

Board of Directors Meeting

February 28, 2023 2:15pm

BOARD OF DIRECTORS

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

- DATE: FEBRUARY 28, 2023
- LOCATION:Conference Room, Administration Building695 Moores Creek Lane, Charlottesville, VA
- TIME: 2:15 p.m.

AGENDA

- 1. CALL TO ORDER
- 2. AGENDA APPROVAL
- 3. MINUTES OF PREVIOUS BOARD MEETING ON JANUARY 24, 2023
- 4. RECOGNITION
- 5. EXECUTIVE DIRECTOR'S REPORT
- 6. ITEMS FROM THE PUBLIC Matters Not Listed for Public Hearing on the Agenda
- 7. RESPONSES TO PUBLIC COMMENTS
- 8. CONSENT AGENDA
 - a. Staff Report on Finance
 - b. Staff Report on Operations
 - c. Staff Report on Ongoing Projects
 - d. Staff Report on Wholesale Metering
 - e. Approval of Engineering Services South Fork Rivanna Reservoir to Ragged Mountain Reservoir Pipeline Topographic Survey– Kimley-Horn
 - f. Approval of Betterment Agreement with Victorian Heights, LLC South Rivanna Reservoir to Ragged Mountain Pipeline, Intake, & Facilities Project

g. Award of Term Contract for Geotechnical, Materials Testing, And Professional Engineering Services – Schnabel Engineering, LLC

9. OTHER BUSINESS

- a. Presentation: Introduction of FY 24-28 Capital Improvement Program Bill Mawyer, Executive Director
- b. Presentation: Unregulated Contaminant Monitoring Rule 5 & Permanganate Update Dave Tungate, Director of Operations

10. OTHER ITEMS FROM BOARD/STAFF NOT ON THE AGENDA

11. CLOSED MEETING

12. ADJOURNMENT

GUIDELINES FOR PUBLIC COMMENT AT RIVANNA BOARD OF DIRECTORS MEETINGS

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

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Items From The Public, Matters Not Listed for Public Hearing on the Agenda." 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 comments 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/RSWA Administration office upon request or can be viewed on the Rivanna website.

Rev. September 7, 2022



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3	RWSA BOARD OF DIRECTORS
4	Minutes of Regular Meeting
5	January 24, 2023
6	5 minut j = 1, 2020
0	A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was
0	hald on Tuesday, January 24, 2022 at 2:22 n m in the 2 nd floor conference room. A dministration
0	Puilding 605 Moores Creak Long Charlottesville Virginie
9	Building, 095 Woores Creek Lane, Charlottesvine, Virginia.
10	
11	Board Members Present: Mike Gailney, Michael Rogers, Brian Pinkston, Ann Mallek, Lauren
12	Hildebrand, Jeff Richardson, and Quin Lunsford as alternate for Gary O'Connell.
13	
14	Board Members Absent: Gary O'Connell.
15	
16	Rivanna Staff Present: Bill Mawyer, Lonnie Wood, Jennifer Whitaker, Deborah Anama, Betsy
17	Nemeth, David Tungate, Michelle Simpson
18	
19	Attorney(s) Present: Carrie Stanton.
20	
21	1. CALL TO ORDER
22	Mr. Gaffney convened the January 24, 2023 regular meeting of the Board of Directors of the
23	Rivanna Water and Sewer Authority at 2:22 p.m.
24	
25	2. AGENDA APPROVAL – (Item 11 AMENDED)
2.6	Mr. Gaffney noted that Item 11 of the Agenda had been amended.
27	
28	Mr. Mawyer stated that Item 11 was amended based on the recommendation from counsel to
29	revise the wording for the exemption utilized for the closed session
30	To vise the wording for the exemption durized for the closed session.
31	Ms Mallek moved to approve the Agenda, as amended. Mr. Pinkston seconded the motion
22	which carried unanimously (6.0)
3Z 22	which carried unanimously (0-0).
33 24	3 MINUTES OF DEVIOUS BOADD MEETING
34	a Minutes of Decular Decard Meeting on December 12, 2022
35	a. Minules of Regular Board Meeting on December 15, 2022
36	
37	Mr. Rogers moved the Board to approve the minutes from the meeting held on December
38	13, 2022. The motion was seconded by Mr. Richardson and passed unanimously (6-0).
39	
40	4. RECOGNITIONS
41	a. Resolution of Appreciation for Mr. Jene R. Phillips, Jr.
42	
43	Mr. Gattney read the resolution.
44	
45	
46	

47 48	RIVANNA WATER AND SEWER AUTHORITY BOARD OF DIRECTORS
49	Resolution of Appreciation for Jene R. Phillips, Jr.
50	
51	WHEREAS, Mr. Phillips has served the Rivanna Water and Sewer Authority since May of
52	1982 in a number of positions, most recently as a Wastewater Operator; and
53	
54 55	WHEREAS , over the same period in excess of 40 years, Mr. Phillips has been a valuable resource and has positively impacted the Authority, its customers and its employees; and
56	
57	WHEREAS, the Rivanna Water and Sewer Authority Board of Directors is most grateful
58 59	for the professional and personal contributions Mr. Phillips has provided to the Rivanna Water and Sewer Authority; and
60	
61	NOW, THEREFORE, BE IT RESOLVED that the Rivanna Water and Sewer Authority
62	Board of Directors recognizes and thanks Mr. Phillips for his distinguished service, efforts and
63	achievements as a member of the Rivanna Water and Sewer Authority, and presents this Resolution
64	as a token of esteem, with its best wishes in his retirement.
65	
66	BE 11 FURTHER RESOLVED that this Resolution be entered upon the permanent Minutes of the Diverge Water and Seven Authority
67	Minules of the Rivanna water and Sewer Authority.
60 69	Michael Gaffney, Chairman
70	Lauren Hildebrand
71	Ann Mallek
72	Garv O'Connell
73	Brian Pinkston
74	Jeff Richardson
75	Michael C. Rogers
76	
77 78	Ms. Mallek moved that the Board adopt the resolution. The motion was seconded by Mr. Pinkston and carried unanimously (6-0).
79	
80	5. EXECUTIVE DIRECTOR'S REPORT
81	Mr. Mawyer reported that Mr. Gaffney had been reappointed by the Albemarle County Board of
82	Supervisors and Charlottesville City Council for his 11th term. He stated that as part of the
83	Authority's regional communication and collaboration program, he submitted a written quarterly
84	Council with an undete on the current status of the Authority's projects and programs
80	Council with an update on the current status of the Authority's projects and programs.
87	Mr. Mawyer recognized Mr. Travis Granger, who completed state requirements to receive a
88	Class II Water Operator license. He stated that Mr. Granger began employment with the
89	Authority about a year and a half ago, and he started working as an unlicensed Operator. He
90	noted that Mr. Granger was an Army veteran.
91	
92	Mr. Mawyer recognized that they operated a staff Apprenticeship Program with the Maintenance

