

Board of Directors Meeting

October 23, 2018 2:15pm



BOARD OF DIRECTORS

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

DATE: October 23, 2018

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

TIME: 2:15 p.m.

AGENDA

- 1. CALL TO ORDER
- 2. MINUTES OF PREVIOUS BOARD MEETINGS a. Minutes of Regular Board Meeting on September 25, 2018
- 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. Approval of Engineering Services Beaver Creek Reservoir Dam Improvements Schnabel Engineering
- e. Approval of Engineering Services Observatory Water Treatment Plant Expansion And Rehabilitation Project – Short, Elliot, Hendrickson Engineers
- f. Approval of Engineering Services South Rivanna Water Treatment Plant Expansion And Rehabilitation Project – Short, Elliot, Hendrickson Engineers
- g. Approval of Engineering Services Ragged Mountain Reservoir To Observatory Water Treatment Plant Raw Water Line - Michael Baker International

h. Approval of Term Contract for Environmental Engineering Services - ECS Mid-Atlantic, LLC

8. OTHER BUSINESS

- a. Presentation: Birdwood Raw Water Line Update Bill Mawyer, Executive Director
 - i. Recommendation for Acquisition of Raw Water Line Easements
 - ii. Recommendation for Authorization to Award Construction Contract
- b. Presentation: Rivanna's Dam Safety Program Jennifer Whitaker, Director of Engineering and Maintenance
- c. Presentation: Recommendation for Disposition of FY 2017-2018 Rate Center Results Lonnie Wood, Director of Finance and Administration

9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

10. CLOSED MEETING

11. ADJOURNMENT

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

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

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

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

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

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

Rev. September 22, 2009



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4	RWSA BOARD OF DIRECTORS
5	Minutes of Regular Meeting
6	September 25, 2018
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9	A regular meeting of the Rivanna Water & Sewer Authority (RWSA) Board of Directors was
10	held on Tuesday, September 25, 2018 at 2:15 p.m. in the 2 nd floor conference room,
11	Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.
12	
13	Board Members Present: Mike Gaffney – Chair, Gary O'Connell, Lauren Hildebrand, Liz
14	Palmer, and Kathy Galvin.
15	
16	Board Members Absent: Jeff Richardson and Mike Murphy.
17	
18	Staff Present: Bill Mawyer, Katie McIlwee, Lonnie Wood, Scott Schiller, Austin Marrs, Dave
19	Tungate, Tim Castillo, Andrea Terry, Michelle Simpson, Victoria Fort, Rob Woodside, and Bill
20	Morris.
21	
22	Also Present: Mr. Kurt Krueger, RWSA counsel, media representatives and members of the
23	public.
24	1 CALL TO OBDED
25	I. CALL IO ORDER
20 27	Mr. Caffnay called the regular meeting of the Board of Directors of the Rivenne Water and
27 20	Sewer Authority at 2:40 n m
20 20	Sewer Autionity at 2.49 p.m.
30	2 MINUTES OF PREVIOUS BOARD MEETINGS
31	a Minutes of Regular Board Meeting on July 24, 2018
32	
33	There were no changes to the minutes presented.
34	
35	Dr. Palmer moved to approve the RWSA Board meeting minutes of August 28, 2018. Ms.
36	Galvin seconded the motion, which passed 5-0-2. Mr. Richardson and Mr. Murphy were
37	absent from the meeting and the vote.
38	
39	3. RECOGNITION
40	There were no recognitions presented.

42 4. EXECUTIVE DIRECTOR'S REPORT

Mr. Mawyer introduced Rob Woodside as the new GIS Coordinator, stating that Mr. Woodside
had come from the Timmons Group and had earned his bachelor's degree from James Madison
University.

- 46
- 47 Mr. Mawyer presented photos of Sugar Hollow and the Scottsville Wastewater Plant following
 48 the heavy amounts of rain received in the area.
- 49
- 50 Mr. Castillo stated that typically you can walk on the grating over the UV channel at the
- 51 Scottsville Wastewater Plant, but not after the heavy rainfall.
- 52
- Mr. Mawyer reported that there were no sanitary sewer overflows following the heavy rainfall,indicating that the systems were working.
- 55
- 56 Mr. O'Connell commented that this was amazing.
- 57
 58 Mr. Mawyer reported that Rivanna was starting an information technology master plan, with a
 59 consultant hired to help them leverage technology to enhance services in a coordinated fashion.
- 60 He noted that this would be completed in spring of 2019.
- 61
- Mr. Mawyer stated that Andrea Terry had been handling the RWSA's algae monitoring program,
 with this summer being described as "normal," with Beaver Creek having to be treated several
- times as expected. He noted that the season would wrap up in November and Ms. Terry would
- present on the 2018 algae season at the RWSA Board's January meeting. He added that the
- 66 hypolimnetic oxygenated system proposed for the reservoir would help with Beaver Creek, and
- 67 that item was already in the CIP.
- 68
- 69 Mr. Mawyer reported that Rivanna had begun moving forward with the Birdwood waterline
- 70 main, with bids advertised and expected to be returned by October 9. He stated that they were in
- further discussions about the terms for that easement acquisition, noting that he included
- 72 information about the Birdwood project in his August report. He stated that it had also been
- 73 discussed at the RWSA's Board meeting in December 2017, March 2018, and April 2018 –
- when the Board approved the engineering services contract. Mr. Mawyer stated that they had
- 75 originally planned to start in July 2018, but a delay in UVA's project schedule pushed that
- 76 timeframe back.77
- 78 Dr. Palmer stated that comments had been made at a Board of Supervisors meeting recently
- regarding the need for better coordination of digging up utilities with projects like Birdwood, andasked Mr. Mawyer to comment on how Rivanna coordinated this.
- 81
- Mr. Mawyer explained that Rivanna coordinated through the Miss Utility program to notify all
 parties that may have utilities in a digging site area.
- 84
- 85 Dr. Palmer clarified that her question was not about Miss Utility but about the timing of separate
- 86 entities who had projects in a specific area, noting that the Board had expressed an interest in87 having better coordination.

88 Mr. Mawyer stated that Birdwood was an example of how that has been done, with Rivanna 89 coordinating with Virginia Power and the UVA Foundation. 90 91 92 Ms. Galvin stated that the City of Charlottesville would be doing some fairly significant street improvements, with Smart Scale applications having been submitted for West Main Street and 93 other projects such as Avon Street and the Belmont Bridge having already been approved for that 94 95 funding. She stated that it seemed important to notify everyone of what their construction schedules were. 96 97 98 Mr. Mawyer stated that a lot of that came through Miss Utility in terms of planning. 99 Ms. Hildebrand noted that there had been a coordination meeting recently that included Rivanna, 100 the County, ACSA, UVA, the UVA Foundation, and the City of Charlottesville - and they all 101 discussed their upcoming projects, with plans to make it an annual occurrence. She stated that 102 with City projects, they alert Rivanna's engineer about any possible utility-related conflicts or 103 104 issues with transportation or streetscape projects. 105 Mr. O'Connell mentioned that the site planning process would also reveal this. He stated that the 106 107 concerns raised by the Board of Supervisors may have arisen from VDOT paving and utility projects that had come in behind that, noting that they had held some meetings with VDOT in 108 which they exchanged information all ACSA capital projects and VDOT paving projects. He 109 stated that they agreed to an annual meeting in early April of every year, and VDOT also reached 110 out to other utility companies such as Dominion. 111 112 113 Dr. Palmer asked if it would help to have VDOT and Dominion present at some of these 114 meetings. 115 Mr. O'Connell responded that most of the issues pertained to communications providers, which 116 would simply show up and start doing work – even though they were supposed to go through the 117 Miss Utility system – and VDOT had been reaching out to them to try to coordinate first. 118 119 120 Mr. Schiller stated that sometimes they learn about these issues from private property owners, which informs Rivanna for the design phase. 121 122 123 Dr. Palmer suggested that they continue to make attempts to coordinate, understanding the issues with communications companies. 124 125 Mr. O'Connell stated that there was not good coordination in one specific project in which 126 VDOT came in and paved during an ACSA construction project. 127 128 129 Mr. Mawyer stated that Rivanna would try to coordinate as much as possible prior to projects getting underway. 130 131 132

133 5. ITEMS FROM THE PUBLIC

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135	There were no items from the public presented.
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137	6. RESPONSES TO PUBLIC COMMENTS
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139	There were no responses to public comments.
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141	7. CONSENT AGENDA
142	
143	a. Staff Report on Finance
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145	b. Staff Report on Ongoing Projects
146	
147	c. Staff Report on Operations
148	
149	d. Recommendation for CIP Amendment and Award of Construction Contract: Crozet Water
150	Treatment Plant Expansion and Rehabilitation
151	
152	e. Recommendation for CIP Amendment and Construction Work Authorization: Sugar
153	Hollow to Ragged Mountain Reservoir Transfer Flow Meter
154	
155	Ms. Hildebrand mentioned that the Sugar Hollow to Ragged Mountain Reservoir transfer flow
156	meter project seemed to provide a good opportunity to address labor costs savings.
157	
158	Mr. Mawyer explained that they would now be able to remotely open and close the valve, as well
159	as measure how much water was going through, which was especially helpful in storm
160	conditions. He stated that this was also a labor and cost savings measure, adding that the valve
161	and meter were expected to last about 20 years.
162	
163	Ms. Galvin moved to approve the Consent Agenda as presented. Dr. Palmer seconded the
164	motion, which passed 5-0-2. Mr. Richardson and Mr. Murphy were absent from the
165	meeting and the vote.
166	
16/	8. OTHER BUSINESS
168	a. Presentation: An Overview of Local and National Utility Projects: Executive Director, Bill
169	Mawyer
170	
1/1	Mr. Mawyer stated that he would provide an overview of other projects for comparative
172	purposes, noting that Greene County was preparing to build the white Run Reservoir and stating
1/3	that they had been through a similar situation to Albemarie and Charlottesville following the
174	drought of the early 2000s. He stated that the county's plan was to build an earth dam and
175	reservoir, as well as a water treatment plant – with completion stated for 2020 and a cost of $\frac{645}{100}$ million. Mr. Mouven stated that they would get an intake in the Danidan
170 177	Diver with a row water pump station pumping row water into the recording. He stated that after
170	the treatment plant was built, they would take that water and must it through for processing, then
170	becoming clean water
1/9	becoming clean water.

180

181 Mr. Gaffney asked if it was similar to the Ragged Mountain Reservoir in that it was being fed by 182 clean water and would not be filled with sediment.

183

184 Mr. Mawyer responded that they would be taking it out very raw at their discretion, but logically 185 if the reservoir was full and the Rapidan was muddy, they would not pump into the reservoir. He 186 noted that this facility was a pump storage facility, with water stored in the reservoir and brought

- into the treatment plant when needed. He pointed out the location of the proposed facility on amap provided.
- 189

190 Mr. Mawyer also presented on a \$10 million bid project in Fluvanna for new finished water drinking lines to be extended to the west of Route 250 and the south along Route 15, with the 191 possibility of adding elevated water tanks. He stated that the likely lines were phase two of their 192 expansion program, and they would also likely add some sewer lines. Mr. Mawyer explained that 193 Fluvanna was getting its water from a line running along Route 250. He stated that the James 194 River Water Authority, which is a partnership between Fluvanna and Louisa counties, has a 195 permit from DEO to build an intake in the James River near Columbia and take water out there. 196 He stated that the raw water would be pumped to a water treatment plant in Ferncliff (Louisa), 197 then treated and piped up Rt. 250 to Zions Crossroads - connecting there and becoming available 198

- 199 for Louisa and Fluvanna.
- 200

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- 201 Dr. Palmer asked how long the pipeline would be.
- 203 Mr. Castillo confirmed that it was about nine miles total.
- Mr. O'Connell noted that at one point they had approached Rivanna about being involved with part of that.
- 207

Mr. Gaffney mentioned that the concept was to take water from the James and run it down Rt.
250 towards Glenmore, and Rivanna had met with them about 10 years ago.

- 210
- 211 Mr. Krueger clarified that they had originally planned to take water from the James River at
- Route 15 and run it to Palmyra, building a water treatment plant there that would serve all parts
 of Fluvanna County but that plan fell apart.
- 214

Mr. Mawyer reported that the Henrico Cobbs Creek project includes an intake from the James River, very close to the previous project mentioned, but the Henrico project also puts water back into the James River. He stated that the Cobbs Creek Reservoir would be hosted in Cumberland County and would include a reservoir of almost 15 billion gallons – with Henrico owning the reservoir and sharing the rights to the water. He presented a photo that showed the location of the proposed project.

- 221
- 222 Dr. Palmer mentioned that the Cumberland County Board of Supervisors had recently approved
- a mega landfill for county waste, and that community was feeling growth pressure from
- 224 Richmond.
- 225

Mr. Mawyer stated that Cumberland was interested in economic development, and Henrico paid them more than \$1 million per year in host fees for the reservoir.

- 228
- 229 Mr. O'Connell asked what the county seat was for Cumberland.
- 230
- 231 Mr. Castillo responded that it was Cumberland Courthouse.
- 232

233 Mr. Mawyer noted that one of the challenges of the Cumberland project was the need to move

two Colonial pipelines that went directly through the middle of the site, at a cost of about \$30million to move them from the pool area to the side. He pointed out the location of a tower and

controller so they can radio their SCADA wirelessly back to Henrico to control their pumps.

- 237
- 238 Dr. Palmer asked what other areas it would serve besides Henrico.
- 239

240 Mr. Mawyer explained that it created 47 MGD in safe yield, with Henrico allocated 30 MGD –

- and DEQ has already permitted Henrico to take an additional 30MGD out of the James River. He
- noted that when the James River was low, they would be putting water back in the river. Mr.
- 243 Mawyer stated that Cumberland had rights to 7 MGD, with Powhatan having rights to 10 MGD.
- 244

Mr. Mawyer reported that the Hampton Roads Sanitation District area encompassed 1.7 million
people and processed 250 MGD in wastewater alone, so they decided to build a SWFT facility
that took treated wastewater, treated it further, and put water back into the Potomac Aquifer in an
effort to replenish aquifers east of I-95. He stated that this project cost \$27 million and was
expandable up to 120 MGD.

