600	400	2,120	1,720	429.99%
Trust Fund Interest	158,200	39,550	77,934	38,384	97.05%
Reserve Fund Interest	690,000	172,500	191,444	18,944	10.98%
Total Debt Service Revenues	\$ 16,946,162	\$ 4,236,541	\$ 4,415,794	\$ 179,254	4.23%

Debt Service Costs

Total Principal & Interest	\$ 14,473,236	\$ 3,618,309	\$ 3,618,309	\$ -	0.00%
Reserve Additions-Interest	690,000	172,500	191,444	(18,944)	-10.98%
Debt Service Ratio Charge	725,000	181,250	181,250	-	0.00%
Reserve Additions-CIP Growth	1,055,725	263,931	263,931	-	0.00%
Total Debt Service Costs	\$ 16,943,961	\$ 4,235,990	\$ 4,254,934	\$ (18,944)	-0.45%
Debt Service Surplus/(Deficit)	\$ 2,201	\$ 550	\$ 160,861		

Summary

Total Revenues	\$ 36,166,433	\$ 9,041,608	\$ 9,716,978	\$ 675,370	7.47%
Total Expenses	36,164,252	8,919,400	8,716,112	203,288	2.28%
Surplus/(Deficit)	\$ 2,181	\$ 122,208	\$ 1,000,867		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Urban Water Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 7,118,541	\$ 1,779,635	\$ 2,092,945	\$ 313,310	17.61%
Lease Revenue	70,000	17,500	20,208	2,708	15.47%
Miscellaneous	-	-	190,294	190,294	
Use of Reserves	600,000	150,000	-	(150,000)	-100.00%
Interest Allocation	13,200	3,300	5,386	2,086	63.20%
Total Operating Revenues	\$ 7,801,741	\$ 1,950,435	\$ 2,308,832	\$ 358,397	18.38%

Expenses

Personnel Cost	A	\$ 1,861,134	\$ 441,369	\$ 456,953	\$ (15,584)	-3.53%
Professional Services	B	207,200	51,800	64,045	(12,245)	-23.64%
Other Services & Charges	C	574,963	143,741	184,346	(40,605)	-28.25%
Communications	D	65,100	16,275	21,613	(5,338)	-32.80%
Information Technology		77,000	19,250	6,591	12,659	65.76%
Supplies		6,100	1,525	1,061	464	30.45%
Operations & Maintenance		2,356,590	589,148	435,315	153,833	26.11%
Equipment Purchases	G	50,500	12,625	22,832	(10,207)	-80.85%
Depreciation		300,000	75,000	75,000	-	0.00%
Reserve Transfers		-	-	-	-	
Subtotal Before Allocations		\$ 5,498,587	\$ 1,350,732	\$ 1,267,755	\$ 82,977	6.14%
Allocation of Support Departments		2,303,155	546,972	546,982	(10)	0.00%
Total Operating Expenses		\$ 7,801,742	\$ 1,897,704	\$ 1,814,737	\$ 82,967	4.37%
Operating Surplus/(Deficit)		\$ (1)	\$ 52,731	\$ 494,095		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 6,178,598	\$ 1,544,650	\$ 1,544,649	\$ (1)	0.00%
Trust Fund Interest	54,000	13,500	26,575	13,075	96.86%
Reserve Fund Interest	387,000	96,750	107,400	10,650	11.01%
Buck Mountain Surcharge	125,900	31,475	69,600	38,125	121.13%
Lease Revenue	1,600	400	2,120	1,720	429.99%
Total Debt Service Revenues	\$ 6,747,098	\$ 1,686,775	\$ 1,750,344	\$ 63,570	3.77%

Debt Service Costs

Total Principal & Interest	\$ 5,223,498	\$ 1,305,875	\$ 1,305,875	\$ -	0.00%
Reserve Additions-Interest	387,000	96,750	107,400	(10,650)	-11.01%
Debt Service Ratio Charge	400,000	100,000	100,000	-	0.00%
Reserve Additions-CIP Growth	736,600	184,150	184,150	-	0.00%
Total Debt Service Costs	\$ 6,747,098	\$ 1,686,775	\$ 1,697,424	\$ (10,650)	-0.63%
Debt Service Surplus/(Deficit)	\$ -	\$ -	\$ 52,920		

Rate Center Summary

Total Revenues	\$ 14,548,839	\$ 3,637,210	\$ 4,059,177	\$ 421,967	11.60%
Total Expenses	14,548,840	3,584,479	3,512,162	72,317	2.02%
Surplus/(Deficit)	\$ (1)	\$ 52,731	\$ 547,015		
Costs per 1000 Gallons Operating and DS	\$ 2.30		\$ 1.82		
	\$ 4.28		\$ 3.52		
Thousand Gallons Treated or Flow (MGD)	3,397,700	849,425	999,019	149,594	17.61%
	9.309		10.859		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Crozet Water Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 1,028,808	\$ 257,202	\$ 257,202	\$ -	0.00%
Lease Revenues	30,000	7,500	7,168	(332)	-4.43%
Use of Reserves	52,000	13,000	-	(13,000)	-100.00%
Interest Allocation	1,800	450	749	299	66.46%
Total Operating Revenues	\$ 1,112,608	\$ 278,152	\$ 265,119	\$ (13,033)	-4.69%

Expenses

Personnel Cost	\$ 300,589	\$ 71,318	\$ 72,765	\$ (1,447)	-2.03%
Professional Services	12,850	3,213	-	3,213	100.00%
Other Services & Charges	137,816	34,454	28,342	6,112	17.74%
Communications	4,950	1,238	1,579	(341)	-27.59%
Information Technology	2,600	650	80	570	87.69%
Supplies	1,395	349	321	28	8.00%
Operations & Maintenance	398,400	99,600	39,553	60,047	60.29%
Equipment Purchases	6,500	1,625	3,832	(2,207)	-135.84%
Depreciation	30,000	7,500	7,500	-	0.00%
Reserve Transfers	-	-	-	-	-
Subtotal Before Allocations	\$ 895,100	\$ 219,946	\$ 153,972	\$ 65,973	30.00%
Allocation of Support Departments	217,513	51,687	51,445	242	0.47%
Total Operating Expenses	\$ 1,112,613	\$ 271,632	\$ 205,417	\$ 66,215	24.38%
Operating Surplus/(Deficit)	\$ (5)	\$ 6,520	\$ 59,701		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 1,311,312	\$ 327,828	\$ 327,828	\$ -	0.00%
Trust Fund Interest	5,500	1,375	2,728	1,353	98.38%
Reserve Fund Interest	21,500	5,375	5,935	560	10.41%
Total Debt Service Revenues	\$ 1,338,312	\$ 334,578	\$ 336,490	\$ 1,912	0.57%

Debt Service Costs

Total Principal & Interest	\$ 1,230,815	\$ 307,704	\$ 307,704	\$ -	0.00%
Reserve Additions-Interest	21,500	5,375	5,935	(560)	-10.41%
Reserve Additions-CIP Growth	86,000	21,500	21,500	-	0.00%
Total Debt Service Costs	\$ 1,338,315	\$ 334,579	\$ 335,139	\$ (560)	-0.17%
Debt Service Surplus/(Deficit)	\$ (3)	\$ (1)	\$ 1,352		

Rate Center Summary

Total Revenues	\$ 2,450,920	\$ 612,730	\$ 601,609	\$ (11,121)	-1.81%
Total Expenses	2,450,928	606,211	540,556	65,655	10.83%
Surplus/(Deficit)	\$ (8)	\$ 6,519	\$ 61,053		
Costs per 1000 Gallons	\$ 5.59		\$ 3.39		
Operating and DS	\$ 12.31		\$ 8.91		
Thousand Gallons Treated	199,053	49,763	60,674	10,911	21.93%
Flow (MGD)	0.545		0.660		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Scottsville Water Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 520,812	\$ 130,203	\$ 130,203	\$ -	0.00%
Use of Reserves	15,000	3,750	-	(3,750)	-100.00%
Interest Allocation	800	200	336	136	67.90%
Total Operating Revenues	\$ 536,612	\$ 134,153	\$ 130,539	\$ (3,614)	-2.69%

Expenses

Personnel Cost	\$ 197,349	\$ 46,766	\$ 47,007	\$ (241)	-0.52%
Professional Services	20,000	5,000	-	5,000	100.00%
Other Services & Charges	33,318	8,330	5,297	3,033	36.41%
Communications	3,430	858	1,484	(627)	-73.10%
Information Technology	800	200	160	40	19.97%
Supplies	410	103	142	(39)	-38.16%
Operations & Maintenance	121,340	30,335	8,365	21,970	72.43%
Equipment Purchases	3,200	800	3,843	(3,043)	-380.37%
Depreciation	20,000	5,000	5,000	(0)	0.00%
Reserve Transfers	-	-	-	-	-
Subtotal Before Allocations	\$ 399,847	\$ 97,390	\$ 71,297	\$ 26,093	26.79%
Allocation of Support Departments	136,770	32,561	31,945	617	1.89%
Total Operating Expenses	\$ 536,617	\$ 129,952	\$ 103,242	\$ 26,710	20.55%
Operating Surplus/(Deficit)	\$ (5)	\$ 4,201	\$ 27,297		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 128,749	\$ 32,187	\$ 32,187	\$ (0)	0.00%
Trust Fund Interest	1,700	425	779	354	83.37%
Reserve Fund Interest	8,400	2,100	2,297	197	9.40%
Total Debt Service Revenues	\$ 138,849	\$ 34,712	\$ 35,264	\$ 551	1.59%

Debt Service Costs

Total Principal & Interest	\$ 129,524	\$ 32,381	\$ 32,381	\$ -	0.00%
Reserve Additions-Interest	8,400	2,100	2,297	(197)	
Reserve Additions-CIP Growth	925	231	231	-	
Total Debt Service Costs	\$ 138,849	\$ 34,712	\$ 34,910	\$ (197)	-0.57%
Debt Service Surplus/(Deficit)	\$ -	\$ -	\$ 354		

Rate Center Summary

Total Revenues	\$ 675,461	\$ 168,865	\$ 165,802	\$ (3,063)	-1.81%
Total Expenses	675,466	164,664	138,151	26,512	16.10%
Surplus/(Deficit)	\$ (5)	\$ 4,201	\$ 27,651		
Costs per 1000 Gallons	\$ 29.56		\$ 24.34		
Operating and DS	\$ 37.21		\$ 32.58		
Thousand Gallons Treated	18,151	4,538	4,241	(297)	-6.54%
or					
Flow (MGD)	0.050		0.046		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Urban Wastewater Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 8,033,620	\$ 2,008,405	\$ 2,086,324	\$ 77,919	3.88%
Stone Robinson WWTP	22,478	5,620	4,811	(809)	-14.39%
Septage Acceptance	450,000	112,500	125,421	12,921	11.49%
Nutrient Credits	90,000	22,500	78,763	56,263	250.06%
Miscellaneous Revenue	-	-	-	-	-
Interest Allocation	14,400	3,600	5,928	2,328	64.67%
Total Operating Revenues	\$ 8,610,498	\$ 2,152,625	\$ 2,301,246	\$ 148,622	6.90%

Expenses

Personnel Cost	A \$ 1,281,463	\$ 303,353	\$ 308,535	\$ (5,181)	-1.71%
Professional Services	175,000	43,750	48,260	(4,510)	-10.31%
Other Services & Charges	2,030,825	507,706	480,872	26,834	5.29%
Communications	10,430	2,608	4,792	(2,185)	-83.80%
Information Technology	62,500	15,625	2,988	12,637	80.88%
Supplies	2,700	675	141	534	79.09%
Operations & Maintenance	1,724,650	431,163	406,578	24,585	5.70%
Equipment Purchases	77,500	19,375	18,509	866	4.47%
Depreciation	470,000	117,500	117,500	(0)	0.00%
Reserve Transfers	-	-	-	-	-
Subtotal Before Allocations	\$ 5,835,068	\$ 1,441,755	\$ 1,388,175	\$ 53,580	3.72%
Allocation of Support Departments	2,775,430	660,043	652,723	7,321	1.11%
Total Operating Expenses	\$ 8,610,498	\$ 2,101,798	\$ 2,040,898	\$ 60,900	2.90%
Operating Surplus/(Deficit)	\$ (0)	\$ 50,827	\$ 260,348		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 8,229,143	\$ 2,057,286	\$ 2,057,286	\$ 0	0.00%
Septage Receiving Support - County	109,440	27,360	109,441	82,081	300.00%
Trust Fund Interest	96,900	24,225	47,773	23,548	97.21%
Reserve Fund Interest	266,900	66,725	74,089	7,364	11.04%
Total Debt Service Revenues	\$ 8,702,383	\$ 2,175,596	\$ 2,288,589	\$ 112,993	5.19%

Debt Service Costs

Total Principal & Interest	\$ 7,880,079	\$ 1,970,020	\$ 1,970,020	\$ -	0.00%
Reserve Additions-Interest	266,900	66,725	74,089	(7,364)	-11.04%
Debt Service Ratio Charge	325,000	81,250	81,250	-	0.00%
Reserve Additions-CIP Growth	230,400	57,600	57,600	-	0.00%
Total Debt Service Costs	\$ 8,702,379	\$ 2,175,595	\$ 2,182,958	\$ (7,364)	-0.34%
Debt Service Surplus/(Deficit)	\$ 4	\$ 1	\$ 105,631		

Rate Center Summary

Total Revenues	\$ 17,312,881	\$ 4,328,220	\$ 4,589,835	\$ 261,615	6.04%
Total Expenses	17,312,877	4,277,393	4,223,856	53,537	1.25%
Surplus/(Deficit)	\$ 4	\$ 50,828	\$ 365,979		
Costs per 1000 Gallons	\$ 2.54		\$ 2.32		
Operating and DS	\$ 5.11		\$ 4.80		
Thousand Gallons Treated	3,390,400	847,600	880,677	33,077	3.90%
or					
Flow (MGD)	9.289		9.573		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Glenmore Wastewater Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 370,524	\$ 92,631	\$ 92,631	\$ -	0.00%
Interest Allocation	700	175	284	109	62.36%
<i>Total Operating Revenues</i>	\$ 371,224	\$ 92,806	\$ 92,915	\$ 109	0.12%

Expenses

Personnel Cost	\$ 95,340	\$ 22,582	\$ 22,851	\$ (269)	-1.19%
Professional Services	-	-	2,194	(2,194)	
Other Services & Charges	35,210	8,803	10,308	(1,506)	-17.11%
Communications	3,000	750	1,052	(302)	-40.25%
Information Technology	3,700	925	-	925	100.00%
Supplies	100	25	-	25	100.00%
Operations & Maintenance	119,450	29,863	37,053	(7,191)	-24.08%
Equipment Purchases	2,900	725	600	125	17.24%
Depreciation	5,000	1,250	1,250	0	0.00%
<i>Subtotal Before Allocations</i>	\$ 264,700	\$ 64,922	\$ 75,308	\$ (10,386)	-16.00%
Allocation of Support Departments	106,527	25,403	24,624	779	3.07%
<i>Total Operating Expenses</i>	\$ 371,227	\$ 90,325	\$ 99,933	\$ (9,607)	-10.64%
<i>Operating Surplus/(Deficit)</i>	\$ (3)	\$ 2,481	\$ (7,017)		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 3,778	\$ 945	\$ 945	\$ 1	0.05%
Trust Fund Interest	-	-	-	-	
Reserve Fund Interest	3,100	775	957	182	23.51%
<i>Total Debt Service Revenues</i>	\$ 6,878	\$ 1,720	\$ 1,902	\$ 1	0.03%

Debt Service Costs

Total Principal & Interest	\$ 1,578	\$ 395	\$ 395	\$ -	0.00%
Reserve Additions-CIP Growth	\$ 2,200				
Reserve Additions-Interest	3,100	775	957	(182)	-23.51%
<i>Total Debt Service Costs</i>	\$ 6,878	\$ 1,170	\$ 1,352	\$ (182)	-15.58%
<i>Debt Service Surplus/(Deficit)</i>	\$ -	\$ 550	\$ 551		

Rate Center Summary

Total Revenues	\$ 378,102	\$ 94,526	\$ 94,817	\$ 292	0.31%
Total Expenses	378,105	91,495	101,284	(9,790)	-10.70%
Surplus/(Deficit)	\$ (3)	\$ 3,031	\$ (6,467)		
Costs per 1000 Gallons	\$ 9.31		\$ 12.90		
Operating and DS	\$ 9.48		\$ 13.07		
Thousand Gallons Treated or Flow (MGD)	39,892	9,973	7,748	(2,225)	-22.31%
	0.109		0.084		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Scottsville Wastewater Rate Center
Revenues and Expenses Summary

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Operations Rate Revenue	\$ 308,988	\$ 77,247	\$ 77,247	\$ -	0.00%
Interest Allocation	600	150	232	82	54.98%
Total Operating Revenues	\$ 309,588	\$ 77,397	\$ 77,479	\$ 82	0.11%

Expenses

Personnel Cost	\$ 95,366	\$ 22,588	\$ 22,851	\$ (262)	-1.16%
Professional Services	2,000	500	-	500	100.00%
Other Services & Charges	28,000	7,000	7,110	(110)	-1.57%
Communications	3,930	983	1,144	(161)	-16.40%
Information Technology	1,700	425	-	425	100.00%
Supplies	25	6	-	6	100.00%
Operations & Maintenance	58,850	14,713	12,848	1,865	12.68%
Equipment Purchases	3,200	800	600	200	25.00%
Depreciation	18,000	4,500	4,500	-	0.00%
Subtotal Before Allocations	\$ 211,071	\$ 51,515	\$ 49,051	\$ 2,463	4.78%
Allocation of Support Departments	98,523	23,484	22,847	637	2.71%
Total Operating Expenses	\$ 309,594	\$ 74,998	\$ 71,898	\$ 3,101	4.13%
Operating Surplus/(Deficit)	\$ (6)	\$ 2,399	\$ 5,582		

Debt Service Budget vs. Actual

Revenues

Debt Service Rate Revenue	\$ 9,442	\$ 2,361	\$ 2,361	\$ 1	0.02%
Trust Fund Interest	100	25	78	53	
Reserve Fund Interest	3,100	775	766	(9)	-1.19%
Total Debt Service Revenues	\$ 12,642	\$ 3,161	\$ 3,205	\$ 44	1.40%

Debt Service Costs

Total Principal & Interest	\$ 7,742	\$ 1,936	\$ 1,936	\$ -	0.00%
Reserve Additions-Interest	3,100	775	766	9	
Estimated New Principal & Interest	1,800	450	450	-	
Total Debt Service Costs	\$ 12,642	\$ 3,161	\$ 3,151	\$ 9	0.29%
Debt Service Surplus/(Deficit)	\$ -	\$ -	\$ 53		

Rate Center Summary

Total Revenues	\$ 322,230	\$ 80,558	\$ 80,684	\$ 127	0.16%
Total Expenses	322,236	78,159	75,049	3,110	3.98%
Surplus/(Deficit)	\$ (6)	\$ 2,399	\$ 5,635		
Costs per 1000 Gallons	\$ 14.28		\$ 16.07		
Operating and DS	\$ 14.87		\$ 16.78		
Thousand Gallons Treated	21,677	5,419	4,473	(946)	-17.46%
or					
Flow (MGD)	0.059		0.049		

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Administration

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Payment for Services SWA	\$	466,000	\$	116,500	\$	116,500	\$	(0)	0.00%
Miscellaneous Revenue		2,000		500		5,119		4,619	923.82%
Total Operating Revenues	\$	468,000	\$	117,000	\$	121,619	\$	4,619	3.95%

Expenses

Personnel Cost	A	\$	1,841,351	\$	432,807	\$	460,978	\$	(28,171)	-6.51%
Professional Services			229,000		57,250		36,270		20,980	36.65%
Other Services & Charges			106,400		26,600		20,252		6,348	23.86%
Communications			18,500		4,625		4,700		(75)	-1.63%
Information Technology	E		174,250		43,563		53,889		(10,327)	-23.71%
Supplies			21,500		5,375		2,518		2,857	53.15%
Operations & Maintenance	F		64,500		16,125		28,487		(12,362)	-76.67%
Equipment Purchases			24,000		6,000		3,530		2,470	41.17%
Depreciation			-		-		-		-	
Total Operating Expenses		\$	2,479,501	\$	592,345	\$	610,626	\$	(18,281)	-3.09%

Department Summary

Net Costs Allocable to Rate Centers		\$	(2,011,501)	\$	(475,345)	\$	(489,007)	\$	13,662	-2.87%
<u>Allocations to the Rate Centers</u>										
Urban Water	44.00%	\$	885,060	\$	209,152	\$	215,163	\$	(6,011)	
Crozet Water	4.00%	\$	80,460		19,014		19,560		(546)	
Scottsville Water	2.00%	\$	40,230		9,507		9,780		(273)	
Urban Wastewater	48.00%	\$	965,520		228,166		234,723		(6,558)	
Glenmore Wastewater	1.00%	\$	20,115		4,753		4,890		(137)	
Scottsville Wastewater	1.00%	\$	20,115		4,753		4,890		(137)	
	100.00%	\$	2,011,501	\$	475,345	\$	489,007	\$	(13,662)	

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Maintenance

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

Payment for Services SWA
Miscellaneous Revenue

Total Operating Revenues

\$ 10,000				
-	-	3,434	3,434	
\$ 10,000	\$ -	\$ 3,434	\$ 3,434	

Expenses

Personnel Cost
Professional Services
Other Services & Charges
Communications
Information Technology
Supplies
Operations & Maintenance
Equipment Purchases
Depreciation

Total Operating Expenses

\$ 1,345,633	\$ 317,601	\$ 300,835	\$ 16,765	5.28%
-	-	-	-	
14,500	3,625	1,866	1,759	48.51%
17,600	4,400	8,067	(3,667)	-83.34%
6,500	1,625	2,250	(625)	-38.46%
2,000	500	123	377	75.39%
77,400	19,350	17,583	1,767	9.13%
147,150	36,788	28,258	8,529	23.19%
-	-	-	-	
\$ 1,610,783	\$ 383,888	\$ 358,983	\$ 24,905	6.49%

Department Summary

Net Costs Allocable to Rate Centers

\$ (1,600,783)	\$ (383,888)	\$ (355,549)	\$ (21,470)	5.59%
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Allocations to the Rate Centers

Urban Water	30.00%	\$ 480,235	\$ 115,166	\$ 106,665	\$ 8,502
Crozet Water	3.50%	56,027	13,436	12,444	992
Scottsville Water	3.50%	56,027	13,436	12,444	992
Urban Wastewater	56.50%	904,442	216,897	200,885	16,012
Glenmore Wastewater	3.50%	56,027	13,436	12,444	992
Scottsville Wastewater	3.00%	48,023	11,517	10,666	850
	100.00%	\$ 1,600,783	\$ 383,888	\$ 355,549	\$ 28,339

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Laboratory

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual

Notes

Revenues

N/A

Expenses

Personnel Cost	\$ 394,222	\$ 92,894	\$ 87,960	\$ 4,934	5.31%
Professional Services	-	-	-	-	
Other Services & Charges	9,230	2,308	104	2,203	95.49%
Communications	1,153	288	309	(21)	
Information Technology	2,500	625	-	625	100.00%
Supplies	2,150	538	69	469	87.24%
Operations & Maintenance	61,500	15,375	20,133	(4,758)	-30.95%
Equipment Purchases	2,200	550	425	125	22.73%
Depreciation	-	-	-	-	
Total Operating Expenses	\$ 472,955	\$ 112,578	\$ 109,001	\$ 3,577	3.18%

Department Summary

Net Costs Allocable to Rate Centers		\$ (472,955)	\$ (112,578)	\$ (109,001)	\$ (3,577)	3.18%
<u>Allocations to the Rate Centers</u>						
Urban Water	44.00%	\$ 208,100	\$ 49,534	\$ 47,960	\$ 1,574	
Crozet Water	4.00%	18,918	4,503	4,360	143	
Scottsville Water	2.00%	9,459	2,252	2,180	72	
Urban Wastewater	47.00%	222,289	52,911	51,230	1,681	
Glenmore Wastewater	1.50%	7,094	1,689	1,635	54	
Scottsville Wastewater	1.50%	7,094	1,689	1,635	54	
	100.00%	\$ 472,955	\$ 112,578	\$ 109,001	\$ 3,577	

Rivanna Water & Sewer Authority
Monthly Financial Statements - September 2019

Engineering

<i>Budget FY 2020</i>	<i>Budget Year-to-Date</i>	<i>Actual Year-to-Date</i>	<i>Budget vs. Actual</i>	<i>Variance Percentage</i>
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Operating Budget vs. Actual**Revenues**

Payment for Services SWA

Total Operating Revenues

\$ -	\$ -	\$ -	\$ -	-
\$ -	\$ -	\$ -	\$ -	-

Expenses

Personnel Cost

Professional Services

Other Services & Charges

Communications

Information Technology

Supplies

Operations & Maintenance

Equipment Purchases

Depreciation & Capital Reserve Transfers

Total Operating Expenses

A	\$ 1,347,631	\$ 317,078	\$ 322,202	\$ (5,124)	-1.62%
	20,000	5,000	2,984	2,017	40.33%
	10,350	2,588	1,219	1,368	52.87%
	14,500	3,625	5,669	(2,044)	-56.40%
E	21,200	5,300	20,772	(15,472)	-291.92%
	9,800	2,450	1,383	1,067	43.55%
	86,798	21,700	17,854	3,846	17.72%
	42,400	10,600	4,926	5,674	53.53%
	-	-	-	-	
	\$ 1,552,679	\$ 368,340	\$ 377,009	\$ (8,669)	-2.35%

Department Summary

Net Costs Allocable to Rate Centers

\$ (1,552,679)	\$ (368,340)	\$ (377,009)	\$ 8,669	-2.35%
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Allocations to the Rate Centers