93	Department and Human Resources Manager. He stated that there were eight mechanics in the
94	apprenticeship program. He stated that apprentices had to complete 8,000 hours of on-the-job
95	training and 576 hours of classroom time to achieve a Journeyman designation. He stated that
96	they sponsored the tuition for the classes, but apprentices completed the classroom requirements
97	on their own time.
98	
99	Mr. Mawyer recognized Mr. Kenny Lawhorne and Mr. Maurice Whitlow who had achieved
100	Journeyman Maintenance Mechanic status. He stated that our HR Manager, Ms. Betsy Nemeth,
101	worked with the Maintenance Department to run the program.
102	
103	Mr. Richardson asked if the curriculum was operated through a college or another type of
104	external program. He asked for more information regarding the framework.
105	
106	Ms. Nemeth responded that apprentices went to Valley Career and Technical Center located in
107	Fishersville, and they attended almost every semester. She stated that most of the partnership was
108	with VCTC. She stated that apprentices attended classes on their own time, and the Authority
109	paid for the courses.
110	
111	Mr. Mawyer asked if the classes were online.
112	
113	Ms. Nemeth responded that they were not. She stated that classes were mainly in-person.
114	Ma Mallah askad if the comion has used notionally on if it had been developed locally
115	Wis. Manek asked if the curriculum was used hatomany of if it had been developed locally.
117	Ms. Nameth stated that VCTC developed the curriculum for the Journeyman designation with
110	the Maintenance Manager
110	the Mantenance Manager.
120	Mr. Mawyer stated that they received a permit from the Virginia Marine Resources Commission
121	to complete the project to install a 24-inch pipe 40 feet beneath the South Rivanna River. He
122	stated that they were moving toward construction. He asked RWSA Senior Engineer. Ms.
123	Michelle Simpson, when they were expected to begin construction.
124	
125	Ms. Simpson stated that they hoped to begin by the summer.
126	
127	Mr. Mawyer explained that they would bore a pit on both sides of the river and then bore under
128	the river. He stated that the construction method helped expedite the permit because there were
129	no environmental impacts. He stated that the Observatory Treatment Plant was under major
130	renovation and was not producing water. He stated that it would remain closed until March. He
131	stated that they received no complaints from UVA regarding noise at the construction site during
132	the exam period.
133	
134	Mr. Mawyer stated that they continued to work on major easements for piping projects with
135	UVA and the UVA Foundation. He stated that they obtained the last private easement required.
136	He stated that the easement was located north of Garth Road on a private horse farm. He stated
137	that they continued to work on the Ragged Mountain to Observatory WTP pipeline. He stated
138	that they are working with the UVA Foundation to obtain an easement across two sections of

their property. 139 140 Mr. Mawyer stated that the third large waterline project was the Central Waterline project. He 141 stated that they continued to complete engineering design and field investigations. He stated that 142 they were ready to review preliminary plans with the City and the ACSA. He reported that the 143 Buck Mountain property sale closed on January 10, and they had received a payment of 144 \$136,501. He stated that the money was deposited into the Buck Mountain Management 145 146 Program. 147 Mr. Mawyer stated that next month, they would introduce the FY24–28 CIP budget. He stated 148 149 that they had two meetings with the Board's subcommittee, which included the ACSA and the City. He stated that they expected to recommend that the waterline project from South Rivanna 150 to Ragged Mountain be accelerated by three years to help get the maximum water supply for the 151 community as soon as possible. He stated that there would be a proposal for the Board's 152 consideration at next month's meeting. 153 154 155 Mr. Gaffney asked if the easements from the UVA Foundation would be acquired concurrently or separately. 156 157 158 Mr. Mawyer responded that they were trying to acquire the easements concurrently. He stated that they were working with Foundation staff. He stated that easements for the remainder of the 159 alignment had been acquired. 160 161 Mr. Gaffney asked why they were going to install the pipe 40 feet below the South Rivanna 162 River. 163 164 165 Ms. Simpson responded that there were certain radii that the drilling machine could enter the ground, and there was a maximum curvature that the drilling machine could go under the river. 166 She stated that they reviewed the elevations on either bank and the entry angle for the machine. 167 She stated from that information, they determined how deep the pipe would be. 168 169 Mr. Gaffney clarified that the borehole would not be a tunnel. 170 171 Ms. Simpson stated that it would not be a tunnel-boring machine. She stated that it would be a 172 horizontal directional drill. 173 174 175 Mr. Mawyer stated that they wanted the pipe to be deep enough so that any scouring of the riverbed would never reach the pipe. 176 177 Ms. Simpson stated that they originally looked for a minimum cover under the river of about 20 178 feet, but based on the other calculations, the depth ended up at 40 feet. She stated that the drill 179 180 would be about 1,200 feet long. 181 Ms. Mallek clarified that the material extruded by the bore was pushed out. 182 183 Ms. Simpson explained that as they drilled forward, a fluid was used to keep the cutter head 184