250

Mr. Mawyer reported that the federal Water Infrastructure Finance and Innovation Act (WIFIA) of 2014, allowed localities to borrow money to accelerate water and wastewater projects, and 12 localities borrowed in 2017. He explained that requirements to get in the program included a minimum threshold of \$20 million, only 49% of total project costs can be borrowed, and the money must be paid back within 35 years, along with some rate provisions. He stated that out of 40+ applications, 12 projects were selected that totaled \$2.3 billion – representing \$5.1 billion in projects.

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259 Mr. Mawyer stated that one awardee was the San Francisco Public Utilities Commission, which was building a biosolids digester facilities project that would replace an outdated treatment 260 facility. He stated that this new facility would produce class A biosolids, maximize biogas 261 utilization and energy recovery, and minimize odors – and the cost estimate was \$1.4 billion. He 262 also reported that there was a \$167 million water reclamation project in the City of Morro Bay; a 263 264 San Diego Pure Water Project, which aimed to achieve 30 MGD of purified water production at a cost of \$1.2 billion; a Deer Creek, Missouri sanitary tunnel and relief project with a pump 265 station constructed downstream at the end of a sanitary sewer tunnel, at a cost of \$85 million; 266 267 and other projects throughout the U.S. 268

269 Mr. Mawyer explained that he and Mr. Wood had looked at this WIFIA program and decided

- 270 there was nothing beneficial for Rivanna and he mentioned that there were no projects
- currently from Virginia for 2017, nor were there any planned in the next year. He mentioned that

- there was a \$100K application fee, along with a \$250K-\$500K credit processing fee, with a
- fairly extensive bureaucratic process involving numerous layers of review. Mr. Mawyer
- emphasized that they did not see any advantage in pursuing WIFIA, noting that Rivanna already
- 275 had access to favorable funding structures.
- 276

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- He also mentioned that Cape Town, South Africa had turned around its water crisis and was backto being able to provide adequate supplies for its residents.
- 280 Mr. Gaffney noted that the consumption there was only 18.5 gallons per person per day.

282 9. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA

- 284 There were no other items presented.
- 286 10. CLOSED MEETING
- 288 There was no closed meeting held.

290 11. *ADJOURNMENT*

- 291
- 292 Ms. Galvin moved to adjourn the meeting. Mr. O'Connell seconded the motion, which
- 293 passed 5-0-2. Mr. Richardson and Mr. Murphy were absent from the meeting and the vote.
- 294
- 295 The RWSA Board adjourned its meeting at 3:26 p.m.
- 296



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

- FROM: BILL MAWYER, EXECUTIVE DIRECTOR
- SUBJECT: EXECUTIVE DIRECTOR'S REPORT
- **DATE: OCTOBER 23, 2018**

Wastewater and Water Systems During Hurricane Michael

SP GOAL: Infrastructure and Master Planning; Operational Optimization; Communication & Collaboration; Workforce Development

The wastewater and water departments successfully managed the impacts of the weather generated from the remnants of Hurricane Michael. This success was possible through good communications, planning, and employee competence. Our employee team is stronger today as employees continue to gain severe weather operations experience. The table below shows the rainfall amounts at various RWSA facilities.

Location	Rainfall on 10/11/2018 (inches)
Moore's Creek	2.84
Glenmore	2.79
Scottsville WWTP	2.79
Sugar Hollow	1.70
Ragged Mountain	1.90
Crozet WTP	1.90
South Rivanna WTP	2.50
Observatory WTP	2.79
North Rivanna WTP	2.60
Scottsville WTP	3.70

It is important to note that there were <u>no sewer overflows or wastewater treatment disruptions</u> <u>during this storm event</u>. At Moore's Creek the following steps were taken:

1. Sewage flow was diverted to the holding ponds in the west end of the Moore's Creek facility starting at 3:45 PM on 10/11/2018 until 1:30 AM on 10/12/2018. The levels in the holding ponds increased from 3.8 feet to 9.0 feet. The maximum level in the holding ponds is 17.6 feet. By 6 AM the sewage in the holding ponds was being processed back through the plant.

- 2. The Moore's Creek operators initiated the "step feed" process at 4:00 PM on 10/11/2018 as the influent flows increased. Step feed is used when influent flows exceed 20 MGD; it alters the plant's nutrient biological process for all of the sewage flow in excess of 20 MGD. Operators will reroute this portion of the sewage to a location further down the aeration tanks to continue organics and ammonia removal. The 20 MGD trigger was established as the existing primary clarifiers have a treatment capacity of 20 MGD. It is assumed that the higher flows of wastewater, which are diluted by storm water, will have less nutrients, which is how Moore's Creek can continue to comply with Virginia DEQ permit requirements.
- 3. The peak instantaneous inflow at Moore's Creek was <u>55 MGD</u> at 5 PM on 10/11/2018.

The smaller wastewater plants managed the storm event with no treatment issues. The Scottsville facility processed 145,000 gallons and diverted 275,000 gallons of sewage to the lagoon. Once the Scottsville flows returned to normal, Operators began to draw the lagoon down and process the sewage back through the plant.

There were no water treatment plant disruptions during or after this rain event. The Water department kept the Urban water storage tanks filled to higher than normal levels before this storm event, which reduced immediate post-storm production demands. South Rivanna WTP received additional shipments of coagulant and lime on 10/11/2018 in anticipation of the higher chemical demands. Raw water turbidities increased at several of the water treatment plants, but that was to be expected with the rainfall amounts noted in the watersheds. It is important to note that the North Rivanna River did not breach its banks.

National Lead Poisoning Prevention Week, October 21 – 27, 2018

SP GOAL: Operational Optimization

Today, childhood lead poisoning is considered the most preventable environmental disease among young children, yet approximately half a million U.S. children have blood lead levels above 5 micrograms per deciliter, the reference level at which the Centers for Disease Control and Prevention (CDC), recommends public health actions be initiated. One of the ways people can be exposed to lead is through the water they drink, if lead leaches from certain piping and plumbing materials into the water.

Our water treatment staff and facilities provide excellent drinking water for our community with lead levels far below the Action Level established by the EPA and VDH. Water samples are taken periodically to monitor lead levels in the distribution system. We will complete a corrosion inhibitor study in the near future which will assess enhancements to our lead prevention program.

Granular Activated Carbon Systems

SP GOAL: Operational Optimization

We continue to receive benefits from the new GAC systems. Reports from our "Taste and Odor" testing group indicate the quality of the finished water is excellent from all of the water treatment plants and has consistently met that standard since the GAC systems were implemented in the spring, regardless of the state of the source water. The GAC systems have had a very positive impact on the aesthetic qualities of the water, and the consistency of quality that GAC treatment seems to provide is notable.

Red Hill Water Treatment Facilities

SP GOAL: Infrastructure and Master Planning; Operational Optimization

Along with the ACSA, we will hold an informational meeting today at 5:30 pm at the Red Hill Elementary School for the drinking water customers in the Red Hill area, including the elementary school, to outline the transfer of operational responsibility for the facilities from the ACSA to RWSA beginning on November 5, 2018.

Reservoir Water Analyses

SP GOAL: Operational Optimization; Environmental Stewardship

As a follow-up to a suggestion from Trevor Henry in the August Board meeting, the RWSA Lab will assist County Parks staff by providing nutrient analysis of water samples from recreational lakes.

Community Outreach

SP GOAL: Communication and Collaboration, Environmental Stewardship

Dave Tungate, Director of Operations, provided a tour of the Observatory Water Treatment Plant to a group of students from the Charlottesville Homeschool Coop.

Katie McIlwee, Communications Manager, and Andrea Terry, Water Resources Manager, took part in the Imagine a Day without Water event on the downtown mall on October 10th.

Jennifer Whitaker, Director of Engineering and Maintenance, participated in the Smith Lake Dam Emergency Action Plan Tabletop exercise. Jennifer provided requested technical expertise and guidance to the emergency operations group and the dam owners committee. According to state dam safety officials, Albemarle County is home to over 300 regulated dam structures. RWSA staff work though the Office of Emergency Management to offer education, technical expertise, and outreach to the community on the operation and ownership of dam structures.



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION

SUBJECT: SEPTEMBER MONTHLY FINANCIAL SUMMARY – FY 2019

DATE: OCTOBER 23, 2018

Urban Water flows and rate revenues are 11% over budget estimates for the first quarter of this fiscal year, and Urban Wastewater flows and rate revenues are 28% over budget. Revenues and expenses are summarized in the table below:

	Urban Water	W	Urban /astewater	To Rat	otal Other te Centers	Total Authority
Operations						
Revenues	\$ 1,979,444	\$	2,549,132	\$	526,703	\$ 5,055,279
Expenses	(1,863,245)		(1,975,678)		(489,647)	(4,328,570)
Surplus (deficit)	\$ 116,199	\$	573,454	\$	37,056	\$ 726,709
Debt Service						
Revenues	\$ 1,632,036	\$	2,237,630	\$	290,879	\$ 4,160,545
Expenses	 (1,592,094)		(2,146,261)		(290,489)	(4,028,844)
Surplus (deficit)	\$ 39,942	\$	91,369	\$	390	\$ 131,701
Total						
Revenues	\$ 3,611,480	\$	4,786,762	\$	817,582	\$ 9,215,824
Expenses	 (3,455,339)		(4,121,939)		(780,136)	(8,357,414)
Surplus (deficit)	\$ 156,141	\$	664,823	\$	37,446	\$ 858,410

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

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

A. Professional Services (Urban Water – page 2) – The Urban Water rate center incurred some unbudgeted expenditures for Engineering and Technical Services related to safe yield modeling.

- B. Other Services & Charges (Urban Water, Urban Wastewater, Engineering pages 2, 5, 11) July's payment of the annual property and liability insurance premium is causing Urban Water and Wastewater to be over budget in this category. Urban Water and Wastewater are also over budget on the cost of hauling biosolids off site to be composted. Urban Wastewater is over budget on odor control costs for the Crozet Interceptor/Pump Stations, and utilities are running high. The Engineering department is over budget due to late posting of an ACSA invoice for modeling services for the quarter ending in June 2018 that are not budgeted in FY 2019.
- C. Information Technology (Engineering page 11) The Engineering department paid \$25,000 in July to renew an annual GIS computer software license agreement.
- D. Operations & Maintenance (Urban Water, Crozet Water, Urban Wastewater, Glenmore Wastewater, Lab, Engineering pages 2, 3, 5, 6, 10, 11) Urban Water paid about \$200,000 for June's North Rivanna Waterline emergency repairs, and the annual lease payment for the Observatory WTP property was paid in September. Urban Wastewater and Glenmore Wastewater went over the prorated budget on pump repairs. Crozet Water is over prorated budget on algae treatment of the Beaver Creek Reservoir. The Lab and Engineering departments are over the prorated budget on vehicle and equipment repairs. However, we expect these expenses to level out as the year progresses.
- E. Communications (Urban Water page 2) -The annual payment to the County of Albemarle for Rivanna's share of the radio system maintenance cost was made in September.

Attachments

Monthly Financial Statements - September 2018 Fiscal Year 2019

<u>Consolidated</u> <u>Revenues and Expenses Summary</u>	۷		Budget FY 2019	Y	Budget 'ear-to-Date	Y	Actual 'ear-to-Date		Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	16,387,174	\$	4,096,794	\$	4,803,617	\$	706,824	17.25%
Lease Revenue			100,000		25,000		23,810		(1,190)	-4.76%
Admin., Maint. & Engineering Revenue			462,000 529 084		115,500 132 021		117,388 220,300		1,888 22 378	1.63%
Interest Allocation			28.050		7.013		7,454		441	6.29%
Total Operating Revenues		\$	17,505,308	\$	4,376,327	\$	5,172,668	\$	796,341	18.20%
F										
Expenses		¢	0 400 78 <i>1</i>	¢	1 090 799	¢	1 908 056	¢	00 833	1 56%
Personnel Cost Professional Services	Α	Ψ	0,429,704 710,250	φ	177,563	φ	145,807	φ	31.755	4.30 %
Other Services & Charges	В		2,814,735		703,684		887,990		(184,306)	-26.19%
Communications	Е		143,105		35,776		53,338		(17,562)	-49.09%
Information Technology	С		341,450		85,363		67,629		17,734	20.77%
Supplies	-		43,920		10,980		11,745		(765)	-6.96%
Operations & Maintenance	D		3,719,660		929,915		1,091,581		(161,666)	-17.39%
Equipment Purchases			459,400 042 000		114,850 210 750		/8,103 210 750		36,687	31.94%
Depreciation Posonya Transfere			043,000 -		210,750		210,750		-	0.00 /0
Total Operating Expenses		\$	17.505.304	\$	4.258.668	\$	4.445.958	\$	(187.290)	-4.40%
Operating Surplus/(Deficit)		\$	4	\$	117,659	\$	726,710			
· - ·		<u> </u>		<u> </u>				:		
Debt Service Budget vs. Actual										
Revenues										
Debt Service Rate Revenue		\$	14,852,531	\$	3,713,133	\$	3,713,130	\$	(3)	0.00%
Use of Reserves for 2016 Bond DS			300,000		75,000		75,000		-	0.00%
Septage Receiving Support - County			109,440		27,360		109,441		82,081	300.00%
Buck Mountain Surcharge			118,600 1 600		29,650 400		65,600		35,950	121.25%
BUCK MOUNTAIN LEASE Revenue			46 400		400 11 600		25 923		(400) 14 323	123 47%
Reserve Fund Interest			344.000		86.000		171.452		85.452	99.36%
Total Debt Service Revenues		\$	15,772,571	\$	3,943,143	\$	4,160,546	\$	217,403	5.51%
Daht Corrigo Costs										
Total Principal & Interest		\$	10 295 400	\$	3 073 850	\$	3 073 850	\$	-	0.00%
Reserve Additions-Interest		Ψ	343.000	Ψ	85.750	Ψ	171.452	Ψ	(85.702)	-99.94%
Debt Service Ratio Charge			725,000		181,250		181,250		-	0.00%
Reserve Additions-CIP Growth			2,409,175		602,294		602,294			0.00%
Total Debt Service Costs		\$	15,772,575	\$	3,943,144	\$	4,028,846	\$	(85,702)	-2.17%
Debt Service Surplus/(Deficit)		\$	(4)	\$	(1)	\$	131,700	-		
			Summar	у						
Total Revenues		\$	33 277 879	\$	8 319 4 70	\$	Q 333 214	\$	1 013 744	12 19%
Total Expenses		Ψ	33 277.879	Ψ	8 201.811	Ψ	8 474 803	Ψ	(272,992)	-3.33%
Surplus/(Deficit)		\$	00,211,010	\$	117,658	\$	858,4 <u>10</u>	•	(_,_,_,_,	····
• • •			<u></u>	<u> </u>	·		<u>.</u>	:		