Urban Water

Crozet Water

Scottsville Water

Urban Wastewater

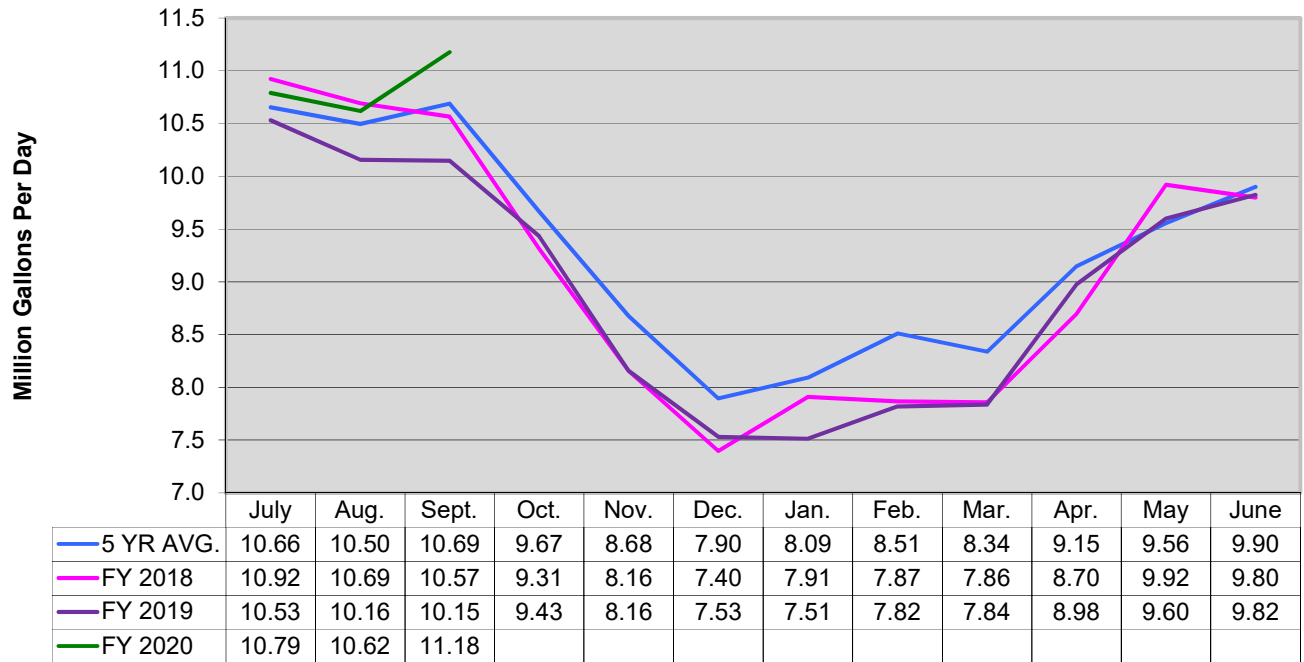
Glenmore Wastewater

Scottsville Wastewater

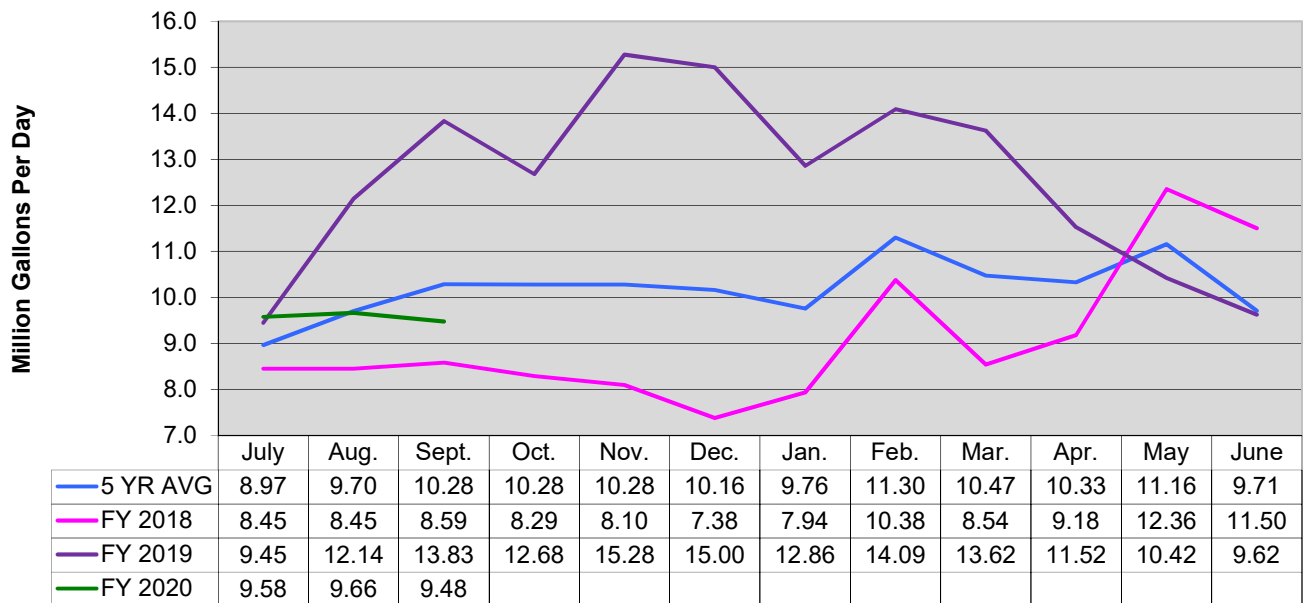
47.00%	\$ 729,759	\$ 173,120	\$ 177,194	\$ (4,074)
4.00%	62,107	14,734	15,080	(347)
2.00%	31,054	7,367	7,540	(173)
44.00%	683,179	162,070	165,884	(3,814)
1.50%	23,290	5,525	5,655	(130)
1.50%	23,290	5,525	5,655	(130)
100.00%	\$ 1,552,679	\$ 368,340	\$ 377,009	\$ (8,669)

**Rivanna Water and Sewer Authority
Flow Graphs**

Urban Water Flows



Urban Wastewater Flows



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: OCTOBER 22, 2019

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

Under Construction

1. Crozet Water Treatment Plant Expansion
2. Wholesale Water Master Metering
3. Valve Repair – Replacement (Phase 2)
4. Scottsville WTP – Finished Water Metering Improvements
5. Buck’s Elbow Ground Storage Tank Chlorination System

Design and Bidding

6. Observatory Water Treatment Plant Expansion
7. South Rivanna Water Treatment Plant Improvements
8. Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line and Raw Water Pump Station
9. Crozet Flow Equalization Tank
10. Beaver Creek Dam Alterations
11. Beaver Creek Raw Water Pump Station
12. Crozet Interceptor Pump Station Rebuilds
13. MC Digester Sludge Storage Improvements
14. MC Aluminum Slide Gate Replacements
15. Sugar Hollow Dam – Rubber Crest Gate Replacement and Intake Tower Repairs
16. Route 29 Pump Station
17. South Rivanna Dam – Gate Repairs
18. Moores Creek Wetland Hydrology Improvements

Planning and Studies

19. South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way
20. Urban Water Demand and Safe Yield Study
21. Urban Finished Water Infrastructure Master Plan
22. South Rivanna River Crossing and North Rivanna Transmission Main
23. Upper Schenks Branch Interceptor, Phase II
24. Asset Management Plan
25. Albemarle-Berkeley PS Basin Demolition and Capacity Analysis
26. Buck Mountain Master Plan

Other Significant Projects

27. Urgent and Emergency Repairs
28. Interceptor Sewer & Manhole Repair
29. Security Enhancements
30. NRWTP Raw Metering Improvements
31. NRWTP Sludge Lagoon Study and Needs Assessment
32. MCAWRRF Cogeneration System Analysis

1. Crozet Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Orders Construction Co. (WVA)
Construction Start:	December 2018
Percent Completion:	23%
Base Construction Contract + Change Order to Date = Current Value:	\$7,170,000- \$285,000 = \$6,885,000
Expected Completion Date:	May 2021
Total Capital Project Budget:	\$8,500,000

Current Status:

Continuing work on the expansion of the Chemical Building, sanitary force main installation, and backwash lagoon improvements.

History:

This project was created to increase the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal was to not drastically increase the plant footprint in regard to the existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity will be improved by approximately 100% (from 1 to 2 mgd). SEH completed a Preliminary Engineering Report (PER); watershed data collection; raw water jar testing; pilot scale testing, as well as preliminary and final design. A Notice to Proceed was issued on December 13, 2018 and the contractor mobilized on February 26, 2019.

2. Wholesale Water Master Metering

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

Current Status:

20 of 25 meters are currently functional. Additional calibration testing for the remaining 5 meters is scheduled for October 18 and is expected to resolve all remaining metering issues. The system should be substantially completed and placed into operation by the end of October, with the initial water usage report in November/December.

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.

3. Valve Repair – Replacement (Phase 2)

Design Engineer:	RWSA / Dewberry
Construction Contractor:	Garney Construction
Construction Start:	May 2019
Percent Complete:	15%

Base Construction Contract +	
Change Orders to Date = Current Value:	\$843,460.00 - \$33,525.21 = \$809,934.79
Expected Completion:	July 2020
Total Capital Project Budget:	\$882,914

Current Status:

Valve replacements will resume in March.

History:

Due to the recently completed Piney Mountain Tank Rehabilitation project and bypass pumping necessary for that work, two valves identified for replacement in the Valve Repair-Replacement Project have been unavailable to be replaced. As such, the Contractor demobilized from the project after the valve replacement completed on May 21, 2019.

Isolation valves are critical for normal operation of the water distribution system and timely emergency response to water main breaks. Staff continuously reviews results from an ongoing Valve Exercising and Condition Assessment Program. This project will replace the highest-priority valves that are identified during the condition assessment as not operable and not repairable. Phase 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.

A Request for Bids (RFB) was issued on November 6, 2018. RWSA staff opened bids for the project on December 11, 2018, and Garney Companies, Inc. was the apparent low bidder (\$843,460). The RWSA Board of Directors approved the bid award recommendation and Capital Improvement Plan Budget Amendment on January 22, 2019. A Notice to Proceed was issued on May 6, 2019.

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

4. Scottsville WTP – Finished Water Metering Improvements

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

Current Status:

Construction will begin when materials are delivered in November.

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. Construction bids were opened on May 29, 2019. Notice of Award was provided to the contractor on July 9, 2019 and a Notice to Proceed was provided on August 26, 2019.

5. Buck's Elbow Ground Storage Tank Chlorination System

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

Current Status:

Construction will begin when materials are delivered in December.

History:

The Contract Documents have been executed by both parties, and a Notice to Proceed (NTP) was issued on September 9, 2019.

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

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

the meeting. Bidding documents were finalized, and the Request for Bids was issued on June 20, 2019. Bids were opened on July 11, 2019, and the apparent low bidder was Littleton and Associates, Inc. (\$186,000). A Bid Award Recommendation and Capital Improvement Plan Amendment was approved by the Board of Directors on July 23, 2019. A Notice of Award was issued to Littleton and Associates, Inc. on August 6, 2019. The Notice to Proceed was issued on September 9, 2019.

6. Observatory Water Treatment Plant Expansion

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Project Start:	October 2017
Project Status:	95% Design
Construction Start:	March 2020
Completion:	2023
Approved Capital Budget:	\$19,700,000
Current Project Estimate:	\$25,500,000

Current Status:

An advertisement for competitive bids is anticipated in November 2019.

History:

An informational meeting with prospective contractors was held on September 26, 2019 to maximize interest in the project. A project kickoff meeting with staff was held on November 14, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results has been completed. Any agreed upon results will be incorporated into the project. This project will consider the design and costs for upgrading the plant systems to achieve a consistent 7.7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 or 12 MGD capacity. Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. Four additional GAC contactors will be included in the design.

7. South Rivanna Water Treatment Plant Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	October 2017
Project Status:	95% Design
Construction Start:	March 2020
Completion:	2023
Approved Capital Budget:	\$15,000,000

Current Status:

An advertisement for competitive bids is anticipated in November 2019.

History:

An informational meeting with prospective contractors was held on September 26, 2019 to maximize interest in the project. A project kickoff meeting with staff was held on November 13, 2018 and 30% design documents were provided in February. A Value Engineering Workshop took place the week of April 8th and a memo summarizing the results has been completed. Any agreed upon results will be incorporated into the project. The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks. The scope of this project will not increase plant treatment capacity.

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

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

Current Status:

Easement acquisitions are underway.

History:

A site evaluation study to recommend a location for the raw water pipe and pump station has been completed. Survey and appraisal work have been completed for portions of this alignment. A Work Authorization was executed in December 2018 with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process for this portion of the project. Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant (WTP) 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. The new pipeline will be constructed of 36-inch ductile iron and will be approximately 14,000 feet in length. The segment of the project immediately east of the RMR will constitute a portion of the proposed South Rivanna Reservoir to RMR raw water main project 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. The new pump station site selection and design are being conducted in coordination with the South Rivanna Reservoir to RMR pipeline 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.

9. Crozet Flow Equalization Tank

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	95% Design
Construction Start:	February 2020
Completion:	May 2022
Approved Capital Budget:	\$4,860,000

Current Status:

An advertisement for construction bids will be issued by November 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 been completed which includes a wetlands investigation of the project site and a topographic survey of the site has also been completed.

10. Beaver Creek Dam Alterations

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

Current Status:

Final design of the dam improvements is underway. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades began in May 2019 and is expected to be completed in the summer of 2020. Staff will pursue federal funding for the project.

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. 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.

11. Beaver Creek Raw Water Pump Station and Intake

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

Current Status:

A site selection study for the new Raw Water Pump Station and intake will be completed by January. Development of a Joint Permit Application for the new Pump Station, Intake, and Beaver Creek Dam Spillway Upgrades will be completed in the summer of 2020.

History:

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

12. Crozet Interceptor Pump Station Rebuilds

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

Current Status:

The Maintenance Department has begun pump replacement work associated with this overall project.

History:

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.

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.

13. MC Digester Sludge Storage Improvements

Design Engineer:	TBD
Project Start:	Summer 2019
Project Status:	Preliminary Design
Construction Start:	Spring 2020
Completion:	Winter 2020

Approved Capital Budget:

\$313,000

Current Status:

Completing an interior inspection of the sludge storage tank.

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.

14. MC Aluminum Slide Gate Replacements

Design Engineer:

Hazen and Sawyer

Project Start:

November 2018

Project Status:

Re-Bidding

Construction Start:

February 2020

Completion:

October 2020

Approved Capital Budget:

\$470,000

Current Status:

Advertised for construction bids.

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 Ultraviolet disinfection facility that leak water, causing a reduced capacity of the facility. Replacement of these gates will restore the process to full capacity.

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

Design Engineer:

Schnabel Engineering

Project Start:

January 2019

Project Status:

Design 20%

Construction Start:

2020

Completion:	2021
Approved Capital Budget:	\$1,140,000

Current Status:

A dive inspection of the intake tower and evaluation of existing electrical and mechanical equipment were completed. Schnabel is proceeding with design of the new rubber crest gate and compiling a list of recommended repairs based the recent inspections. Construction is anticipated to begin in late spring or summer of 2020.

History:

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

16. Route 29 Pump Station

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	July 2019
Project Status:	Design 6%
Construction Start:	2021
Completion:	2022
Approved Capital Budget:	\$2,300,000

Current Status:

The project kick-off meeting is scheduled for October 22, 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 conditions. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport water pressure zone. As this project has been developed, the North Rivanna Transmission Main improvements included under a separate CIP project have been added to this project to allow connection of the pump station to the distribution system.

17. South Rivanna Dam – Gate Repairs

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

Current Status:

Design is underway for the pump station and piping extension to the North Rivanna Transmission Main.

History:

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

18. MC Wetland Hydrology Improvements

Design Engineer:	VHB/ECS, Mid-Atlantic
Project Start:	March 2019
Project Status:	90% Design
Construction Start:	November 2019
Completion:	February 2020
Approved Capital Budget:	\$95,000

Current Status:

Construction bidding in October.

History:

As part of the Ragged Mountain project, RWSA was required to mitigate for impacts to streams and wetlands. The wetland mitigation site is located along Moores Creek on Franklin St. RWSA has been monitoring the mitigation sites, as required by the project permit, since construction in 2014. Reports on the success of the site are submitted to the Department of Environmental Quality (DEQ) at intervals during the first 10 year of the project construction. From this monitoring it was determined that the wetland is holding more water than is ideal for its function. VHB designed a Hydrology Improvement

Plan for the site, which was approved by DEQ. RWSA is now working with ECS Mid-Atlantic, to obtain the necessary County permits for the improvements (i.e., Erosion and Sediment Control permit).

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

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

Current Status:

We are completing easement appraisals and making offers to property owners.

History:

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

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

Baker has completed the routing study. Preliminary design, plat creation and the acquisition of easements are underway. Property owners were contacted to request permission to access properties for topographical surveying. A community information meeting was held in June 2018.

20. Urban Water Demand and Safe Yield Study

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	82% complete
Completion:	January 2020
Approved Capital Budget:	\$154,000

Current Status:

Another demand study workshop with the City and ACSA is scheduled for mid-October. Once final demands are agreed upon, Hazen can move forward with the Safe Yield analysis and report writing.

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.

21. Urban Finished Water Infrastructure Master Plan

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2018
Project Status:	52% complete
Completion:	June 2020
Approved Capital Budget:	\$253,000

Current Status:

Work on model development and calibration is on-going.

History:

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

22. South Rivanna River Crossing and North Rivanna Transmission Main

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

Current Status:

Design of this project will begin in summer 2020.

History:

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. As work associated with the Route 29 Pump Station begins, improvements to the North Rivanna Transmission Main as needed to facilitate that project, will be included in that effort. 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. The North Rivanna Transmission Main improvements portion of this CIP project have been moved to the Route 29 Pump Station project to allow for the connection of that pump station to the distribution system. These project changes will be formalized during the upcoming CIP development process.

23. Upper Schenks Branch Interceptor, Phase II

Design Engineer:	Frazier Engineering, P.A.
Project Start:	TBD
Project Status:	Alignment Analysis
Construction Start:	TBD
Completion:	TBD
Approved Capital Budget:	\$3,985,000

Current Status:

Additional subsurface exploration work was completed in September to gather rock information along the alignment in McIntire Road as well as across the ballfield. A final report is anticipated in October 2019.

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 through 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.

24. Asset Management Plan

Design Consultant:	GHD, Inc.
Project Start:	July 2018
Project Status:	Phase 1 – 99% Complete Phase 2 – Underway
Completion:	2020
Approved Capital Budget:	\$500,000

Current Status:

Development of an asset register, condition assessment protocols, and a pilot study of the asset management process in underway.

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.

25. Albemarle-Berkeley PS Basin Demolition and Capacity Analysis

Design Consultant:	GHD, Inc.
Project Start:	September 2019
Project Status:	Planning
Completion:	2021
Approved Capital Budget:	\$200,000

Current Status:

A preliminary scoping meeting was held with the consultant in late September 2019. The initial WA draft is being developed by the consultant, and staff is coordinating with Albemarle County Public Schools to find more information on their sewer system(s) that tie into the PS.

History:

Historically, the Albemarle Berkley Pump Station was co-located within an open-air basin that occasionally collected sewage during power outages. With the addition of a back-up power generator, the basin no longer serves a technical purpose. Given the proximity of the deteriorating structure to school property, this project serves to demolish and fill the area of the existing basin. In addition, due

to unacceptably high run times on the pumps themselves, a second part of the overall project will be to perform a capacity analysis of the PS, given the current and projected upstream conditions.

26. Buck Mountain Master Plan

Design Consultant:	LPDA (Charlottesville)
Project Start:	November 2019
Project Status:	0%
Completion:	May 2020
Budget:	\$56,000

Current Status:

Study is underway.

History:

The purpose of this Master Plan for is to consider alternatives for use of the 1300 acre property purchased in the 1980's for a water supply reservoir, which was never built. 600 acres are currently under deed restrictions to mitigate the environmental impacts of the expanded Ragged Mountain Dam. Development of the Buck Mountain Master Plan will consider past and current uses of the property, identify alternatives, and provide recommendations for strategic use of the property into the future.

Other Significant Projects

27. Urgent and Emergency Repairs

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

Project No.	Project Description	Approx. Cost
2017-03	Crozet Sewer Force Main Air Release Valve Repair	\$16,600
2018-06	South Rivanna Dam Apron and River Bank Repairs	\$200,000
2019-07	Urban Water Line Valve and Blow-off Repair	TBD

- **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 currently possible to dewater the force main and take pressure off the pipe at this location without the installation of line stops. However, once the Crozet Flow Equalization Tank (FET) has been installed, ample time will be available to dewater the force main without the aid of line stops. RWSA will be working with Faulconer Construction to stabilize the saddle for the short-term, and once the FET comes online, a permanent repair can be made. **Coordination with the property owner is underway and this repair will be scheduled this fall.**

- South Rivanna Dam Apron and River Bank Repairs

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

- Urban Water Line Valve and Blow-off Repair

During its routine inspections of the Water System, the Maintenance Department discovered a blowoff (drain) valve along the Urban Waterline (UWL-017) that had significant leakage. In addition, during one of the numerous heavy rain events received in 2018, the water in the creek adjacent to the drain line rose, eroding the area around the drain line and causing the headwall to become disconnected from the end of the pipe. Staff will be coordinating internally to confirm the overall scope of the project, including whether the drain line will need to be further reinforced or restrained. Once the scope has been finalized, **Faulconer Construction will be performing the valve replacement(s), as well as any piping/outlet modifications to the drain line. Staff is coordinating the logistics of the project, including the associated water main shutdown.**

28. Interceptor Sewer and Manhole Repair

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	30%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$1,244,337.19
Expected Completion:	October 2021
Total Capital Project Budget:	\$1,088,330 (Urban) + \$625,000 (Crozet) = \$1,713,330

Current Status:

Condition assessment and repair activities continue on portions of the Morey Creek, Crozet, and Powell Creek Interceptors. Repairs to the upper Morey Creek Interceptor through the Birdwood Golf Course are nearly complete, with potentially one sewer repair remaining.

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.

29. Security Enhancements

Contractor:	Security 101
Construction Start:	August 2019
Percent Complete:	Award
Completion:	2021
Approved Capital Budget:	\$1,000,000

Current Status:

An initial work authorization is being developed to secure doors at priority locations.

History:

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

RWSA Engineering staff held a meeting with Operations staff to discuss overall project needs and priorities in October 2018. Meetings with ACSA and City staff were held in Fall/Winter 2018-2019 to discuss how access control and intrusion detection systems have been implemented into to the day-to-day operations of the two utilities. A Request for Proposal (RFP) for an Implementer to facilitate selection of an access control system, confirmation of design requirements based upon RWSA's facilities and project goals, and installation of the selected system was issued on June 6, 2019. RWSA conducted a Pre-Proposal Meeting on June 14, 2019, and proposals were opened on June 27, 2019. Interviews were conducted on July 15-16, 2019, and a Contract Award Recommendation was brought to the Board on July 23, 2019.

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

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

30. NRWTP Raw Water Metering Improvements

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

31. NRWTP Sludge Lagoon Study and WTP Needs Assessment

The two lagoons or settling ponds at the plant are earthen basins designed to capture and hold residuals generated through the treatment process as well as periodic draining and washdown of the sedimentation and flocculation basins. The basins were designed to allow all the residuals and solids to settle out and then the clarified water to be decanted and conveyed to the river. The operational use of these lagoons is not as originally intended, and the Virginia Department of Environmental Quality has concerns regarding their condition. A study is being performed to determine how they can be improved, and other locations on site that may be less prone to flood waters. Under this project, a needs assessment at the plant will be also be performed and updated. **Completion of the needs assessment is anticipated by the end of September 2019. Construction activities associated with these improvements have been proposed in the FY 20 CIP.**

32. MCAWRRF Cogeneration System Analysis

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

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 SEPTEMBER 2019

DATE: OCTOBER 22, 2019

WATER OPERATIONS:

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

<i>Water Treatment Plant</i>	<i>Average Daily Production (MGD)</i>	<i>Total Monthly Production (MG)</i>	<i>Maximum Daily Production in the Month (MGD)</i>
Observatory	1.87	56.19	2.10 (9/07/19)
South Rivanna	8.88	266.28	9.70 (9/26/19)
North Rivanna	<u>0.429</u>	<u>12.86</u>	0.553 (9/10/19)
Urban Total	11.18	335.33	12.29 (9/23/19)
Crozet	0.667	20.00	0.875 (9/08/19)
Scottsville	<u>0.048</u>	<u>1.43</u>	0.062 (9/10/19)
RWSA Total	11.90	356.76	---

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

Status of Reservoirs (as of October 17, 2019):

- Urban Reservoirs: 91 % of Total Useable Capacity
- Ragged Mountain Reservoir is – 2.78 feet (90 %)
- Sugar Hollow Reservoir is -6.7 feet (73%)
- South Rivanna Reservoir is full (100%)
- Beaver Creek Reservoir is – 1.2 feet (93%)
- Totier Creek Reservoir is full (100%)

WASTEWATER OPERATIONS:

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

WRRF	Average Daily Effluent Flow (mgd)	Average CBOD₅ (ppm)		Average Total Suspended Solids (ppm)		Average Ammonia (ppm)	
		RESULT	LIMIT	RESULT	LIMIT	RESULT	LIMIT
Moore's Creek	9.03	<QL	11	<QL	22	0.5	2.2
Glenmore	0.080	2.0	15	4.0	30	NR	NL
Scottsville	0.039	2.0	25	5.0	30	NR	NL
Stone Robinson	0.002	NR	30	NR	30	NR	NL

NR = Not Required

NL = No Limit

<QL: Less than analytical method quantitative level (2.0 ppm for CBOD, 1.0 ppm for TSS, and 0.1 ppm for Ammonia).

Nutrient discharges at the Moore's Creek AWWRF were as follows for September 2019.

State Annual Allocation (lb./yr.) Permit		Average Monthly Allocation (lb./mo.) *	Moore's Creek Discharge September (lb./mo.)	Performance as % of monthly average Allocation*	Year to Date Performance as % of annual allocation
Nitrogen	282,994	23,583	4,699	20%	46%
Phosphorous	18,525	1,544	1,371	89%	32%

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

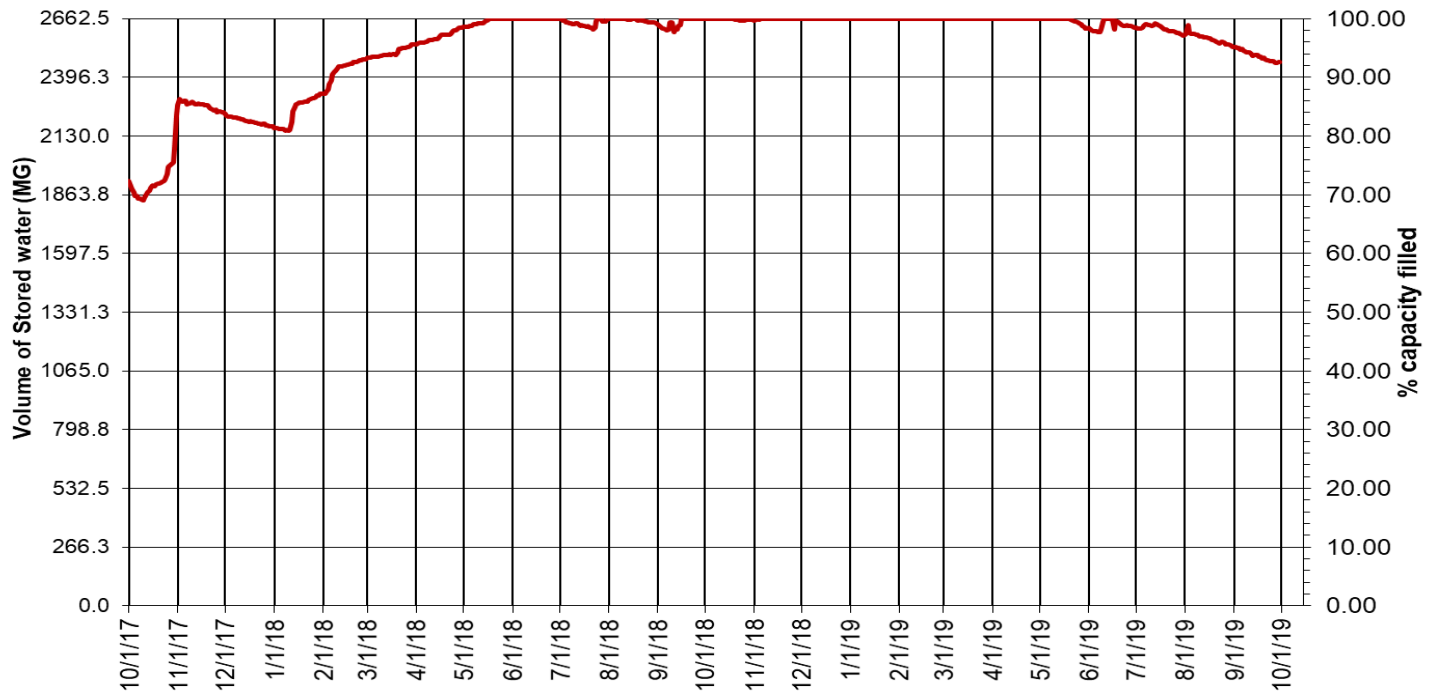
WATER AND WASTEWATER DATA:

The following graphs are provided for review:

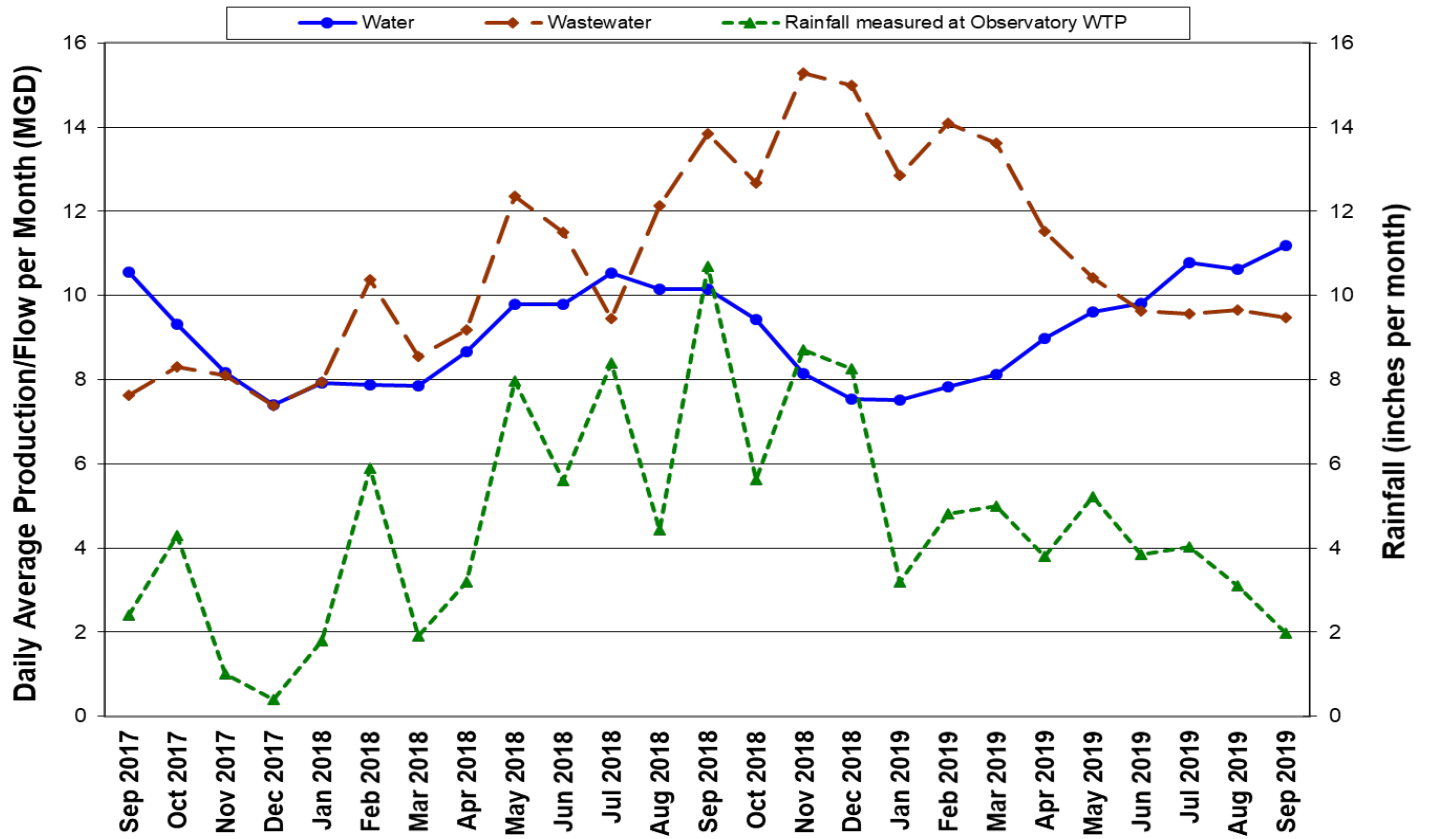
- Usable Urban Reservoir Water Storage
- Urban Water and Wastewater Flows versus Rainfall

Usable Urban Reservoir Water Storage

Maximum 2,662.5 MG after 5/1/19



Urban Water and Wastewater Flows versus Rainfall





MEMORANDUM

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

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

**SUBJECT: RECOMMENDATION FOR DISPOSITION OF FY2019 RATE
CENTER RESULTS**

DATE: OCTOBER 22, 2019

The Authority ended the previous fiscal year with a cumulative net surplus of roughly \$229,600. There were contrasting results when comparing the two Urban rate center results for FY 2019. The Urban Water rate center finished the year with a \$1.47 million deficit while the Urban Wastewater rate center had a \$1.72 million surplus. The deficit in Urban Water was due to several unbudgeted expenses for GAC study and GAC replacement. There were several line breaks that were very costly, as well as legal fees for the Observatory lease and, unexpected water pump replacements that also contributed to the deficit. For Urban Wastewater, despite exceeding the budget by \$917,000, there was still a surplus due to excess revenues of roughly \$2.54 million more than budget estimates. This was due to high flows from higher than normal precipitation for the year. Of the other rate centers, Crozet Water had a deficit and the two Scottsville Rate Centers and Glenmore Wastewater had surpluses.