185	lubri	cated, and the fluid came back out.
186 107	Mel	Mallek clarified that the fluid carried the other material out
188	1015.1	wanek elamied that the fluid carried the other material out.
189	Ms S	Simpson stated that was correct
190	1,10. 1	
191	6. I	TEMS FROM THE PUBLIC
192	F	For matters not listed on the agenda for public hearing
193	Ther	e were none.
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195	7. <i>K</i>	RESPONSES TO PUBLIC COMMENTS
196	Ther	e were no comments from the public, therefore, there were no responses.
197		
198	8. 0	CONSENT AGENDA
199		a. Staff Report on Finance
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201		b. Staff Report on Operations
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203		c. Staff Report on Ongoing Projects
204		
205		d. Staff Report on Wholesale Metering
206	No it	ame ware pulled from the Concept Acondo for comment or question
207	INO II	enis were puned from the Consent Agenda for comment of question.
208	Mr	Rogers moved that the Roard adont the Consent Agenda. The motion was seconded by
210	Ms.	Mallek and carried unanimously (6-0).
210	1,10,0	
212	9. 0	OTHER BUSINESS
213		a. Presentation: Financial Update: Credit Rating, Financial Profile and Policies
214		Lonnie Wood, Director of Finance and Administration
215		Ted Cole, Senior Vice President, Davenport Public Finance
216		·
217	Mr. V	Wood stated that we would provide a brief financial update that will address the Authority's
218	finan	cial management practices. He stated three main areas will be reviewed, which will be
219	finan	cial policy guidance and a closer look at reserves held by the Authority. Lastly, we will ask
220	Ted (Cole with Davenport Public Finances to review our financial profile and bonded debt related
221	rating	gs from an investor perspective.
0.0.0	M 1	Nood stated that the Four Dorty Agreement was and of the first and most important a line
222	Mr.	wood stated that the Four-Party Agreement was one of the first and most important policy-
223	guiui	ing documents. He stated that it addressed the two urban rate centers, one for waster waster the stated that the City and the ΔCSA were part of the urban ring cost
224		ations. He stated that the agreement addressed other rate centers not part of the urban ring
226	and t	hose were 100% funded by the ACSA. He stated that the agreement stipulated budget
227	prena	arations and that the Board adopt a budget each year. He stated that the agreement required
228	the C	City and the ACSA to pay the adopted charges set by the Board.
229		

- Mr. Wood stated that the Four-Party Agreement identified the initial capital improvements that 230 the Authority was to undertake, and it gave the Authority the responsibility to issue debt to fund 231 the capital projects. He stated that all of the capital projects had been completed, except one, to 232 bring the Moores Creek plant from 15MGD to 20MGD. 233 234 Mr. Wood explained that the next policy guidance related to the bond indenture, or the trust 235 agreement, which was established in the 1970s. He stated that they were using bond anticipation 236 notes up until that time. He stated that before they began issuing revenue bonds, they had to have 237 a trust agreement in place. He stated that the agreement created certain restricted funds held by 238 the trustee. 239 240 Mr. Wood stated that the construction fund was a bond-proceed fund. He explained that monthly, 241 they applied to the trustee for reimbursement. He stated that a debt service reserve fund was 242 created. He explained that in the early days of the Authority issuing debt, their bond rating was 243 not as high, so they were required to deposit into the debt service reserve fund 125% of the 244 highest debt service payment annually, which was acting like a collateral account. 245 246 Mr. Wood stated that the principal and interest account was where they deposit each month's 247 debt service. He explained that twice a year, the trustee withdrew six months' worth of deposits 248 249 from the account and paid the bondholders. He stated that all of the accounts were held by the trustee, not Rivanna. 250 251 Mr. Wood stated that there were unrestricted accounts, such as the general operating cash 252 account, the rate stabilization fund, and the capital improvement fund created by the trust 253 agreement. He stated that in August 2011, the Board adopted internal financial policies to help 254 guide them on capital budgeting. He stated that they were planning documents to provide 255 management goals for their financial decisions. He stated it was crucial for financial assessments 256 and bond ratings. 257 258 Mr. Wood stated that there were three tiers of reserves and funds. He stated that the first tier was 259 the restricted funds, the second tier was the operating accounts created by the trustee, and the 260 third was purely discretionary reserves controlled by the Authority. He stated that the watershed 261 262 management fund was where the funds for the Elliot House were deposited. He noted that in November, the Board was presented with the disposition of the year-end results. He stated that 263 they had withdrawn money from the reserves to make the operating account whole, which 264 followed the financial policies. 265 266 Mr. Wood stated that in 2018 and 2019, the reserves increased to nearly \$35M. He stated that in 267 268 2021, a fair amount of the reserves was used for capital spending. He stated that during the COVID-19 pandemic, they did not raise their rates for a year and relied on the reserves to fill the 269 gap in revenue. 270 271 Mr. Wood stated that the reserves were sound financial planning and they provided the Board 272
- with the flexibility to make decisions mid-year without considering a rate increase. He stated that
- in 2021, they used \$2.4M in COVID-19 reserves to offset the need for revenue increases. He
- stated that about a decade ago, there was an odor control issue at the plant because they were

- composting biosolids. He stated that the Board had made a decision to stop composting which
- resulted in a \$250K loss in revenue per year. He stated that it cost about \$700K to truck the
 biosolids to a different location and perform the composting.
- 279
- Mr. Wood stated that the reserves helped the Authority with unanticipated repair costs. He stated that pipeline breaks were expensive, and it was hard to budget for such events as they are unpredictable. He stated that they would rather use reserves to fund the repair costs.
- 283

Mr. Ted Cole, Senior Vice President of Davenport Public Finance, explained that they had served as advisors to the Authority for a number of years. He stated that the highest bond rating that any local government or local authority could achieve was triple-A. He stated that the City and the County were all rated AAA/AAA.