<u>Urban Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Ye	Budget ear-to-Date	١	Actual Year-to-Date		Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual	Natas									
Revenues	Notes									
Operations Rate Revenue Lease Revenue Miscellaneous		\$	7,034,788 70,000 -	\$	1,758,697 17,500 -	\$	1,957,802 16,880 1,600	\$	199,105 (620) 1,600	11.32% -3.54%
Interest Allocation		*	12,000	•	3,000	*	3,163	¢	163	5.43%
Total Operating Revenues		\$	7,116,788	\$	1,779,197	\$	1,979,444	\$	200,247	11.25%
Expenses Percennel Cost		¢	1 003 770	¢	451 086	¢	410 909	¢	21 100	6.01%
Professional Services	Δ	φ	329 250	φ	82 313	φ	115 448	φ	(33,136)	-40 26%
Other Services & Charges	В		582,700		145,675		176,260		(30,585)	-21.00%
Communications	Е		64,200		16,050		21,881		(5,831)	-36.33%
Information Technology			65,300		16,325		10,737		5,588	34.23%
Supplies	Б		5,000		1,250		1,878		(628)	-50.25%
Equipment Purchases	D		1,570,660		26 650		525,395 23,896		(132,730) 2 754	-33.60%
Depreciation			300,000		75,000		75,000		-	0.00%
Reserve Transfers			-		-		-		-	
Subtotal Before Allocations		\$	4,927,489	\$	1,207,013	\$	1,370,395	\$	(163,381)	-13.54%
Allocation of Support Departments		¢	2,189,298	¢	519,781	¢	492,850	¢	26,931	5.18%
		<u>ψ</u>	7,110,707	Ψ ¢	50 400	Ψ ¢	1,005,245	Ψ	(130,431)	-1.50 /6
Operating Surplus/(Deficit)		\$	1	Þ	52,403	þ	116,200	=		
Revenues Debt Service Rate Revenue Trust Fund Interest Reserve Fund Interest Buck Mountain Surcharge Lease Revenue		\$	5,863,271 18,000 184,000 118,600 1 600	\$	1,465,818 4,500 46,000 29,650 400	\$	1,465,818 8,892 91,727 65,600	\$	0 4,392 45,727 35,950 (400)	0.00% 97.59% 99.41% 121.25% -100.00%
Total Debt Service Revenues		\$	6,185,471	\$	1,546,368	\$	1,632,036	\$	85,668	5.54%
Debt Service Costs										
Total Principal & Interest		\$	4,190,796	\$	1,047,699	\$	1,047,699	\$	-	0.00%
Reserve Additions-Interest			184,000		46,000		91,727		(45,727)	-99.41%
Debt Service Ratio Charge			400,000		100,000		100,000		-	0.00%
Total Debt Service Costs		\$	6.185.471	\$	1.546.368	\$	1.592.094	\$	(45,727)	-2.96%
Debt Service Surplus/(Deficit)		\$	-	\$	-	\$	39,942	-	(10,1-1)	
		-						-		
		Ra	te Center S	Sun	nmary					
Total Revenues Total Expenses		\$	13,302,259 13,302,258	\$	3,325,565 3,273,162	\$	3,611,481 3,455,339	\$	285,916 (182,177)	8.60% -5.57%
Surplus/(Deficit)		\$	1	\$	52,403	\$	156,141	=		
Costs per 1000 Gallons			2 09				1 97			
Thousand Gallons Treated			3 397 700		849 425		945 798		96 373	11.35%
or			0,001,100		570,720		0-10,700		00,010	11.0070
Flow (MGD)			9.309				10.280			

<u>Crozet Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Ye	Budget ear-to-Date	Y	Actual ear-to-Date	v	Budget s. Actual	Variance Percentage
Operating Budget vs. Actual	N									
Revenues	Notes									
Operations Rate Revenue		\$	957,384	\$	239,346	\$	239,346	\$	-	0.00%
Lease Revenues Interest Allocation			30,000 1,700		7,500 425		6,931 450		(569) 25	-7.59% 5.95%
Total Operating Revenues		\$	989,084	\$	247,271	\$	246,727	\$	(544)	-0.22%
Expenses										
Personnel Cost		\$	288,389	\$	68,348	\$	63,375	\$	4,973	7.28%
Professional Services			30,000		7,500		1,925		5,575	74.33%
Other Services & Charges			126,960		31,740		31,174		000 (201)	1.78%
Information Technology			14,200		3.550		80		3.470	97.75%
Supplies			620		155		537		(382)	-246.63%
Operations & Maintenance	D		261,150		65,288		78,043		(12,756)	-19.54%
Equipment Purchases			26,450		6,613		1,987		4,626	69.96%
Depreciation Reserve Transfers			30,000		7,500		7,500		-	0.00%
Subtotal Before Allocations		\$	782.219	\$	191.806	\$	186.035	\$	5.771	3.01%
Allocation of Support Departments		•	206,863	•	49,120	,	46,366		2,753	5.60%
Total Operating Expenses		\$	989,082	\$	240,925	\$	232,401	\$	8,524	3.54%
Operating Surplus/(Deficit)		\$	2	\$	6,346	\$	14,326	=		
Debt Service Budget vs. Actual Revenues Debt Service Rate Revenue Trust Fund Interest		\$	995,568	\$	248,892	\$	248,892	\$	-	0.00%
Reserve Fund Interest			6.700		1.675		3.371		1.696	101.23%
Total Debt Service Revenues		\$	1,004,068	\$	251,017	\$	253,170	\$	2,153	0.86%
Dabt Samiaa Caata										
Total Principal & Interest		\$	426 071	\$	106 518	\$	106 518	\$	-	0.00%
Reserve Additions-Interest		Ψ	6,700	Ψ	1,675	Ψ	3,371	Ψ	(1,696)	-101.23%
Reserve Additions-CIP Growth			571,300		142,825		142,825		-	0.00%
Total Debt Service Costs		\$	1,004,071	\$	251,018	\$	252,713	\$	(1,696)	-0.68%
Debt Service Surplus/(Deficit)		\$	(3)	\$	(1)	\$	457	=		
	R	late	Center Su	mn	nary					
Total Revenues Total Expenses		\$	1,993,152 1,993,153	\$	498,288 491,943	\$	499,897 485,114	\$	1,609 6,829	0.32% 1.39%
Surplus/(Deficit)		\$	(1)	\$	6,345	\$	14,782	=		
Costs per 1000 Gallons			5.02				4.33			
Thousand Gallons Treated			196,946		49,237		53,719		4,483	9.10%
Flow (MGD)			0.540				0.584			

<u>Scottsville Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Ye	Budget ear-to-Date	Ye	Actual ear-to-Date	v	Budget rs. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	443,328	\$	110,832	\$	110,832	\$	-	0.00%
Interest Allocation		-	750	*	188	_	200	<u> </u>	13	6.79%
Total Operating Revenues		\$	444,078	Þ	111,020	Þ	111,032	\$	13	0.01%
Expenses										
Personnel Cost		\$	153,885	\$	36,486	\$	33,459	\$	3,027	8.30%
Professional Services			20,000		5,000		5,613		(613)	-12.26%
Other Services & Charges			28,680		7,170		7,246		(76)	-1.07%
Communications			3,210		803		1,092		(290)	-36.08%
Information Technology			7,000		1,750		-		1,750	100.00%
Supplies			750		188		-		188	100.00%
Operations & Maintenance			66,570		16,643		16,254		389	2.34%
Equipment Purchases			14,000		3,500		325		3,175	90.71%
Depreciation Recorve Transfore			20,000		5,000		5,000		(0)	0.00%
Reserve Transiers		\$	314.095	\$	76 538	\$	68 989	\$	7 549	9.86%
Allocation of Support Departments		Ψ	129 988	Ψ	30,880	Ψ	29 024	Ψ	1 856	6.01%
Total Operating Expenses		\$	444.083	\$	107,418	\$	98.013	\$	9,405	8.76%
Operating Surplus/(Deficit)		\$	(5)	\$	3,601	\$	13,019	•	0,.00	0.1.070
Revenues Debt Service Rate Revenue Trust Fund Interest Reserve Fund Interest <i>Total Debt Service Revenues</i> Debt Service Costs Total Principal & Interest Reserve Additions-Interest Reserve Additions-CIP Growth <i>Total Debt Service Costs</i> <i>Debt Service Surplus/(Deficit)</i>		\$ \$ \$ \$	129,280 400 <u>3,300</u> 132,980 129,680 <u>3,300</u> - 132,980 -	\$ \$ \$ \$	32,320 100 825 33,245 32,420 825 - 33,245 -	\$ \$ \$ \$	32,319 259 1,691 34,269 32,420 1,691 - - 34,111 158	\$ \$ \$	(1) 159 866 1,024 (866) - (866)	0.00% 159.22% 104.99% 3.08% 0.00% -2.61%
	R	ate	Center Su	Imn	nary					
Total Revenues Total Expenses		\$	577,058 577,063	\$	144,265 140,663	\$	145,302 132,124	\$	1,037 8,539	0.72% 6.07%
Surplus/(Deficit)		\$	(5)	\$	3,601	\$	13,177	-		
Costs per 1000 Gallons			23.70				23.06			
Thousand Gallons Treated			18,738		4,685		4,250		(435)	-9.28%
or Flow (MGD)			0.051				0.046			

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Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

<u>Urban Wastewater Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Ŷ	Budget lear-to-Date	Ŷ	Actual ear-to-Date		Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	7,277,082	\$	1,819,271	\$	2,326,989	\$	507,719	27.91%
Stone Robinson WWTP			28,084		7,021		5,754		(1,267)	-18.04%
Septage Acceptance			410,000		102,500		108,094		5,594	5.46%
Nutrient Credits			90,000		22,500		104,060		81,560	362.49%
			12 500		- 3 125		2 244		210	7 0.2%
Total Operating Revenues		\$	7 817 666	\$	1 954 417	\$	2 549 132	\$	594 716	30 43%
_		.	1,011,000	Ŧ	1,001,111	•	2,010,102	¥	00-1,1-10	0011070
Expenses										
Personnel Cost		\$	1,282,792	\$	303,364	\$	288,521	\$	14,843	4.89%
Professional Services			54,000		13,500		-		13,500	100.00%
Other Services & Charges	в		1,816,225		454,056		600,371		(146,315)	-32.22%
Leformation Technology			10,430		2,000		5,205 1,516		(2,000)	-101.93%
Supplies			2 700		14,313		1,510		12,790	09.41% 70.26%
Operations & Maintenance	п		1 408 900		352 225		358 088		(5 863)	-1 66%
Equipment Purchases	5		74 500		18 625		15 313		3 312	17 78%
Depreciation			470.000		117,500		117,500		(0)	0.00%
Reserve Transfers			-		-		-		-	
Subtotal Before Allocations		\$	5,176,797	\$	1,276,865	\$	1,386,775	\$	(109,910)	-8.61%
Allocation of Support Departments			2,640,868		627,177		588,903		38,274	6.10%
Total Operating Expenses		\$	7,817,665	\$	1,904,043	\$	1,975,678	\$	(71,635)	-3.76%
Operating Surplus/(Deficit)		\$	1	\$	50,374	\$	573,454	=		
Debt Service Budget vs. Actual										
Revenues										
Debt Service Rate Revenue		\$	7 854 820	\$	1 963 705	\$	1 963 704	\$	(1)	0.00%
Use of Reserves for 2016 Bond DS		Ψ	300.000	Ψ	75.000	Ψ	75.000	Ψ	(-)	0.00%
Septage Receiving Support - County			109,440		27,360		109,441		82,081	300.00%
Trust Fund Interest			26,200		6,550		15,839		9,289	141.81%
Reserve Fund Interest			148,000		37,000		73,646		36,646	99.04%
Total Debt Service Revenues		\$	8,438,460	\$	2,109,615	\$	2,237,630	\$	128,015	6.07%
Debt Service Costs										
Total Principal & Interest		\$	7,539,261	\$	1,884,815	\$	1,884,815	\$	-	0.00%
Reserve Additions-Interest			148,000		37,000		73,646		(36,646)	-99.04%
Dept Service Ratio Charge			325,000		81,250		81,250		-	0.00%
Reserve Additions-CIP Growth		¢	420,200	¢	2 100,000	¢	2 146 262	¢	(26.646)	0.00%
Debt Service Surplus/(Deficit)		\$	(1)	\$	2,103,013	\$	91.369	Ψ	(30,040)	-1.74/0
				Ŧ		Ŧ	;	-		
		Rat	te Center S	um	marv					
					,					
Total Revenues		\$	16,256,126	\$	4,064,032	\$	4,786,762	\$	722,731	17.78%
Total Expenses			16,256,126		4,013,658		4,121,940	_	(108,282)	-2.70%
Surplus/(Deficit)		\$	(0)	\$	50,373	\$	664,823	=		
Costs per 1000 Gallons			2.31				1.82			
Thousand Gallons Treated			3,390,400		847,600		1,084,338		236,738	27.93%
or Flow (MGD)			9.289				11.786			