Background: After the completion of the audit, staff performs an analysis of the year ending financial results and the effect on the operating cash liquidity position. This is also done to ensure that rate center results are kept separate from each other. In some years similar to FY 2019, one rate center may have a deficit and others may have a surplus, therefore, we do not want one rate center's surplus funding another rate center's deficit.

There is only one operating cash account where all transactions originate during the year for all capital and operating activities including inflow from revenues and bond proceeds, and outflow for expenses and debt payments. Capital transactions are reconciled and separated at the end of each month, (i.e., no capital funds are in the operations account at the end of each month or at year end). However, all of the rate centers' operating results are comingled until this process of determining the results for the year and making transfers to or from the respective rate center reserves to ensure proper segregation is completed.

The operations account has a target working cash balance of 60 days of cash and cash equivalents on hand to meet daily and monthly cash flow needs, which currently is \$5,945,200 (based on the

FY 2020 budget). This is an increase of \$474,830 from the prior year, because the FY 2020 budget was increased compared to the FY 2019 budget. At year end, this target is compared to actual cash basis results for the fiscal year, and the variance, if any, is brought before the Board for action, which is consistent with the Authority's financial policy.

At year end, operating cash and cash equivalents were as follows:

Cash on hand	\$5,326,300
Cash equivalents	<u>\$ 848,500</u>
Total	\$6,174,800
60 Day Cash Target	\$5,945,200
Surplus Operational Cash	\$ 229,600

Cash equivalents are the invoiced amounts for June 2019 not yet paid from the City and ACSA net of our accounts payable due to our vendors at year end, which is a very conservative measure of working cash. *(Many entities only use actual cash on hand to measure their requirement of working cash/capital.)*

The target amount of operating cash is overfunded by \$229,600 due to the previously mentioned year-end results. Therefore, the following transfers to the discretionary reserves are recommended for FY 2019 to bring the operations account back to the target balance and properly keep the six rate center reserves separated. FY 2018 to FY 2015 transfers are included for comparison:

Transfers to (from) reserves based on ending results for each rate center:

	<u>FY2019</u>	<u>FY2018</u>	<u>FY2017</u>	<u>FY2016</u>	<u>FY2015</u>
Urban Water	\$ (1,466,200)	\$ 1,800	\$ 113,700	\$ 113,700	\$ 279,390
Urban Wastewater	1,716,400	(1,313,500)	(673,900)	355,437	4,070
Crozet Water	(80,300)	(58,500)	(18,600)	17,618	7,630
Scottsville Water	1,100	30,100	30,200	11,382	8,580
Glenmore Wastewater	25,400	26,800	(5,300)	(1,896)	(21,380)
Scottsville Wastewater	<u>33,200</u>	<u>17,700</u>	<u>7,900</u>	<u>(6,263)</u>	<u>(20,900)</u>
	\$ 229,600	\$ (1,295,600)	\$ (546,000)	\$ 489,978	\$ 257,390

To summarize the year-end process, one of the Authority's financial policies is to keep the operations account, defined here as cash and cash equivalents, financially sound with 60 days of cash for normal operating cash flow needs. That goal will continue to be met, and the reserves will continue to provide for the yearly variances in budget versus actual results. As any given year progresses, the operations account temporarily funds rate center deficits and accumulates surpluses, and a reconciliation of the results to allocate the respective surpluses and deficits is performed annually after the year-end audit is complete. The Board has taken similar action for the previous 14 years. Attached is a summary of the ending reserves for Fiscal Year 2019.

Board Action Requested:

Board action is requested to transfer funds to/(from) the respective reserves for FY 2019 ending results to or from the operations account as follows:

Urban Water	\$(1,466,200)	Urban Wastewater	\$ 1,716,400
Crozet Water	\$ (80,300)	Glenmore Wastewater	\$ 25,400
Scottsville Water	\$ 1,100	Scottsville Wastewater	\$ 33,200

Attachment

Rivanna Water and Sewer Authority
Statement of Reserve Balances
June 2019 Reserves

	June FY 2019 Ending Balance	FROM (TO) OPERATIONS ACCOUNT FY 2019 ending results reserve adjustment proposed Board action needed **	Adjusted FY 2019 Ending Balance
Urban Water			
Discretionary Reserve	\$ 13,125,838	\$ (1,466,200)	\$ 11,659,638
Rate Stabilization Fund	1,000,000		1,000,000
Watershed Management Fund	194,393		194,393
Subtotal	\$ 14,320,231		\$ 12,854,031
Urban Wastewater			
Discretionary Reserve	\$ 8,455,894	1,716,400	\$ 10,172,294
Rate Stabilization Fund	1,000,000		1,000,000
Subtotal	\$ 9,455,894		\$ 11,172,294
Crozet Water			
Discretionary Reserve	\$ 674,973	(80,300)	\$ 594,673
Scottsville Water			
Discretionary Reserve	\$ 313,874	1,100	\$ 314,974
Glenmore Wastewater			
Discretionary Reserve	\$ 88,122	25,400	\$ 113,522
Scottsville Wastewater			
Discretionary Reserve	\$ 125,278	33,200	\$ 158,478
Capital Fund			
Specific Capital Projects	\$ 7,789,473		\$ 7,789,473
Vehicle Replacement Fund	\$ 799,162		\$ 799,162
Subtotal Discretionary Reserves	\$ 33,567,007	\$ 229,600	\$ 33,796,607
Indenture Restricted Minimum	\$ 500,000		\$ 500,000
Total Reserves *	\$ 34,067,007		\$ 34,296,607

* - Agrees to investment balances - audited.

** - Proposed Board action



MEMORANDUM

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

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

**SUBJECT: APPROVAL OF CAPITAL IMPROVEMENT PLAN
AMENDMENT – VALVE REPAIR-REPLACEMENT (PHASE 2)**

DATE: OCTOBER 22, 2019

Isolation valves are critical for normal operation of the water distribution system and timely emergency response to water main breaks and are maintained through an ongoing asset management program. As part of this program, the scope of Phase 2 of the Valve Repair-Replacement Project is to replace the highest-priority valves identified in the condition assessment as being inoperable and unrepairable, as well as to address repairable valves with operational deficiencies.

Construction began for Phase 2 of the Valve Repair-Replacement Project in May 2019. Due to ongoing work in the North Rivanna Pressure Zone, the two valves slated to be replaced along the North Rivanna Waterline were unavailable to be replaced at that time. In addition, while attempting to replace a valve on the Pantops Waterline, a sufficient system shutdown could not be achieved, and the contractor (Garney Construction) had to backfill the excavation ahead of a second replacement attempt to be performed later in the project. These factors, combined with the long lead times on line-stopping/tapping services, resulted in Garney Construction demobilizing from the project on May 24, 2019. In reviewing the plan to replace two system valves near the South Rivanna WTP, it was determined that in order to better accommodate the operational requirements of the South Rivanna WTP, two valves for a temporary 24" bypass are required, in addition to the 30" line stops that were originally included as a part of the contract. These two valves are crucial not only in that they provide a critical system isolation point but must also function for several adjacent valve replacements. Based on negotiations with Garney Construction to accommodate these various changed conditions, a change order (authorized by the original contract approval) and an Amendment to the Capital Improvement Plan budget for this project of \$250,000 will be required.

Board Action Requested:

Staff requests the Board of Directors to amend the FY 2020 Capital Improvement Plan to include a budget increase of \$250,000 for Phase 2 of the Valve Repair-Replacement Project. This amendment would bring the total project budget to \$1,132,914.



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY
BOARD OF DIRECTORS

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: AUTHORIZATION OF PROFESSIONAL ENGINEERING
SERVICES FOR ADDITIONAL TEMPORARY SEWER FLOW
METERING – FRAZIER ENGINEERING

DATE: OCTOBER 22, 2019

In February 2019, RWSA executed a Work Authorization with Frazier Engineering for wastewater flow metering to be completed every five years (due in 2020) for an amount not to exceed \$89,700, as required by the 2014 Wastewater Projects Cost Allocation Agreement. The wastewater flow data will serve as the basis for allocation of capacity-related debt service charges for wastewater CIP projects. Due to inadequate dry weather flows, we must extend the efforts of Frazier Engineering to collect this data for an additional cost not-to-exceed \$209,300.

The purpose of this flow metering was to supplement RWSA's permanent wastewater flow meter installations (14 locations) with temporary installations throughout the system at interconnection points with the City of Charlottesville and the Albemarle County Service Authority (23 locations). The temporary flow meters were intended to only be in place for three months (April to June 2019); however, rainfall was below normal during that duration (and to present) and no significant wet weather events have occurred. A significant wet weather event would ideally be a storm with a 2-year recurrence interval or at least a 1-year recurrence interval and a duration of 24 hours. Recording a significant wet weather event is necessary for the flow data analysis required by the Wastewater Projects Cost Allocation Agreement and in order to obtain that data, it is recommended that the temporary flow metering be extended through January 2020. A temporary flow metering extension through January 2020 would cover an additional 7 months at a cost of \$29,900 per month for maintenance of the 23 temporary flow meters and a review of the collected data. This would equate to a not-to-exceed value of \$209,300 and a total revised not-to-exceed temporary flow metering program value of \$299,000. This proposed extension will only be utilized to the extent that is necessary to obtain sufficient wet weather flow data.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a new Work Authorization with Frazier Engineering to include an additional seven months of temporary flow metering for a not-to-exceed value of \$209,300.



MEMORANDUM

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

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

SUBJECT: DROUGHT UPDATE

DATE: OCTOBER 22, 2019

Dry climate conditions this summer and fall have caused concerns regarding local rainfall and its effect on water supplies. Currently, precipitation is 5.8-inches below normal. Local streamflows are approximately 30-40% of median historic flows. The DEQ state Drought Monitoring Task Force met on October 10, 2019 and recommended a statewide drought watch advisory. The Governor followed with this declaration on October 11, 2019.

Staff are carefully monitoring water supplies. It is very positive that reservoirs are at 91% of useable storage and the South Fork Rivanna Reservoir is overflowing, which is one of our key indicators as to the operation of the Urban Water System.

RWSA has a Drought Contingency and Response Plan which guides the regional response to drought conditions that may impact water supplies. The Rivanna Regional Drought Response Committee met on October 15, 2019 to discuss the recent declaration of a drought advisory by the Governor, and to get a status update on the region's water supplies. Given conditions at the time of the meeting and the forecast for rain, the Committee decided to continue closely monitoring conditions and provide an update at today's Board Meeting.

Board Action Requested:

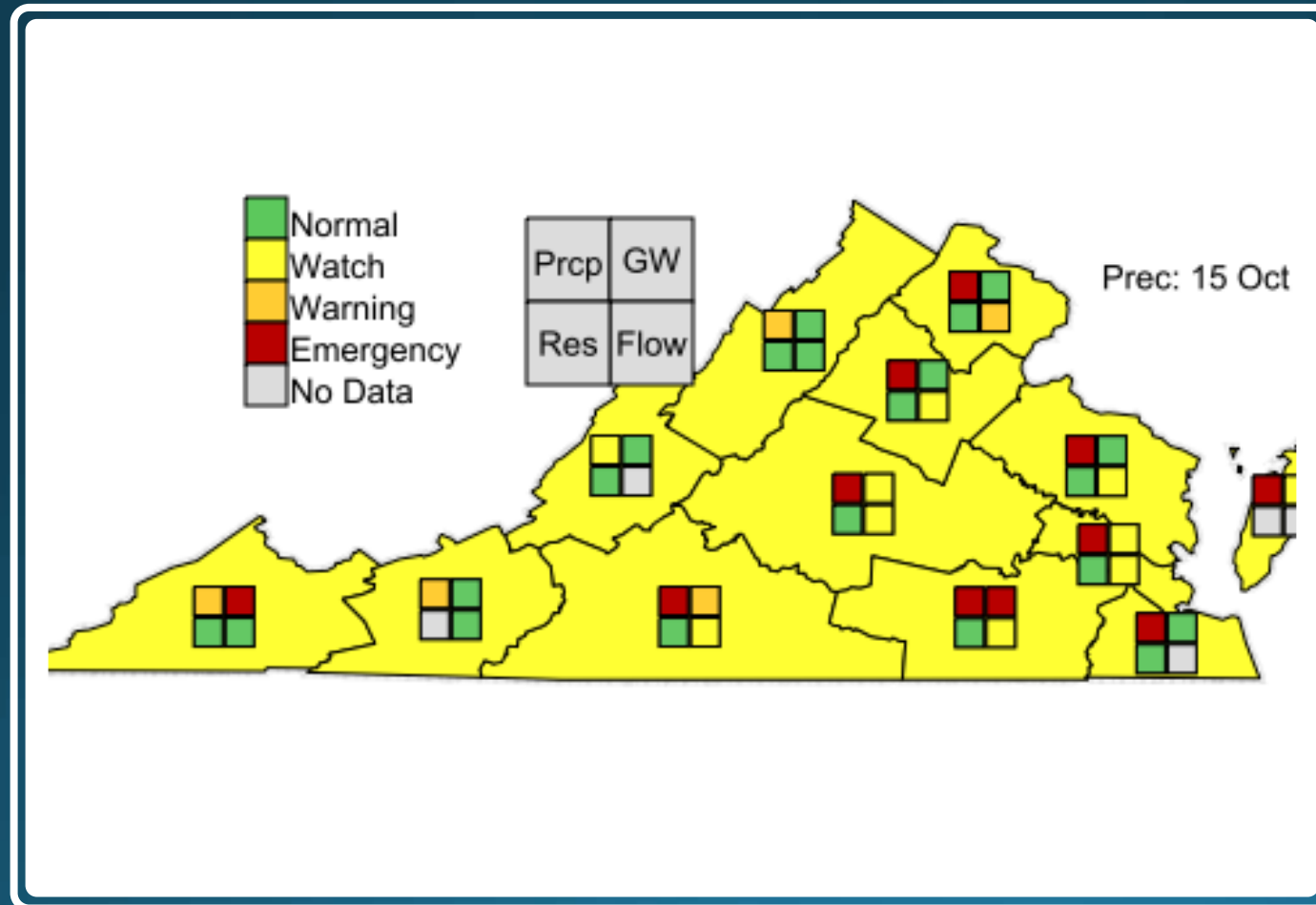
Discussion with staff on current status of water supplies and public outreach plans for the coming weeks.

Drought Update

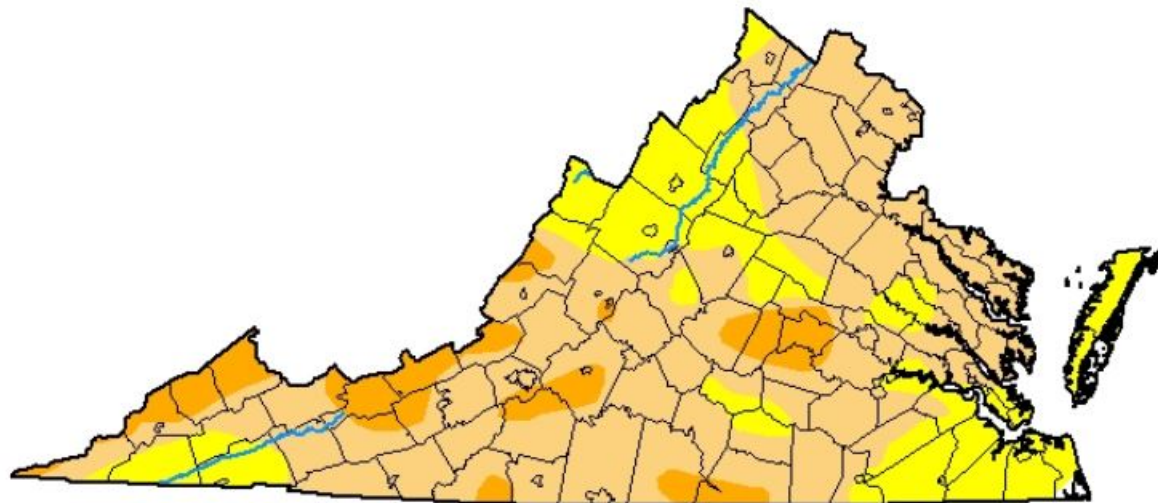
October 22, 2019

- RWSA has a Drought Response and Contingency Plan
- Provides guidelines for declaration of drought conditions by reviewing the following indicators:
 1. VA Drought Monitoring Task Force declares a drought stage
 2. Drought emergency declaration by Governor
 3. Review of weather forecasts
 4. “Oasis” hydrologic model
 5. Review of USGS/DEQ streamflow data

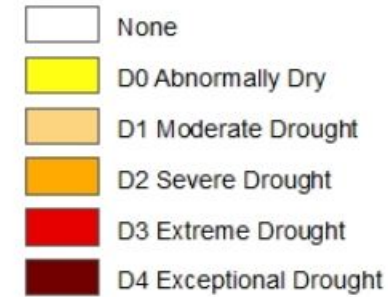
1 -Virginia Drought Monitoring Task Force declares a Drought stage



U.S. Drought Monitor



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

10/8/2019

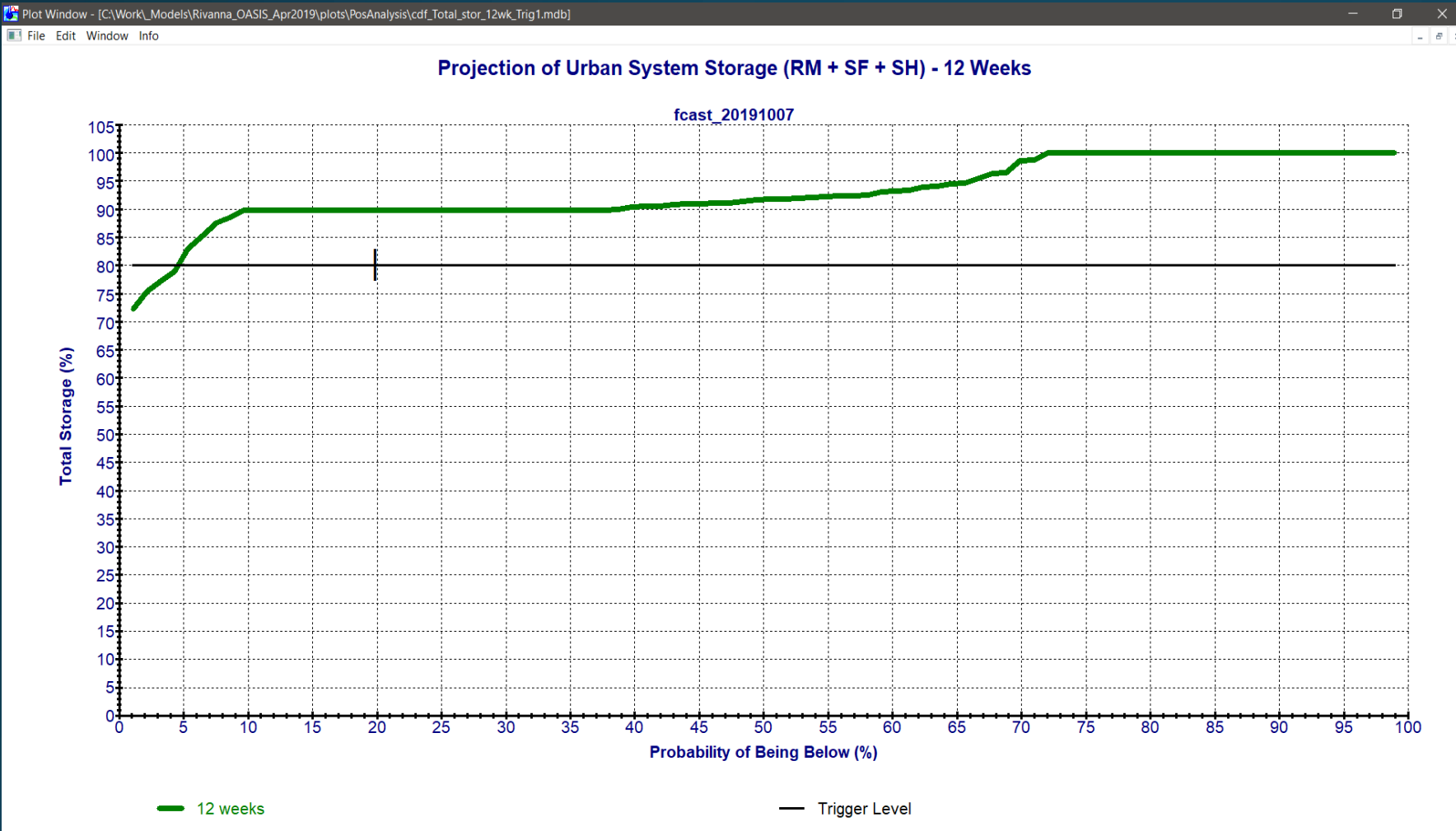
2 - Drought Emergency Declaration by Governor

- Governor declared a Drought Watch Advisory 10/11/2019

3 - Review of Weather Forecasts

- At least an inch of rain 10/16/2019.
- Chance of rain Monday- Wednesday 10/21/19 - 10/23/19

4 –Oasis Model (10/8/2019)



- Drought Watch Trigger – 20% chance of being below 75% useable storage in 12 weeks
- Actual Results -2% chance of being below 75% useable storage in 12 weeks

5 –Review of USGS/DEQ Streamflow data

Gage #	Streamflow*	
	Average of last 7 days (cfs)	Median daily statistic (cfs)
Mechums	14.1	34
Moormans	4.2	14
South Fork Rivanna	17.8	84

*as of October 14, 2019

Summary and Discussion

- Adverse climate conditions
- Historically rain likely this time of year
- Urban reservoirs level remains above 90 %
- Ample water supply for community demand
- Concern if historical rain pattern doesn't continue
- Continue careful monitoring of reservoir levels and optimize operations at the WTPs
- Communicate plans with the public for next steps



MEMORANDUM

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

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: SERIES 2019 REFUNDING REVENUE BOND

DATE: OCTOBER 22, 2019

With the recent market conditions causing long-term interest rates to decline, staff with the assistance of our financial advisor began looking at opportunities to potentially refinance (technically known as advance refund) some of our existing bonds. Advance refunding is when a new bond is issued more than 90 days in advance of the allowed call date on the bonds. Most bonds have a set call date when they can be paid off early. The new refunding bond proceeds are placed in a sinking fund or escrow account that are invested in guaranteed yield instruments, and on the call date of the bond, the sinking fund is “activated” to pay off the existing bonds.

The Series 2012A Bond (original issue at par for \$25.1 million) was found to be a good candidate for refinancing. The call date of the 2012A Bond is November 1, 2022. This is the earliest date the bonds can be paid off; therefore, this will be a partial refunding. The bonds due between now and the call date are not candidates for the refunding. The remaining portion of the bonds due after the call date will be part of this refinancing transaction. This will amount to roughly \$17.7 million being refinanced. The bonds were originally issued through the Virginia Resources Authority (VRA) pooled bond program, and we will conduct this refinancing with the VRA as well.

The bonds will sell on October 30 (tentative). Depending on the market rates of interest, the potential savings will fluctuate. Based on current market condition estimates using a 3.06% interest cost, the potential savings from this refinancing would be roughly \$2.5 million in cash flow savings or a net present value saving of \$1.8 million over the next 24 years. That is equal to roughly an average of \$102,000 cash flow savings annually by lowering the Authority’s debt service payments.

The parameters for this bond are written into the attached resolution authorizing the issuance of the bonds as follows: A not to exceed par amount for the bond is \$19,545,000; a not to exceed interest rate of 4.5%; and a net present value savings of no less than 7%. The parameters are needed because the market conditions will vary compared to current markets on the date the bonds are priced. Should these parameters not be met, then the Authority’s refunding will be

pulled out of the overall VRA pooled financing. Our estimate as of the date this memo is written is a net present value savings of 11.6%, which is well within the parameters.

There are several documents attached to this cover memo that need to be approved for this potential financing.

- **The Thirty-First Supplemental Agreement of Trust between Rivanna and the Bank of New York Mellon Trust Company.** This document authorizes and brings the new Series 2019 Bond into the existing trust agreement of 1979 along with all the terms, details and conditions associated with the new bond. This essentially brings the new bond into existence in parity status with all other outstanding bonds (current and future) of the Authority. The principal amounts shall mature in installments each October 1 through the year 2042. Interest payment will be made semi-annually on April 1 and October 1 through the year 2042.
- **The Local Bond Sale and Financing Agreement** between the Virginia Resources Authority and Rivanna Water and Sewer Authority. This agreement details all the terms and conditions relative to the 2019 Bond issue between the two parties. This agreement is very similar to other VRA agreements Rivanna has executed in the past.
- **Resolution** – Authorizing the issuance, sale and award of the Taxable Regional Water and Sewer Refunding Bonds in an amount not to exceed \$19,545,000, et al. This resolution approves the previous two documents mentioned here and authorizes the Chair and/or Vice-Chair to execute these agreements.

The resolution is the only action the Board needs to vote on as it automatically approves the Supplemental Trust agreement and the VRA financing agreement. To summarize, this bond issue will advance refund most of the Series 2012A Bond and has the potential to have significant savings for the Authority relative to the current annual debt service payments of the existing bond. The bond will tentatively be priced on October 30, 2019. Tentatively staff is planning to execute the documents November 6 or 7. The Chair or Vice-Chair, Secretary-Treasurer, Executive Director, Director of Finance and General Counsel will need to be present for the executions.