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289 Mr. Cole stated that the Authority was rated Aa2 by Moody's and AA+ by Standard and Poor's

- (S&P). He stated that the Moody's rating was achieved in 2012 when they last published a report
- on the Authority for bond issuance. He explained that Moody's would periodically publish
- reports unassociated from bond issuances, and they last issued one for the Authority in 2021. He
- explained that the rating reports were available to the public.
- 294

Mr. Cole stated that the Authority was upgraded to AA+ in 2011 by S&P. He stated that S&P last published a report in 2019. He stated that the Authority's staff had to periodically interact with the rating agencies. He stated that bond issuances needed to be rated. He stated that during the interactions with the rating agencies, the rating can be increased, decreased, or remain unchanged.

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Mr. Cole explained that Moody's rating process for utilities was simpler than S&P's process. He explained that Moody's looked at four areas. He stated that the S&P enterprise risk profile assessment addressed topics such as the service area, whether there was a monopoly of the service area, the demographics, the tax base, and the types of compliance with regulatory requirements. He stated that Moody's system characteristics and S&P's enterprise risk profile addressed similar topics.

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Mr. Cole stated that some items the Board was able to control on a year-to-year basis, and other items were longer-term concepts that were not controlled by the Board. He stated that they tried to focus on what the Board could control in the short term. He stated that in terms of financial strength for Moody's, they reviewed cash levels, liquidity levels, and performance versus the budget. He stated management, policies, and procedures.

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- He stated that there were legal provisions related to the documents under which the debt would be issued. He explained that not all bond documents were exactly the same.
- 316

Mr. Cole stated that S&P reviewed financial risk profiles which included debt service coverage,

liquidity in reserves, debt and liability, pension obligations, post-employment benefit obligations,

and financial management. He stated that the financial policies were ways to influence control

and maximize the rating. He stated that other debt issuers would perform a similar review even if

321 they did not require a bond rating.

- 322
- 323 Mr. Cole stated that there were two key financial ratios, and they were in the Authority's
- policies. He stated that there was debt service coverage. He stated that when the Authority sold
- ³²⁵ bonds, it sold revenue bonds. He stated that the bondholder's security was on the net revenues of
- the Authority. He explained that the Authority did not have taxing authority, so there was no
- 327 general obligation pledge.
- 328
- Mr. Cole stated that they did not have a lien on any asset, building, or equipment, so the security
- was a lien on the net operating revenues. He explained that net operating revenues were all the dollars available after accounting for operating expenses. He stated that once the operating costs
- were paid, the remaining was the net operating revenue.
- 333
- 334 Mr. Cole stated that the Authority must be able to demonstrate by virtue of its bond documents
- that for every dollar of debt service that the Authority owed, there was at least one dollar of
- revenues to pay it for a minimum coverage of one times debt coverage. He stated that this
- originated from the documents that Mr. Wood had referenced and from the fact that the
- Authority was a wholesale operation with only two customers, billing and collecting revenue for
- debt service not on flow but on fixed cost component.
- 340

Mr. Cole stated that as a wholesaler, the market was willing to accept that lower level of debt coverage. He stated that from a policy and management perspective, the expectation would be that they would operate at a higher level, with a policy that set rates and charges at such a level so that they could achieve 1.5 times debt coverage—so that if there were an unexpected increase in expenses or decrease in revenues, there would be more cushion that helped ensure that the

- bondholders were paid and the Authority avoided defaulting.
- 347

Mr. Cole stated that the second ratio was system reserves. He stated liquidity was a large part of the credit methodology from rating agencies and other lenders. He stated that they measured

- liquidity as a percentage of the operating budget in terms of days of cash on hand, or how many days of operating expenses could be covered from the reserves as if no operating revenue were
- 352 coming in.
- 353

Mr. Cole stated that if they had a policy that they wanted to be at 100% of budget for reserves, that would be 365 days cash on hand. He stated that their policy stated that between the Tier 2 and Tier 3 reserves, they wanted to operate such that they were at 150% of budget or about 550 days of cash on hand in order to provide financial flexibility.

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Mr. Cole stated that they had subscribed to a database that Moody's maintained, and would give a few pages of comparisons in order to see this perspective. He stated that they would be

- compared to a number of groups; at the top of the table were AAA-rated utilities by Moody's,
- Aa1 and Aa2. He stated that most peer groups would be from Moody's, and they looked more
- closely at Virginia and water-only or sewer-only authorities.
- 364
- Mr. Cole stated that one entity displayed on the screen was another wholesale entity, and all the others were retail systems, which had distribution and billing of all end users. He stated that the
- very bottom group on the slide was combined water and sewer systems across Virginia that were

- 368 at least AA rated.
- 369

Mr. Cole stated that the first slide they looked at was liquidity, and on the lefthand side was the

historical performance of Rivanna, including FY18–FY22 from the audit. He stated that the

green bars represented the operating days' cash on hand, and the policy was 550 days, and

- unrestricted cash as a percentage of operations was a green line, and it had trended as high as 200% and was new sitting at short 175%. He stated that the multiple of the state of th
- 374 300%, and was now sitting at about 175%. He stated that the policies were 150% of the 375 operating and maintenance budget, or 548 cash on hand, and in FY21 and FY22, they were on
- top of that policy.
- 377

Mr. Cole stated that on the right side of the page was the comparison, which measured unrestricted cash as a percentage of the budget. He stated that they had finished at 175%, with a brown bar representing their data point, and in gold the AA or higher-rated water and sewer authorities, the light green indicated the water or sewer entities, and the dark green at the top was the national AAA, Aa1, Aa2 medians. He stated that they compared at or above the national Aa1 and Aa2 at the medians and were on the higher end of the light green bar, and on the lower end of the gold peer group.