<u>Glenmore Wastewater Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Y	Budget ear-to-Date	Ŷ	Actual Tear-to-Date	N	Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	372,720	\$	93,180	\$	93,180	\$	-	0.00%
Interest Allocation	-		600		150		163		13	8.63%
Total Operating Revenues	-	\$	373,320	\$	93,330	\$	93,343	\$	13	0.01%
Expenses										
Personnel Cost		\$	94,490	\$	22,347	\$	21,365	\$	982	4.40%
Professional Services			3,000		750		-		750	
Other Services & Charges			39,510		9,878		10,747		(869)	-8.80%
Communications			2,600		650		1,255		(605)	-93.06%
Information Technology			3,350		838		-		838	100.00%
Supplies			100		25		-		(1 649)	100.00%
Equipment Purchases			2 900		30,303 725		32,010		(1,040)	-3.43%
Depreciation			5,000		1 250		1 250		125	0.00%
Subtotal Before Allocations	-	\$	272.400	\$	66.825	\$	67.227	\$	(402)	-0.60%
Allocation of Support Departments		Ŧ	100,915	Ŧ	23,991	•	22,704	•	1,287	5.37%
Total Operating Expenses	-	\$	373,315	\$	90,816	\$	89,931	\$	885	0.97%
Operating Surplus/(Deficit)	-	\$	5	\$	2,514	\$	3,412	_		
Revenues Debt Service Rate Revenue Trust Fund Interest		\$	1,586 -	\$	397 -	\$	396 -	\$	(1)	-0.13%
Reserve Fund Interest	-		1,000		250		514		264	105.74%
Total Debt Service Revenues	-	\$	2,586	\$	647	\$	910	\$	(1)	-0.08%
Debt Service Costs										
Total Principal & Interest		\$	1,586	\$	397	\$	397	\$	-	0.00%
Reserve Additions-Interest	-		1,000		250		514		(264)	-105.74%
Total Debt Service Costs	-	\$	2,586	\$	647	\$	911	\$	(264)	-40.89%
Debt Service Surplus/(Deficit)	=	Þ	-	Þ	-	Þ	(1)	-		
	R	ate	Center Su	mn	nary					
Total Revenues		\$	375,906	\$	93,977	\$	94,253	\$	277	0.29%
Total Expenses	-		375,901		91,462		90,841	-	621	0.68%
Surplus/(Deficit)	:	\$	5	\$	2,514	\$	3,412	-		
Costs per 1000 Gallons			8.60				7.89			
Thousand Gallons Treated			43,412		10,853		11,392		539	4.97%
Flow (MGD)			0.119				0.124			

Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

<u>Scottsville Wastewater Rate Center</u> Revenues and Expenses Summary			Budget FY 2019	Ye	Budget ear-to-Date	Y	Actual ear-to-Date	Budget vs. Actual		Variance Percentage
Operating Budget vs. Actual	[
	Notes									
Revenues										
Operations Rate Revenue		\$	301,872	\$	75,468	\$	75,468	\$	-	0.00%
Interest Allocation			500		125		133		8	6.52%
Total Operating Revenues		\$	302,372	\$	75,593	\$	75,601	\$	8	0.01%
Fynenses										
Personnel Cost		\$	94 515	\$	22 353	\$	21 365	\$	989	4 4 2 %
Professional Services		Ψ	2 000	Ψ	500	Ψ	21,000	Ψ	500	100.00%
Other Services & Charges			28 400		7 100		7 188		(88)	-1 25%
Communications			2 630		658		1 393		(735)	-111 82%
Information Technology			2.350		588		-		588	100.00%
Supplies			100		25		446		(421)	-1682.04%
Operations & Maintenance			57,850		14,463		12,776		1,687	11.66%
Equipment Purchases			3,200		800		600		200	25.00%
Depreciation			18,000		4,500		4,500		-	0.00%
Subtotal Before Allocations		\$	209,045	\$	50,986	\$	48,267	\$	2,719	5.33%
Allocation of Support Departments			93,328		22,185		21,035		1,150	5.19%
Total Operating Expenses		\$	302,372	\$	73,171	\$	69,302	\$	3,869	5.29%
Operating Surplus/(Deficit)		\$	(0)	\$	2,422	\$	6,299			
Revenues Debt Service Rate Revenue Trust Fund Interest Reserve Fund Interest Total Debt Service Revenues		\$ \$	8,006 - 1,000 9,006	\$	2,002 	\$	2,001 26 <u>503</u> 2,530	\$	(1) 26 253 278	-0.02% <u>101.06%</u> 12.35%
Debt Service Costs										
Total Principal & Interest		\$	8,006	\$	2,002	\$	2,002	\$	-	0.00%
Reserve Additions-Interest			-		-		503		(503)	
Estimated New Principal & Interest		*	1,000	¢	250	*	250	*	-	00.00%
Total Debt Service Costs		*	9,006	\$	2,252	\$	2,754	\$	(503)	-22.33%
Debt Service Surplus/(Delicit)		φ	•	φ	-	φ	(225)			
		Rate	Center Su	Jmr	nary					
Total Revenues		\$	311,378	\$	77,845	\$	78,131	\$	286	0.37%
Total Expenses			311,378		75,423		72,056		3,367	4.46%
Surplus/(Deficit)		\$	(0)	\$	2,422	\$	6,075			
Costs per 1000 Gallons			15.14				11.23			
Thousand Gallons Treated			19,966		4,992		6,173		1,182	23.67%
or Flow (MGD)			0.055				0.067			

Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

Administration											
Administration			Budget FY 2019	Y	Budget /ear-to-Date	Ye	Actual ear-to-Date	v	Budget vs. Actual	Variance Percentage	
Operating Budget vs. Actual		L									
	Notes										
Revenues											
Payment for Services SWA		\$	460,000	\$	115,000	\$	115,000	\$	(0)	0.00%	
Miscellaneous Revenue			2,000		500		854		354	70.80%	
Total Operating Revenues		\$	462,000	\$	115,500	\$	115,854	\$	354	0.31%	
Expenses											
Personnel Cost		\$	1,796,150	\$	422,148	\$	415,444	\$	6,704	1.59%	
Professional Services			228,000		57,000		15,969		41,031	71.98%	
Other Services & Charges			140,980		35,245		32,474		2,771	7.86%	
Communications			20,280		5,070		6,289		(1,219)	-24.05%	
Information Technology			138,500		34,625		25,139		9,486	27.40%	
Supplies			21,000		5,250		7,226		(1,976)	-37.64%	
Operations & Maintenance			60,400		15,100		6,791		8,309	55.03%	
Equipment Purchases			27,500		6,875		3,479		3,396	49.40%	
Depreciation			-		-		-		-		
Total Operating Expenses		\$	2,432,810	\$	581,313	\$	512,811	\$	68,502	11.78%	

Department Summary									
Net Costs Allocable to Rate Centers		\$	(1,970,810)	\$	(465,813)	\$	(396,957)	\$ (68,856)	14.78%
Allocations to the Rate Centers									
Urban Water	44.00%	\$	867,157	\$	204,958	\$	174,661	\$ 30,297	
Crozet Water	4.00%	\$	78,832		18,633		15,878	2,754	
Scottsville Water	2.00%	\$	39,416		9,316		7,939	1,377	
Urban Wastewater	48.00%	\$	945,989		223,590		190,539	33,051	
Glenmore Wastewater	1.00%	\$	19,708		4,658		3,970	689	
Scottsville Wastewater	1.00%	\$	19,708		4,658		3,970	689	
	100.00%	\$	1,970,810	\$	465,813	\$	396,957	\$ 68,856	

Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

Maintenance

<u>Maintenance</u>				Budget FY 2019		Budget Year-to-Date		Actual Year-to-Date	v	Budget s. Actual	Variance Percentage
Operating Budge	et vs. Actual	Notes	<u></u>								
Revenues Miscellaneous Revenue				-		-		1.534		1.534	
	Total Operating Revenues		\$	-	\$	-	\$	1,534	\$	1,534	
Expenses Personnel Cost Professional Services Other Services & Charges Communications Information Technology Supplies Operations & Maintenance Equipment Purchases Depreciation			\$	1,304,247 17,500 17,325 6,500 2,000 64,300 105,650	\$	307,842 4,375 4,331 1,625 500 16,075 26,413	\$	276,363 6,725 8,546 2,625 272 17,687 23,084	\$	31,479 (2,350) (4,215) (1,000) 228 (1,612) 3,329	10.23% -53.71% -97.31% -61.54% 45.68% -10.03% 12.60%
	Total Operating Expenses		\$	1,517,522	\$	361,161	\$	335,302	\$	25,859	7.16%
Not Costs Allocable t	o Poto Contors	[Dep	artment S	um ¢	mary (361 161)	•	(333 767)	•	(24 325)	6 74%

Net Costs Allocable to Rate Centers		\$ (1,517,522)	\$ (361,161)	\$ (333,767)	\$ (24,325)	6.74%
Allocations to the Rate Centers						
Urban Water	30.00%	\$ 455,256	\$ 108,348	\$ 100,130	\$ 8,218	
Crozet Water	3.50%	53,113	12,641	11,682	959	
Scottsville Water	3.50%	53,113	12,641	11,682	959	
Urban Wastewater	56.50%	857,400	204,056	188,579	15,477	
Glenmore Wastewater	3.50%	53,113	12,641	11,682	959	
Scottsville Wastewater	3.00%	45,526	10,835	10,013	822	
	100.00%	\$ 1,517,522	\$ 361,161	\$ 333,767	\$ 27,393	

Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

Laboratorv

L aboratom/										
			Budget FY 2019	Yea	Budget ar-to-Date	Ye	Actual ar-to-Date	v	Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual] '									
Revenues	Notes									
N/A										
Expenses										
Personnel Cost Professional Services		\$	301,100	\$	71,035	\$	71,052	\$	(16)	-0.02%
Other Services & Charges			14.230		3.558		1.058		2,500	70.27%
Communications			800		200		200		_,	
Information Technology			2,500		625		-		625	100.00%
Supplies			2,150		538		278		260	48.37%
Operations & Maintenance	D		53,500		13,375		24,193		(10,818)	-80.88%
Equipment Purchases			72,100		18,025		400		17,625	97.78%
Depreciation			-		-		-		-	
Total Operating Expenses	:	\$	446,380	\$	107,355	\$	97,180	\$	10,176	9.48%
	Depa	tme	ent Summ	ary						
Net Costs Allocable to Rate Centers		\$	(446,380)	\$	(107,355)	\$	(97,180)	\$	(10,176)	9.48%
Allocations to the Rate Centers										
Urban Water	44.00%	\$	196,407	\$	47,236	\$	42,759	\$	4,477	
Crozet Water	4.00%		17,855		4,294		3,887		407	
Scottsville Water	2.00%		8,928		2,147		1,944		204	
Urban Wastewater	47.00%		209,799		50,457		45,674		4,783	
Glenmore Wastewater	1.50%		6,696		1,610		1,458		153	
Scottsville Wastewater	1.50%		6,696		1,610		1,458		153	
	100.00%	\$	446,380	\$	107,355	\$	97,180	\$	10,176	

Rivanna Water & Sewer Authority Monthly Financial Statements - September 2018

Engineering

<u>Engineering</u>		Budget FY 2019	Budget Year-to-Date	Actual Year-to-Date	V	Budget s. Actual	Variance Percentage
Operating Budget vs. Actual							
Revenues							
Payment for Services SWA		\$ -	\$ -	\$ -	\$	-	
Total Operating Revenues		\$ -	\$ -	\$ -	\$	-	
Expenses							
Personnel Cost		\$ 1,210,438	\$ 284,778	\$ 288,113	\$	(3,336)	-1.17%
Professional Services		44,000	11,000	6,852		4,148	37.71%
Other Services & Charges	в	19,550	4,888	14,747		(9,859)	-201.73%
Communications		17,180	4,295	6,004		(1,709)	-39.79%
Information Technology	С	44,500	11,125	27,531		(16,406)	-147.47%
Supplies		9,500	2,375	908		1,467	61.77%
Operations & Maintenance	D	54,880	13,720	20,344		(6,624)	-48.28%
Equipment Purchases		26,500	6,625	8,479		(1,854)	-27.99%
Depreciation & Capital Reserve Transfers		-	-	-		-	
Total Operating Expenses		\$ 1,426,548	\$ 338,805	\$ 372,978	\$	(34,173)	-10.09%

Department Summary								
Net Costs Allocable to Rate Centers		\$	(1,426,548)	\$	(338,805)	\$ (372,978)	\$ 34,173	-10.09%
Allocations to the Rate Centers								
Urban Water	47.00%	\$	670,477	\$	159,239	\$ 175,300	\$ (16,061)	
Crozet Water	4.00%		57,062		13,552	14,919	(1,367)	
Scottsville Water	2.00%		28,531		6,776	7,460	(683)	
Urban Wastewater	44.00%		627,681		149,074	164,110	(15,036)	
Glenmore Wastewater	1.50%		21,398		5,082	5,595	(513)	
Scottsville Wastewater	1.50%		21,398		5,082	5,595	(513)	
	100.00%	\$	1,426,548	\$	338,805	\$ 372,978	\$ (34,173)	

Rivanna Water and Sewer Authority Flow Graphs







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 23, 2018

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

Under Construction

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

Design and Bidding

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

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

Planning and Studies

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

O&M Related Projects

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

1. Birdwood Raw Water Main

Michael Baker International
TBD
November 2018
0%
TBD
October 2019
\$4,000,000

Current Status:

Construction bids were opened on October 11, 2018. However, all bids were rejected, and a second invitation for bids has been issued with bids to be opened on October 31, 2018. A separate memo is included in this month's Board package addressing contract award.