Board Action Requested:

It is requested that the Board of Directors approve the attached resolution authorizing the sale of Series 2019 Taxable Regional Water and Sewer System Revenue Refunding Bond in the amount not to exceed \$19,545,000 to advance refund the Series 2012A Revenue Bond. Included within the resolution is the approval as to form of (1) the Thirty-First Supplemental Agreement of Trust and (2) the Local Bond Sale and Financing Agreement between the VRA and the Authority, as presented and included at this meeting.

THIRTY-FIRST SUPPLEMENTAL AGREEMENT OF TRUST

between

RIVANNA WATER AND SEWER AUTHORITY

and

**THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A.,
as Trustee**

Dated as of [_____ 1, 2019]

**Authorizing the Issuance of
Taxable Regional Water and Sewer System Revenue Refunding Bond
Series 2019**

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THIS THIRTY-FIRST SUPPLEMENTAL AGREEMENT OF TRUST dated as of [_____] 1, 2019] (this “Supplemental Agreement”), by and between **RIVANNA WATER AND SEWER AUTHORITY**, a public body politic and corporate and political subdivision of the Commonwealth of Virginia (the “Authority”), and **THE BANK OF NEW YORK MELLON TRUST COMPANY, N.A.**, a national banking association, as successor trustee to NationsBank of Virginia, N.A., as successor to Sovran Bank, N.A., as successor to Virginia National Bank, as trustee (in such capacity, together with any successor in such capacity, herein called the “Trustee”);

W I T N E S S E T H:

WHEREAS, the Authority and the Trustee have entered into an Agreement of Trust dated as of October 1, 1979 (the “Master Trust Agreement”), as previously supplemented and amended from time to time (the Master Trust Agreement and the supplemental agreements collectively referred to herein as the “Trust Agreement”), pursuant to which the Authority has issued its Taxable Regional Water and Sewer System Revenue Bond, Series 2005A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2009A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2010A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011B; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011D; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011E; its Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A; its Regional Water and Sewer System Revenue Bonds, Series 2012B; its Taxable Regional Water and Sewer System Revenue Bond, Series 2014A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2015A; its Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2015B; its Regional Water and Sewer System Revenue Bond, Series 2016; and its Taxable Regional Water and Sewer System Revenue Bond, Series 2018 (the outstanding principal amounts of such bonds collectively referred to herein as the “Outstanding Bonds”), to finance and refinance certain facilities for a regional water and sewer system (the “System”) to serve on a wholesale basis the City of Charlottesville, Virginia, and the Albemarle County Service Authority;

WHEREAS, the Authority is not in default under the Trust Agreement or in payment of the principal of or interest on the Outstanding Bonds;

WHEREAS, within the limitations of and in compliance with the Trust Agreement, the Authority is authorized to issue Additional Bonds (as defined in the Master Trust Agreement), secured on a parity with the Outstanding Bonds to the extent provided in the Trust Agreement, to finance or refinance the cost of improvements, extensions and additions to the System;

WHEREAS, the Authority has determined to issue its Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019, in the principal amount of \$[_____] (the “Series 2019 Bond”), and to use the proceeds thereof to (a) refund a portion of the outstanding principal installments of the Authority’s Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A (such refunded installments, the “Refunded Installments”), and (b) pay the related costs of issuing the Series 2019 Bond and refunding the Refunded Installments;

WHEREAS, the Authority has entered into a Local Bond Sale and Financing Agreement dated as of [_____, 2019], with the Virginia Resources Authority (“VRA”) for the sale of the Series 2019 Bond to, and the purchase of the same by, VRA;

WHEREAS, the Authority has taken all necessary action to make the Series 2019 Bond, when authenticated by the Trustee and issued by the Authority, a valid and binding limited obligation of the Authority and to constitute this Supplemental Agreement a valid and binding agreement authorizing and providing for the details of the Series 2019 Bond; and

WHEREAS, the Authority has determined that it is desirable to make certain amendments to the Master Trust Agreement to provide for the payment of the principal of, premium, if any, and interest on the Series 2019 Bond;

NOW, THEREFORE, THIS THIRTY-FIRST SUPPLEMENTAL AGREEMENT OF TRUST WITNESSETH that the Authority does covenant and agree with the Trustee and with the respective holders, from time to time, of the Outstanding Bonds and the Series 2019 Bond, as follows:

ARTICLE I SUPPLEMENTAL AGREEMENT

Section 31-101. Authorization of Supplemental Agreement.

This Supplemental Agreement is authorized and executed by the Authority and delivered to the Trustee pursuant to and in accordance with Articles V and XIII of the Master Trust Agreement. All covenants, conditions and agreements of the Trust Agreement shall apply with full force and effect to the Series 2019 Bond and to the holder thereof, except as otherwise provided herein.

Section 31-102. Definitions.

Except as otherwise defined herein, terms defined in the Master Trust Agreement are used in this Supplemental Agreement with the same meanings assigned to them in the Master Trust Agreement. In addition, the following capitalized terms shall have the following meanings:

“2019 Financing Agreement” shall mean the Local Bond Sale and Financing Agreement dated as of [_____, 2019], between the Authority and VRA.

“Bond Counsel” shall mean counsel nationally recognized on the subject of municipal bonds.

“Local Account” shall have the meaning assigned to such term in the 2019 Financing Agreement.

“Refunded Installments” shall mean the outstanding principal installments of the Series 2012A Bonds maturing on October 1 in the years 2023 through 2042.

“Series 2012A Bond” shall mean the \$25,100,000 Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A.

“Series 2019 Bond” shall mean the \$[_____] Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019, to be issued pursuant to the terms of this Supplemental Agreement.

“Supplemental Agreement” shall mean this Thirty-First Supplemental Agreement of Trust between the Authority and the Trustee, which supplements and amends the Trust Agreement.

“VRA” shall mean the Virginia Resources Authority.

“VRA Trustee” shall have the meaning assigned to such term in the 2019 Financing Agreement.

Section 31-103. Reference to Articles and Sections.

Unless otherwise indicated, all references herein to particular articles or sections are references to articles or sections of this Supplemental Agreement.

ARTICLE II

AUTHORIZATION, DETAILS AND FORM OF SERIES 2019 BOND

Section 31-201. Authorization of Series 2019 Bond.

There is authorized to be issued as an Additional Bond pursuant to Article V of the Master Trust Agreement a revenue bond of the Authority in the principal amount of \$[_____] , which shall be designated “Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019,” to provide funds to refund the Refunded Installments and to pay the related costs of issuing the Series 2019 Bond and refunding the Refunded Installments.

Section 31-202. Details of Series 2019 Bond.

The Series 2019 Bond shall be dated October [___], 2019, shall be issued as a single, registered bond, shall be numbered R-1 and shall be in the principal amount of \$[_____]. The Series 2019 Bond shall bear interest at rates per year calculated on the basis of a 360-day year of twelve 30-day months, payable semiannually on April 1 and October 1, beginning April 1, 2020, and shall mature in installments on October 1 in years and amounts at such rates, as follows:

Installment Date (October 1)	Installment Amount	Interest Rate
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Section 31-203. Payment Provisions of Series 2019 Bond.

(a) The Series 2019 Bond shall be payable solely from revenues, and nothing in the 2019 Financing Agreement, the Series 2019 Bond or this Supplemental Agreement shall be deemed to create or constitute an indebtedness or pledge of the faith and credit of the Commonwealth of Virginia (the “Commonwealth”) or of any county, city, town or other political subdivision of the Commonwealth, including the Authority, the City of Charlottesville, Virginia, Albemarle County, Virginia, and the Albemarle County Service Authority. All payments due on the Series 2019 Bond shall be payable as provided in the 2019 Financing Agreement in lawful money of the United States of America. As set forth in the 2019 Financing Agreement, the Authority agrees to pay “Supplemental Interest” and other charges as provided therein. Payments shall be made, at the option of the registered owner, (i) by check or draft mailed to the registered owner at its address as it appears on the registration books kept for that purpose by the Trustee on the 15th day of the month preceding the payment date or (ii) by wire transfer pursuant to the most recent wire instructions received by the Trustee from such registered owner, except that the final payment is payable upon presentation and surrender of the Series 2019 Bond at the office of the Trustee. The Authority intends that amounts constituting interest on the Series 2019 Bond will be included in the gross income of the holder thereof for federal income tax purposes.

(b) Except as otherwise provided herein, the Series 2019 Bond shall be payable, executed, authenticated, registrable, exchangeable and secured, all as set forth in the Master Trust Agreement.

Section 31-204. Form of Series 2019 Bond.

The Series 2019 Bond shall be in substantially the form set forth in Exhibit A, with such appropriate variations, omissions and insertions as are permitted or required by the Master Trust Agreement and this Supplemental Agreement. The terms and provisions of the Series 2019 Bond that are set forth in Exhibit A shall be deemed to be incorporated into this Supplemental Agreement as though fully set forth herein.

Section 31-205. Delivery of Series 2019 Bond.

The Trustee shall authenticate and deliver the Series 2019 Bond when there have been filed with or delivered to it all items required by Section 503 of the Master Trust Agreement.

ARTICLE III

PREPAYMENT OF SERIES 2019 BOND

Section 31-301. Prepayment of Series 2019 Bond.

The Series 2019 Bond shall be subject to prepayment as set forth in Section 6.2 of the 2019 Financing Agreement. The optional redemption and notice provisions set forth in Sections 401 and 402 of the Master Trust Agreement shall not apply to the Series 2019 Bond.

ARTICLE IV

PROCEEDS OF SERIES 2019 BOND

Section 31-401. Use of Proceeds of Series 2019 Bond.

The net proceeds of the Series 2019 Bond (\$[____]) shall be paid for the benefit of the Authority and applied in the manner prescribed in Section 505 of the Master Trust Agreement and as follows:

(a) \$[____] shall be retained by the VRA Trustee and applied[, together with the moneys described in subsection (c) below,] as payment in full for the principal of and premium, if any, and interest on the Refunded Installments.

(b) The balance of the proceeds of the Series 2019 Bond (\$[____]) shall be held in the Local Account to be disbursed in accordance with Section 4.3 of the 2019 Financing Agreement to be used in the manner provided by the Master Trust Agreement to pay the related costs of issuing the Series 2019 Bond and refunding the Refunded Installments. The Trustee hereunder shall be provided copies of any monthly reports and other statements provided to the Authority by VRA or the VRA Trustee with respect to the disbursements made from such account.

(c) \$[____] shall be transferred from the Bond Fund to the VRA Trustee and applied, together with the moneys described in subsection (a) above, as payment in full for the principal of and premium, if any, and interest on the Refunded Installment.]

ARTICLE V

SECURITY FOR SERIES 2019 BOND

Section 31-501. Security for Series 2019 Bond.

(a) The Series 2019 Bond shall be issued pursuant to the Master Trust Agreement and this Supplemental Agreement and shall be equally and ratably secured under the Trust Agreement with the Outstanding Bonds and any Additional Bonds issued pursuant to Article V of the Master Trust Agreement, without preference, priority or distinction of any Bonds over any other Bonds, as provided in the Master Trust Agreement.

(b) The existing Debt Service Reserve Fund shall not secure the Series 2019 Bond. No debt service reserve fund or account is currently established or funded in connection with the issuance of the Series 2019 Bond.

ARTICLE VI

AMENDMENTS TO MASTER TRUST AGREEMENT EFFECTIVE IMMEDIATELY

Section 31-601. Effective Date of Amendments.

Pursuant to Section 1301(e)(2) of the Master Trust Agreement, the amendments provided in this article shall be effective upon the execution of this Supplemental Agreement.

Section 31-602. Amendment to Section 705 of the Master Trust Agreement.

Section 705 of the Master Trust Agreement is hereby amended and restated to read as follows (changes being reflected in bold):

Section 705. Establishment of Funds. The following funds are hereby established:

(a) Operating Fund, to be held by the Authority;

(b) Bond Fund, in which there are established a Series 2005A Debt Service Account, a Series 2009A Debt Service Account, a Series 2010A Debt Service Account, a Series 2011A Debt Service Account, a Series 2011B Debt Service Account, a Series 2011D Debt Service Account, a Series 2011E Debt Service Account, a Series 2014A Debt Service Account, a Series 2015A Debt Service Account, a Series 2015B Debt Service Account, a Series 2018 Debt Service Account, **a Series 2019 Debt Service Account**, an Interest Account, a Principal Account and a Sinking Fund Account, all to be held by the Trustee;

(c) Debt Service Reserve Fund, to be held by the Trustee;

(d) Facilities Lease Fund, to be held by the Authority;

(e) Improvement Fund, to be held by the Authority; and

(f) Rate Stabilization Fund (Urban Area Wastewater Facilities), to be held by the Authority.

Section 31-603. Amendment to Section 707 of the Master Trust Agreement.

Section 707 of the Master Trust Agreement is hereby amended and restated to read as follows (changes being reflected in bold):

Section 707. Bond Fund. The Authority shall transfer from available moneys in the Operating Fund to the Trustee for deposit in the Bond Fund such amounts as shall be necessary to make the following deposits in the following order:

(a) first, in the Series 2005A Debt Service Account the next finance payment, if any, as required by Section 6.1 of the 2005 Financing Agreement between the Authority and VRA dated as of November 1, 2005, due on the Series 2005A Bond, within the next six succeeding months;

(b) second, in the Series 2009A Debt Service Account the next finance payment, if any, as required by Section 6.1 of the 2009 Financing Agreement due on the Series 2009A Bond, within the next six succeeding months;

(c) third, in the Series 2010A Debt Service Account the next finance payment, if any, as required by Section 6.1 of the 2010 Financing Agreement due on the Series 2010A Bond, within the next six succeeding months;

(d) fourth, in the Series 2011A Debt Service Account the next finance payment, if any, as required by Section 6.1 of the 2011 Financing Agreement due on the Series 2011A Bond, within the next six succeeding months;

(e) fifth, in the Series 2011B Debt Service Account the next finance payment, if any, as required by Section 6.1 of the 2011 Financing Agreement due on the Series 2011B Bond, within the next six succeeding months;

(f) sixth, in the Series 2011D Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2011 Financing Agreement due on the Series 2011D Bond, within the next six succeeding months;

(g) seventh, in the Series 2011E Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2011 Financing Agreement due on the Series 2011E Bond, within the next six succeeding months;

(h) eighth, in the Series 2014A Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2014A Financing Agreement due on the Series 2014A Bond, within the next six succeeding months;

(i) ninth, in the Series 2015A Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2015 Financing Agreement due on the Series 2015A Bond, within the next six succeeding months;

(j) tenth, in the Series 2015B Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2015B Financing Agreement due on the Series 2015B Bond, within the next six succeeding months;

(k) eleventh, in the Series 2018 Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2018 Financing Agreement due on the Series 2018 Bond, within the next six succeeding months;

(l) twelfth, in the Series 2019 Debt Service Account, the next finance payment, if any, as required by Section 6.1 of the 2019 Financing Agreement due on the Series 2019 Bond, within the next six succeeding months;

(m) thirteenth, in the Interest Account, such amount, if any, as may be required to make the total amount on deposit therein equal to the amount of interest which will become due on the Bonds, *other than* the Series 2005A Bond, the Series 2009A Bond, the Series 2010A Bond, the Series 2011A Bond, the Series 2011B Bond, the Series 2011D Bond, the Series 2011E Bond, the Series 2014A Bond, the Series 2015A, the Series 2015B Bond, the Series 2018 Bond **or the Series 2019 Bond**, within the next succeeding six months;

(n) fourteenth, in the Principal Account, such amount, if any, as may be required to make the total amount on deposit therein equal to the amount of principal of the Bonds, *other than* the Series 2005A Bond, the Series 2009A Bond, the Series 2010A Bond, the Series 2011A Bond, the Series 2011B Bond, the Series 2011D Bond, the Series 2011E Bond, the Series 2014A Bond, the Series 2015A Bond, the Series 2015B Bond, the Series 2018 Bond **or the Series 2019 Bond**, maturing within the next succeeding 12 months; and

(o) fifteenth, in the Sinking Fund Account, such amount, if any, as may be required to make the total amount on deposit therein equal to the amount of any sinking fund installment due within the next succeeding 12 months with respect to any Additional Bonds which are issued as term bonds.

Notwithstanding the foregoing, if an Event of Default occurs as described in Sections 1101(a) or 1101(b) and so long as such Event of Default shall continue, the transfers set forth in Section 707(a) through **(o)** shall not be made. The Trustee shall determine what moneys are on deposit in all the accounts in the Bond Fund. The Trustee shall then allocate among the accounts any moneys on deposit in the Operating Fund available for transfer into the Bond Fund, any moneys drawn out of the Debt Service Reserve Fund and any other available moneys so that all bondholders are paid ratably, taking into account such available moneys and moneys on deposit in all the accounts in the Bond Fund.

The Trustee shall provide for the redemption of any Additional Bonds which may be issued as term bonds in accordance with the schedule in the supplement to this agreement authorizing their issuance; provided, however, that on or before the sixtieth day next preceding any such sinking fund payment date, the Authority may:

(i) pay to the Trustee for deposit in the Sinking Fund Account on or before such sixtieth day such amount as the Authority may determine, accompanied by a certificate signed by an Authorized Representative of the Authority directing the Trustee to apply such amount to the purchase of Bonds required to be redeemed on such sinking fund payment date, and the Trustee shall thereupon use all reasonable efforts to expend such funds as nearly as may be practicable in the purchase of such Bonds, with all unmatured coupons, if any, attached, at a price not exceeding the principal amount thereof plus accrued interest to such sinking fund redemption date; or

(ii) deliver to the Trustee for cancellation such Bonds required to be redeemed on such sinking fund payment date, in any aggregate principal amount desired with all unmatured coupons, if any, attached; or

(iii) instruct the Trustee to apply a credit against the Authority's sinking fund redemption obligation for any Bonds which have been issued as term bonds which previously have been redeemed (other than through the operation of the sinking fund) and canceled by the Trustee but not theretofore applied as a credit against any sinking fund redemption obligation.

Each Bond so purchased, delivered or previously redeemed shall be credited by the Trustee at 100% of the principal amount thereof against the obligation of the Authority on such sinking fund redemption date and shall reduce accordingly the amount to be on deposit in the Sinking Fund Account. Any excess over such obligation shall be credited against future sinking fund redemption obligations in chronological order, and the principal amount of such Bonds to be redeemed by operation of the sinking fund and the amount to be on deposit in the Sinking Fund Account shall be accordingly reduced. Any funds received by the Trustee pursuant to subsection (i) of the previous paragraph but not expended as provided therein for the purchase of Bonds within seven days after said sixtieth day shall be retained in the Sinking Fund Account and shall thereafter be used only for a credit against future deposits to the Sinking Fund Account or, upon the direction of an Authorized Representative of the Authority, for transfer to the Interest Account to be used as a credit against transfers to be made thereto.

The Trustee shall pay the principal of and interest on the Bonds (*other than* the Series 2005A Bond, the Series 2009A Bond, the Series 2010A Bond, the Series 2011A Bond, the Series 2011B Bond, the Series 2011D Bond, the Series 2011E Bond, the Series 2014A Bond, the Series 2015A Bond, the Series 2015B Bond, the Series 2018 Bond **and the Series 2019 Bond**) from the Principal Account and the Interest Account, respectively, as the same become due. The Trustee shall pay the finance payment on the Series 2005A Bond from the Series 2005A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2009A Bond from the Series 2009A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2010A Bond from the Series 2010A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2011A Bond from the Series 2011A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2011B Bond from the Series 2011B Debt Service Account as the same becomes due. The Trustee shall pay the

finance payment on the Series 2011D Bond from the Series 2011D Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2011E Bond from the Series 2011E Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2014A Bond from the Series 2014A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2015A Bond from the Series 2015A Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2015B Bond from the Series 2015B Debt Service Account as the same becomes due. The Trustee shall pay the finance payment on the Series 2018 Bond from the Series 2018 Debt Service Account as the same becomes due. **The Trustee shall pay the finance payment on the Series 2019 Bond from the Series 2019 Debt Service Account as the same becomes due.** In the event the balances in the accounts in the Bond Fund on any interest, principal or finance payment date (whether at maturity or by mandatory sinking fund redemption) are insufficient for the purposes thereof, the Trustee shall transfer to such Accounts such amounts as may be necessary therefor (1) first from any rate stabilization fund created with respect to such series of Bonds, then (2) in the case of the Series 2005A Bond, the Series 2009A Bond, the Series 2010A Bond, the Series 2011A Bond, the Series 2011B Bond, the Series 2011D Bond and the Series 2011E Bond, from the Debt Service Reserve Fund, then (3) from the Improvement Fund and then (4) from the Facilities Lease Fund. In the event the balance in any account in the Bond Fund on any interest, principal or finance payment date (whether at maturity or by mandatory sinking fund redemption) exceeds the amounts required by this section, such excess shall be transferred to any other account in the Bond Fund the balance in which is insufficient for the purposes thereof in the following order of priority: Series 2005A Debt Service Account, Series 2009A Debt Service Account, Series 2010A Debt Service Account, Series 2011A Debt Service Account, Series 2011B Debt Service Account, Series 2011D Debt Service Account, Series 2011E Debt Service Account, Series 2014A Debt Service Account, Series 2015A Debt Service Account, Series 2015B Debt Service Account, Series 2018 Debt Service Account, **Series 2019 Debt Service Account**, Interest Account, Principal Account and Sinking Fund Account. If there is no insufficiency in any account in the Bond Fund, such excess shall be transferred, if the Debt Service Reserve Fund does not then hold the Required Reserve, to the Debt Service Reserve Fund and otherwise shall be held in the account containing such excess to be credited against future deposits to such account.

ARTICLE VII

MISCELLANEOUS

Section 31-701. Limitation of Rights.

With the exception of the rights herein expressly conferred, nothing expressed or mentioned in or to be implied from this Supplemental Agreement is intended or shall be construed to give any person other than the parties hereto and the holder of the Series 2019 Bond any legal or equitable right, remedy or claim under or in respect to this Supplemental Agreement or any covenant, condition and agreement herein contained; this Supplemental Agreement and all of the covenants, conditions and agreements hereof being intended to be and being for the

sole and exclusive benefit of the parties hereto and the holder of the Series 2019 Bond as herein provided.

Section 31-702. Successors and Assigns.

This Supplemental Agreement shall be binding upon, inure to the benefit of and be enforceable by the parties hereto and their respective successors and assigns.

Section 31-703. Severability.

If any provision of this Supplemental Agreement shall be held invalid by any court of competent jurisdiction, such holding shall not invalidate any other provision hereof.

Section 31-704. Applicable Law.

This Supplemental Agreement shall be governed by the applicable laws of the Commonwealth.

Section 31-705. Counterparts.

This Supplemental Agreement may be executed in several counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

[Remainder of this page intentionally left blank.]

IN WITNESS WHEREOF, the Authority and the Trustee have caused this Thirty-First Supplemental Agreement of Trust to be executed in their respective corporate names by their duly authorized officers, all as of the date first above written.

RIVANNA WATER AND SEWER AUTHORITY

By _____
Michael A. Gaffney, Chair

**THE BANK OF NEW YORK MELLON TRUST
COMPANY, N.A., as Trustee**

By _____
[____], Vice President

FORM OF SERIES 2019 BOND

Interest on this bond is not excludable from the gross income of the registered owner hereof for federal income tax purposes.

R-1

October [___], 2019

UNITED STATES OF AMERICA

COMMONWEALTH OF VIRGINIA

Rivanna Water and Sewer Authority

Taxable Regional Water and Sewer System Revenue Refunding Bond

Series 2019

Rivanna Water and Sewer Authority (the “Authority”), a public body politic and corporate and political subdivision of the Commonwealth of Virginia (the “Commonwealth”) duly created pursuant to the Virginia Water and Waste Authorities Act, Chapter 51, Title 15.2, Code of Virginia of 1950, as amended (the “Act”), for value received, acknowledges itself indebted and promises to pay to the Virginia Resources Authority, or its registered assigns or legal representative (“VRA”), the principal sum of [_____] AND XX/100 DOLLARS (\$[_____]). Principal of this bond shall be payable in annual installments in the amounts and on the dates set forth in Schedule I attached hereto. Interest on this bond shall be payable on each April 1 and October 1, commencing April 1, 2020, computed on the basis of a 360-day year of twelve 30-day months at the rates set forth in Schedule I.

If any installment of principal of and interest on this bond is not paid to the registered owner of this bond within ten days after its due date, the Authority shall pay to VRA a late payment charge in an amount equal to five percent (5%) of the overdue installment.

Subject to the provisions of the Local Bond Sale and Financing Agreement dated as of [_____, 2019] (the “Financing Agreement”), between VRA and the Authority, so long as this bond is held by or for the account of VRA or its registered assigns or legal representative, interest is payable by (i) check or draft mailed to the registered owner of this bond at the address that appears on the 15th day of the month preceding each interest payment date on the registration books kept by The Bank of New York Mellon Trust Company, N.A., as successor trustee (the “Trustee”), or (ii) wire transfer pursuant to the most recent wire instructions received by the Trustee from such registered owner, except that the final payment is payable upon presentation and surrender of this bond at the office of the Trustee. Principal of and premium, if any, and interest on this bond shall be payable in lawful money of the United States of America. In case the payment date on this bond shall not be a Business Day (as defined below), then payment of principal, premium, if any, and interest need not be made on such date, but may be made on the next succeeding Business Day, and, if made on such next succeeding Business Day, no

additional interest shall accrue for the period after such payment date. “Business Day” means any day on which commercial banking institutions generally are open for business in New York, New York, and Richmond, Virginia.

This bond is issued under an Agreement of Trust dated as of October 1, 1979 (the “Master Trust Agreement”), between the Authority and the Trustee, as supplemented and amended from time to time, and as further supplemented and amended by a Thirty-First Supplemental Agreement of Trust dated as of [_____ 1, 2019] (collectively, the “Trust Agreement”), and is secured equally and ratably on a parity with the outstanding balance of the Authority’s Taxable Regional Water and Sewer System Revenue Bond, Series 2005A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2009A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2010A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011B; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011D; its Taxable Regional Water and Sewer System Revenue Bond, Series 2011E; its Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A (the “Series 2012A Bond”); its Regional Water and Sewer System Revenue Bonds, Series 2012B; its Taxable Regional Water and Sewer System Revenue Bond, Series 2014A; its Taxable Regional Water and Sewer System Revenue Bond, Series 2015A; its Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2015B; its Regional Water and Sewer System Revenue Bond, Series 2016; and its Taxable Regional Water and Sewer System Revenue Bond, Series 2018 (collectively, the “Prior Bonds”), to the extent provided in the Trust Agreement and the Financing Agreement. Reference is made to the Trust Agreement for a description of the provisions, among others, with respect to the nature and extent of the security, the rights, duties and obligations of the Authority and the Trustee, the rights of the registered owner of this bond and the terms upon which this bond is issued and secured.

Additional bonds secured on a parity with this bond and the Prior Bonds may be issued on the terms provided in the Trust Agreement. This bond is authorized and issued pursuant to the Act and the Trust Agreement to refund a portion of the outstanding principal installments of the Series 2012A Bond and to pay the related costs of issuance and refunding. The Authority’s obligations under this bond shall terminate when all amounts due and to become due pursuant to this bond, the Financing Agreement and the Trust Agreement have been paid in full.

This bond is a limited obligation of the Authority and (except to the extent payment with respect to this bond shall be made from the proceeds from the sale of this bond or the income, if any, derived from the investment thereof) are payable solely from certain revenues to be derived from the ownership or operation of the System (as defined in the Trust Agreement), which serves, on a wholesale basis, the City of Charlottesville, Virginia, and the Albemarle County Service Authority, as the same may from time to time exist, certain pledged reserves, income from investments pursuant to the Trust Agreement and proceeds of insurance, which revenues and other moneys have been pledged pursuant to the Trust Agreement to secure payment thereof. This bond shall not be deemed to constitute a pledge of the faith and credit of the Commonwealth or any political subdivision thereof, including the Authority, the City of Charlottesville, Virginia, Albemarle County, Virginia, and the Albemarle County Service Authority (collectively, the “Political Subdivisions”).

Neither the Commonwealth nor any political subdivision thereof, including the Political Subdivisions, shall be obligated to pay the principal of this bond or other costs incident thereto except from the revenues pledged therefor, and neither the faith and credit nor the taxing power of the Commonwealth or any political subdivision thereof, including the Political Subdivisions, is pledged to the payment of the principal of or interest on this bond or other costs incident thereto. The Authority has no taxing power.