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Mr. Cole stated that they particularly related to UOSA in that they were a wholesale operator, and on that profile, the Authority was stronger than them. He summarized that they had a good policy that they were in compliance with, and their position on liquidity was expected for the

- rating and even for the above categories.
- 390

Mr. Gaffney asked if, in order to get AAA rating on the national average, they would have to
 double their reserves.

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Mr. Cole stated that that was not the only thing. He stated that reserves were 40% of the rating,
so there were other ways to improve to get to that AAA level. He stated that to get into the AAA
category for the reserves, it may not need to be doubled, but would need to be higher than what
was currently had.

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Mr. Cole stated that the debt coverage was for the bond documents, and they had to be in 1.5 times coverage or better, which they had been for all years shown. He stated that the green line was their actual coverage, and the gold line was the policy target of 1.5 times. He stated that over the last five or six years, they had fallen a little bit short of that target, but were far above the minimum. He stated that they had finished in 2022 at about 1.3 times. He stated that looking at the bottom left matrix for standard providers, they were in the good to strong category, and the comparison to others was located on the righthand side.

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Mr. Cole stated that they were on the lower end related to all of their peer groups, commensurate with another wholesaler, with the mitigating factor that the revenue needed for debt service was being billed not on flow but on a fixed rate basis. He stated that it would be ideal for them to be closer to the policy, but he knew that was something they would continue to manage with each budget. He stated that he did not anticipate any downward pressure on the rating, and he thought they could get the Moody's rating up to a level that was commensurate with S&P and potentially

413 higher.

414	
415	Mr. Gaffney asked what the difference in rates was between AAA and AA+.
416	
417	Mr. Cole stated that it would vary between markets, but a good estimate today would be the
418	difference of borrowing at 3% AAA versus 3.15% AA+. He stated that it was a bit of a higher
419	borrowing rate, but everything added up, typically with a large CIP. He stated that however, it
420	could vary, and the important level to be mindful of in that regard was the A category, where
421	interest rates spread out and widen out, perhaps to a difference of borrowing at 3% versus 3.50%.
422	
423	Mr. Cole stated that creditors and investors had comfort with governments or local issuers such
424	as the Authority so long as they were in the AA category. He stated that he saw no risk of that
425	happening on the horizon. He stated that they were well-positioned to get capital at attractive
426	interest rates and reasonable terms and conditions.
427	
428	Mr. Gaffney asked Mr. Wood what the credit rating of the Authority was in 2002.
429	Mr. Wood stated that it had moved three or four times during his time here. He stated that it
430	likely would have been in the high single A's
431	inkery would have been in the high single-A s.
432	Mr. Mawyer asked Mr. Wood what the debt was
434	
435	Mr. Wood stated it was \$200 million.
436	
437	Mr. Mawyer stated that 0.15 rate times \$200 million added up.
438	
439	Mr. Cole agreed that it did. He stated that he did not mean to minimize it.
440	
441	b. Presentation: History and Organizational Agreements of the RWSA
442	Mr. Mawyer stated that he wanted to begin 2023 with a review of some of the foundational
443	documents and how they related to the budget, because they would be discussing budget and
444	costs in February and March. He stated that Rivanna was created in 1972 by the City and the
445	County through the State Corporation Commission.
446	
447	Mr. Mawyer stated that the federal government was making money available, but stated that if
448	the locality wanted it, they had to give it to one organization to represent both the City and the
449	County, because they were not going to give it to each locality. He stated that the County and
450	City wrote the Four-Party Agreement, the Articles of Incorporation, and the by-laws in 1973.
451	
452	Mr. Mawyer stated that the Articles of the Incorporation had been revised several times and had
453	to be revised with the approval of City Council and the Albemarie County Board of Supervisors,
454 455	revised in 2017 when the City decided to split the Department of Public Works between Public
433 456	Works and the newly created Utilities Department, because their articles stated that the Director
400 157	of Public Works would sit on the RWSA Board and the revision was to put the Director of
458	Utilities on the RWSA Board and Director of Public Works on the RSWA Board
4.59	Canados on and Ren bri Bourd and Bricetor of Fuone months on the RD With Bourd.
100	

present, but it did not have to be a unanimous vote. The by-laws were most recently amended 461 last year in 2022 by this Board to add the remote participation policy, which allowed members to 462 participate remotely while out of town as well as to have virtual Board meetings, a change that 463 came from state legislation. 464 465 Mr. Mawyer noted that within the Articles of Incorporation in 2009, the City and the County 466 decided to increase the Board from 5 to 7 members by putting an elected official from the City 467 and County on the Board. He stated that there were several working agreements that they had 468 completed between the City and ACSA about who would pay for certain projects. 469 470 Mr. Mawyer stated that they had the Joint Resolution in 1983 to purchase the Buck Mountain 471 property of 1,300 acres. The Southern Loop Agreement of 1987 was created with the purpose of 472 getting water distributed from the Observatory Treatment Plant around the east and west sides of 473 the City, and was the predecessor of the Central Waterline Project. 474 475 Mr. Mawyer stated that the South Rivanna Water Treatment Plant Expansion had numerous 476 aspects about how they would pay for capacity and non-capacity CIP projects, and that debt 477 service allocation of 48% to the City and 52% to the ACSA continued. 478 479 Mr. Mawyer stated that he discussed last month the Ragged Mountain Dam Project Agreement 480 of 2012, which directed Rivanna to build the new Ragged Mountain Dam and a pipeline from the 481 South Rivanna Reservoir to Ragged Mountain Reservoir to fill that larger reservoir. He stated 482 that the Water Cost Allocation Agreement set forth that the Service Authority would pay for 483 85% of the dam and 80% of the pipeline project costs. 484 485 486 Mr. Mawyer stated that the Amendment to the Four Party Agreement in 2015 may be what Mr. Cole just mentioned, which was that the debt service charges changed in 2015 from a flow-based 487 charge to a monthly charge. He stated that more recently, in 2019, they ended the Buck 488 Mountain surcharge that charged for every new water connection in the City and County to pay 489 for the proposed reservoir. 490 491 492 Mr. Mawyer stated that now that there was no reservoir, the charge had ended in 2019. He stated that they had renewed and updated the Observatory Water Treatment Plant ground lease with the 493 University of Virginia in 2020, and most recently, the Northern Area Drinking Water Area 494 Projects Agreement, which generally allocated all of the costs to the Service Authority for 495 construction projects located north of the South Rivanna River. 496 497 498 Mr. Mawyer stated that they had several foundational documents, by-laws, and agreements, and the staff worked hard to keep these allocations managed. He stated that generally, any time a new 499 facility was built, they had to determine who needed the facility, then craft an Agreement to 500 allocate the debt service costs between the City and ACSA. 501 502 (reconvene RSWA for a JOINT SESSION with the RWSA) 503 Mr. Gaffney called to order the joint session of the RWSA and RSWA. 504 505