History:

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

2. <u>Crozet Water Treatment Plant Expansion</u>

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

Current Status:

A Notice of Award has been issued and the contractor is in the process of securing bonds and insurance.

History:

This project was created to analyze the feasibility of increasing the supply capacity of the existing Crozet WTP by modernizing plant systems. The goal is to not drastically increase the plant footprint in regard to the existing filter plant, flocculation tanks, and sedimentation basins. By modernizing the outdated equipment within these treatment systems, the plant discharge capacity can be improved by approximately 100% (from 1 to 2 mgd).

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

3. Crozet Interceptor Pump Stations Bypass and Isolation Valves

Design Engineer:	Johnson, Mirmiran & Thompson (JMT)
Construction Contractor:	Anderson Construction
Construction Start:	September 2018
Percent Completion:	5%
Base Construction Contract +	
Change Order to Date = Current Value:	\$361,820

Expected Completion Date: Total Capital Project Budget: December 2018 \$720,000

Current Status:

The Contract Documents have been fully executed, a Pre-Construction Meeting was held on September 5, 2018 and the Notice to Proceed was issued on September 14, 2018. Due to a material shortage as a result of recent storms, the contractor anticipates mobilizing later this month once materials are available.

History:

There are four pump stations located in the Crozet Interceptor system that help convey flow from the Crozet Area into the Morey Creek Interceptor and the rest of the urban collection system. These pump stations were constructed in the 1980s and provided no means of isolating each pump station from its downstream force main. This condition complicates maintenance-related activities as each time a pump station component needs to be serviced or replaced, the volume of wastewater within the force main must be addressed at the pump station as it drains back to the wet well. In addition, the Crozet Interceptor pump stations also have limited storage within their wet wells, and any reduction of down time as a result of dealing with the impacts of no isolation valves, decreases the amount of time available to work on the equipment. In order to alleviate this condition, temporary valves called "line stops" will be temporarily installed on the force mains downstream of the pump stations to allow enough time for a new isolation valve to be installed. Isolation valves will be located in order to provide the maximum amount of down time available based on current system conditions for future pump station maintenance activities. While line stops are in place, bypass connections will also be provided at each pump station. These will allow staff the option of bringing in bypass pumps for more significant pump station shutdowns required for maintenance activities or repairs for which the isolation valves alone cannot account. Contract Documents were advertised for bidding and bids were opened on July 10, 2018. A Notice of Award was provided to Anderson Construction on August 6, 2018.

4. Wholesale Water Master Metering

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	Linco, Inc.
Construction Start:	January 2016
Percent Complete:	95%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$2,228,254 - \$284,104.24 = \$1,944,149.76
Expected Completion Date:	January 2019
Total Capital Project Budget:	\$3,200,000

Current Status:

Three water treatment plant flow meters, and all 25 distribution system flow meters have been installed. Of those 25 meters, 20 are currently functional and 5 are experiencing reporting errors. Meter troubleshooting is ongoing with the intent of having all but the 2

bidirectional meters functional by the end of October 2018. Staff is working to find a solution for the bidirectional sites, hopefully by the end of the year.

History:

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

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

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

5. Sugar Hollow to Ragged Mountain Reservoir Transfer Flow Meter

Design Engineer:	Michael Baker International (Baker)
Construction Contractor:	G.L. Howard
Construction Start:	October 2018
Percent Complete	5%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$354,905
Expected Completion:	February 2019
Total Capital Project Budget:	\$383,241

Current Status:

The Notice to Proceed was issued to the contractor on October 1, 2018. Mobilization is anticipated to occur in the month of October, with Substantial Completion slated for late January 2019. This project requires the Sugar Hollow to Ragged Mountain Reservoir transfer line to be out of service, and as such, any transfer line needs will be coordinated with the RWSA Water and Maintenance Departments.

History:

RWSA staff has worked with the design engineers to complete plan and profile design drawings for this project. The project will include installation of a flow meter on the 18inch diameter Sugar Hollow Reservoir discharge pipe and a control valve that can be operated remotely through the Observatory WTP SCADA system. The control valve will modulate the amount of flow being transferred between the two reservoirs, the flow meter will record data, and staff will be able to remotely monitor the data through the SCADA system. Additional work has been added to this project including replacement of an existing, original gate valve at the site, demolition of four existing small utility structures and sheds that have not been used in many years, demolition of the existing Gatekeeper's House, and a separate control valve vault that will optimize the accuracy of the new flow meter by creating adequate separation distance between the meter and modulating control valve. The structures to be demolished and removed have been inspected and tested for asbestos containing materials and lead based paint. As a result, there will be some special abatement work required. Several long lead items were purchased by the contractor as a result of the initial Work Authorization.

6. Crozet Finished Water Pump Station

Short Elliot Hendrickson (SEH)
Anderson Construction, Inc.
May 2017
95%
\$1,949,386
November 2018
\$2,600,000

Current Status:

Start-up and testing of equipment is underway. Operations and Maintenance Manuals have been distributed and training began at the end of August. The new pump station was tied into the existing distribution system at the end of July and will be put into service at the conclusion of the demonstration period, anticipated in November.

History:

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

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

7. <u>Interceptor Sewer and Manhole Repair</u>

Design Engineer:	Frazier Engineering
Construction Contractor:	IPR Northeast
Construction Start:	November 2017
Percent Complete:	10%
Base Construction Contract +	
Change Orders to Date = Current Value:	\$1,244,337.19
Expected Completion:	2020
Total Capital Project Budget:	\$1,962,389

Current Status:

Frazier Engineering continues to conduct condition assessment activities and has completed a preliminary review of previous CCTV results. Manhole inspections on various interceptors were completed and a report documenting the results is being developed. An initial work authorization with the contractor to perform additional CCTV investigations has begun and completion is expected by December 2018 as some additional cleaning of interceptor sections will be required to complete the investigation in easement areas with difficult access conditions. Initial results from the investigation have been provided to Frazier Engineering for review. A condition assessment report for a portion of the Morey Creek Interceptor has been completed with rehabilitation work to follow. Additional investigation and rehabilitation work will follow after the initial round of CCTV investigations.

History:

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

8. Urgent and Emergency Repairs

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

Project	Project Description	Approx. Cost
No.		
2017-03	Crozet Sewer Force Main Air Release Valve Repair	\$135,000
2018-01	Rivanna Interceptor – RVI-MH-32 Erosion Repair	\$50,000
2018-06	South Rivanna Dam Apron and River Bank Repairs	\$200,000

• Crozet Sewer Force Main Air Release Valve Repair

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

• <u>Rivanna Interceptor – RVI-MH-32 Erosion Repair</u>

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

• South Rivanna Dam Apron and River Bank Repairs

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

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

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

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

History:

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

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

10. Observatory Water Treatment Plant Expansion

Short Elliot Hendrickson, Inc. (SEH)
October 2017
Preliminary Engineering Report
October 2019
2023
\$18,630,000

Current Status:

Design documents will be completed by May 2019.

History:

This project will consider the design and costs for upgrading the plant systems to achieve a consistent 7 MGD plant capacity, as well as consider the costs involved with upgrading the plant to 10 or 12 MGD capacity. Much of the Observatory Water Treatment Plant is original to the 1953 construction. In an effort to better understand the needed future improvements, a Condition Assessment Report was completed by SEH in October of 2013. The approved Capital Improvement Plan project was based on the findings from this report. A portion of this project was expedited in order to repair and replace old, existing equipment that was not functional. The flocculator systems have been replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). The second flocculator system was started up in May 2017, and both systems are currently in full service. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

11. South Rivanna Water Treatment Plant Improvements

Short Elliot Hendrickson (SEH)
October 2017
Preliminary Engineering Report
October 2019
December 2022
\$7,500,000

Current Status:

Design documents will be completed by May 2019.

History:

The South Rivanna Water Treatment Plant is currently undergoing significant upgrades as part of the Granular Activated Carbon Project. Several other significant needs have also been identified and have been assembled into a single project. The projects herein include: expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; the addition of a second variable frequency drive at the Raw Water Pump Station; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station; a new building on site for additional office, lab, control room and storage space; improvements to storm sewers to accept allowable WTP discharges; and the construction of a new metal building to cover the existing liquid lime feed piping and tanks. The scope of this project will not increase plant treatment capacity. The PER has been finalized, as well as a Work Authorization with the design engineer for design, bidding and construction administration services.

12. <u>Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line</u> and Raw Water Pump Station

Design Engineer:	Michael Baker International (Baker)
Project Start:	August 2018
Project Status:	Work Authorization in Progress
Construction Start:	2022
Completion:	2025
Total Capital Project:	\$18,000,000

Current Status:

A Work Authorization has been negotiated with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process and is being submitted to the Board for approval this month. A site evaluation study to recommend a location for the raw water pump station is currently being conducted under

the South Rivanna River to Ragged Mountain Reservoir Water Line Right-of-Way Work Authorization with Baker.

History:

Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant by way of two 18-inch cast iron pipelines, which have been in service for more than 110 and 70 years, respectively. The increased frequency of emergency repairs and expanded maintenance requirements are one impetus for replacing these pipelines. The proposed water line will be able to reliably transfer water to the expanded Observatory plant, which may eventually have the capacity to treat 10 million gallons per day (mgd). The new pipeline is expected to be constructed of 36-inch ductile iron and will approximately 14,000 feet in length. The opportunity to integrate the Observatory WTP raw water supply line with the proposed South Rivanna Reservoir to RMR raw water main project is currently being investigated as part of the approved 50-year Community Water Supply Plan.

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

13. Crozet Flow Equalization Tank

Design Engineer:	Schnabel Engineering
Project Start:	October 2016
Project Status:	25% Design Complete
Construction Start:	2019
Completion:	2020
Total Capital Project Budget:	\$3,300,000

Current Status:

Design documents will be completed by February 2019.

History:

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

equalization tank was identified as the best method to alleviate wet weather capacity issues.

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

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

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

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

Design Engineer:	Schnabel Engineering
Project Start:	February 2018
Project Status:	Work Authorization Under Negotiation
Construction Start:	2021
Completion:	2023
Total Capital Project Budget:	\$20,600,000

Current Status:

Staff expects completion of a Preliminary Engineering Report by the end of October. A work authorization for the design of the dam upgrades has been negotiated with Schnabel Engineering and is included in this month's Board Agenda. Final design is expected to begin in November 2018.

History:

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

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

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

15. <u>Beaver Creek Raw Water Pump Station, Intake and Hypolimnetic Oxygenation</u> <u>System</u>

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

Current Status:

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

History:

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

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

16. Crozet Interceptor Pump Station Rebuilds

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

Staff is reviewing the overall scope of work for the project and will be coordinating with the Maintenance Department regarding schedule and preferred equipment and materials. Work will be performed via quote packages and the need for consultant assistance is being determined.

History:

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

17. Bucks Elbow Tank and Crozet Waterball Tank Painting

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

Current Status:

Following selection of a consultant to complete the work, staff will begin negotiation of the first work authorization for design services for this project. Construction for this project is scheduled to begin in Spring 2021, following completion of the CZWTP Expansion in October 2020.

History:

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

also be included in this work. Construction of the tank improvements are expected to begin in spring of 2021.

18. Valve Repair – Replacement (Phase 2)

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

Current Status:

RWSA Staff has finalized the project's scope and continues to assemble design and bid documents for Phase 2. Meetings with RWSA, ACSA, and VDOT staff have taken place, and feedback from each stakeholder will be integrated into the design and bid documents. Once all design and bid documents are complete, a Request for Bids will be issued. Staff anticipates bidding taking place in Fall of 2018 with construction starting in Spring of 2019.

History:

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

19. MCAWRRF Digester Sludge Storage Improvements

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

Current Status:

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

History:

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

20. MCAWRRF Aluminum Slide Gate Replacements

Design Engineer:	Hazen and Sawyer
Project Start:	November 2018
Project Status:	Preliminary Design
Construction Start:	March 2019
Completion:	June 2019
Total Capital Project Budget:	\$470,000

Current Status:

Engineering staff is negotiating a scope of work with Hazen and Sawyer for project design support.

History:

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

21. Glenmore Secondary Clarifier Coating

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	Fall 2018
Project Status:	Preliminary Design
Construction Start:	2019

Completion:2019Total Capital Project Budget:\$50,000Current Status:\$50,000

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

History:

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

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

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

Current Status:

Design will begin in the fall of 2018 with construction to begin in 2019.

History:

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

23. <u>Scottsville WTP – Finished Water Metering Improvements</u>

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

Current Status:

A work authorization with SEH has been finalized and they have begun preliminary design work. Final design documents are anticipated to be complete in November 2018.

History:

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

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

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

Current Status:

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

History:

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

approved by the Board of Directors in July 2017.

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

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

Current Status:

The PER will be completed by December 2018. Easement acquisition negotiations will begin by May 2019.

History:

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

RWSA has negotiated a scope and fee with Michael Baker International for the routing study, preliminary design, plat creation and easement acquisition process. Preliminary design work began in November 2017. Property owners have been contacted to request permission to access properties for topographical surveying which will take place following completion of the PER. A recommendation for a tentative final alignment was presented at a community information meeting in June 2018.

26. Urban Water Demand and Safe Yield Study

Design Engineer:	Hazen and Sawyer
Project Start:	October 2018
Project Status:	0% complete
Completion:	June 2019
Total Capital Project Budget:	\$154,000

Current Status:

A project kick-off meeting is anticipated this month.

History:

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

27. Urban Finished Water Infrastructure Master Plan

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2018
Project Status:	0% complete
Completion:	November 2019
Total Capital Project Budget:	\$253,000

Current Status:

A project kick-off meeting is anticipated this month.