If any failure of the Authority to pay all or any portion of any required payment of the principal of or premium, if any, or interest on this bond results in a withdrawal from any VRA Reserve (as defined in the Financing Agreement), the interest rates applicable to this bond shall be increased to interest rates sufficient to reimburse the VRA Reserve for any foregone investment earnings and/or pay any interest, fees or penalties assessed as a result of the drawing on the VRA Reserve. The increment of interest payable pursuant to the increase in rates shall be referred to as "Supplemental Interest." The term "interest" as used in this bond shall include Supplemental Interest, when and if payable. The Authority's obligation to pay Supplemental Interest shall commence on the date of VRA's withdrawal of funds from the VRA Reserve occasioned by the Authority's failure to pay a required payment or portion thereof as described above (the "Supplemental Interest Commencement Date"). The Authority's obligation to pay Supplemental Interest shall terminate on the date on which the Authority remedies such failure to pay by making all payments required but outstanding since the date of such failure to pay (the "Supplemental Interest Termination Date"). From the Supplemental Interest Commencement Date to the Supplemental Interest Termination Date, Supplemental Interest shall be due and payable on the regularly scheduled interest payment dates provided for in this bond. As soon as reasonably possible after the Supplemental Interest Commencement Date and before the next regularly scheduled interest payment date provided for in this bond, VRA shall deliver to the Authority and the Trustee a certificate as to the increase in interest rates and the amount of Supplemental Interest. The certificate shall set forth in reasonable detail the basis for the increase in interest rates and the manner of calculation of the increase and the amount of Supplemental Interest. Such certificate shall be conclusive (absent manifest error) as to the interest rate increase and amount of Supplemental Interest set forth therein. In determining the interest rate increase and the amount of Supplemental Interest, VRA may use any reasonable averaging and attribution methods.

This bond is subject to prepayment to the extent and under the terms set forth in the Trust Agreement and the Financing Agreement. The optional redemption and notice provisions set forth in Sections 401 and 402 of the Master Trust Agreement shall not apply to this bond.

This bond is issued as a registered bond and may be transferred only in accordance with the provisions with respect thereto as provided in the Trust Agreement and the Financing Agreement.

The registered owner of this bond shall have no right to enforce the provisions of the Trust Agreement, to institute action to enforce the covenants therein, to take any action with respect to any Event of Default under the Trust Agreement or to institute, appear in or defend any suit or other proceeding with respect thereto, except as provided in the Trust Agreement. Modifications or alterations of the Trust Agreement, or of any supplement thereto, may be made only to the extent and in the circumstances permitted by the Trust Agreement.

Upon surrender of this bond at the corporate trust office of the Trustee in Pittsburgh, Pennsylvania, together with an assignment duly executed by the registered owner or his duly authorized attorney or legal representative in such form as shall be satisfactory to the Trustee, the Authority shall execute, and the Trustee shall authenticate and deliver in exchange, a new bond or bonds in the manner and subject to the limitations and conditions provided in the Trust Agreement, having an equal aggregate principal amount, in authorized denominations, of the same series, form and maturity, bearing interest at the same rate, and registered in names as requested by the then registered owner hereof or his duly authorized attorney or legal representative. Any such exchange shall be at the expense of the Authority, except that the Trustee may charge the person requesting such exchange the amount of any tax or other governmental charge required to be paid with respect thereto.

All acts, conditions and things required to happen, exist or be performed precedent to and in connection with the issuance of this bond have happened, exist and have been performed.

This bond shall not be valid until the Trustee shall have executed the Certificate of Authentication appearing hereon and inserted the date of authentication hereon.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the Rivanna Water and Sewer Authority has caused this bond to be signed by its [Vice-]Chair, its seal to be affixed hereto and attested by its Secretary-Treasurer, and this bond to be dated the date first above written.

RIVANNA WATER AND SEWER AUTHORITY

(SEAL)

By _____
[Vice-]Chair

ATTEST:

Secretary-Treasurer

CERTIFICATE OF AUTHENTICATION

Date Authenticated: November __, 2019

This bond is the Series 2019 Bond described in the within-mentioned Trust Agreement.

**THE BANK OF NEW YORK
MELLON TRUST COMPANY, N.A.**

By _____
Authorized Signature

ASSIGNMENT

FOR VALUE RECEIVED the undersigned sell(s), assign(s) and transfer(s) unto

_(please print or typewrite name and address including postal zip code of Transferee)

PLEASE INSERT SOCIAL SECURITY OR OTHER
IDENTIFYING NUMBER OF TRANSFEREE

: :
: :
: :

the within bond and all rights thereunder, irrevocably constituting and appointing

_____,
Attorney, to transfer said bond on the books kept for the registration thereof, with full power of
substitution in the premises.

Dated: _____

Signature Guaranteed

NOTICE: Signature(s) must be
guaranteed by an Eligible Guarantor
Institution such as a Commercial
Bank, Trust Company, Securities
Broker/Dealer, Credit Union, or
Savings Association who is a member
of a medallion program approved by
The Securities Transfer Association, Inc.
Inc.

(Signature of Registered Owner)

NOTICE: The signature above must
correspond with the name of the
registered owner as it appears on the
front of this bond in every particular,
without alteration or enlargement
or any change whatsoever.

TRANSFER OF BOND

The transfer of this bond may be registered by the registered owner or its duly authorized attorney or legal representative upon presentation hereof to the Registrar who shall make note of such transfer in books kept by the Registrar for that purpose and in the registration blank below.

<u>Date of Registration</u>	<u>Name of Registered Owner</u>	<u>Signature of Registrar</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

SCHEDULE I

Installment Date (October 1)	Installment Amount	Interest Rate
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AMENDMENT TO FINANCING AGREEMENT

This **AMENDMENT TO FINANCING AGREEMENT** (this "Amendment") is dated November 20, 2019 (the "Closing Date"), and is between the **VIRGINIA RESOURCES AUTHORITY** ("VRA") and the **RIVANNA WATER AND SEWER AUTHORITY** (the "Local Government").

RECITALS

A. VRA issued its Virginia Resources Authority Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program), Series 2012A (the "2012A VRA Bonds"), pursuant to the Virginia Resources Authority Act, Chapter 21, Title 62.1 of the Code of Virginia of 1950, as amended, and the Master Indenture of Trust dated as of December 1, 2003, as supplemented and amended (the "Indenture"), between VRA and U.S. Bank National Association, as successor trustee (the "Trustee").

B. VRA applied a portion of the proceeds of the 2012A VRA Bonds to acquire from the Local Government the \$25,100,000 Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A (the "Original Local Bond"), pursuant to a Local Bond Sale and Financing Agreement dated as of April 30, 2012 (the "Original Financing Agreement") between VRA and the Local Government.

C. On the Closing Date, VRA is issuing its Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program), Series 2019C (the "2019C VRA Bonds") and using a portion of the proceeds thereof to acquire from the Local Government its \$[_____] Water Revenue Refunding Bond, Series 2019 (the "2019 Local Bond"). The Local Government has requested that VRA issue the 2019C VRA Bonds and acquire the 2019 Local Bond to, among other things, refund, redeem and defease a portion of the outstanding principal amount of the Original Local Bond specified on Exhibit A (the "Defeased Payments").

D. To evidence the reduction in the principal amount of the Original Local Bond as a result of the refunding, redemption and defeasance of the Defeased Payments, the Local Government has delivered to VRA and the Trustee an Allonge to the Original Local Bond dated as of the Closing Date (the "Allonge").

E. As set forth below, VRA and the Local Government desire to amend the Original Financing Agreement in connection with the refunding, redemption and defeasance of the Defeased Payments.

NOW THEREFORE, VRA and the Local Government agree as follows:

**ARTICLE I
AMENDMENT TO ORIGINAL FINANCING AGREEMENT; DEFINITIONS**

1.1 Amendment to Original Financing Agreement.

(a) The definition of "Local Bond" in the Original Financing Agreement is hereby amended to mean the Original Local Bond, as amended by the Allonge.

(b) The definition of "Agreement" in the Original Financing Agreement is hereby amended to mean the Original Financing Agreement, as amended by this Amendment.

1.2 Definitions. Unless otherwise defined or the context otherwise requires, each capitalized term used in this Agreement shall have the meaning set forth in the Original Financing Agreement.

**ARTICLE II
TERMS AND CONDITIONS**

2.1 Defeasance of Defeased Payments. Subject to the terms hereof and satisfaction of the conditions set forth herein, VRA agrees that the Defeased Payments will be deemed defeased upon the issuance of the 2019C VRA Bonds and the acquisition of the 2019 Local Bond.

2.2 Undischarged Obligations. The Local Government acknowledges and agrees that its agreements set forth in Section 5.1 of the Original Financing Agreement are not discharged by the defeasance of the Defeased Payments. Such agreements will remain in effect until the earlier of the final payment or final maturity date of the amount of the 2012A VRA Bonds corresponding to such Defeased Payments or such later date as may be provided with respect to compliance with the "rebate requirement" of Section 148(f) of the Code and certain recordkeeping requirements as specified in the Local Tax Document.

**ARTICLE III
REPRESENTATIONS**

3.1 No Default. The Local Government represents that no event or condition has happened or existed, or is happening or existing, which constitutes, or which, with notice or lapse of time, or both, would currently constitute, an Event of Default under the Original Financing Agreement.

**ARTICLE IV
MISCELLANEOUS**

4.1 Further Assurances. The Local Government shall, to the fullest extent permitted by law, pass, make, do, execute, acknowledge and deliver such further resolutions, acts, deeds, conveyances, assignments, transfers and assurances as may be necessary or desirable for the better assuring, conveying, granting, assigning and confirming the rights, revenues and other funds pledged or assigned by the Original Local Bond and this Amendment, or as may be required to carry out the purposes of the Original Local Bond and this Amendment.

4.2 Successors and Assigns. This Amendment is binding upon, inures to the benefit of and is enforceable by the parties and their respective successors and assigns.

4.3 Applicable Law. This Amendment shall be governed by the laws of the Commonwealth of Virginia.

4.4 Ratification of Original Financing Agreement. VRA and the Local Government hereby reaffirm, ratify and confirm all terms of the Original Financing Agreement except as amended or modified by the terms of this Amendment.

4.5 Severability. If any clause, provision or section of this Amendment shall be held illegal or invalid by any court, the illegality or invalidity of such clause, provision or section shall not affect the remainder of this Amendment, which shall be construed and enforced as if such illegal or invalid clause, provision or section had not been contained in this Amendment. If any agreement or obligation contained in this Amendment is held to be in violation of law, then such agreement or obligation shall be deemed to be the agreement or obligation of VRA and the Local Government, as the case may be, only to the extent permitted by law.

4.6 Headings. The headings of the several articles and sections of this Amendment are inserted for convenience only and do not comprise a part of this Amendment.

4.7 Counterparts. This Amendment may be executed in any number of counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

[Signature Page Follows]

WITNESS the following signatures, all duly authorized.

VIRGINIA RESOURCES AUTHORITY

By: _____
Stephanie L. Hamlett
Executive Director

**RIVANNA WATER AND SEWER
AUTHORITY**

By: _____
Chair

EXHIBIT A

Defeased Payments

COVERING CERTIFICATE FOR RESOLUTION

The undersigned Executive Director of the Rivanna Water and Sewer Authority (the “Authority”), certifies as follows:

1. Attached hereto is a true, correct and complete copy of a resolution entitled “RESOLUTION AUTHORIZING THE ISSUANCE, SALE AND AWARD BY THE RIVANNA WATER AND SEWER AUTHORITY OF ITS TAXABLE REGIONAL WATER AND SEWER SYSTEM REVENUE REFUNDING BOND IN A PRINCIPAL AMOUNT NOT TO EXCEED \$19,545,000, PROVIDING FOR THE FORM, DETAILS AND PAYMENT THEREOF AND PROVIDING FOR THE REFUNDING OF ALL OR A PORTION OF THE OUTSTANDING PRINCIPAL INSTALLMENTS OF ITS TAXABLE REGIONAL WATER AND SEWER SYSTEM REVENUE AND REFUNDING BOND, SERIES 2012A” (the “Resolution”), as adopted at a regular meeting of the members of the Authority held on October 22, 2019, by the affirmative roll-call vote of a majority of all members of the Authority.

2. Such meeting of the Authority was held at the time and place established by the Authority for its regular meetings.

3. The minutes of such meeting reflect the attendance of the members and their votes on the Resolution as follows:

Member	Attendance (Present/Absent)	Vote (Aye/Nay/Abstain)
Michael A. Gaffney		
Kathleen Galvin		
Lauren Hildebrand		
Gary B. O’Connell		
Lizbeth A. Palmer		
Jeff Richardson		
Tarron Richardson		

4. The Resolution has not been repealed, revoked, rescinded or amended and is in full force and effect on the date hereof.

WITNESS my signature and the seal of the Rivanna Water and Sewer Authority, this ____ day of October, 2019.

(SEAL)

William I. Mawyer, Jr, Executive Director,
Rivanna Water and Sewer Authority

RESOLUTION AUTHORIZING THE ISSUANCE, SALE AND AWARD BY THE RIVANNA WATER AND SEWER AUTHORITY OF ITS TAXABLE REGIONAL WATER AND SEWER SYSTEM REVENUE REFUNDING BOND IN A PRINCIPAL AMOUNT NOT TO EXCEED \$19,545,000, PROVIDING FOR THE FORM, DETAILS AND PAYMENT THEREOF AND PROVIDING FOR THE REFUNDING OF ALL OR A PORTION OF THE OUTSTANDING PRINCIPAL INSTALLMENTS OF ITS TAXABLE REGIONAL WATER AND SEWER SYSTEM REVENUE AND REFUNDING BOND, SERIES 2012A

WHEREAS, the Rivanna Water and Sewer Authority (the “Authority”) has entered into a Service Agreement dated June 12, 1973, as amended (the “Service Agreement”), by and between the Authority, the Albemarle County Service Authority (the “Service Authority”), the City of Charlottesville, Virginia (the “City”), and the County of Albemarle, Virginia (the “County”), providing for the acquisition by the Authority of certain existing water and wastewater facilities from the City and the Service Authority, the construction by the Authority of new facilities requested by the City and/or the Service Authority, and the financing, operation and maintenance by the Authority of all such facilities (collectively, the “System”);

WHEREAS, pursuant to the provisions of the Service Agreement and an Agreement of Trust dated as of October 1, 1979 (the “Master Trust Agreement”), between the Authority and The Bank of New York Mellon Trust Company, N.A. (the “Trustee”), the Authority previously issued its Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A (the “2012A Bond”);

WHEREAS, the Authority’s financial advisor, Davenport & Company LLC, has advised the Authority that the Authority may be able to achieve debt service savings by refunding all or a portion of the outstanding principal installments of the 2012A Bond (such refunded installments, the “Refunded Installments”);

WHEREAS, the Authority desires to issue its Taxable Water and Sewer System Revenue Refunding Bond, Series 2019 (the “2019 Bond”), to (a) refund the Refunded Installments, subject to the terms and conditions herein, including a condition that the refunding achieve an aggregate net present value debt service savings of not less than 7.0% of the principal amount of the Refunded Installments (the “Targeted Savings”), and (b) pay the related costs of issuing the 2019 Bond and refunding the Refunded Installments;

WHEREAS, the Authority has applied to the Virginia Resources Authority (“VRA”) for the purchase of the 2019 Bond, and VRA has indicated its willingness to purchase the 2019 Bond from the proceeds of one or more series of its Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program) (collectively, the “VRA Bonds”), in accordance with the terms of (a) a Local Bond Sale and Financing Agreement (the “Financing Agreement”), between VRA and the Authority, and (b) a Thirty-First Supplemental Agreement of Trust (the “Thirty-First Supplemental Agreement” and, together with the Master Trust Agreement, as previously supplemented and amended, the “Trust Agreement”), between the Authority and the Trustee, the forms of which have been made available to the Authority prior to this meeting;

WHEREAS, VRA has advised the Authority that VRA's objective is to pay the Authority a purchase price for the 2019 Bond that in VRA's judgment reflects its market value (the "Purchase Price Objective") taking into consideration such factors as the Targeted Savings, the purchase price received by VRA for the VRA Bonds, the issuance costs of the VRA Bonds (consisting of the underwriters' discount and other costs incurred by VRA) (collectively, the "VRA Costs") and other market conditions relating to the sale of the VRA Bonds; and

WHEREAS, the Financing Agreement shall provide that the terms of the 2019 Bond may not exceed the parameters set forth below in Section 5;

BE IT RESOLVED BY RIVANNA WATER AND SEWER AUTHORITY:

1. It is found and determined that it is in the best interests of the Authority and its customers for the Authority (a) to promote the increased quality of drinking water and meet regulatory expectations, (b) to promote the interest of efficient water quality management for the upper Rivanna River Basin, (c) to ensure a reliable supply of potable water for the City and the County and their citizens and (d) otherwise to further the purposes of the Virginia Water and Waste Authorities Act (Chapter 51, Title 15.2 of the Code of Virginia 1950, as amended), all by undertaking the issuance of the 2019 Bond and using the proceeds thereof to refund the Refunded Installments and to pay the related costs of issuing the 2019 Bond and refunding the Refunded Installments. Accordingly, the Authority authorizes the issuance and sale of the 2019 Bond to VRA in accordance with the terms of this resolution and the Financing Agreement and as an "Additional Bond" in accordance with the terms of the Trust Agreement.

2. The Chair and Vice-Chair of the Authority, either of whom may act, are authorized to execute and deliver the Thirty-First Supplemental Agreement. The Thirty-First Supplemental Agreement shall be in substantially the form made available prior to this meeting, which is approved, with such completions, omissions, insertions and changes not inconsistent with this resolution as may be approved by the Chair or Vice-Chair, whose approval shall be evidenced conclusively by the execution and delivery thereof.

3. The Chair and the Vice-Chair of the Authority, either of whom may act, are authorized to execute and deliver the Financing Agreement. The Financing Agreement shall be in substantially the form made available prior to this meeting, which is approved, with such completions, omissions, insertions and changes not inconsistent with this resolution as may be approved by the Chair or Vice-Chair, whose approval shall be evidenced conclusively by the execution and delivery thereof. For purposes of this resolution, all capitalized terms used but not otherwise defined herein shall have the same meaning as set forth in the Financing Agreement.

4. The 2019 Bond shall be payable solely from Revenues, certain reserves or proceeds of insurance and secured on a parity as to such pledge with the Authority's outstanding bonds and any Additional Bonds issued pursuant to the Trust Agreement. The 2019 Bond shall be a limited obligation of the Authority, and nothing in the 2019 Bond, the Trust Agreement or the Financing Agreement shall be deemed to create or constitute a pledge of the faith and credit

of the Commonwealth of Virginia or any political subdivision thereof, including the Authority, the Service Authority, the City and the County.

5. The 2019 Bond shall be issued as a single, registered bond, designated “Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019,” or such other designation as the Chair or Vice-Chair shall make, shall be dated the date that is 30 days prior to the closing date of the VRA Bonds and shall be numbered R-1. The Authority authorizes the issuance and sale of the 2019 Bond on terms as shall be determined by VRA subject to the Purchase Price Objective and market conditions described in the recitals hereof; provided, however, that the 2019 Bond (a) shall be issued in a principal amount not to exceed \$19,545,000, (b) shall be payable in installments ending no later than December 31, 2042, (c) shall have a “true” interest cost not to exceed 4.50% (exclusive of “Supplemental Interest” as provided in the Financing Agreement) and (d) shall be subject to prepayment upon the terms set forth in the Financing Agreement, and provided further that the refunding shall achieve at least the Targeted Savings. Subject to the preceding terms, the Authority further authorizes the Executive Director to accept the final terms presented by VRA, including (x) the final principal amount of the 2019 Bond and (y) the amortization schedule (including the principal installment dates and amounts) for the 2019 Bond.

As set forth in the Financing Agreement, the Authority agrees to pay such “Supplemental Interest” and other charges as provided therein, including such amounts as may be necessary to maintain or replenish the VRA Reserve. The principal of and premium, if any, and interest on the 2019 Bond shall be payable in lawful money of the United States of America.

The 2019 Bond shall be substantially in the form attached as an exhibit to the Thirty-First Supplemental Agreement.

6. The Chair, the Vice-Chair and the Secretary-Treasurer of the Authority are authorized and directed to have the 2019 Bond prepared and executed pursuant to the Trust Agreement, to deliver it to the Trustee for authentication and to cause the 2019 Bond so executed and authenticated to be delivered to, or at the direction of, VRA upon payment therefor.

7. In accordance with Section 503(b) of the Trust Agreement, the following matters are stated:

(a) The redemption price of the Refunded Installments, if any, is 100% (expressed as a percentage of the principal amount), plus accrued and unpaid interest to the date fixed for redemption.

(b) The expenses incidental to the issuance of the 2019 Bond and the refunding of the Refunded Installments are estimated not to exceed \$100,000 (excluding VRA costs of issuance and underwriters’ discount).

(c) The amounts required to be on deposit at all times in the Bond Fund are as determined pursuant to Section 707 of the Trust Agreement.

(d) No deposit to the Debt Service Reserve Fund will be made with respect to the 2019 Bond.

(e) No capitalized interest is expected to be financed from proceeds of the 2019 Bond.

8. The Authority authorizes and consents to the inclusion of information with respect to the Authority contained in VRA's Preliminary Official Statement and VRA's Official Statement in final form, both prepared in connection with the sale of the VRA Bonds. If appropriate, such disclosure documents shall be distributed in such manner and at such times as VRA shall determine. The Executive Director is authorized and directed to take whatever actions are necessary or appropriate to aid VRA in ensuring compliance with Securities and Exchange Commission Rule 15c2-12.

9. The Executive Director is authorized and directed to determine which portion(s) of the outstanding principal installments of the 2012A Bond, if any, shall constitute the Refunded Installments and to take all proper steps to effect the refunding of the Refunded Installments. The Chair, Vice-Chair and Secretary-Treasurer of the Authority are authorized to approve changes to the 2012A Bond and related financing documents, including the execution and delivery of an allonge to the 2012A Bond and an amendment to the Local Bond Sale and Financing Agreement dated as of April 30, 2012, between VRA and the Authority, as may be necessary to provide for any unrefunded portion(s) of the outstanding principal installments of the 2012A Bond. The Executive Director is authorized to affix the Authority's seal on any such documents and attest the same.

10. The Authority has heretofore received and reviewed the Information Statement (the "Information Statement") describing the State Non-Arbitrage Program of the Commonwealth of Virginia ("SNAP") and the Contract Creating the State Non-Arbitrage Program Pool (the "Contract"), and the Authority has determined to authorize the Chair or Vice-Chair, if and as necessary, to utilize SNAP in connection with the investment of the proceeds of the 2019 Bond. The Authority acknowledges the Treasury Board of the Commonwealth of Virginia is not, and shall not be, in any way liable to the Authority in connection with SNAP, except as otherwise provided in the Contract.

11. The officers of the Authority are authorized and directed to execute and deliver all certificates and other instruments considered necessary or desirable in connection with the issuance, sale and delivery of the 2019 Bond and the refunding of the Refunded Installments pursuant to this resolution, the Financing Agreement and the Trust Agreement. All other actions of the officers of the Authority in conformity with the purposes and intent of this resolution and in furtherance of the issuance and sale of the 2019 Bond and the refunding of the Refunded Installments are ratified, approved and confirmed.

12. The Secretary-Treasurer of the Authority is authorized and directed to arrange for a certified copy of this resolution to be filed with reasonable dispatch in the office of the Clerk of the Circuit Court of Albemarle County, Virginia.

13. This resolution shall take effect immediately.

LOCAL BOND SALE AND FINANCING AGREEMENT

between

VIRGINIA RESOURCES AUTHORITY

and

RIVANNA WATER AND SEWER AUTHORITY

Dated as of October [___], 2019

**Virginia Resources Authority
Infrastructure and State Moral Obligation Revenue Bonds
(Virginia Pooled Financing Program)
Series 2019C (Taxable)**

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LOCAL BOND SALE AND FINANCING AGREEMENT

This **LOCAL BOND SALE AND FINANCING AGREEMENT** is dated as of October [___], 2019, and is between the **VIRGINIA RESOURCES AUTHORITY**, a public body corporate and a political subdivision of the Commonwealth of Virginia ("VRA"), and the **RIVANNA WATER AND SEWER AUTHORITY**, a public body corporate and political subdivision of the Commonwealth of Virginia (the "Local Government").

A. VRA intends to issue its Related Series of VRA Bonds, as hereinafter defined, and to use a portion of the proceeds thereof to acquire from the Local Government the Local Bond, as hereinafter defined.

B. VRA and the Local Government wish to set forth herein certain terms, conditions and provisions related to the purchase of the Local Bond, the application of the proceeds thereof, the payment of the debt service thereon and the security therefor, and the use and maintenance of the Related Financed Property, as hereinafter defined.

NOW, THEREFORE, VRA and the Local Government agree as follows:

ARTICLE I DEFINITIONS

Section 1.1 Definitions. Each capitalized term contained in this Agreement has the meaning set forth below:

"2012 Local Bond" means the Local Government's Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A issued on May 13, 2012 in the original principal amount of \$25,100,000 pursuant to that certain Local Bond Sale and Financing Agreement dated as of April 30, 2012, between VRA and the Local Government in connection with the issuance by VRA of the 2012A VRA Bonds.

"2012A VRA Bonds" means, the Virginia Resources Authority Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program), Series 2012A, in the original principal amount of \$298,140,000.

"2019C Acquisition Fund" has the meaning set forth in the Related Supplemental Series Indenture.

"Act" means the Virginia Resources Authority Act, Chapter 21, Title 62.1 of the Code of Virginia of 1950, as amended.

"Agreement" means this Local Bond Sale and Financing Agreement dated the date first written above, between VRA and the Local Government, as modified, altered, amended or supplemented in accordance with the terms hereof.

"Annual Budget" means the budget of the System for each Fiscal Year.

"Business Day" means any day on which commercial banking institutions are generally open for business in New York, New York and Richmond, Virginia.

"Call Date" means November 1, 2022, or such other date as may be determined by VRA.

"Closing Date" means November 20, 2019, or such other date as may be determined by VRA.

"Consulting Engineer" has the meaning set forth in the Local Master Indenture, and for the purposes of this Agreement, such term shall include, at the discretion of the Local Government, the Local Engineer.

"Customers" means the Local Government's two customers under the Service Agreement, the City of Charlottesville, Virginia, and the Albemarle County Service Authority.

"Escrow Agreement" means the Escrow Agreement dated November 20, 2019, between VRA and the Trustee.

"Effective Date" means October [___], 2019.

"Event of Default" has the meaning set forth in Section 10.1.

"Existing Parity Bonds" has the meaning set forth in Section 2.2(n).

"Financing Parameters" means the parameters established by the governing body of the Local Government regarding the terms and conditions of the Local Bond, which may include a maximum par amount, maximum "true" interest cost or targeted savings.

"Fiscal Year" has the meaning set forth in the Local Master Indenture.

"Government Obligations" means direct obligations of, or obligations the payment of the principal of and interest on which is unconditionally guaranteed by, the United States of America.

"Local Account" means the local account established for the Local Bond within the 2019C Acquisition Fund.

"Local Authorization" means the resolution adopted on October 22, 2019 by a majority of the members of the governing body of the Local Government approving (i) the transactions contemplated by and authorizing the execution and delivery of this Agreement and (ii) the execution, issuance and sale of the Local Bond subject to the Financing Parameters.

"Local Bond" means the Local Government's Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019, issued in the original principal amount set forth in Schedule 1.1, as such bond may be amended or modified.

"Local Engineer" means an officer or employee of the Local Government so designated in writing by a Local Representative, which officer or employee (i) is licensed as a professional engineer in Virginia, (ii) has recognized standing in the field of water and sewer engineering and licensed as professional engineers in Virginia that the Local Government designates in writing, subject to VRA's reasonable approval and (iii) is subject to VRA's reasonable approval.

"Local Government" means the Rivanna Water and Sewer Authority.

"Local Master Indenture" means the Agreement of Trust dated as of October 1, 1979, between the Local Government and the Local Trustee, as previously amended and supplemented, and as further amended and supplemented by the Thirty-First Supplemental Agreement of Trust to be dated the date of the Local Bond, between the Local Government and the Local Trustee, as amended and supplemented in accordance with its terms.

"Local Representative" means (i) the chair or vice chair of the governing body, (ii) the chief executive officer of the Local Government and (iii) any other official or employee of the Local Government authorized by resolution of the governing body of the Local Government to perform the act or sign the document in question.