Mr. Mawyer stated that the by-laws included that the Board could change them with all members

460

506 c. *Presentation: Sustainability and Climate Action Overview*

Ms. Jennifer Whitaker stated that she was presenting the collective work of numerous staff in
both authorities in an effort to provide insight into how the Authorities fit into the regional fabric
of the community's climate action plans. She stated that at their core, both authorities were
environmental protection organizations, citing that both their vision and mission talked about
sustainability, environmental protection, and public health.

512

Ms. Whitaker stated that the 1972 Clean Water Act established wastewater treatment targets and clean water goals. She stated that the 1974 Safe Drinking Water Act established public health and public protection through drinking water treatment, and that the 1976 RCRA Act set the groundwork for modern-day solid waste and recycling services. Ms. Whitaker stated that given this core mission, staff were working to understand what it meant to be sustainable and responsible for climate action, when their day to day work already addressed so many different aspects. She stated that the organization has taken some time to find out the next steps.

520

Ms. Whitaker stated that similar to many organizations, the Authorities were adjusting to a 521 dynamic and unpredictable environment in several areas: (a) climate change, (b) regulatory 522 requirements, and (c) scientific discovery and best practices, noting the industry was changing 523 rapidly. Ms. Whitaker stated that in the past, they would have conceived a project, constructed 524 it, and complete it. The process would have taken nearly 10 years. Now, however, work must 525 526 be completed in much shorter periods of time with frequent mid-stream changes. She noted that it is difficult to measure progress and success in this environment. She stated that they have 527 adjusted how they provide service, while still striving to meet the core mission, by internally 528 changing work processes. Ms. Whitaker stated that they were attempting to better understand 529 where their impacts and footprint. Going forward the organization is focusing on practical 530 climate- based outcomes with measurable results and not just policy and conversation. 531

532

Ms. Whitaker stated that the 2023 strategic plan had five key priorities, including one for 533 environmental stewardship. She stated that it weaved its way through everything they were 534 doing, but also was worthy as a priority to stand on its own. She focused on and emphasized the 535 first four words of the goal statement, "To demonstrate and promote." Ms. Whitaker explained 536 that as an organization of people who "did things" by trade, they wanted to ensure that they were 537 able to champion real change and make a difference. Ms. Whitaker stated that they also 538 discussed sustainability, research, conservation, and environmental education, with strategies 539 identified. She stated that they focused on outreach and how to work with other agencies to bring 540 technical expertise forward, how to educate others, and how to help make collaborative 541 decisions. Ms. Whitaker stated that they also are asking what their inward sustainability 542 initiatives were, and what they could do to enhance the environmental protection work they 543 wanted to achieve. She stated that the third item was about business practices and equity, 544 specifically referencing solid waste in the strategic plan. 545

546

547 Ms. Whitaker stated that staff have developed an approach to working on this program that

allows for input, problem solving and results at various points within the organization. She

stated that on one side of the equation is a strategic plan goal team, composed of representatives

of different departments in the Authority who have some interest or job authority for

sustainability. Ms. Whitaker stated that those members had begun meeting and had set goals and

- objectives about educational outreach and finding opportunities to engage internally in the 552 departments. She stated that she was impressed with the work accomplished by the team 553 recently. The team feeds into the planning, strategy, coordination, policy and management 554 aspect of the program. She stated that on the other side of the equation, sustainability focused 555 capital and operating projects were utilizing traditional project management staff. She stated that 556 by doing so, they were able to develop policies and be reactive to the impacts of climate change. 557 558 Ms. Whitaker stated that there were three key areas of focus for the Authorities at this time: (1) 559 climate action and GHG emissions; (2) natural resources protection, and (3) climate change 560 resiliency. 561 562 Ms. Whitaker notes that the climate action-related projects, included a greenhouse gas baseline 563 assessment for the Moores Creek facility, which was the largest electricity user. She stated that a 564 pilot project would be conducted before expanding it to the other facilities so that they had a 565 clear picture of the actual carbon footprint. 566 567 Ms. Whitaker stated that they were working their way through how to calculate this footprint, 568 and one way was by putting in submetering and linking it to the SCADA system, so they would 569 be able to see in real time the power consumption throughout all different parts of the plant. This 570 571 will allow staff to have a better understanding of what was driving power consumption and how they might reduce it. 572 573 Ms. Whitaker stated that they were intending to establish targets and goals, which would take a 574 while to do, because the baseline work must be completed first. Ms. Whitaker acknowledged the 575 County and City had greenhouse gas reduction goals through their climate action plans: to reduce 576 45% by 2030 and going to net zero by 2060. She stated that they understood that they were a part 577 of the community and a part of achieving that goal. 578 579 Ms. Whitaker stated that the next project was focused on methane gas utilization. She stated that 580 they had a cogeneration facility that was not very functional at the moment, and a study was 581 being conducted to determine how the wastewater biogas industry had evolved. She stated that 582 staff were reviewing cogeneration, microturbines, and/or potentially cleaning the gas for pipeline 583 584 use. She stated that the investigative phase was currently underway, with the hope of using that energy source at the facility in a better way. 585 586 587 Ms. Whitaker stated that they were looking at renewable energy projects such as solar installation on the new Administration Building and the Ivy MUC brownfields installation. Ms. 588 Whitaker noted that Dominion power had recently taken a greater interest in the Ivy MUC 589 590 project, indicating it is becoming a likely candidate for their solar development program. She stated that things like operational optimization such as chemical, electrical use reduction, and 591 vehicle driving reduction required finer process control at the plants. She stated that this would 592 entail more SCADA control and more process programming, among other things. 593 594
- 595 Ms. Whitaker stated that granular activated carbon (GAC) was harvested out of the earth and was
- thus a carbon-intensive process. She stated that review of carbon regeneration and its footprint
- 597 was being reviewed.