History:

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

28. South Rivanna River Crossing and North Rivanna Transmission Main

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

Current Status:

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

History:

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

29. Route 29 Pump Station

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

Current Status:

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

History:

The Rt. 29 Pipeline and Pump Station master plan was developed in 2007 and originally envisioned a multi-faceted project that reliably connected the North and South Rivanna pressure bands; reduced excessive operating pressures, and developed a new Airport pressure zone to serve the highest elevations near the Airport and Hollymead Town Center. The master plan update was completed in June of 2018 to reflect the changes in the system and demands since 2007. This project, along with the South Rivanna River Crossing and North Rivanna Transmission Main project will provide a reliable and redundant finished water supply to the North Rivanna area. The proposed pump station will be able to serve system demands at both the current high pressure and future low pressure condition. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport pressure zone.

30. South Rivanna Hydropower Plant Decommissioning

Gomez and Sullivan
October 2016
Exemption Surrender Process – Phase 2 Underway
2019
2020
\$1,000,000

Current Status:

A consultation document was provided to local regulatory agencies and a meeting was held on May 21, 2018 with the agencies to discuss the decommissioning process. Minor comments were provided by those agencies and development of the surrender application for submission to FERC is underway. As part of the application, a draft decommissioning plan has been developed and is being reviewed by RWSA. Due to a recent significant wet weather event, returning the 72-inch diameter penstock to a reservoir drain is being considered. Modifications to the decommissioning plan may be necessary as a result.

<u>History</u>:

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

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

31. <u>Security Enhancements</u>

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

Current Status:

Prior to the formulation of an internal Security Project Team, RWSA Engineering and Operations staff met to discuss the recommendations of the final 2018 Risk Assessment Report (RA) and narrow the scope of the project. RWSA Engineering staff has begun addressing the priority items resulting from the preliminary meeting and assembling the internal Security Project Team. This team will help RWSA continue to prioritize the implementation of the RA's recommendations based upon their applicability to RWSA's raw and finished water systems, wastewater system, and internal capabilities. As the project's scope of work is refined through the internal Security Project Team, a consultant

will be selected to provide project assistance where needed. As such, a Work Authorization will be developed by RWSA staff to begin the design process in areas where assistance is needed, while other areas will have the design process conducted in-house.

History:

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

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

Design Engineer:	Frazier Engineering, P.A.
Project Start:	TBD
Project Status:	Planning
Construction Start:	TBD
Completion:	TBD
Total Capital Project Budget:	\$4,485,000

Current Status:

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

History:

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

The remaining sections, which are considered the Upper Schenks Branch Interceptor, were split into 2 phases. The first phase has been completed and is located within City-owned

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

33. Engineering and Administration Building

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

Current Status:

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

History:

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

34. Asset Management Plan

GHD, Inc.
July 2018
5% Complete (Phase 1)
2020

Total Capital Project Budget: \$500,000

Current Status:

A work authorization and Agreement has been finalized with GHD to perform the first phase of the process which includes the development of an asset management framework and implementation roadmap. An internal Asset Management Project Team meeting was held on September 18, 20187 and a kick-off meeting with GHD was held on October 12, 2018.

History:

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

O&M Related Projects

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

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

• <u>NRWTP Raw Water Metering Improvements</u>

The NRWTP is permitted to provide up to 2.0 MGD of potable drinking water to RWSA customers located in the Urban service area. After water is pumped from the raw water pump station on the North Fork Rivanna River, the raw water flow is metered by an orifice plate, or insert style meter, prior to entering the rap mix chamber. The meter is located behind the existing powdered activated carbon feed system and is difficult to access. In addition, RWSA recognizes that the accuracy of this style of meter is reduced by laying length conditions in comparison to modern magnetic flow meters which have been installed

at other locations. RWSA is working with SEH to develop contract documents to have a magnetic flow meter installed on the raw water line in an exterior below grade vault. Bidding is expected in January 2019 and construction to be completed by June 2019.

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

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

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

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

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

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

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

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

determine future property requirements. The analysis is expected to be complete by December 2018.



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 2018

DATE: OCTOBER 23, 2018

WATER OPERATIONS:

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

Water Treatment Plant	Average Daily Production (MGD)	Total Monthly Production (MG)	Maximum Daily Production in the Month (MGD)
Observatory	1.59	47.72	2.25 (9/18/18)
South Rivanna	8.18	245.40	9.93 (9/05/18)
North Rivanna	<u>0.38</u>	<u>11.31</u>	0.505 (9/4/18)
Urban Total	10.15	304.43	12.36 (9/05/18)
Crozet	0.558	16.73	0.741 (9/12/18)
Scottsville	<u>0.045</u>	<u>1.36</u>	0.064 (9/13/18)
RWSA Total	10.75	322.52	

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

Status of Reservoirs (as of October 18, 2018):

- ▶ Urban Reservoirs: 100 % of Total Useable Capacity
- Ragged Mountain Reservoir is full (100%)
- Sugar Hollow Reservoir is full (100%)
- South Rivanna Reservoir is full (100%)
- ➢ Beaver Creek Reservoir is full (100%)
- Totier Creek Reservoir is full (100%)

WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during the month of September 2018. Performance of the WRRFs in September was as follows compared to the respective VADEQ permit limits:

WRRF	Average Daily Effluent	Average CBOD ₅ (ppm)		Average Total Suspended Solids (ppm)		Average Ammonia (ppm)	
	Flow (mgd)	RESULT	LIMIT	RESULT	LIMIT	RESULT	LIMIT
Moores Creek	11.5	0.5	10	0.7	22	0.01	2.0
Glenmore	0.125	1.8	15	2.4	30	0.12	NL
Scottsville	0.080	1.5	25	2.8	30	0.30	NL
Stone Robinson	0.000	NR	30	NR	30	NR	NL

NR = Not Required

NL = No Limit

<QL: Less than analytical method quantitative level (2 ppm for CBOD, and 1 ppm for TSS) is reported as zero.

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

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

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

WATER AND WASTEWATER DATA:

The following graphs are provided for review:

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







MEMORANDUM

TO: RIVANNA WATER AND SEWER AUTHORITY BOARDS OF DIRECTORS

FROM: JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT:APPROVAL OF ENGINEERING SERVICES - BEAVER CREEK
RESERVOIR DAM IMPROVEMENTS – SCHNABEL ENGINEERING

DATE: OCTOBER 23, 2018

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, requiring that the capacity of the spillway be increased. In 2012, Schnabel Engineering developed three alternatives for upgrading the capacity of the Beaver Creek Dam Spillway. Following 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 elected to have Schnabel update the 2012 alternatives analysis and prepare a Preliminary Engineering Report for upgrading the dam spillway. Staff has decided to proceed with design of a labyrinth spillway and chute through the existing dam with a bridge to allow Browns Gap Turnpike to cross over the new spillway. Staff expects final design to begin in late 2018 and construction to begin in 2021.

The Natural Resources Conservation Service (NRCS) periodically has funding available for upgrades to eligible dams under their jurisdiction (which includes the Beaver Creek Dam). If funding for the Beaver Creek Dam upgrades becomes available during design of the project, additional design and coordination efforts will be authorized by RWSA staff to meet specific NRCS design criteria.

In 2017, RWSA entered into a term contract with Schnabel Engineering for dam-related engineering services. Under this term contract, staff has negotiated a work authorization for final design and bid-phase services for the selected dam upgrade alternative on a fixed-fee basis not to exceed \$776,000. NRCS funding efforts will require an additional fixed fee of \$115,000 for additional design-phase services and an additional time and materials not-to-exceed fee of \$300,000 for development of a Supplemental Watershed Plan for a total not-to-exceed fee of \$1,191,000. As mentioned above, additional professional services required to meet NRCS funding efforts, will only be authorized if NRCS funding becomes available and represents a financial

benefit to the Authority. Work on this project will be coordinated with the new relocated raw water pump station and intake and reservoir oxygenation system.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a Work Authorization with Schnabel Engineering for the Beaver Creek Dam Improvements project for final design and bid-phase services for a total fee not to exceed \$1,191,000, and any amendments to the Work Authorization, only when necessary for the completion of this portion of the project, provided the total amount of all amendments does not exceed 10% of the total Work Authorization fee.



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 ENGINEERING SERVICES – OBSERVATORY WATER TREATMENT PLANT - EXPANSION AND REHABILITATION PROJECT – SHORT, ELLIOT, HENDRICKSON ENGINEERS

DATE: OCTOBER 23, 2018

The Observatory Water Treatment Plant (OBWTP) is the oldest of the three urban water plants. The facility is a conventional surface water treatment plant that has a process train consisting of rapid mix, flocculation, sedimentation, and dual-media filtration. The plant was originally constructed in the mid-1950's and since that time very little has been replaced or upgraded at the facility. As a result, much of the original equipment is inefficient, prone to unexpected failure, and does not have readily accessible replacement parts. Early planning for the Community Water Supply envisioned that the plant would undergo a wholesale upgrade. This upgrade was to be concentrated on specific improvements to critical systems including the flocculators, filters, sedimentation basins, and chemical feed facilities, all to enhance future reliability. In addition, the existing reinforced concrete flume, which conveys treated water from the sedimentation basins to the filters, needs to be replaced along with deteriorated piping control valves, along with upgrades to the electrical and SCADA control systems.

A Preliminary Engineering Report for this plant was completed by Short Elliot Hendrickson (SEH) that evaluated replacement and rehabilitation methods for the issues noted above and analyzed a capacity upgrade for the facility. The PER recommended that the facility be upgraded to 10 million gallons per day to meet the future capacity, redundancy and resiliency needs of the Urban Water System. An upgrade of the flocculator system has been completed, which included replacement of mechanical and electrical equipment, as part of the Granular Activated Carbon project.

In order to take this project from the PER phase through construction, staff has negotiated a scope, fee and schedule with SEH to perform preliminary engineering, final design, bidding, and construction administration services for the Observatory Water Treatment Plant - Expansion and Rehabilitation project.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a work authorization with Short Elliot Hendrickson for preliminary engineering, final design, bidding, and construction administration services for the Observatory Water Treatment Plant - Expansion and Rehabilitation project, for an amount not to exceed \$1,644,815, and any amendments needed to complete the design, bidding, and construction administration of the improvements identified above, not to exceed 10% of the original contract amount.



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 ENGINEERING SERVICES – SOUTH RIVANNA WATER TREATMENT PLANT - EXPANSION AND REHABILITATION PROJECT – SHORT ELLIOT HENDRICKSON ENGINEERS

DATE: OCTOBER 23, 2018

The South Rivanna Water Treatment Plant (SRWTP) is a conventional surface water treatment plant that has a process train consisting of rapid mix, flocculation, sedimentation, and dual-media filtration. It was constructed in 1964 and expanded in 1984 and supplies the majority of water to RWSA's Urban Water System. The solids processing infrastructure was added in 1992 and the chlorine building, and equalization tank were added in 1999.

Some components of this project include expansion of the coagulant storage facilities; installation of additional filters to meet firm capacity needs; addition of a second variable frequency drive at the Raw Water Pump Station; relocation of electrical gear from a sub terrain location at the Sludge Pumping Station; a new building for additional office, lab, control room, and storage space; installation of a new high service pump; and other general renovations. As the plant currently operates at 80 to 90% of its firm capacity of 12 million gallons per day, these modifications will allow the plant to operate at its full capacity more reliably and efficiently.

A Preliminary Engineering Report for this plant was completed by Short Elliot Hendrickson (SEH) that evaluated replacement and rehabilitation methods for the systems noted above. The PER recommended expanding the SRWTP filtering capacity and other rehabilitation projects. To take this project from the PER phase through construction, staff has negotiated a scope, fee and schedule with SEH to perform preliminary engineering, final design, bidding, and construction administration services for the South Rivanna Water Treatment Plant - Expansion and Rehabilitation project.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a work authorization with Short Elliot Hendrickson for preliminary engineering, final design, bidding, and construction administration services for the South Rivanna Water Treatment Plant - Expansion and Rehabilitation project, for an amount not to exceed \$1,451,613, and any amendments needed

to complete the design, bidding, and construction administration of the improvements identified above, not to exceed 10% of the original contract amount.



MEMORANDUM

TO: RIVANNA WATER AND SEWER AUTHORITY BOARDS OF DIRECTORS

FROM: JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT:APPROVAL OF ENGINEERING SERVICES – RAGGED MOUNTAIN
RESERVOIR TO OBSERVATORY WATER TREATMENT PLANT
RAW WATER LINE - MICHAEL BAKER INTERNATIONAL

DATE: OCTOBER 23, 2018

Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant by way of two 18-inch cast iron pipelines, which have been in service for more than 110 and 70 years respectively. The increased frequency of emergency repairs and expanded maintenance requirements are one reason for replacing these pipelines. The proposed waterline will also be able to more reliably transfer water to the expanded Observatory plant, which will have the capacity to treat 10 million gallons per day (mgd) following upgrades at the plant expected to be completed by 2023. The new pipeline is expected to be constructed of 36-inch ductile iron and will be approximately 14,000 feet in length. It is the intent for this pipeline to be integrated with the future proposed South Rivanna Reservoir to RMR raw water main project as part of the approved 50-year Community Water Supply Plan.

This project includes a pipeline route analysis, preliminary (30%) design and preparation of easement documents, and support during the water line easement acquisition process along the approved route to secure a corridor for the construction of the water line. Final design, bidding assistance and construction administration services will follow in a subsequent work authorization.

RWSA entered into a term agreement with Michael Baker International, Inc. (Baker) on August 3, 2016 for Water and Sewer Engineering Consulting Services. Based on the success of similar projects completed by Baker for RWSA, Baker was selected to perform engineering services for the South Fork Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way Project and as a result, was selected for this project as well.

Engineering staff has negotiated a scope of work, fee and schedule with Baker for the Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line project to include:

- Routing Study (including Hydraulic Analysis and Route Alternatives Analysis)
- Preliminary Engineering Report

- Preliminary (30%) Design Drawings and Cost Estimates
- Easement Plats Preparation, and
- Support during the Easement Acquisition Process

The total not to exceed value for this work authorization is \$210,565, which is within the approved budget for this CIP project.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute a Work Authorization with Michael Baker International, Inc. for Engineering Services for the Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line project for an amount not to exceed \$210,565. Staff further requests the Board of Directors authorize the Executive Director to execute amendments in additional amounts, if deemed necessary for the completion of this project, provided the total amount of all amendments does not exceed 10% of the total Work Authorization fee.