"Local Trustee" means The Bank of New York Mellon Trust Company, N.A. (as successor to NationsBank, National Association, as successor to Sovran Bank, N.A., as successor to Virginia National Bank), and its successors serving in such capacity, as trustee under the Local Master Indenture.

"Master Indenture" means the Master Indenture of Trust dated as of December 1, 2003, between VRA and the Trustee, as modified, altered, amended and supplemented in accordance with its terms.

"Net Revenues Available for Debt Service" means the Revenues less amounts necessary to pay Operation and Maintenance Expenses.

"Operation and Maintenance Expenses" has the same meaning as the term "Operating Expenses" in the Local Master Indenture.

"Parity Bonds" means any of the Local Government's "Bonds" issued under the Local Master Indenture.

"Parity Debt" means any of the Local Government's Parity Bonds, including the Local Bond.

"Proceeds Requested" means an amount necessary to provide for the escrow related to the Refunded 2012A VRA Bonds, subject to the Financing Parameters, plus local costs of issuance, or such other amount requested in writing by the Local Government and approved by VRA prior to the Sale Date.

"Project" means the project described in Exhibit B.

"Project Budget" means the budget for the Project set forth in Schedule 1.1.

"Project Costs" means the costs of the Project to the extent such costs are included in the definition of "cost" set forth in Section 62.1-199 of the Act, and includes the refunding of obligations of VRA or the Local Government issued to finance or refinance "costs" set forth in Section 62.1-199 of the Act.

"Purchase Price" has the meaning set forth in Schedule 1.1 and represents the amount received by the Local Government from the sale of the Local Bond to VRA. The Purchase Price of the Local Bond will be determined by adding to or subtracting from the par amount of the Local Bond the Local Government's share of the net original issue premium or discount on the Related Series of VRA Bonds and by subtracting from the par amount of the Local Bond the Local Government's share of VRA's expenses as set forth in Section 3.2 and the Local Government's share of the deposit on the Closing Date to any applicable VRA Reserve. It is acknowledged that the Purchase Price does not include any accrued interest on the Local Bond from its dated date to the Closing Date.

"Qualified Independent Consultant" means an independent professional consultant having the skill and experience necessary to provide the particular certificate, report or approval required by the provision of this Agreement in which such requirement appears, including without limitation a Consulting Engineer and an independent certified public accountant or firm of independent certified public accountants; provided, however, all Qualified Independent Consultants are subject to the reasonable approval of VRA.

"Refunded 2012A VRA Bonds" means the portion of the 2012A VRA Bonds allocated to the 2012 Local Bond to be refunded as agreed to in writing by the Local Government and VRA prior to the Sale Date.

"Registrar" means the Local Trustee.

"Related Financed Property" means the land, building, equipment and other property, the acquisition, construction, renovation, or equipping of which was refinanced by the Local Bond as part of the Project.

"Related Portion of VRA Bonds" means the portion of the Related Series of VRA Bonds allocable to the Local Bond (as determined by VRA), including any bonds issued by VRA to refund such Related Series of VRA Bonds in whole or in part.

"Related Series of VRA Bonds" means the Virginia Resources Authority Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program), Series 2019C (Taxable) (or such other series of Infrastructure and State Moral Obligation Revenue Bonds (Virginia Pooled Financing Program that is specified in Schedule 1.1), in the original aggregate principal amount set forth in Schedule 1.1, and, unless the Local Government receives notice to the contrary from VRA, any bonds issued by VRA to refund the Related Series of VRA Bonds in whole or in part.

"Related Supplemental Series Indenture" means the Forty-Sixth Supplemental Series Indenture of Trust dated as of November 1, 2019, between VRA and the Trustee, as modified, altered, amended and supplemented in accordance with its terms and those of the Master Indenture.

"Revenue Fund" has the meaning set forth in the Master Indenture.

"Revenues" means (i) all rates, fees, rentals, charges and other income properly allocable to the System under generally accepted accounting principles or resulting from the Local Government's ownership or operation of the System and all rights to receive the same, whether now existing or hereafter coming into existence, exclusive of user and other deposits subject to refund until such deposits have become the Local Government's property, (ii) the proceeds of any insurance covering business interruption loss relating to the System, (iii) interest on any money or securities related to the System held by or on behalf of the Local Government, except as otherwise provided by the Local Master Indenture, and (iv) any other income from other sources now or hereafter pledged or specifically made available by or on behalf of the Local Government to or for the payment of Operation and Maintenance Expenses or debt service on Parity Debt.

"Sale Date" means October 29, 2019, or such other date specified in Schedule 1.1.

"Service Agreement" means the Service Agreement dated June 12, 1973, among the Local Government, the City of Charlottesville, Virginia, the Albemarle County Service Authority and the Board of County Supervisors acting for and on behalf of Albemarle County, as supplemented and amended from time to time.

"Subordinate Debt" means obligations of the Local Government secured by a pledge of Revenues expressly made subordinate to the pledge securing the Local Bond and any other Parity Bonds, and any obligations to make deposits related to reserve funds, rebate funds and similar funds or accounts established for the benefit of the Local Bond or any other Parity Bonds.

"Supplemental Interest" has the meaning set forth in Section 6.1.

"System" has the meaning set forth in the Local Master Indenture.

"Trustee" means U.S. Bank National Association, Richmond, Virginia, as trustee under the Master Indenture and the Related Supplemental Series Indenture, or its successors serving in such capacity.

"UVA" means the Rector and Visitors of the University of Virginia, a public corporation and educational institution of the Commonwealth of Virginia.

"Verification Agent" means a firm or individual engaged by VRA to provide the Verification Report.

"Verification Report" means the report of the Verification Agent delivered in connection with the refunding and defeasance of the Refunded 2012A VRA Bonds.

"Virginia SNAP" means the Commonwealth of Virginia State Non-Arbitrage Program.

"VRA" means the Virginia Resources Authority, a public body corporate and a political subdivision of the Commonwealth of Virginia.

"VRA Bonds" means the Related Series of VRA Bonds and any additional bonds issued under the Master Indenture.

"VRA Reserve" means any one or more of the Capital Reserve Fund, the Infrastructure Debt Service Reserve Fund, the Operating Reserve Fund, a CRF Credit Facility or an Infrastructure Revenue DSRF Facility, each as defined in the Master Indenture.

Section 1.2 Rules of Construction. The following rules apply to the construction of this Agreement unless the context requires otherwise:

(a) Singular words connote the plural number as well as the singular and vice versa.

(b) Words importing the redemption or calling for redemption of the Local Bond do not refer to or connote the payment of the Local Bond at its stated maturity.

(c) All references in this Agreement to particular Articles, Sections or Exhibits are references to Articles, Sections or Exhibits of this Agreement unless otherwise indicated.

(d) The headings and table of contents as used in this Agreement are solely for convenience of reference and do not constitute a part of this Agreement and do not affect its meaning, construction or effect.

ARTICLE II REPRESENTATIONS

Section 2.1 Representations by VRA. VRA represents to the Local Government as follows:

(a) VRA is a duly created and validly existing public body corporate and political subdivision of the Commonwealth of Virginia vested with the rights and powers conferred upon it under the Act.

(b) VRA has full right, power and authority to (i) issue, sell and deliver the Related Series of VRA Bonds, (ii) direct the Trustee to use a portion of the proceeds of the Related Series of VRA Bonds to purchase the Local Bond from the Local Government as contemplated under the Related Supplemental Series Indenture and this Agreement and (iii) carry out and consummate all other transactions contemplated by this Agreement.

(c) VRA has duly authorized, executed and delivered this Agreement, and this Agreement constitutes a legal, valid and binding obligation of VRA enforceable against VRA in accordance with its terms.

Section 2.2 Representations by Local Government. The Local Government represents to VRA as follows:

(a) The Local Government is a duly created and validly existing Virginia "local government" (as defined in Section 62.1-199 of the Act) and is vested with the rights and powers conferred upon it by Virginia law.

(b) The Local Government has full right, power and authority to (i) adopt the Local Authorization and execute and deliver this Agreement and all related documents, (ii) issue, sell and deliver its Local Bond to the Trustee, (iii) own and operate the System, (iv) undertake the Project and (v) carry out and consummate all of the transactions contemplated by the Local Authorization, the Local Bond, this Agreement, and the Service Agreement.

(c) The Local Authorization authorized the execution and delivery of this Agreement, and this Agreement is in substantially the same form as presented to the Local Government's governing body at its meeting at which the Local Authorization was adopted. The Local Authorization was filed in the Circuit Court of the County of Albemarle, Virginia, on October [___], 2019.

(d) The Local Government has obtained all governmental permits, licenses, registrations, certificates, authorizations and approvals required to have been obtained as of the Effective Date for the Local Government's (i) adoption of the Local Authorization, (ii) execution and delivery of this Agreement and the Local Bond, (iii) performance of its obligations under this Agreement, the Local Bond, and the Service Agreement, (iv) the undertaking of the Project and (v) the operation and use of the System. The Local Government knows of no reason why any such required governmental permits, licenses, registrations, certificates, authorizations or approvals not required to be obtained by the Effective Date cannot be obtained as required in the future.

(e) The Local Government has executed and delivered this Agreement, and this Agreement constitutes a legal, valid and binding obligation of the Local Government enforceable against the Local Government in accordance with its terms.

(f) When executed and delivered in accordance with the Local Authorization and this Agreement, the Local Bond will have been executed and delivered by duly authorized officials of the Local Government and will constitute a legal, valid and binding limited obligation of the Local Government enforceable against the Local Government in accordance with its terms.

(g) The issuance of the Local Bond and the execution and delivery of this Agreement and the performance by the Local Government of its obligations thereunder and under the Service Agreement are within the powers of the Local Government and will not conflict with, or constitute a breach or result in a violation of, (i) to the best of the Local Government's knowledge, any federal or Virginia constitutional or statutory provision, including the Local Government's charter or articles of incorporation, if any, (ii) any agreement or other instrument to which the Local Government is a party or by which it is bound or (iii) any order, rule, regulation, decree or ordinance of any court, government or governmental authority having jurisdiction over the Local Government or its property.

(h) The Local Government is not in default in the payment of the principal of or interest on any of its indebtedness for borrowed money and is not in default under any instrument under and subject to which any indebtedness for borrowed money has been incurred. No event or condition has happened or existed, or is happening or existing, under the provisions of any such instrument, including but not limited to this Agreement, which constitutes, or which, with notice or lapse of time, or both, would constitute an event of default thereunder.

(i) The Local Government (i) to the best of the Local Government's knowledge, is not in violation of any existing law, rule or regulation applicable to it in any way that would have a material adverse effect on its financial condition or its ability to perform its obligations under the Local Bond, this Agreement, or the Service Agreement and (ii) is not in default under any indenture, mortgage, deed of trust, lien, lease, contract, note, order, judgment, decree or other agreement, instrument or restriction of any kind to which the Local Government is a party or by which it is bound or to which any of its assets is subject that would have a material adverse effect on its financial condition or its ability to perform its obligations under the Local Bond and this Agreement. The Local Government's execution and delivery of the Local Bond and this Agreement and its compliance with the terms and conditions thereof will not conflict with or result in a breach of or constitute a default under any of the foregoing.

(j) The Local Government reasonably expects that, unless otherwise permitted by the terms of this Agreement or approved by VRA, the Local Government will own, operate and control the System at all times during the term of the Local Bond.

(k) Except as set forth in Exhibit C, there are not pending nor, to the best of the Local Government's knowledge, threatened against the Local Government, any actions, suits, proceedings or investigations of a legal, equitable, regulatory, administrative or legislative nature (i) affecting the creation, organization or existence of the Local Government or the title of its officers to their respective offices, (ii) seeking to prohibit, restrain or enjoin the approval, execution, delivery or performance of the Local Authorization, this Agreement, the Service Agreement or the issuance or delivery of the Local Bond, (iii) in any way contesting or affecting the validity or enforceability of the Local Bond, the Local Authorization, this Agreement, the Service Agreement or any agreement or instrument relating to any of the foregoing, (iv) in which a judgment, order or resolution may have a material adverse effect on the Local Government or its business, assets, condition (financial or otherwise), operations or prospects or on its ability to perform its obligations under the Local Authorization, this Agreement, the Local Bond, or the Service Agreement or (v) affecting the Project.

(l) The financial statements, applications and other information that the Local Government furnished to VRA in connection with this Agreement fairly and accurately portray the Local Government's financial condition, as of their dates, and there has been no material adverse change in the financial condition of the Local Government since the date of the financial statements provided to VRA in connection with this Agreement.

(m) Nothing that would constitute an Event of Default hereunder has occurred and is continuing, and no event or condition exists that with the passage of time or the giving of notice, or both, would constitute an Event of Default hereunder.

(n) A list of all Parity Debt that is outstanding on the date of this Agreement is attached as Exhibit J (the "Existing Parity Bonds").

(o) Except for the Existing Parity Bonds, there is no indebtedness of the Local Government secured by a pledge of Revenues prior to or on a parity with the lien of the pledge of Revenues that secures the Local Bond.

Section 2.3 Representations Remade as of the Sale Date. (a) It shall be a condition precedent of VRA's obligation to sell the Related Series of VRA Bonds that the Local Government's representations and warranties set forth in Section 2.2 be true and accurate in all respects on the Sale Date.

(b) If prior to the Sale Date, any representation or warranty set forth in Section 2.2 becomes untrue or inaccurate, then the Local Government shall notify VRA within one Business Day of becoming aware of such facts, and VRA, in its sole and absolute discretion, shall determine whether to sell VRA Bonds on behalf of the Local Government, which series of VRA Bonds (if any) to sell on behalf of the Local Government and any additional conditions precedent to the sale of such VRA Bonds or the purchase of the Local Bond.

ARTICLE III PURCHASE OF THE LOCAL BOND

Section 3.1 Purchase of the Local Bond. (a) Subject to the terms and conditions and in reliance upon the representations, warranties and agreements set forth or incorporated herein, VRA shall purchase, solely from the proceeds of the Related Series of VRA Bonds, all, but not less than all, of the Local Bond from the Local Government, and the Local Government shall, subject to the Financing Parameters, sell and deliver to VRA the Local Bond for the Purchase Price. The Local Government acknowledges that the Purchase Price is determined by VRA, is subject to VRA's Purchase Price Objective (as defined below) and market conditions as described below, and is expected to be substantially equal to the Proceeds Requested. The Local Government shall issue the Local Bond pursuant to the Local Authorization and in substantially the form of Exhibit A to this Agreement. As a condition of VRA entering into this Agreement, the Local Government shall deliver to VRA a copy of the Local Authorization as adopted prior to the date hereof.

(b) The Local Government acknowledges that VRA has advised the Local Government that its objective is to pay the Local Government the Purchase Price for its Local Bond which in VRA's judgment reflects the market value of the Local Bond ("Purchase Price Objective"), taking into consideration the Financing Parameters, the purchase price received by VRA for the Related Series of VRA Bonds, the underwriters' discount and other issuance costs of the Related Series of VRA Bonds and other market conditions relating to the sale of the Related Series of VRA Bonds. The Local Government further acknowledges that VRA has advised it that such factors may result in the Local Bond having a value other than par and that in order to receive an amount of proceeds that is substantially equal to the Proceeds Requested, the Local Government may need to issue the Local Bond with a par amount that is greater or less than the Proceeds Requested. The Local Government shall not issue the Local Bond if doing so would violate any Financing Parameter. Subject to the preceding sentence, the Local

Government shall issue the Local Bond at a par amount that provides, to the fullest extent practicable given VRA's Purchase Price Objective, a Purchase Price at least equal to the Proceeds Requested, all in accordance with the Local Authorization. The Local Government acknowledges that the Purchase Price will be less than the Proceeds Requested if any Financing Parameter prevents VRA from generating a Purchase Price substantially equal to the Proceeds Requested, based upon VRA's Purchase Price Objective.

Section 3.2 Issuance Expenses. VRA shall pay, or cause to be paid, from the proceeds of the Related Series of VRA Bonds all expenses incident to the performance of VRA's obligations under and the fulfillment of the conditions imposed by this Agreement in connection with the issuance, sale and delivery of the Related Series of VRA Bonds and the purchase of the Local Bond on the Closing Date, including, but not limited to: (i) the cost, if any, of preparing and delivering the Related Series of VRA Bonds; (ii) the cost of preparing, printing and delivering the Preliminary Official Statement and the Official Statement for the Related Series of VRA Bonds and any amendment or supplement thereto; (iii) the fees and expenses of the financial advisor(s) and bond counsel to VRA; and (iv) all other costs and expenses incurred by VRA. The Local Government shall pay all expenses of the Local Government incident to the issuance, sale and delivery of the Local Bond, including, but not limited to the fees and disbursements of the financial advisor, counsel and bond counsel to the Local Government from the Purchase Price or other funds of the Local Government.

Section 3.3 Schedule 1.1. VRA shall complete Schedule 1.1, which shall set forth, among other things, the principal amount, interest rates, payment schedule and Purchase Price with respect to the Local Bond and the principal amount of the Related Series of VRA Bonds on or after the Sale Date. VRA shall deliver the completed Schedule 1.1 to the Local Government and shall attach Schedule 1.1 to this Agreement. Upon delivery to the Local Government, the completed Schedule 1.1 shall become a part of this Agreement the same as if it were a part hereof on the Effective Date.

Section 3.4 Conditions Precedent to Purchase of the Local Bond. VRA shall not be required to cause the Trustee to purchase the Local Bond unless:

(a) VRA has received the following, all in form and substance satisfactory to VRA:

(1) Certified copies of the Local Authorization and all other ordinances and resolutions of the Local Government relating to this Agreement and the Local Bond, if any.

(2) A certificate of the appropriate officials of the Local Government dated the Closing Date as to the matters set forth in Section 2.2 and Section 2.3 (to the extent applicable), including appropriate certifications regarding this Agreement, and such other matters as VRA may reasonably require.

(3) Evidence that the Local Government has performed and satisfied all of the terms and conditions contained in this Agreement to be performed and satisfied by it as of such date.

(4) An opinion of counsel to the Local Government in substantially the form attached as Exhibit F.

(5) An opinion of bond counsel to the Local Government in form and substance reasonably satisfactory to VRA.

(6) Evidence that the Local Government has complied with the insurance provisions set forth in Section 910 of the Local Master Indenture as of the Closing Date.

(7) Evidence that the Local Government has satisfied all conditions precedent to the issuance of the Local Bond as a "Parity Bond" under the financing documents for the Existing Parity Bonds.

(8) A copy of a Verification Report that verifies the sufficiency of the funds deposited under the Escrow Agreement to pay the principal of and premium, if any, and interest on the Refunded 2012A VRA Bonds to and including the Call Date.

(9) Such other documentation, certificates and opinions as VRA may reasonably require as set forth in Schedule 1.1.

(b) The initial purchasers of the Related Series of VRA Bonds have paid in full and VRA has accepted the purchase price for the Related Series of VRA Bonds on the Closing Date. It is understood that the sole source of funds to pay the Purchase Price is a portion of the proceeds of the Related Series of VRA Bonds.

ARTICLE IV USE OF PURCHASE PRICE

Section 4.1 Deposit of Purchase Price; Investment of Amounts in Local Account.

(a) On the Closing Date, VRA shall cause the Trustee to deposit the Purchase Price into the Local Account and to apply the Purchase Price and the earnings thereon as set forth in the Related Supplemental Series Indenture, this Agreement, and the Local Master Indenture.

(b) The Local Government acknowledges and consents to the investment of the Purchase Price and the earnings thereon allocable to pay the Local Government's related costs of issuance, if any, in Virginia SNAP.

Section 4.2 Agreement to Accomplish Project. (a) The Local Government shall undertake the Project as described in Exhibit B and in accordance with the Project Budget. The Local Government shall maintain complete and accurate books and records of the Project Costs and permit VRA or the Trustee through their duly authorized representatives to inspect such books and records at any reasonable time.

(b) The Local Government shall cause the deposit of a portion of the proceeds of the Local Bond under the Escrow Agreement in an amount sufficient when invested to pay the principal of and premium, if any, and accrued interest on the Refunded 2012A VRA Bonds to and including the Call Date as verified in the Verification Report.

(c) If upon payment of all related costs of issuance, there is a balance remaining in the Local Account, the Trustee, at the written direction of the Local Government, shall disburse any remaining balance to the Local Government by April 1, 2020 to pay or reimburse previously-paid interest on the Local Bond or in such other manner that is permitted under the Act.

Section 4.3 Disbursement of Purchase Price and Earnings. Except as provided in Section 4.2(c), the Local Government shall apply the amounts in the Local Account solely and exclusively to the payment or reimbursement of the Local Government for the Project Costs. Not more frequently than once per calendar month, the Trustee shall disburse amounts from the Local Account to the Local Government or as directed by the Local Government upon the Trustee's receipt of the following:

(a) A requisition (upon which the Trustee and VRA shall be entitled to rely) signed by a Local Representative and containing all information called for by, and otherwise being in the form of, Exhibit D (including the Schedules thereto).

(b) Receipts, vouchers, statements, bills of sale or other evidence of payment of the related Project Costs.

Following VRA's approval of each such requisition and accompanying invoice(s) and certificate(s), which approval will not unreasonably be withheld, the Trustee shall pay the requisition from the Local Account in accordance with the instructions in such requisition.

The Local Government agrees that any amounts disbursed to it or for its account from the Local Account will be (i) immediately applied to reimburse the Local Government for Project Costs it has already paid or (ii) actually spent to pay Project Costs not later than five banking days after receipt.

Section 4.4 No Sufficiency Warranty by VRA; Local Government Required to Complete Project. VRA makes no warranty, either express or implied, that the Purchase Price will be sufficient to pay all or any particular portion of the Project Costs.

ARTICLE V PLEDGE AND SECURITY

Section 5.1 Pledge. As set forth in Section 712 of the Local Master Indenture, all Revenues derived from the ownership or operation of the System and all moneys in the funds established by the Local Master Indenture and enumerated in Section 712 are trust funds and are pledged to the payment of the Bonds issued under and as defined in the Local Master Indenture, including the principal of and interest on the Local Bond and the payment and performance of the Local Government's obligations under this Agreement.

Section 5.2 Rate Covenant. (a) The Local Government shall fix and collect rates, fees and other charges for the use of and for services furnished or to be furnished by the System, and will from time to time revise such rates, fees and other charges to the extent required to satisfy the revenue covenant in Section 702 of the Local Master Indenture.

(b) If, for any reason, the Net Revenues Available for Debt Service are insufficient to satisfy the covenant set forth in subsection (a), the Local Government shall within 90 days adjust and increase its rates, fees and other charges or reduce its Operating Expenses so as to provide sufficient Net Revenues Available for Debt Service to satisfy such requirement.

(c) On or before the last day of each Fiscal Year, the Local Government shall review the adequacy of its rates, fees and other charges for the next Fiscal Year, and, if such review indicates the Local Government's rates, fees and other charges will be insufficient to satisfy the rate covenant in subsection (a), the Local Government shall promptly take appropriate action to increase its rates, fees and other charges or reduce its Operating Expenses to cure any deficiency.

Section 5.3 Annual Budget of the System. Not less than 15 days before the first day of each Fiscal Year, the Local Government shall submit to its governing body and to VRA a copy of a preliminary annual budget, containing all information called for by, and otherwise being in the form of, Exhibit I to this Agreement, for such Fiscal Year setting forth a schedule of the rates, fees and other charges to be imposed by the Local Government, the Revenues estimated to be generated thereby and the expenditures anticipated by the Local Government for operations, maintenance, repairs, replacements, improvements, debt service and other purposes. The Local Government shall adopt, prior to the first day of each Fiscal Year, a budget for such Fiscal Year. The Local Government shall ensure that the adopted budget contains the information required to be included in the preliminary budget. Such budget as approved by the Local Government's governing body is referred to in this Agreement as the Annual Budget. The Local Government may at any time during any Fiscal Year amend the Annual Budget for such Fiscal Year so long as such amendment does not result in an Event of Default. The Local Government shall promptly submit to VRA, in an electronic format, a copy of the Annual Budget and any amendments thereto.

Section 5.4 Qualified Independent Consultant's Report. (a) If at the end of any Fiscal Year, the Local Government is not in compliance with the rate covenant made by the Local Government in Section 5.2(a), within 210 days after the end of such Fiscal Year, the Local Government shall obtain a report from the Qualified Independent Consultant. The Local Government shall ensure that the report gives advice and makes recommendations as to the proper maintenance, repair, replacement and operation of the System for the next ensuing Fiscal Year and estimating the costs thereof as to the rates, fees, and other charges which should be established by the Local Government to satisfy the rate covenant in Section 5.2(a). The Local Government shall promptly furnish a copy of such report to VRA and, subject to Section 5.4(b), take measures to implement the recommendations of the Qualified Independent Consultant within 90 days of obtaining such report.

(b) If the Local Government determines that the Qualified Independent Consultant's recommendations are impractical or inappropriate, the Local Government may in lieu thereof adopt other procedures which the Local Government believes will bring it into compliance with the rate covenant made by the Local Government in Section 5.2(a) when such measures have been implemented and become fully effective. Such alternative plan shall be filed with VRA not later than 30 days after receipt of the Qualified Independent Consultant's report along with a detailed explanation of the Local Government's reason for rejecting the

Qualified Independent Consultant's recommendations. Notwithstanding anything herein to the contrary, VRA reserves the right, in its sole discretion, to reject such alternate procedures and, to the extent permitted by law, require the Local Government to comply with the Qualified Independent Consultant's recommendations.

Section 5.5 Limitation on Amendments to Certain Documents. After the Sale Date, the Service Agreement shall not be terminated, permitted to lapse or amended in whole or in part without the prior written consent of the Local Trustee, Local Government, the City of Charlottesville, Virginia, the Albemarle County Service Authority and the Board of County Supervisors acting for and on behalf of Albemarle County. Any such consent shall be given in accordance with the Local Authorization and Local Master Indenture.

ARTICLE VI PAYMENT AND REDEMPTION OF LOCAL BOND

Section 6.1 Payment of Local Bond and Related Amounts. (a) Until the principal of and premium, if any, and interest on the Local Bond and all other amounts payable under this Agreement have been paid in full, the Local Government shall pay from the Revenues to the Trustee or VRA, as applicable, the following amounts:

- (1) to the Trustee, the amounts required by the Local Bond on such dates and in such manner as provided for in the Local Bond – the term "interest," as used in the Local Bond and this Agreement, includes Supplemental Interest, when and if payable;
- (2) Reserved;
- (3) to VRA, on its demand, a late payment penalty in an amount equal to 5.0% of the payment on the Local Bond not paid within five days after its due date;
- (4) to the Trustee, the Local Government's share (as determined by VRA) of the annual fees and expenses of the Trustee, less the Local Government's share of the net earnings on the Revenue Fund, Infrastructure Revenue Debt Service Fund and Moral Obligation Debt Service Fund established under the Master Indenture (as determined by VRA), and the Local Government shall pay such amounts no later than 15 days after VRA or the Trustee sends to the Local Government a written bill for them; and
- (5) to VRA, to the extent permitted by law, the reasonable costs and expenses, including reasonable attorneys' fees, if any, incurred by VRA in connection with (i) an Event of Default or default by the Local Government under this Agreement (ii) any amendment to or discretionary action that VRA undertakes at the request of the Local Government under this Agreement, any other document related to the Related Series of VRA Bonds or the Local Bond or (iii) any claim, lawsuit or other challenge to the Local Bond, the VRA Bonds or this Agreement that arises, at least in part, out of the Local Government's authorization of its issuance of the Local Bond, and the Local Government shall pay such amounts no later than 15 days after VRA or the Trustee sends to the Local Government a written bill for them.