598	
599	Mr. Richardson asked if Ms. Whitaker would be discussing anything regarding fleet.
600	
601	Ms. Whitaker stated that it is intended to be part of the program. She stated that they had done
602	research on fleet, but a very large portion of their fleet were heavy-duty trucks, and the industry
603	currently was not quiet fulling developed for fleet vehicles. She stated that they were looking at
604	adding eV-charging infrastructure at this building for guests, employees, as well as fleet.
605	Additionally, she indicated that they were investigating installing eV-charging infrastructure at
606	key fleet maintenance and storage areas. She stated that they were looking at replacing some
607	lighter vehicles with eVs, and indicated that eventually the truck market would evolve.
608	
609	Ms. Mallek stated that the EPA was working on a program side for heavy vehicles, and some
610 611	communities were getting fire engines and trash trucks, so it may be quicker than previously thought for this to come forward. She stated that the policy was there, but the substructure was
612	missing
613	missing.
614	Ms. Whitaker stated that a large issue was that many vehicles were demonstration vehicles or
615	were very expensive
616	were very emperior en
617	Ms. Mallek stated that it was important to think about the entire cost of the vehicle, not only the
618	diesel and the electricity. She asked if the methane was currently being released.
619	
620	Ms. Whitaker stated no, and that by law, they were not allowed to release methane, nor did they
621	want to. She stated that they were doing a combination of use in their boiler system and flaring,
622	and they wanted to get away from doing that.
623	
624	Ms. Mallek asked if flaring was the same as releasing.
625	
626	Ms. Whitaker responded that it wasn't and stated that flaring was burning, and it converted it to a
627	much less impactful emission.
628	
629	Mr. Mawyer stated that they used electric golf carts on-site to reduce gas consumption.
630	Ma Whitelear stated that they were also using more electrical tools in place of gas powered tools
631	wind we stated that they were taking little stops in an affort to understand
632	where the markets were going
621	where the markets were going.
635	She continued that for natural resource protection, the Moores Creek plant was an enhanced
636	nutrient reduction plant, and most of the wastewater in the region came to the facility. She stated
637	that the community did a great job, with their nutrient reduction targets exceeded across the
638	board, and they continued to work to lower those. She stated that eventually, the regulations
639	would become state-of-the-industry targets, so they would continue to work on that as well.
640	
641	Ms. Whitaker stated that water quality had been an emphasis for a long time, and in Virginia,
642	they were an early adopter in looking at raw water nutrients, algae monitoring, and reservoir
643	treatment. She stated that they had an in-stream flow program and had recently worked with

DEQ to update this plan to better mimic the data they had. She indicated that DEQ had been a

good partner in that as staff have enhanced the understanding of river flows, through data

analysis, they have allowed the in-stream flow requirement to be altered to better mimic actual

- river conditions. She stated that they would be removing the dam at the North Fork Rivanna
- River when they decommissioned the North Fork water treatment plant, returning the river to a natural flow.
- 650

Ms. Whitaker stated that for land use management practices, there were forestry management practices being implemented at various sites. She stated that the expansion of the recycling and composting centers was done in concert with the County, and that staff continued to grow and regionalize cardboard baling and glass recycling. She stated that they were continuing with the residential compost facility drop-off program and with UVA dining composting. She stated that they were continuing the e-waste and hazardous waste disposal programs to keep those items out of landfills.

658

Ms. Whitaker stated that a key factor for the program area of climate change resiliency was that they were anticipating much larger precipitation flood events and much drier and deeper droughts. She stated that it was what California was seeing right now, and their infrastructure was not set up to fully catch and utilize the heavy rainfall to refill the reservoirs. She stated that

on the east coast, they had been buffered from that for a little bit, but it was coming, and they must be preparing for it.

665

Ms. Whitaker stated that to this point, they had done some building flood resiliency evaluations, working under the EPA and FEMA guidelines, and the evaluations were done based on the 100year flood, the 100-plus-two feet, and the 500-year flood. She stated that they were going to start doing some mitigation activities with a target of all of the facilities being 500-year-flood-proof.

670

Ms. Whitaker stated that there were capital improvement projects to construct redundant water
supply pipelines at critical river crossings for both the North Fork Rivanna and South Fork
Rivanna Rivers. She stated that they were also designing and constructing the South Rivanna
Reservoir to Ragged Mountain Reservoir (SFR to RMR) and the Ragged Mountain Reservoir to
Observatory Water Treatment plant pipeline system, which would dramatically help with system
operation as well as drought resilience by fully interconnecting the raw water resources and
treatment capacity.