MEMORANDUM

TO: RIVANNA WATER AND SEWER AUTHORITY BOARDS OF DIRECTORS

FROM: JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENACE

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT:APPROVAL OF TERM CONTRACT FOR ENVIRONMENTAL
ENGINEERING SERVICES - ECS MID-ATLANTIC, LLC

DATE: OCTOBER 23, 2018

The RWSA has a need for various environmental engineering consulting services for on-going and future projects. A Request for Proposals (RFP 18-02) for a new term contract was developed and advertised on August 30, 2018. Six proposals were received on September 20, 2018.

Based on the qualifications of the firms, the RFP selection committee interviewed three firms. Interviews were conducted on October 4 and October 5, 2018, and the committee determined that ECS Mid-Atlantic, LLC, Albemarle County office, was the top-ranked candidate, and selection of this firm would be in the best interests of the Authority. Work tasks under this contract may include, but are not limited to:

- Wetland and stream mitigation, design, and monitoring
- Permitting coordination with regulatory agencies
- Stormwater issues
- Endangered species impact analysis

The first project RWSA will be using this contract for will be for continued monitoring of the wetland and stream mitigation sites for the Ragged Mountain Reservoir project.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to execute an Engineering Services Agreement, and future work authorizations, with ECS Mid-Atlantic, LLC for a Term Contract for Environmental Engineering Consulting Services. The contract will be awarded for one year, with the option for up to four additional one-year renewals for a total contract length not to exceed five years.



Birdwood Raw Water Line Project Update

BILL MAWYER, EXECUTIVE DIRECTOR

OCTOBER 23, 2018



Scope

•6,100 LF of 36" ductile iron pipe

•Part of raw water line connecting South Rivanna Reservoir and Ragged Mountain Reservoir

•Schedule:

- Advertise for Construction Bids
- Award by RWSA Board
- Start Construction
- Construction Completion

September 2018 October 23, 2018 December 2018 October 2019

•Estimated Project Budget: \$7 M



Easements







Acquisitions from UVA Foundation

Permanent Easements: 6.03 acres
Temporary Easements: 2.83 acres
Cost Negotiated: \$240,200


 Project Budget: 	\$7 M
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 Competitive bids: 	\$2.6 - \$4.1 M
 Easement Costs: 	\$240,200

•Anticipated Project Budget: \$4 - 4.5 M



Request Approval Of:

1. ACQUISITION OF EASEMENTS

Authorize the Executive Director to execute easement and compensation agreements with UVAF for permanent easements totaling 6.03 acres and temporary easements totaling 2.83 acres, for a total cost of \$240,200. The Executive Director is also authorized to execute minor modifications to these documents as necessary to fully complete the project.

2. CONSTRUCTION CONTRACT

Authorize the Executive Director to award a construction contract for the SFRR to RMR 36" Raw Water Main; Phase 1 – Birdwood Golf Course Project to the lowest responsible and responsive bidder as long as the low bid is less than the Engineer's estimate and within the project budget of \$7 M. The Executive Director is also authorized to execute any change orders necessary for completion of the project provided the total amount of all change orders does not exceed 10% of the original contract amount.



MEMORANDUM

TO: RIVANNA WATER AND SEWER AUTHORITY BOARDS OF DIRECTORS

FROM: JENNIFER WHITAKER, DIRECTOR OF ENGINEERING & MAINTENANCE

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT:RECOMMENDATION FOR ACQUISITION OF RAW WATER LINE
EASEMENTS ON THE BIRDWOOD PROPERTY

DATE: OCTOBER 23, 2018

The design plans and plats for the 36" raw water line across the Birdwood property have been finalized. This report recommends RWSA acquire permanent and temporary easements required to construct a raw water line along the eastern boundary of the Birdwood property, owned by the University of Virginia Foundation (UVAF). Based on the design requirements and preferred alignment of the water line established with the UVAF, 6.03 acres of permanent easement and 2.83 acres of temporary easement will be required. Compensation for these easements totals \$240,203.

Our staff and engineering consultant have been coordinating with UVAF since mid - 2017 to plan the installation of this raw water line while the golf course is closed for reconstruction. This strategy will minimize our construction costs as well as the impact on golf course operations and the impact on the adjacent neighborhood. Our project will include installation of about 6,100 linear feet of 36" ductile iron pipe located at varying depths in the proposed alignment between the golf course and the eastern property boundary. Final easement areas and the associated costs will be determined after installation of the water line has been completed, as unforeseen underground construction challenges may result in minor changes to the area required. This section of the raw water line, located on the Birdwood property between Rt. 250 and Reservoir Road, was anticipated in the Community Water Supply Plan completed in 2012, as part of a larger project to extend a raw water line from the South Rivanna Reservoir to the Ragged Mountain Reservoir.

Board Action Requested:

Authorize the Executive Director to execute easement and compensation agreements with UVAF for permanent easements totaling 6.03 acres and temporary easements totaling 2.83 acres for a total cost of \$240,200. The Executive Director is also authorized to execute minor modifications to these documents as necessary to fully complete the project.



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT:RECOMMENDATION FOR ATHORIZATION TO AWARD
CONSTRUCTION CONTRACT – SRFF TO RMR 36-INCH RAW
WATER MAIN; PHASE 1 BIRDWOOD GOLF COURSE

DATE: OCTOBER 23, 2018

Our staff have been coordinating with the UVA Foundation since mid - 2017 to strategically plan an expedited project to construct 6100 LF of 36-inch raw water main along the eastern boundary of the Birdwood golf course property. The strategy is to proceed with our pipeline work just ahead of the planned golf course reconstruction project to reduce our project costs, as well as to avoid repeated disruptions to the property, golf course operations, and the adjacent neighbors. The golf course reconstruction project is scheduled to begin in December 2018.

In accordance with the coordinated schedule, our Consultant Engineer, Michael Baker International, completed the design and the project was advertised for bids (RFB No. 347) on September 10, 2018. Construction bids for the project were opened on October 11, 2018, and four competitive bids were received ranging from \$2.59 M to \$4.16 M. However, after review of the bid documents, it was determined that all of the bids were nonresponsive to the bid requirements, and all of the bids were rejected. The bid documents were clarified, and a new Invitation for Bids was issued on October 19, 2018. Bids will be opened on October 31, 2018.

In order to maintain the expedited schedule for completion of this work, we are requesting authorization to award a construction contract to the lowest responsive and responsible bidder as long as the low bid is less than the Engineer's estimate and within the project budget of \$7 M.

Board Action Requested:

Staff requests that the Board of Directors authorize the Executive Director to award a construction contract for the SFRR to RMR 36" Raw Water Main; Phase 1 – Birdwood Golf Course Project to the lowest responsible and responsive bidder as long as the low bid is less than the Engineer's estimate and within the project budget of \$7 M. The Executive Director is also authorized to execute any change orders necessary for completion of the project provided the total amount of all change orders does not exceed 10% of the original contract amount.

Dam Safety Program Overview



Presented by: Jennifer Whitaker Director of Engineering & Maintenance October 2018

Agenda

- Why is Dam Safety Important?
- Dam Safety Regulations/Terminology
- RWSA and Regional Dam Facilities
- Emergency Action Plans
- Dam Safety Program Elements

Why is Dam Safety Important?



Oroville Dam Incident in California, February 2017

- Heavy rain in early 2017 caused water levels to quickly rise in the lake
- To relieve pressure on the dam, the owner released water down the main spillway
- A large crack soon formed in the spillway, which quickly grew into a 250-ft crater
- Overtopping of the earthen emergency spillway led to erosion and threatened to breach the spillway
- A decision was made to evacuate the Feather River basin
- Waters eventually receded without breaching the spillway, which is currently undergoing repairs at a cost of >\$1 Billion

Why is Dam Safety Important?



College Lake Dam in Lynchburg, VA

- Heavy rain (>6") caused water levels in the College Lake Dam to rise rapidly in August, 2018
- The emergency spillway activated but was unable to pass enough water to prevent overtopping of the dam, causing damage to the road and embankment
- A spillway through the dam was opened to rapidly dewater the lake in an effort to avoid failure
- Downstream areas were evacuated out of fear of dam failure

Dam Safety Regulations & Terminology

- Dam Any artificial barrier, including appurtenant works, that impounds or diverts water on a temporary or long-term basis. Also referred to as impoundments
- All Dams in Virginia are regulated by the Department of Conservation and Recreation (DCR), EXCEPT:
 - <6 feet tall
 - <25 feet tall AND impounds <50 acre-feet
 - Impounds <15 acre-feet
 - Agricultural use and impounds <100 acre-feet
 - Federal dams (FERC)
 - Operated for Mining Purposes

Dam Safety

- Dams are Designed with a High Level of Conservatism.
- Dam Safety Emergencies are <u>Low Probability Events</u> with the Potential for High Impact.
- Potential Causes of Dam Emergencies
 - Rainfall Exceeds Dam Design
 - Material Failure
 - Vandalism
 - Terrorism
 - Accidents / Public Safety

Hazard Potential Classification

A system that categorizes dams according to the degree of adverse consequences from their failure or misoperation. This does not reflect on their current condition (their safety, structural integrity, or flood routing capacity), and that includes the following categories:

- High hazard potential loss of one human life is likely if the dam fails
- Significant hazard potential possible loss of human life and likely significant property or environmental destruction
- Low hazard potential no probable loss of human life and low economic and/or environmental losses.

Probable Maximum Precipitation (PMP)

"The theoretically greatest depth of precipitation for a given duration that is physically possible over a particular drainage area at a certain time of the year."

- American Meteorological Society, 1959

Probable Maximum Precipitation (PMP)



Rainfall Recurrence Intervals for Charlottesville Area, from NOAA Atlas 14 (Volume 2, Version 3) & VA DCR PMP Study for Virginia, November 2015

Probable Maximum Precipitation (PMP)

• PMP in the United States

- Point rainfall exceeding the PMP has only occurred twice: Cherry Creek, CO (1935) and Smethport, Pennsylvania (1942)
- Hurricane Harvey (2017): localized rainfall reached upward of 90% of the PMP over 72 hours
- PMP in Central Virginia
 - Hurricane Camille: Nelson County 1969 (81% of the PMP)
 - Madison County 1995 (86% of the PMP)

RWSA & Regional Dam Facilities

• High Hazard Dams:

- South Fork Rivanna Dam (FERC)
- Sugar Hollow Dam (DCR)
- Beaver Creek Dam (DCR)
- Ragged Mountain Dam (DCR)
- Low Hazard Dams:
 - Totier Creek Dam (DCR)
 - Lickinghole Creek Dam (DCR)

- Other (Unregulated) RWSA Dams:
 - North Fork Rivanna Low Head Dam (at NRWTP)
 - Mechums River Low Head Dam
 - Ivy MUC Dam
 - Unnamed Dam on Piney Creek (on Buck Mountain Property)
- Other Dams in the Region:
 - State Lake Albemarle (VGIF/VDCR)
 - Private Key West Subdivision
 - County Walnut Creek, Chris Green
 - Other VDP Lake Anna

South Fork Rivanna Dam



- Federally Regulated Dam
- Small Hydropower Facility
- Built in 1965
- Concrete Gravity Dam
- 700 feet long
- 47 feet tall



Ragged Mountain Dam

- State Regulated Dam
- Built in 2012-2014
- Historical Dams 1885 & 1908
- Earthfill Dam
- 785 feet long
- 125 feet tall



Sugar Hollow Dam

- State Regulated Dam
- Built in 1948
- Upgraded 1998
- Concrete Dam, Rubber Bladder
- 77 feet tall
- Outfall Upgrades 2014



Beaver Creek Dam

- State Regulated Dam
- Built in 1963
- Earthfill
- 60 feet tall
- County Park
- State Road on Cres





Totier Creek & Lickinghole Creek Dams

Totier Creek

- Located in Scottsville
- State Regulated Dam
- Built in 1971
- 35 feet tall





Lickinghole Creek

- State Regulated Dam
- Built in 1995
- 32 feet tall
- Built as Sediment Basin

Emergency Response Planning for Dams

Owners Dam Safety Program

- Dam Safety Policies
- Internal Training and Procedures
- Safe Dam Design and Quality Construction
- Dam Maintenance and Monitoring

Emergency Action Plans

 Coordination with Emergency Response and Planning Agencies

EAP review, Training, and Exercising

• Drills, Functional Exercises

Public Safety Education and Notifications

 Signs, Alarms, Downstream Notifications

Emergency Action Plans for Dams

- Notification Chart
- Emergency Detection, Evaluation & Classification
- Responsibilities
- Preparedness
- Inundation Maps

Failure Scenarios & Notification Charts

- Three Failure Scenarios
 - Failure is Imminent or Has Occurred
 - Potential Failure Situation is Developing
 - Non-Failure Emergency
- Each Scenario has Notification Chart for each Dam