(b) If any failure of the Local Government to pay all or any portion of any required payment of the principal of or premium, if any, or interest on the Local Bond results in a withdrawal from or a drawing on any VRA Reserve, the interest rates applicable to the Local Bond shall be increased to interest rates sufficient to reimburse the VRA Reserve for any foregone investment earnings on the funds withdrawn therefrom and pay any interest, fees or penalties assessed as a result of the withdrawal from or drawing on the VRA Reserve. The increment of interest payable pursuant to the increase in rates shall be referred to as "Supplemental Interest." The Local Government's obligation to pay Supplemental Interest shall commence on the date of the withdrawal or drawing of funds from the VRA Reserve occasioned by the Local Government's failure to pay a required payment or portion thereof as described above (the "Supplemental Interest Commencement Date"). The Local Government's obligation to pay Supplemental Interest shall terminate on the date on which the Local Government makes all payments required but outstanding since the date of the initial failure to pay (the "Supplemental Interest Termination Date"). From the Supplemental Interest Commencement Date to the Supplemental Interest Termination Date, Supplemental Interest shall be due and payable on the regularly scheduled interest payment dates provided for in the Local Bond. As soon as reasonably possible after the Supplemental Interest Commencement Date and before the next regularly scheduled interest payment date provided for in the Local Bond, VRA shall deliver to the Local Government a certificate as to the increase in interest rates and the amount of Supplemental Interest. The certificate shall set forth in reasonable detail the basis for the increase in interest rates and the manner of calculation of the increase and the amount of Supplemental Interest. Such certificate shall be conclusive (absent manifest error) as to the interest rate increase and amount of Supplemental Interest set forth therein. In determining the interest rate increase and the amount of Supplemental Interest, VRA may use any reasonable averaging and attribution methods.

(c) The Local Government shall pay the amounts described above and make payments as scheduled under the Local Bond despite any amount being withdrawn from or drawn on a VRA Reserve pursuant to the Master Indenture.

Section 6.2 Defeasance and Redemption of Local Bond. (a) The Local Government shall not defease or redeem the Local Bond (in whole or in part), except as provided in this Section 6.2.

(b) The Local Government shall satisfy the following conditions prior to the defeasance and redemption of the Local Bond:

(1) The Local Government shall provide to VRA not less than 60 days' prior written notice of the deposit of the funds described in (2), (3) and (4) below.

(2) The Local Government shall deposit with the Trustee an amount sufficient for VRA to establish an escrow of cash and non-callable, non-prepayable Government Obligations the principal of and interest on which will be sufficient (without reinvestment) to cause the defeasance under Article XII of the Master Indenture of the portion of the Related Portion of VRA Bonds corresponding to the portion of the Local Bond to be defeased or prepaid (the "Allocated Portion"). The defeasance of the

Allocated Portion may be either to maturity or an earlier redemption date as determined by the Local Government.

(3) The Local Government shall deposit with VRA cash in an amount sufficient, as determined by VRA, to pay for a verification report required for the defeasance of the Allocated Portion under Article XII of the Master Indenture, any costs incurred by VRA in connection with the redemption, refunding and defeasance of the Allocated Portion, all amounts overdue or then due on the Local Bond (including, without limitation, any Supplemental Interest) and all amounts overdue, due or to become due under Section 6.1(a) of this Agreement.

(4) The Local Government shall deposit with VRA cash in an amount equal to the present value of interest that would be paid on the principal of the Allocated Portion at a rate equal to 0.125%, payable semiannually, to the maturity dates of the Allocated Portion or, if earlier, the redemption date or dates of the Allocated Portion. Present value shall be determined by using a discount rate equal to the true interest cost of the Related Portion of VRA Bonds.

(c) VRA will determine which Related Portion of VRA Bonds will be designated as the Allocated Portion and the amounts to be deposited under subsection (b)(2) and (3) above using such reasonable allocation and estimation methods as may be selected by VRA, and VRA's determinations shall be conclusive (absent manifest error).

(d) The Local Government acknowledges that no funds in any VRA Reserve will be available to the Local Government for the defeasance or redemption of the Local Bond.

Section 6.3 Payments and Rights Assigned. The Local Government hereby consents to VRA's assignment to the Trustee of VRA's rights under this Agreement and the Local Bond. The Local Government also hereby acknowledges and consents to the reservation by VRA of the right and license to enjoy and enforce VRA's rights under the Local Bond and this Agreement so long as no Event of Default (as defined in the Master Indenture) with respect to the Related Series of VRA Bonds has occurred and is continuing. Even though VRA will be the registered owner of the Local Bond, the Local Government shall pay directly to the Trustee all amounts payable by the Local Government under the Local Bond and this Agreement (except for those amounts specifically indicated as payable to VRA under Section 6.1 or Section 11.8, which the Local Government shall pay directly to VRA).

Section 6.4 Obligations Absolute and Unconditional. The obligation of the Local Government to make the payments required by the Local Bond and this Agreement from the sources pledged therefor shall be absolute and unconditional. The Local Government shall pay all such amounts without abatement, diminution or deduction (whether for taxes or otherwise) regardless of any cause or circumstance whatsoever including, without limitation, any defense, set-off, recoupment or counterclaim that the Local Government may have or assert against VRA, the Trustee or any other person.

ARTICLE VII OPERATION AND USE COVENANTS

Section 7.1 Maintenance. At its own cost and expense the Local Government shall operate the System in a proper, sound and economical manner in compliance with all legal requirements and shall maintain the System in good repair and operating condition and from time to time shall make all necessary repairs, renewals and replacements.

Section 7.2 Additions and Modifications. At its own expense the Local Government from time to time may make any renewals, replacements, additions, modifications or improvements to the System that the Local Government deems desirable, provided that any such renewal, replacement, addition, modification or improvement does not (i) materially reduce the value of the System or (ii) negatively affect the structural or operational integrity of any part of the System. The Local Government shall ensure that all such renewals, replacements, additions, modifications or improvements comply with all applicable federal, state and local laws, rules, regulations, orders, permits, authorizations and requirements. All such renewals, replacements, additions, modifications and improvements shall become part of the System.

Section 7.3 Permits. The Local Government shall comply with Section 904 of the Local Master Indenture and shall, upon request, promptly furnish to VRA and the Trustee copies of all permits, consents and approvals referred to in Section 904 of the Local Master Indenture.

Section 7.4 Use. The Local Government shall comply with all lawful requirements of any governmental authority regarding the System, whether now existing or subsequently enacted, whether foreseen or unforeseen or whether involving any change in governmental policy or requiring structural, operational or other changes to the System, irrespective of the cost of making the same.

Section 7.5 Inspection and Local Government's Books and Records. The Local Government shall permit VRA, the Trustee and their duly authorized representatives and agents such reasonable rights of access to the System as may be necessary to determine whether the Local Government is in compliance with the requirements of this Agreement, and the Local Government shall permit such parties, at all reasonable times and upon reasonable prior notice to the Local Government, to examine and copy the Local Government's books and records that relate to the System.

Section 7.6 Ownership. The Local Government shall not construct, reconstruct or install any part of the System on (i) lands other than those which the Local Government (a) owns, (b) can acquire title to or a perpetual easement over, (c) has a leasehold interest or similar contractual right from either one of its two Customers or the County of Albemarle, Virginia, or (d) has a ground leasehold interest, lease or license from UVA, in any case sufficient for the Local Government's purposes, or (ii) any other lands in which the Local Government has acquired a right or interest less than a fee simple or perpetual easement, unless (1) such part of the System is lawfully located in a public street or highway or (2) the Local Government provides a written opinion of counsel or a report of a Qualified Independent Consultant, either of which in a form reasonably acceptable to VRA, that indicates that the lands and the Local Government's right or interest therein is sufficient for the Local Government's purposes.

Section 7.7 Sale or Encumbrance. No part of the System shall be sold, exchanged, leased, mortgaged, encumbered or otherwise disposed of except as provided in Section 907 of the Local Master Indenture.

Section 7.8 Collection of Revenues. The Local Government shall use its best efforts to collect all rates, fees and other charges due to it, including, without limitation, the perfection of liens on premises served by the System for the amount of all delinquent rates, fees and other charges where such action is permitted by law, the Local Master Indenture and the Service Agreement. The Local Government shall, to the full extent permitted by law, discontinue and shut off, or cause to be discontinued and shut off, services and facilities of the System, and use its best efforts to cause to be shut off water service furnished otherwise than through the System, to customers of the System who are delinquent beyond any customary grace periods in the payment of rates, fees and other charges due to the Local Government.

Section 7.9 Intentionally Omitted.

Section 7.10 Intentionally Omitted.

Section 7.11 Intentionally Omitted.

Section 7.12 Lawful Charges. The Local Government shall pay when due all taxes, fees, assessments, levies and other governmental charges of any kind whatsoever (collectively, the "Governmental Charges") which are (i) assessed, levied or imposed against the System or the Local Government's interest in it, or (ii) incurred in the operation, maintenance, use and occupancy of the System. The Local Government shall pay or cause to be discharged, or shall make adequate provision to pay or discharge, all lawful claims and demands for labor, materials, supplies or other objects which, if unpaid, might by law become a lien upon all or any part of the System or the Revenues (collectively, the "Mechanics' Charges"). The Local Government, however, after giving VRA 10 days' notice of its intention to do so, at its own expense and in its own name, may contest in good faith any Governmental Charges or Mechanics' Charges. If such a contest occurs, the Local Government may permit the same to remain unpaid during the period of the contest and any subsequent appeal unless, in VRA's reasonable opinion, such action may impair the lien on Revenues granted by this Agreement, in which event, such Governmental Charges or Mechanics' Charges promptly shall be satisfied or secured by posting with the Trustee or an appropriate court a bond in form and amount satisfactory to VRA. Upon request, the Local Government shall furnish to VRA proof of payment of all Governmental Charges and Mechanics' Charges the Local Government is required to pay under this Agreement.

Section 7.13 Intentionally Omitted.

Section 7.14 Engineering Services. The Local Government shall retain or employ a Consulting Engineer as provided in Section 906 of the Local Master Indenture.

ARTICLE VIII INSURANCE, DAMAGE AND DESTRUCTION

Section 8.1 Insurance. The Local Government shall maintain or cause to be maintained the insurance coverages required by Section 910 of the Local Master Indenture.

Neither VRA nor the Trustee shall have any responsibility or obligation with respect to (i) the procurement or maintenance of insurance or the amounts or the provisions with respect to policies of insurance or (ii) the application of the proceeds of insurance.

The Local Government shall provide annually to VRA a certificate or certificates of the respective insurers evidencing the fact that the insurance required by this Section is in force and effect.

Section 8.2 Requirements of Policies. The Local Government shall maintain all insurance required by Section 8.1 with generally recognized responsible insurance companies selected by the Local Government and reasonably acceptable to VRA. Such insurance may be written with deductible amounts comparable to those on similar policies carried by other utility systems of like size and character to the System. If the Local Government does not maintain such insurance with an insurer licensed to do business in Virginia or placed under the requirements of the Virginia Surplus Lines Insurance Law, Chapter 48, Title 38.2, Code of Virginia of 1950, as amended, or any successor statute, the Local Government shall provide evidence reasonably satisfactory to VRA that such insurance is enforceable under Virginia law.

Section 8.3 Notice of Damage, Destruction or Condemnation. In case of (i) any damage to or destruction of any material part of the System, (ii) a taking of all or any part of the System or any right in it under the exercise of the power of eminent domain, (iii) any loss of the System because of failure of title or (iv) the commencement of any proceedings or negotiations which might result in such a taking or loss, the Local Government shall notify VRA in writing within ten Business Days of the occurrence describing generally the nature and extent of such damage, destruction, taking, loss, proceedings or negotiations.

Section 8.4 Damage and Destruction. If all or any part of the System is destroyed or damaged by fire or other casualty, and the Local Government shall not have exercised its option, if such option is available, to redeem the outstanding Local Bond pursuant to Section 6.2, the Local Government shall restore promptly the property damaged or destroyed to substantially the same condition as before such damage or destruction, with such alterations and additions as the Local Government may determine and which will not impair the capacity or character of the System for the purposes for which it then is being used or is intended to be used. The Local Government may apply so much as may be necessary of the net proceeds of insurance received on account of any such damage or destruction to payment of the cost of such restoration, either on completion or as the work progresses. If such net proceeds are not sufficient to pay in full the cost of such restoration, the Local Government shall pay so much of the cost as may be in excess of such net proceeds.

Section 8.5 Condemnation and Loss of Title. If title to or the temporary use of all or any part of the System shall be taken under the exercise of the power of eminent domain or lost because of failure of title, and the Local Government shall not have exercised its option, if such option is available, to redeem the outstanding Local Bond pursuant to Section 6.2, the Local Government shall cause the net proceeds from any such condemnation award or from any title insurance to be applied to the restoration of the System to substantially its condition before the exercise of such power of eminent domain or failure of title. If such net proceeds are not

sufficient to pay in full the cost of such restoration, the Local Government shall pay so much of the cost as may be in excess of such net proceeds.

ARTICLE IX SPECIAL COVENANTS

Section 9.1 Intentionally Omitted.

Section 9.2 Maintenance of Existence. The Local Government shall maintain its existence as a public body corporate and politic and political subdivision of the Commonwealth of Virginia under Virginia law, and shall not dissolve or otherwise dispose of all or substantially all of its assets or consolidate or merge with or into another entity without VRA's prior written consent, which consent will not be unreasonably withheld.

Section 9.3 Financial Records and Statements. The Local Government shall maintain proper books of record and account in which proper entries shall be made in accordance with generally accepted government accounting standards, consistently applied, of all its business and affairs. The Local Government shall have an annual audit of the financial condition of the Local Government (and at the reasonable request of VRA, of the System) made in accordance with Section 911 of the Local Master Indenture; provided, however, that such annual audit shall be prepared within one hundred and eighty (180) days after the end of each Fiscal Year. The annual audit shall include a supplemental schedule demonstrating whether the Local Government satisfied the rate covenant set forth in Section 5.2 for such fiscal year. The Local Government shall furnish to VRA, in an electronic format, a copy of such report immediately after it is accepted by the Local Government. Such report shall include statements in reasonable detail, certified by such accountant, reflecting the Local Government's financial position as of the end of such Fiscal Year and the results of the Local Government's operations and changes in the financial position thereof for the Fiscal Year. The Local Government agrees to file, or to cause the Trustee to file, with VRA each of the documents required to be filed with the Local Trustee pursuant to the Local Master Indenture at the time each such document is required to be filed with the Local Trustee.

Section 9.4 Certification as to No Default. The Local Government shall deliver to VRA, within 180 days after the close of each Fiscal Year, a certification in substantially the form attached as Exhibit G and signed by a Local Representative.

Section 9.5 Notice of Issuance of Additional Bonds of Local Government. The Local Government agrees to notify VRA before the issuance of any Additional Bonds as defined in the Local Master Indenture. Notwithstanding anything else in this Agreement to the contrary, the Local Government may not issue Additional Bonds or any other obligations or indebtedness to refund or refinance some or all of the Local Bond without VRA's prior written consent.

Section 9.6 Further Assurances. The Local Government shall to the fullest extent permitted by law pass, make, do, execute, acknowledge and deliver such further resolutions, acts, deeds, conveyances, assignments, transfers and assurances as may be necessary or desirable for the better assuring, conveying, granting, assigning and confirming the rights and collateral, if any, assigned or pledged by this Agreement, or as may be required to carry out the purposes of this Agreement. The Local Government shall at all times, to the fullest extent permitted by law,

defend, preserve and protect the pledges made under this Agreement and all rights of VRA under this Agreement against all claims and demands of all persons, including without limitation the payment of certain costs of VRA as described in Section 6.1(a)(5).

Section 9.7 Assignment by Local Government. The Local Government shall not assign its rights and obligations under the Local Bond or this Agreement, or both, without the prior written consent of VRA.

Section 9.8 Continuing Disclosure. (a) For purposes of this Section 9.7, the following terms and phrases have the following meanings:

"Annual Financial Information" with respect to any Fiscal Year for the Local Government means the following:

(i) the financial statements (consisting of at least a balance sheet and a statement of revenues and expenses) of the System ,which financial statements must be (A) prepared annually in accordance with generally accepted accounting principles in effect from time to time consistently applied (provided that nothing in this clause (A) will prohibit the Local Government after the date of this Agreement from changing such other principles so as to comply with generally accepted accounting principles as then in effect or to comply with a change in applicable law) and (B) audited by an independent certified public accountant or firm of such accountants in accordance with generally accepted auditing standards as in effect from time to time (provided that if audited financial statements are not available for filing when required by this Section or the Rule (as defined herein), unaudited financial statements will be filed and audited financial statements will be filed as soon as possible thereafter); and

(ii) operating data of the type set forth in Exhibit E.

"Dissemination Agent" means any person, reasonably acceptable to VRA, whom the Local Government contracts in writing to perform its obligations as provided in subsection (i) of this Section.

"Financial Obligation" means a (i) debt obligation; (ii) derivative instrument entered into in connection with, or pledged as security or a source of a payment for, an existing or planned debt obligation; or (iii) a guarantee of (i) or (ii). The term Financial Obligation does not include municipal securities as to which a final official statement has been otherwise provided to the MSRB under the Rule.

"Make Public" or **"Made Public"** has the meaning set forth in subsection (c) of this Section.

"Material Local Government" means the Local Government if the aggregate outstanding principal amount of the Local Bond and any other of the Local Government's local bonds purchased with proceeds of the VRA Bonds represent 15% or more of the outstanding aggregate principal amount of the local bonds purchased with proceeds of the VRA Bonds.

"Rule" means Rule 15c2-12, as it may be amended from time to time, under the Securities Exchange Act of 1934 and any similar rules of the SEC relating to disclosure requirements in the offering and sale of municipal securities, all as in effect from time to time.

"SEC" means the U.S. Securities and Exchange Commission.

(b) The Local Government shall Make Public or cause to be Made Public:

(1) Within seven months after the end of the Local Government's Fiscal Year (commencing with the Fiscal Year in which the Closing Date occurs), Annual Financial Information for such Fiscal Year as of the end of which the Local Government constitutes a Material Local Government. Annual Financial Information may be set forth in the documents Made Public or may be included in a document Made Public by specific reference to any document available to the public on the internet website of the Municipal Securities Rulemaking Board ("MSRB") or filed with the SEC. If the document referred to is a final official statement, then it must be available from the MSRB.

(2) In a timely manner, notice of any failure by the Local Government to Make Public or cause to be Made Public Annual Financial Information pursuant to the terms of part (1) of this subsection.

(c) For purposes of this Section, information and notices shall be deemed to have been "Made Public" if transmitted to VRA, to the Trustee and to the MSRB in an electronic format as prescribed by the MSRB.

(d) The Local Government shall also notify VRA of the occurrence of any of the following events that may from time to time occur with respect to the Local Bond, such notice to be given in a timely manner not in excess of five Business Days after the occurrence of the event:

- (1) principal and interest payment delinquencies;
- (2) non-payment related defaults;
- (3) unscheduled draws on debt service reserves reflecting financial difficulties;
- (4) unscheduled draws on any credit enhancement maintained with respect to the Local Bond reflecting financial difficulties;
- (5) substitution of credit or liquidity providers, or their failure to perform;
- (6) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701 – TEB) or other notices or determinations with respect to the Local Bond that could affect the tax status of the Related Series of VRA Bonds, or other events with respect to the Local Bond that could affect the tax status of the Related Series of VRA Bonds;

- (7) modifications to rights of holders;
- (8) bond calls and tender offers;
- (9) defeasances;
- (10) release, substitution, or sale of property securing repayment of the Local Bond;
- (11) rating changes;
- (12) bankruptcy, insolvency, receivership or similar event of the Local Government;
- (13) the consummation of a merger, consolidation, or acquisition involving the Local Government or the sale of all or substantially all of the assets of the Local Government, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such action, other than pursuant to its terms;
- (14) appointment of a successor or additional trustee for the Local Bond, if any, or the change of name of a trustee;
- (15) the failure of the Local Government on or before the date required by this Agreement to provide Annual Financial Information to the persons and in the manner required by this Agreement;
- (16) incurrence of a Financial Obligation of the Local Government, if material, or agreement to covenants, events of default, remedies, priority rights, or other similar terms of a Financial Obligation of the Local Government, any of which affect security holders, if material; and
- (17) default, event of acceleration, termination event, modification of terms, or other similar events under the terms of a Financial Obligation of the Local Government, any of which reflect financial difficulties.

(e) Additionally, upon request of VRA, the Local Government shall certify in writing that it has made all filings and disclosures required under this Section or any similar undertaking pursuant to the Rule.

(f) Notwithstanding anything in this Agreement to the contrary, the Local Government need not comply with the provisions of subsections (a) through (d) above unless and until VRA has notified the Local Government that it satisfied the objective criteria for a Material Local Government as of the end of VRA's immediately preceding fiscal year.

(g) (1) If the Local Government fails to comply with any covenant or obligation set forth in this Section, any holder (within the meaning of the Rule) of VRA Bonds then Outstanding may, by notice to the Local Government, proceed to protect and enforce its

rights and the rights of the other holders by an action for specific performance of the Local Government's covenants or obligations set forth in this Section.

(2) Notwithstanding anything herein to the contrary, any failure of the Local Government to comply with any disclosure obligation specified in this Agreement (i) shall not be deemed to constitute an Event of Default under this Agreement and (ii) shall not give rise to any right or remedy other than that described in part (1) of this subsection.

(h) The Local Government may from time to time disclose certain information and data in addition to that required under this Section. Notwithstanding anything in this Agreement to the contrary, the Local Government shall not incur any obligation to continue to provide, or to update, such additional information or data.

(i) The Local Government may, from time to time, appoint or engage a Dissemination Agent to assist it in carrying out its obligation to cause to be Made Public the information described in this Section and may discharge any such Dissemination Agent, with or without appointing a successor Dissemination Agent. It is not necessary for purposes of this Article that the Dissemination Agent have any agency relationship with the Local Government for purposes of state law.

(j) All documents Made Public under this Section shall be accompanied by identifying information as prescribed by the MSRB.

Section 9.9 Other Indebtedness. The Local Government shall pay when due all amounts required by any other indebtedness of the Local Government and perform all of its obligations in connection with all other indebtedness of the Local Government.

Section 9.10 Additional Indebtedness. The Local Government shall not incur any indebtedness or issue any bonds, notes or other evidences of indebtedness secured by a pledge of Revenues, except Parity Debt or Subordinate Debt issued in accordance with the terms and conditions of the Local Master Indenture.

Section 9.11 Litigation; Material Change. The Local Government shall promptly notify VRA of (i) the existence and status of any litigation that general counsel to the Local Government determines is not reasonably certain to have a favorable outcome and which individually or in the aggregate could have a material adverse effect on the financial condition or operations of the System or its ability to perform its payment and other obligations under this Agreement or the Local Bond or (ii) any change in any material fact or circumstance represented or warranted in this Agreement.

ARTICLE X DEFAULTS AND REMEDIES

Section 10.1 Events of Default. Each of the following events is an "Event of Default":

(a) The failure to pay any installment of principal of or premium, if any, on the Local Bond when due (whether at maturity, by mandatory or optional redemption, by acceleration or otherwise).

(b) The failure to pay any installment of interest (including Supplemental Interest) on the Local Bond when due.

(c) The failure to make any other payment or deposit required by this Agreement within 15 days after its due date.

(d) The Local Government's failure to perform or observe any of the other covenants, agreements or conditions of the Local Bond or this Agreement and the continuation of such failure for a period of 60 days after written notice specifying such failure and requesting that it be cured is given to the Local Government by VRA, or, in the case of any such failure which cannot with diligence be cured within such 60-day period, the Local Government's failure to proceed promptly to commence to cure the failure and thereafter to prosecute the curing of the failure with diligence.

(e) Any warranty, representation or other statement by or on behalf of the Local Government contained in this Agreement or in any instrument furnished in compliance with or in reference to this Agreement or in connection with the issuance and sale of the Local Bond is false and misleading in any material respect.

(f) Any bankruptcy, insolvency or other similar proceeding shall be instituted by or against the Local Government under any federal or state bankruptcy or insolvency law and, if instituted against the Local Government, is not dismissed within 60 days after filing.

(g) Any proceeding shall be instituted, with the Local Government's consent or acquiescence, for the purpose of effecting a composition between the Local Government and its creditors or for the purpose of adjusting such creditors' claims under any federal or state statute now or hereafter enacted, if such claims are under any circumstances payable from the Revenues.

(h) An order or decree shall be entered, with the Local Government's consent or acquiescence, appointing a receiver or receivers of the System or any part of it or of the Revenues, or if such order or decree, having been entered without the Local Government's consent or acquiescence, shall not be vacated or discharged or stayed on appeal within 60 days after its entry.

(i) The occurrence of an Event of Default under and as defined by the Local Master Indenture or under the terms of any Subordinate Debt, the Prior Bonds, Existing Parity Bonds or Parity Bonds and the failure to cure such default or obtain a waiver thereof within any period of time permitted thereunder.

Section 10.2 Intentionally Omitted.

Section 10.3 Other Remedies. Upon the occurrence and continuation of an Event of Default, and subject to Article XI of the Local Master Indenture, VRA may proceed to protect

and enforce its rights by mandamus or other action, suit or proceeding at law or in equity for specific performance of any agreement contained in the Local Bond, this Agreement or the Local Master Indenture. No remedy conferred by this Agreement upon or reserved to the registered owners of the Local Bond is intended to be exclusive of any other remedy, but each such remedy shall be cumulative and shall be in addition to any other remedy given to VRA under this Agreement or the Local Master Indenture or now or hereafter existing at law or in equity or by statute.

Section 10.4 Delay and Waiver. No delay or omission to exercise any right or power accruing upon any default or Event of Default shall impair any such right or power or shall be construed to be a waiver of any such default or Event of Default or acquiescence in it, and every such right and power may be exercised from time to time and as often as may be deemed expedient. No waiver of any default or Event of Default under this Agreement shall extend to or shall affect any subsequent default or Event of Default or shall impair any rights or remedies consequent to it.

ARTICLE XI MISCELLANEOUS

Section 11.1 Intentionally Omitted.

Section 11.2 Successors and Assigns. This Agreement shall be binding upon, inure to the benefit of and be enforceable by the parties and their respective successors and assigns.

Section 11.3 Amendments. VRA and the Local Government shall have the right to amend from time to time any of this Agreement's terms and conditions, provided that all amendments shall be in writing and shall be signed by or on behalf of VRA and the Local Government.

Section 11.4 Limitation of Local Government's Liability. Notwithstanding anything in the Local Bond or this Agreement to the contrary, the Local Government's obligations hereunder and under the Local Bond are not its general obligations, but are limited obligations payable solely from the Revenues which are specifically pledged for such purpose. Neither the Local Bond nor this Agreement shall be deemed to create or constitute a debt or a pledge of the faith and credit of the Local Government and the Local Government shall not be obligated to pay the principal of or premium, if any, or interest on the Local Bond or other costs incident to them except from the Revenues and other funds pledged for such purpose. In the absence of fraud or intentional misconduct, no present or future director, official, officer, employee or agent of the Local Government shall be liable personally to VRA in respect of this Agreement or the Local Bond or for any other action taken by such individual pursuant to or in connection with the financing provided for in this Agreement or the Local Bond.

Section 11.5 Applicable Law. This Agreement shall be governed by Virginia law.

Section 11.6 Severability. If any clause, provision or section of this Agreement shall be held illegal or invalid by any court, the illegality or invalidity of such clause, provision or section shall not affect the remainder of this Agreement which shall be construed and enforced as if such illegal or invalid clause, provision or section had not been contained in this Agreement.

If any agreement or obligation contained in this Agreement is held to be in violation of law, then such agreement or obligation shall be deemed to be the agreement or obligation of VRA and the Local Government, as the case may be, only to the extent permitted by law.

Section 11.7 Notices. Unless otherwise provided for herein, all demands, notices, approvals, consents, requests, opinions and other communications under the Local Bond or this Agreement shall be in writing and shall be deemed to have been given when delivered in person or mailed by first class registered or certified mail, postage prepaid, addressed (a) if to the Local Government, at the address specified for notices on the signature page; (b) if to VRA, at 1111 East Main Street, Suite 1920, Richmond, Virginia 23219, Attention: Executive Director; or (c) if to the Trustee, at 1021 East Cary Street, 18th Floor, Richmond, Virginia 23219, Attention: Corporate Trust Department. A duplicate copy of each demand, notice, approval, consent, request, opinion or other communication given by any party named in this Section shall also be given to each of the other parties named. VRA, the Local Government and the Trustee may designate, by notice given hereunder, any further or different addresses to which subsequent demands, notices, approvals, consents, requests, opinions or other communications shall be sent or persons to whose attention the same shall be directed.

Section 11.8 Right to Cure Default. If the Local Government fails to make any payment or to perform any act required by it under the Local Bond or this Agreement, VRA or the Trustee, without prior notice to or demand upon the Local Government and without waiving or releasing any obligation or default, may (but shall be under no obligation to) make such payment or perform such act. All amounts so paid by VRA or the Trustee and all costs, fees and expenses so incurred shall be payable by the Local Government as an additional obligation under this Agreement, together with interest thereon at the rate of 15% per year until paid. The Local Government's obligation under this Section shall survive the payment of the Local Bond.