EAP Notification Chart

Notification Calldown List

	EMERGENCY ACT	ION NOTIFIC	SOUT	FOR AN INST TH RIVANNA D	ANTANE DAM	OUS OR IMMINENT FAILU	RE
Da	am Facilit	y 🦯	Еме	RGENCY CONDITION	A"		
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			Op South Rivan	erator on Duty na Water Treatment Plant 973-5709		Descrip	tion
	+	_		1		1	
	Dave Tungate, Director of O Work: 977-2970 x15 Cell: 906-0771 Home: 205-4372	perations 5	Bill Mawy Work	er, Executive Director : 977-2970 x103 elt 906-2623		Matthew Bussell, Water Manager Work: 973-5709 Cell/Home: 906-0761	
	*		Hom	e: 804-839-0531		+	
	Charlottesville-UVA-Albe Emergency Management Coo Alison Farole Work: 971-1263 Cell: 714-33 911 Dispetch: 977-904 Albemarle Co. Fire & Res J. Dre Exidence. Chie	marie «. (EMC) 8-0646 1 f	Mike Ga Mike Ga H	ffney, RWSA Chairman Nork: 978-1884 Cel: 760-2160 Iome: 760-2180 dson. Albernarile Co. Exec.		Jennifer Whitaker Director of Engineering & Maintenance Volk: 977-2070 v 104 Cell: 906-0762 Home: 282-0089	
	Work: 296-5833 Cell: 531-6	3600	Work	295-5841 ext. 3400		Wayne Barnes Water Dent Assistant Manager	
\square	Albemarie Co. Police Ron Lantz, Chief Work: 296-5807 Cell: 987-1 Charlottesville Fire	8594	Ce Mike Murphy	// Interim Charlottesville City Manager Work: 970-3116 Cell: 989-5515		Work: 295-2306 Cell/Home: 587-859 Scott Schiller, Engineering Manager Work: 977-2970 ett. 206 Cell: 962-8889 Home: 504-869-8117	
	Andrew Baxter, Chief Mork: 970-3323 Cell: 531-3	504	,	lome: 242-6279		Greg Morris, Maintenance Manager	
節	HUK. 519-5525 CHL 331-		Gary O'Cor	nnell, ACSA Exec. Director		Work: 977-2970 x120 Cell: 905-0772	
	Charlottesville Police Chief RaShall Brackney		Wo	rk: 977-4511 x109 Cell: 531-0674		190110. 010-1400	
10	Dispatch: 977-9041 Work: 97	0-3288	•	iome: 293-7144		Greg Marrs, Maintenance Assistant Manager Work: 977-2970 x184 Cell. 906-0776	
TAGE	Fluvanna County Sheri Eric Hess, Sheriff Dispatch: 589-8211	er .	Lauren Hild	ebrand, Director of Utilities Nork: 970-3819 Cell: 566-7345 Iome: 973-9117		Home: 985-6388 Tim Castillo, Wastewater Manager Work: 977-2970 x112 Cell: 906-0788 Home: 277-0748	
o,	Debbie Smith Work: 591-1910 ext. 105	6	Steve Nichols,	Fluvanna County Administrat Nork: 591-1910 Cell: 825-7589	×	Rob Haacke, Wastewater Assistant Manager Work: 977-2970 x112 Cell: 964-6382	
\square	UVA Office of Emergency Prep Mariorie Sidebation Dire	aredness				Home: 540-560-9029	
	Work: 924-8745 Cell: 964-1	7912					
	UVA Police Departmen Dispatch: 924-7166	×	Television WVIR TV	Media 220-2900 / 220-2970		Monticello United Soccer Club (MONU) Pet Riley Work: 974-4825 Cett. 249-7774	
	Virginia State Police Phone: 1-800-552-096		WTVR (6) Radio	804-254-3600 / 3684		Soccer Organization Charlottesville Area (SOCA) Mett Wilson	
	24-Hour 1-703-996-220	1	WOMZ WCYK WCHV AM	977-0397 977-0397 977-2300 977-0397 978-4408 975-9970 978-4408 975-9970 977-0397 (main office)		VVDR: 9755025 Cell 4062/457 VA Department of Transportation Joel DeNunzio, Resident Engineer Work: 422-9373 Cell: 531-2846 24-Hour Erner: Hotline: 951-6744	
	Wayne King, PE, FERC, Regional Work: 678-245-3075 Cell 1: 404- Cell 2: 404-433-5628	Engineer 661-1270	WMRYAWMRA WNRN WUVA WT.IU	800-677-9672 971-4096 989-5918 293-5477 817-6880 924-3418 924-3959		Norfolk Southern Railroad Emergency 1-800-453-2530 or 1-800-680-0400	
	Randal G. Pool, PE, FERC, Brand Work: 678-245-3079 Cell: 404-6 Home: 404-377-2333	63-1531				CSX Ratiroad Chief Dispatcher: 904-381-2782 Emergency Only: 1-800-232-0144 Viroinia Dam Safety	4
	William J. Brown, PE, FERC, Bran Work: 678-245-3070 Cell: 202- Home: 708-310-0430	ch Chief 365-4691			_	Robert VanLer Work: 244-0653	
	List of Alternatives: Participant	Alternate		Alternate's Work Phone	Alternate's Cell Phone	Alternate's Home Phone	
	Matthew Bussell	Wayne Barnes		295-2306	987-8659	967-8659	
	Castillo, Tim Risbardenn Jaff	Rob Haacke		977-2970 x104 977-2970 x112	906-0762 964-6382	282-0069 540-560-9029 540-225-0284	
	Murphy, Mike Mawyer, Bill	Leslie Beauregard Dave Tungate		970-3105 977-2970 x155	326-2061 905-0771	757-810-0212 205-4372	
	Whitaker, Jennifer	Victoria Fort Scott Schiller		977-2970 x205 977-2970 x206	905-2813 962-8889	804-814-3024 804-869-8117	

NOTE: ALL PHONE NUMBERS ARE 434 AREA CODE UNLESS OTHERWISE LISTED

REVISED 10/5/2018

Responsibilities under the EAP's

• RWSA:

- Verify and assess emergency conditions at the dam
- Notify participating EMA's
- Take corrective action at facility, if possible
- Issue condition status reports
- Declare termination of emergency at facilities

• Charlottesville-UVA-Albemarle Emergency Communications Center:

- Receive condition status reports from RWSA
- Notify public
- Coordinate evacuation from inundation areas, if required
- Albemarle County Charlottesville UVA Fluvanna County:
 - Receive condition status reports from RWSA
 - Notify public
 - Conduct evacuation from inundation areas, if required
 - Provide mutual aid, if requested and able

Inundation Mapping



Inundation Mapping



RWSA Dam Safety Program Elements

- Permitting and Regulatory Compliance
- Emergency Action Plan (EAP) Updates
- Training
- Exercises (internal & regional)
- Vegetation Control

- Repairs/Upgrades
- Public Safety
- Studies and Reports
- Inspections and Surveys
- Monitoring
- Operations

References

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- Riedel, John T. and Louis C. Schreiner. NOAA Technical Report NWS 25, Comparison of Generalized Estimates of Probable Maximum Precipitation with Greatest Observed Rainfalls, NOAA, March 1980. <u>https://archive.org/details/comparisonofgeneooried/page/n3</u>
- Johnson, Garrett. "Hurricane Harvey Rainfall Effects on Texas." *Freese and Nichols*, 31 August 2017. <u>https://www.freese.com/blog/hurricane-harvey-rainfall-effects-texas</u>
- Jones, Rhett. "Why All Americans Should be Worried about the Oroville Dam Crisis." *Gizmodo*, Gizmodo Media Group, 13 February 2017. <u>https://gizmodo.com/why-all-americans-should-be-worried-about-the-oroville-1792304716
 </u>
- "College Lake dam deemed stable, but monitoring continues." *University of Lynchburg*, 3 August 2018. <u>https://www.lynchburg.edu/news/2018/08/college-lake-dam-deemed-stable-but-monitoring-continues/</u>
- "Lynchburg, Va. Officials eye College Lake Dam stability." USA Today, 3 August 2018. https://www.usatoday.com/picture-gallery/news/nation/2018/08/03/lynchburg-va-officials-eye-college-lakedam-stability/902885002/
- Eherts, Byrne, and Williams. "Evacuations lifted after dam failure fears ease in Lynchburg, Virginia." Accuweather, 4 August 2018. <u>https://www.accuweather.com/en/weather-news/potential-college-lake-dam-failure-spurs-evacuations-in-lynchburg-virginia/70005672</u>

Questions?

Urban Reservoirs & Dams



South Rivanna Dam

Sugar Hollow Dam

Ragged Mountain Dam

Reservoirs	Useable Volume (MG)	Surface Area (Acres)	Watershed (miles ²)
South Fork Rivanna	883	366	259
Ragged Mountain	1,513	170	2
Sugar Hollow	339	47	18



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 FY 2017-2018 RATE CENTER RESULTS

DATE: OCTOBER 23, 2018

The Authority ended the previous fiscal year with a cumulative net loss/deficit of roughly \$1,295,600. The Urban Wastewater rate center was the most significant contributor to the deficit this year due to unbudgeted expenses for the clarifier repairs and chemicals for temporary odor control at the Moores Creek Plant. The amount of the deficit for Urban Wastewater was \$1,313,500. (*Notes about the Urban Wastewater deficit that were discussed with the Board at the April meeting are attached at the end of this memo.*) Urban Water ended the year nearly even with a surplus of \$1,800. Of the other rate centers, Crozet Water had a deficit and the two Scottsville Rate Centers and Glenmore Wastewater had surpluses.

<u>Background</u>: 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 2018, 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.

The operations account has a <u>target</u> working cash balance of 60 days of cash and cash equivalents on hand to meet daily and monthly cash flow needs, which currently is \$5,470,300 (based on the FY 2019 budget). This is an increase of \$372,800 from the prior year, because the FY 2019 budget was increased compared to the FY 2018 budget. At year end, this target is compared to actual <u>cash basis</u> 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	\$2,808,100
Cash equivalents	\$1,366,600
Total	\$4,174,700
60 Day Cash Target	\$5,470,300
Deficit Operational Cash	(\$1,295,600)

Cash equivalents are the invoiced amounts mostly due from the City and ACSA net of our accounts payable due at year end, but paid in the next year, 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 is underfunded by \$1,295,600 which agrees to the cash basis result on the monthly budget vs. actual reports to the Board for June 2018. Therefore, the following transfers to the discretionary reserves are recommended for FY 2018 to bring the operations account back to the target balance and properly keep the six rate center reserves separated. FY 2017 to FY 2014 transfers are included for comparison:

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

	F	Y2018	FY2017]	FY2016	1	FY2015	<u>FY2014</u>
Urban Water	\$	1,800	\$ 113,700	\$	55,983	\$	279,390	\$ 298,310
Urban Wastewater	(1	,313,500)	(673,900)		355,437		4,070	1,264,670
Crozet Water		(58,500)	(18,600)		17,618		7,630	(37,070)
Scottsville Water		30,100	30,200		11,382		8,580	28,880
Glenmore Wastewater		26,800	(5,300)		(1,896)		(21,380)	1,920
Scottsville Wastewater		17,700	 7,900		(6,263)		(20,900)	 (6,210)
	\$ (1	.295.600)	\$ (546.000)	\$	432.261	\$	257.390	\$ 1.550.500

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. The previous years' results are shown for comparison to show how reserves are used and accumulated to maintain a sound operating account. 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 13 years. Attached is a summary of the ending reserves for Fiscal Year 2018.

Board Action Requested:

Board action is requested to transfer funds to/(from) the respective reserves for FY 2018 ending results to or from the operations account as follows:

Urban Water	\$	1,800	Urban Wastewater	\$(1,313,500)
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Crozet Water	\$ (58,500)	Glenmore Wastewater	\$ 26,800
Scottsville Water	\$ 30,100	Scottsville Wastewater	\$ 17,700

Attachment

Rivanna Water and Sewer Authority			FROM (TO)		
Statement of Reserve Balances			OPERATIONS ACCOUNT		
June 2018 Reserves		luno	recerve adjustment		Adjusted
			reserve aujustment		Aujusteu
	۲m	FI ZUIO	Proposed		FI 2010 Ending Bolonce
Linhan Watar		ung balance	Doard action needed		Ending balance
Disantianana Desena	¢	44,000,000	ф <u>4 000</u>	ሱ	
Discretionary Reserve	\$	11,963,306	\$ 1,800	\$	11,965,106
Rate Stabilization Fund		1,000,000			1,000,000
watersned Management Fund		194,393		¢	194,393
Subtotal	\$	13,157,699		\$	13,159,499
Urban Wastewater					
Discretionary Reserve	\$	9,387,424	(1,313,500)	\$	8,073,924
Rate Stabilization Fund		1,000,000			1,000,000
Subtotal	\$	10,387,424		\$	9,073,924
Crozet Water					
Discretionary Reserve	\$	789,028	(58,500)	\$	730,528
Scottsville Water					
Discretionary Reserve	\$	255,983	30,100	\$	286,083
.					
Glenmore Wastewater	•			•	
Discretionary Reserve	\$	78,985	26,800	\$	105,785
Soottovillo Wastowator					
Discretionary Posenyo	¢	97 240	17 700	¢	104 040
Discretionary Reserve	φ	07,240	17,700	φ	104,940
Capital Fund					
Specific Capital Projects	\$	4,199,908		\$	4 199 908
Vehicle Replacement Fund	\$	961.084		\$	961.084
	Ŧ			Ŧ	
Subtotal Discretionary Reserves	\$	29,917,351	\$ (1,295,600)	\$	28,621,751
2	<u> </u>	· · ·	/	<u> </u>	· · ·
Indenture Restricted Minimum	\$	500,000		\$	500,000
				•	,
Total Reserves *	\$	30,417,351		\$	29,121,751

* - Agrees to investment balances - audited.

** - Proposed Board action

Rivanna Water & Sewer Authority Urban Wastewater Deficit Analysis:

Total items identified	\$ 903,779	
Pipeline - line items overruns	\$ 122,142	Several stream bank restorations: Aug: \$20,660 Moores Creek Interceptor repair at 5th St. Oct: \$116,409 Stream Bank Restoration & repair-Rivanna Int. Dec: \$45,266 to Morey Creek Aerial Crossing
Odor control overrun - Crozet Interceptor	\$ 116,500	Budgeted \$207,000 (annual) vs actual of \$323,500 (10 months)
Utility Budget overrun	\$ 45,000	Budgeted \$750,000 (12 months) vs actual of 794,963 (10 months) New PS, new odor control systems, rate schedule may be in error
Metering errors in July and August	\$ 100,000	Recycle meter was over reporting causing billed flow to be under reported
Flows are under budget by 9.3%	\$ 520,137	Dry summer and fall of 2017 flows are 266,600,000 gallons below budgeted amounts
Deficit as of April 30, 2018	\$ 918,295	