Section 11.9 Term of Agreement. This Agreement is effective as of the Effective Date. Except as otherwise specified, the Local Government's obligations under the Local Bond and this Agreement shall expire upon payment in full of the Local Bond and all other amounts payable by the Local Government under this Agreement.

Section 11.10 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

[Signature Pages Follow]

WITNESS the following signatures, all duly authorized.

VIRGINIA RESOURCES AUTHORITY

By: _____
Stephanie L. Hamlett, Executive Director

**RIVANNA WATER AND SEWER
AUTHORITY**

By: _____

Name: Michael Gaffney

Title: Chair

Address for Notices:

695 Moores Creek Lane
Charlottesville, Virginia 22902
Attention: Executive Director

[Signature Page of Local Bond Sale and Financing Agreement –
Rivanna Water and Sewer Authority]

The Trustee, by the execution hereof, accepts the duties imposed on it by this Agreement.

U.S. BANK NATIONAL ASSOCIATION, as
Trustee

By: _____
Patricia A. Welling, Vice President

EXHIBIT A

[To be provided]

EXHIBIT B

DESCRIPTION OF THE PROJECT

The Project includes the refunding of a portion of the 2012 Local Bond, together with related expenses.

The proceeds of the 2012 Local Bond were used to (i) finance the acquisition, construction and equipping of improvements to the System, including, but not limited to, improvements to the Moore's Creek Wastewater Treatment Plant and Pump Station, various interceptor improvements and repairs, improvements to the Scottsville and Crozet Water Treatment Plants and other improvements to the water system, together with expenses related thereto and (ii) prepay all or a portion of the outstanding principal amount of the Local Government's (a) Regional Water and Sewer System Refunding Revenue Bonds, Series of 2001 issued on July 10, 2001 in the original aggregate principal amount of \$14,755,000 (the "2001 Local Bonds"), and (b) Regional Water and Sewer System Refunding Revenue Bond, Series of 2003 issued on September 17, 2003 in the original aggregate principal amount of \$10,000,000 (the "2003 Local Bond").

The proceeds of the 2001 Local Bonds were used to currently refund the Local Government's Regional Water and Sewer System Refunding Revenue Bonds, Series of 1991 (the "1991 Local Bonds") and to advance refund its Regional Water and Sewer System Revenue Bonds, Series of 1994 (the "1994 Local Bonds"). The proceeds of the 1991 Local Bonds were used to advance refund the Local Government's \$9,605,000 Regional Water and Sewer System Refunding Bonds, Series of 1985 (the "1985 Local Bonds"). The proceeds of the 1985 Local Bonds were used to advance refund the Local Government's Regional Water and Sewer System Revenue Bonds, Series of 1982, the proceeds of which were used to acquire, construct and equip improvements to the Local Government's regional water and sewer system (the "System") and to retire the Local Government's Regional Water and Sewer System Bond Anticipation Notes, Series of 1982 (the "1982 Local BANs"). The proceeds of the 1982 Local BANs were used to acquire, construct and equip improvements to the System. The proceeds of the 1994 Local Bonds were used to acquire, construct and equip improvements to the System.

The proceeds of the 2003 Local Bond were used to currently refund the Local Government's \$25,215,000 Regional Water and Sewer System Refunding Revenue Bonds, Series of 1993 (the "1993 Local Bonds"). The proceeds of the 1993 Local Bonds were used to refund the Local Government's \$13,250,000 Regional Water and Sewer System Revenue Bonds, Series of 1979 (the "1979 Local Bonds"), its \$9,600,000 Regional Water and Sewer System Revenue Bonds, Series of 1986 (the "1986 Local Bonds"), its \$4,915,000 Regional Water and Sewer System Revenue Bonds, Series of 1988 (the "1988 Local Bonds") and its \$1,350,000 Regional Water and Sewer System Revenue Bond, Series of 1989 (the "1989 Local Bond"). The proceeds of the 1979 Local Bonds, the 1986 Local Bonds, the 1988 Local Bonds and the 1989 Local Bond were used to acquire, construct and equip improvement's to the System.

EXHIBIT C

**PENDING OR THREATENED ACTIONS, SUITS, PROCEEDINGS, OR
INVESTIGATIONS**

None.

EXHIBIT D
FORM OF REQUISITION

Requisition No.

Date: _____, 2019

U.S. Bank National Association, as Trustee
Attention: Corporate Trust Department
1021 East Cary Street
18th Floor
Richmond, Virginia 23219

Virginia Resources Authority
1111 East Main Street
Suite 1920
Richmond, Virginia 23219
Attention: Executive Director

This Requisition, including Schedule 1 and Schedule 2 hereto, is submitted in connection with the Local Bond Sale and Financing Agreement dated as of October [___], 2019 (the "Financing Agreement") between the Virginia Resources Authority and the Rivanna Water and Sewer Authority (the "Local Government"). Unless otherwise defined in this Requisition, each capitalized term used herein has the meaning given it under Article I of the Financing Agreement. The undersigned Local Representative hereby requests payment of the following amounts from the Local Account established for the Local Government in the 2019C Acquisition Fund established under the Forty-Sixth Supplemental Series Indenture.

Payee (including wiring instructions if receiving electronic payment):

Address:

Amount to be paid:

Purpose (in reasonable detail) for which obligations(s) to be paid were incurred:

Attached on Schedule 2 are the wire instructions for this requisition, and also attached hereto is an invoice (or invoices) relating to the items for which payment is requested.

The undersigned certifies that the amounts requested by this Requisition will be applied solely and exclusively to the payment, or the reimbursement of the Local Government for its payment, of Project Costs.

The Local Government has agreed in the Financing Agreement that any amounts it receives pursuant to this Requisition will be (i) immediately applied to reimburse the Local Government for Project Costs it has already paid or (ii) actually spent to pay Project Costs not later than five banking days after receipt.

Local Representative

SCHEDULE 1

Form to Accompany Requisition

Requisition # _____
Recipient: Rivanna Water and Sewer Authority – VRA 2019C
Local Representative: _____
Title: _____
Date: _____

<u>Cost Category</u>	<u>Total Project Cost</u>	<u>Previous Disbursements</u>	<u>Disbursement This Period</u>	<u>Disbursements to Date</u>	<u>Remaining Balance</u>
	\$	\$	\$	\$	\$
TOTALS	\$	\$	\$	\$	\$

SCHEDULE 2

Wire Instructions for Requisition

[To be provided by the Local Government]

EXHIBIT E
OPERATING DATA

Description of Local Government. A description of the Local Government including a summary description of the System.

Debt. A description of the terms of the Local Government's outstanding debt including a historical summary of outstanding debt and a summary of annual debt service on outstanding debt as of the end of the preceding fiscal year. The annual disclosure should also include (to the extent not shown in the latest audited financial statements) a description of contingent obligations as well as pension plans administered by the Local Government and any unfunded pension liabilities.

Financial Information and Operating Data. Financial information for the System as of the end of the preceding fiscal year, including a description of revenues and expenditures, largest users, a summary of rates, fees and other charges of the System, and a historical summary of debt service coverage.

EXHIBIT F

FORM OF OPINION OF COUNSEL TO THE LOCAL GOVERNMENT

[Print on the Letterhead of Counsel for the Local Government]

November 20, 2019

Rivanna Water and Sewer Authority
Charlottesville, Virginia

The Bank of New York Mellon Trust
Company, N.A., as Trustee
Pittsburgh, Pennsylvania

Hunton Andrews Kurth LLP
Richmond, Virginia

Virginia Resources Authority
Richmond, Virginia

**Rivanna Water and Sewer Authority
Regional Water and Sewer System Revenue Bond
Series 2019**

Ladies and Gentlemen:

We have served as general counsel to Rivanna Water and Sewer Authority (the "Authority") in connection with the issuance and sale by the Authority of its \$[_____] Taxable Regional Water and Sewer System Revenue Refunding Bond, Series 2019 (the "Bond").

As counsel to the Authority, we have examined, among other things, the following:

(a) The Virginia Water and Waste Authorities Act, Chapter 51, Title 15.2, Code of Virginia of 1950, as amended (the "Act").

(b) The Authority's Articles of Incorporation and By-Laws.

(c) Resolutions adopted by the Board of Directors of the Authority authorizing the execution of a Service Agreement between the Authority, the City of Charlottesville, Albemarle County Service Authority and the Board of County Supervisors of Albemarle County, acting for and on behalf of Albemarle County, dated as of June 12, 1973, as amended by Amendment No. 1 to Service Agreement dated October 27, 2015 and supplemented by (i) Joint Resolution adopted in January, 1983 (as such resolution was clarified by Resolution of the Albemarle County Service Authority dated March 17, 1983, and by Resolution of the Charlottesville City Council dated May 2, 1983, and modified by Joint Resolution adopted in December, 1983); (ii) Working Agreement on Urban Area Wholesale Flow Allocation and Billing Methodology dated January 24, 1983; (iii) Agreement dated October 26, 1987; (iv) Agreement dated June 29, 1990; (v) Memorandum dated December 15, 1993; (vi) Agreement dated December 1, 2003; (vii) Ragged Mountain Dam Project Agreement dated as of January 1, 2012; (viii) Water Cost Allocation

Agreement dated as of January 1, 2012; and (ix) Wastewater Projects Cost Allocation Agreement dated April 22, 2014 (as so amended and supplemented, the "Service Agreement").

(d) A resolution adopted by the Board of Directors of the Authority on October 22, 2019 (the "Resolution"), authorizing, among other things, the execution and delivery of:

(i) a Thirty-First Supplemental Agreement of Trust dated as of October [___], 2019 (the "Thirty-First Supplemental Agreement"), between the Authority and The Bank of New York Mellon Trust Company, N.A., New York, New York, as successor trustee (the "Trustee"), providing for the security and form of the Bond as an additional bond pursuant to an Agreement of Trust between the Authority and the Trustee dated as of October 1, 1979, as previously supplemented and amended (together with the Thirty-First Supplemental Agreement, the "Trust Agreement"), to provide funds to be used, together with other available funds, to finance the acquisition, construction and equipping of improvements to the Authority's regional water and sewer system (the "System"); and

(ii) a Local Bond Sale and Financing Agreement dated as of October [___], 2019 (the "Financing Agreement"), between the Authority and the Virginia Resources Authority.

(e) Executed counterparts of the Financing Agreement, the Service Agreement and the Trust Agreement.

As to questions of fact material to this opinion, we have relied upon representations of the Authority contained in the Trust Agreement and the Financing Agreement, certifications of public officials furnished to us, and certifications and representations contained in certificates of the Authority and others delivered at the closing. We have assumed that all signatures on documents, certificates, and instruments examined by us are genuine, all documents, certificates, and instruments submitted to us as originals are authentic, and all documents, certificates, and instruments submitted to us as copies conform to the originals. In addition, we have assumed that all documents, certificates, and instruments relating to this financing have been duly authorized, executed, and delivered by all parties other than the Authority, and we have further assumed the due organization, existence, and powers of such other parties.

Whenever the phrase "to the best of our knowledge" is used herein, it refers to the actual knowledge of the attorneys of this firm involved in the representation of the Authority for the purposes of this transaction.

Based on the foregoing and such other information and documents as we consider necessary for rendering this opinion, we are of the opinion that:

1. The Authority was created pursuant to the Act, is validly existing and in good standing under the Act, and pursuant to the Act, has all necessary power and authority to (a) operate the System, (b) fix, charge and collect rates, fees and other charges for the use of the System, and (c) enter into and perform its obligations under the Financing Agreement, the Service Agreement and the Trust Agreement and to issue and sell the Bond. To the best of our

knowledge, the Authority has not instituted any dissolution proceedings pursuant to Section 15.2-5109 of the Act.

2 The Financing Agreement, the Service Agreement and the Trust Agreement have been duly authorized, executed and delivered by the Authority, and assuming their due authorization, execution and delivery by the other parties to them, are in full force and effect and constitute valid and legally binding limited obligations of the Authority, enforceable against the Authority in accordance with their terms.

3. The Bond has been duly authorized, executed and delivered by the Authority.

4. The enforceability of the obligations of the Authority with respect to the documents described above is subject to the provisions of bankruptcy, insolvency, reorganization, moratorium and similar laws, now or hereafter in effect, relating to or affecting the enforcement of creditors' rights generally. The enforceability of the obligations is also subject to usual equitable principles which may limit the specific enforcement of certain remedies.

5. The authorization, execution and delivery of the Bond, the Financing Agreement, the Service Agreement and the Trust Agreement and compliance with their provisions are within the powers of the Authority under the Act and do not and will not conflict with or constitute a violation of, breach of or default under (a) the Articles of Incorporation or By-Laws of the Authority, (b) any federal or Virginia constitutional provision or any other provision of Virginia law, including, but not limited to, the Act, or, (c) to the best of our knowledge (i) any agreement or other instrument to which the Authority is a party or by which the Authority is bound, or (ii) any order, rule or regulation of any court or governmental agency or body having jurisdiction over the Authority or any of its properties.

6. There is no litigation at law or in equity or any proceeding before any governmental agency pending or, to the best of our knowledge, threatened (a) with respect to (i) the organization or existence of the Authority, (ii) its authority to execute and deliver the Bond, the Financing Agreement, the Service Agreement or the Trust Agreement, (iii) the validity or enforceability of any of such instruments or the transactions contemplated by them, (iv) the title of the officers who executed such instruments, (v) any authority or proceedings relating to the execution and delivery of any of such instruments by the Authority, (vi) the ability of the Authority to fix, charge and collect charges under the Act and as provided in the Financing Agreement, the Service Agreement and the Trust Agreement, or (vii) the ability of the Authority to undertake the Project (as defined in the Financing Agreement) or (b), except as disclosed in Section 2.2(k) of the Financing Agreement, in which a judgment, order or resolution would reasonably be expected to have a material adverse effect on the Authority or its business, assets, condition (financial or otherwise), operations or prospects or its ability to perform its obligations under the Financing Agreement, the Trust Agreement or the Bond.

7. To the best of our knowledge, there have been obtained all consents, approvals, authorizations and orders of governmental or regulatory authorities, if any, which are required to

be obtained by the Authority as conditions precedent to the execution and delivery of the Financing Agreement, the Service Agreement and the Trust Agreement.

The foregoing opinions are being furnished only to the addressees and only in connection with the financing referred to in the first paragraph of this opinion letter and this opinion letter is not to be furnished to any other person or entity or used or relied upon by any other person or for any other purpose without our prior written consent.

Very truly yours,

EXHIBIT G

FORM OF CERTIFICATION AS TO NO DEFAULT

[DATE]

[Insert Name]

Compliance & Financial Analyst
Virginia Resources Authority
1111 East Main Street, Suite 1920
Richmond, VA 23219

Dear [Mr./Ms.] _____:

In accordance with Section 9.4 of the Local Bond Sale and Financing Agreement dated as of October [___], 2019 (the "Financing Agreement") between Virginia Resources Authority and the Rivanna Water and Sewer Authority (the "Local Government"), I hereby certify that, during the fiscal year that ended June 30, _____, and through the date of this letter:

1. [No event or condition has happened or existed, or is happening or existing, which constitutes, or which, with notice or lapse of time, or both, would constitute, an Event of Default as defined in Section 10.1 of the Financing Agreement.] [If an Event of Default has occurred, please specify the nature and period of such Event of Default and what action the Local Government has taken, is taking or proposes to take to rectify it].
2. [The ownership and status of all or a portion of the Related Financed Property has not changed since the Closing Date.] [If untrue, please describe.]

Sincerely,

[Insert Name]

Local Representative

EXHIBIT H
DESCRIPTION OF SPECIAL USE ARRANGEMENTS

None.

EXHIBIT I
FORM OF ANNUAL BUDGET

[DATE]

Compliance and Financial Analyst
Virginia Resources Authority
1111 East Main Street, Suite 1920
Richmond, VA 23219

Ladies and Gentlemen:

Pursuant to the Financing Agreement[s] between Virginia Resources Authority and the Rivanna Water and Sewer Authority, dated as of [add dates of all outstanding Financing Agreements], a copy of the fiscal year [20xx] annual budget is enclosed. Such annual budget provides for the satisfaction of the rate covenant as demonstrated below.

Revenues	Operation & Maintenance Expenses	Net Revenues Available for Debt Service (Revenues – O&M Expenses)	Debt Service	*Coverage (Net Revenues Available for Debt Service/Debt Service)
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Unless otherwise defined herein, the capitalized terms used in this Certificate shall have the meanings set forth in the Financing Agreement[s].

Very truly yours,

By: _____

Its: _____

EXHIBIT J

EXISTING PARITY BONDS

1. Taxable Regional Water and Sewer System Revenue Bond, Series 2005A
2. Taxable Regional Water and Sewer System Revenue Bond, Series 2009A
3. Taxable Regional Water and Sewer System Revenue Bond, Series 2010A
4. Taxable Regional Water and Sewer System Revenue Bond, Series 2011A
5. Taxable Regional Water and Sewer System Revenue Bond, Series 2011B
6. Taxable Regional Water and Sewer System Revenue Bond, Series 2011D
7. Taxable Regional Water and Sewer System Revenue Bond, Series 2011E
8. Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2012A
9. Regional Water and Sewer System Revenue Bonds, Series 2012B
10. Taxable Regional Water and Sewer System Revenue Bond, Series 2014A
11. Taxable Regional Water and Sewer System Revenue Bond, Series 2015A
12. Taxable Regional Water and Sewer System Revenue and Refunding Bond, Series 2015B
13. Regional Water and Sewer System Revenue Bond, Series 2016
14. Taxable Regional Water and Sewer System Revenue Bond, Series 2018

SCHEDULE 1.1

[To be provided]

ADDITIONAL CONDITIONS PRECEDENT TO PURCHASE OF LOCAL BOND:

None.

**ADDITIONAL CONDITIONS PRECEDENT TO FIRST REQUISITION OF PROCEEDS
OF LOCAL BOND:**

None.

PROJECT BUDGET

[To be provided]

INTEREST RATES AND PAYMENT SCHEDULE FOR LOCAL BOND

[To be provided]



MEMORANDUM

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

FROM: DAVID TUNGATE, DIRECTOR OF OPERATIONS

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: CORROSION CONTROL UPDATE

DATE: OCTOBER 22, 2019

As part of our Strategic Plan to Optimize Operations, this presentation will review our corrosion control program, and changes scheduled to begin in November in Crozet. Corrosion control changes will follow in the Scottsville and Urban Area water treatment plants. RWSA has been adding a corrosion control product for more than 30 years as part of our drinking water treatment process. We plan to change the corrosion inhibitor from a poly-phosphate to a blended ortho-and poly-phosphate product. We recently completed optimization testing which demonstrated that an orthophosphate product provides better protection from the leaching of lead and copper into drinking water.

This change in corrosion control product is being made as a proactive process optimization, even though we do not have any history of elevated lead and copper levels in our drinking water. Our drinking water system has a long history of being significantly below federally regulated lead and copper action levels. We are on a tri-annual, as compared to a 6 month, monitoring program because of these exceptional results. The table below shows the most recent lead and copper results from July and August of 2019 used for regulatory compliance.

Distribution System	Lead (Action Level 15 ppb)	Copper (Action Level 1,300 ppb)
ACSA Urban	<2.0	64.8
City Urban	<2.0	7.4
Crozet	<2.0	9.7
Scottsville	<2.0	21.1

Board Action Requested:

This presentation is to inform the Board of our plans to implement a new corrosion control product in our drinking water systems.

Update on Corrosion Control in our Drinking Water



Dave Tungate
Director of Operations
RWSA BOD Meeting
October 22, 2019

Corrosion Inhibitor

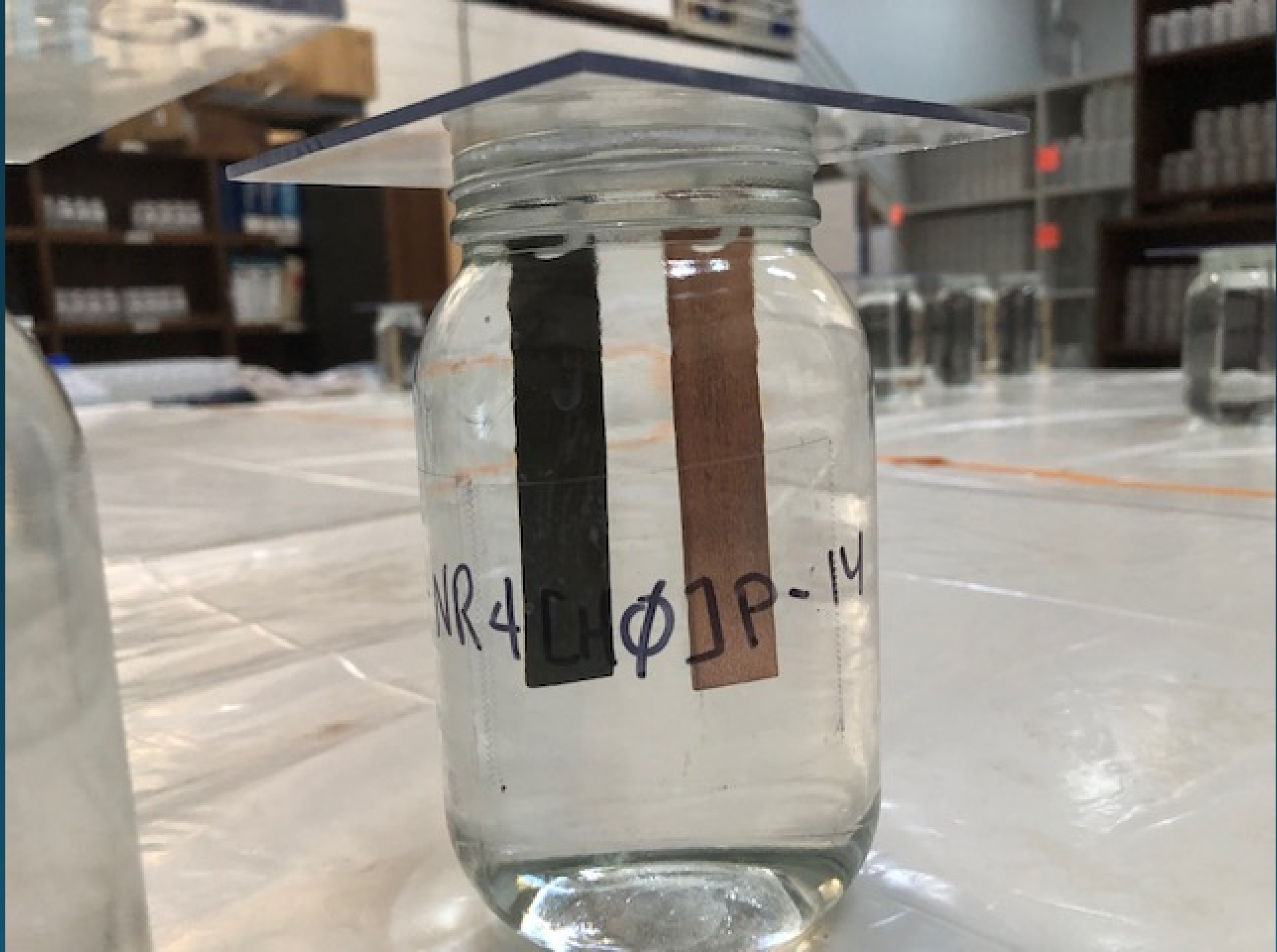
- Product added at the water treatment plants to reduce the corrosivity of the drinking water. It prevents lead and copper from leaching from pipes and plumbing fixtures into the drinking water.
- We have been adding a corrosion inhibitor product (poly-phosphate) for more than 30 years.

Operational Optimization

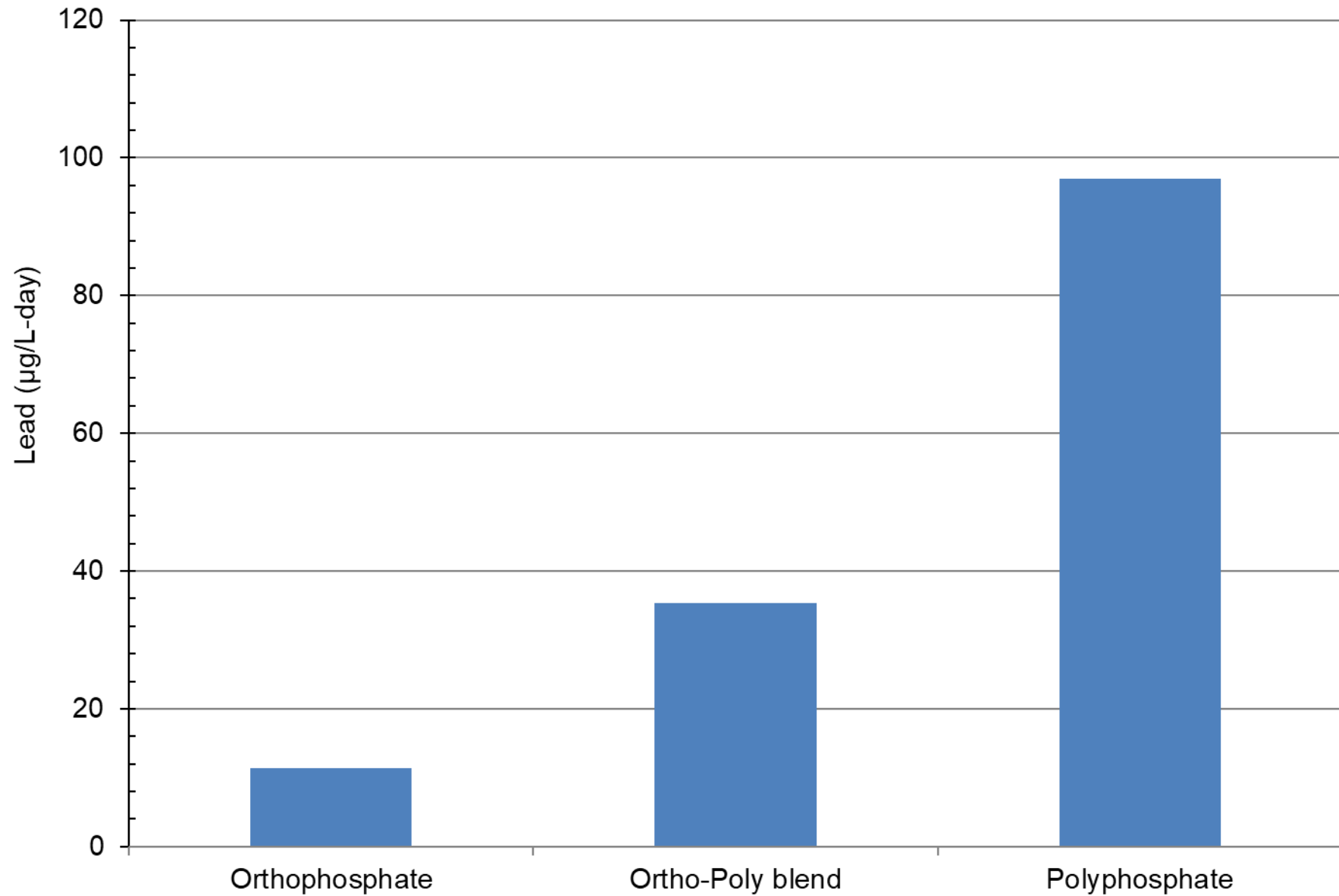
- Historically, tests of our drinking water have shown we have very low levels of lead and copper.
- A consultant completed an exhaustive study to optimize our corrosion inhibitor program.
- A series of tests were performed to evaluate different corrosion inhibitor products.

Study Objectives

- Evaluate the impacts of changing from a polyphosphate (current product) to an orthophosphate corrosion inhibitor
- Evaluate the effectiveness of corrosion inhibitors using water specifically from our water treatment plants
- Analyze for any unintended consequences (discolored water) resulting from the change in products used



Laboratory Test Results



2019 Lead and Copper results

Distribution System	Lead (Action level 15 ppb)	Copper (Action Level 1,300 ppb)
Crozet	< 2.0	9.7
Scottsville	<2.0	21.1
City Urban Area	<2.0	7.4
ACSA Urban Area	<2.0	64.8

Lead and Copper

- Results are reported as Action Levels
- Public Water Systems (PWS) must have 90% of their samples less than Action Levels
- When Action Levels are exceeded, the PWS is required to change water treatment processes to get below the Action Level

Project Implementation

- Propose to start the corrosion inhibitor conversion in Crozet in November with an ortho-poly-phosphate blend; followed by Scottsville and then the Urban system.
- Will coordinate with ACSA and the City to develop a customer communication plan