677 678

Ms. Whitaker stated that this also allowed them to refill the Ragged Mountain Reservoir at the rate of 25 million gallons per day as opposed to the current 3.3 MGD. She stated that when there was a large rain event, they could take in more water, allowing them to quickly collect water and take advantage of those events. She stated again that they were decommissioning the North Fork Water Treatment Plant, which in turn allowed for dam removal and better flood resiliency.

684

Ms. Whitaker stated that staff were implementing "design policies" as part of their infrastructure resiliency standards. She stated that they have implemented a policy of installing exterior bypass pumping connections on every pump station. She stated that this is in addition to emergency power generation. She indicated that if there was something that destroyed the interior of the

⁶⁸⁹ pump station such as a flood or fire, they could quickly tie in on the suction and discharge side

with temporary pumping and keep the system operational. She stated that it was expected to be apolicy moving forward.

692

Ms. Whitaker discussed dam safety and showed images on the slide of the 2018 flood. She stated
that they had adopted a "design standard" to size dams for 100% of the probable maximum
precipitation/flood, although Virginia only required 90%. She stated that they were also working
with the dam safety community to understand the recent research on anticipated future flood

- event and the impact of climate change on those events.
- 698

Ms. Whitaker stated that for regional coordination, all the agencies, committees, and groups that
they were either a part of or advisors to or stakeholders in were displayed on the current slide.
She stated that their goal was to use their technical expertise to be helpful to others and to make
sure that they were tied in regionally and understood the community goals, so that their work
was in concert with what was being asked of them.

- 704
- Ms. Mallek asked what the 2018 flood was in comparison to a 100-year flood.
- Ms. Whitaker stated that published literature stated that it was close to a 1000-year storm event.
- She stated that however, it was not the storm of record, and was not a probable maximum flood.
 She stated that for this area, PMF precipitation was somewhere in the 30 inches in a 24-hour rain
- event. She stated that the 30+-inch storm was based on the existing calculations, so the future
- 711 may be more than that.
- 712
- Mr. Rogers asked if there was a form that they were sharing with the City Climate Action Team.
- Ms. Whitaker stated that they were part of that group and had sessions within that group in which
- the members shared what they were currently working on, but she had not shared this
- presentation. She stated that they had shared some of the information but could certainly share
 this with the City staff as well.
- 718 719
- 720 10. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA
- 721 There were none.
- 722

723 11. CLOSED MEETING

At 3:45 p.m., Ms. Mallek moved the Rivanna Water and Sewer Authority enter into a joint closed session with the Rivanna Solid Waste Authority to discuss the evaluation of performance of departments where such evaluation will necessarily involve discussion of the performance of specific individuals as permitted by the personnel exemption at Section 2.2-3711(A)(1) of the Code of Virginia. Mr. Pinkston seconded the motion, which passed unanimously (6-0), by roll-call vote.

730

731 At 4:47 p.m., Ms. Mallek moved to certify the closed session whereas, the Rivanna Water

- and Sewer Authority has convened a joint closed meeting with the Rivanna Solid Waste
- Authority on this date pursuant to an affirmative, recorded vote and in accordance with
- 734 the provisions of the Virginia Freedom of Information Act, and whereas Section 2.2-
- **3712(D)** of the Code of Virginia requires a certification by the Rivanna Water and Sewer

- Authority that such closed meeting was conducted in conformity with Virginia law; now,
- 737 therefore, be it resolved that the Rivanna Water and Sewer Authority hereby certifies by
- recorded vote that, to the best of each member's knowledge, only public business matters
- 739lawfully exempted from the open meeting requirements of the Virginia Freedom of
- 740 Information Act and identified in the motion authorizing the closed meeting were heard,
- 741 discussed or considered in the closed meeting to which this certification resolution applies.
- 742 Mr. Pinkston seconded the motion, which passed unanimously (6-0), by roll-call vote.
- 743
- 744 *12. ADJOURNMENT*
- 745 At 4:50 p.m., Ms. Mallek moved to adjourn the meeting of the Rivanna Water and Sewer
- 746 Authority. Ms. Hildebrand seconded the motion, which passed unanimously (6-0).



MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: EXECUTIVE DIRECTOR'S REPORT

DATE: FEBRUARY 28, 2023

STRATEGIC PLAN GOAL: COMMUNICATION AND COLLABORATION

Utility Management Committee

The Virginia Water Environment Association / Virginia American Water Works Association's Utility Management Committee held a regional panel discussion on February 22nd in Chesterfield. Panelists shared insights on regional topics including long-term water supply planning, partnerships, water reuse, emergency preparedness, workforce retention, and cybersecurity. Panelists included:

Mike Nannery – Assistant Director, Chesterfield Utilities Bentley Chan – Director, Henrico Dept of Public Utilities Bill Mawyer – Executive Director, Rivanna Water and Sewer Authority

STRATEGIC PLAN GOAL: OPTIMIZATION AND RESILIENCY

Safety Recognition

The Virginia Risk Sharing Association (VRSA) released a <u>video</u> congratulating Rivanna Authorities on our reduction of reportable incidents and injuries by 82.4% over the last 3 years. VRSA posted their interview with Liz Coleman, Safety Manager, discussing safety measures implemented by Rivanna such as increased training, updates to our safety manual, and safety equipment purchases.



STRATEGIC PLAN GOAL: PLANNING AND INFRASTRUCTURE

Observatory WTP Renovation

No drinking water will be produced at the Observatory WTP from December 5 – March 30, 2023 to complete the renovation and treatment capacity increase from 7.7 to 10 mgd. The South Rivanna and North Rivanna WTPs will serve the Urban Water System (City and adjacent areas of the County) during this period.

Other Major Projects

- 1. We continue to work with UVA and UVAF to acquire final easements on the following major water piping projects:
 - S. F. Rivanna to Ragged Mtn Reservoir Water Pipe: 8 miles of 36" pipe
 - Ragged Mtn Reservoir to Observatory WTP Water Pipe and Pump Station: 5 miles of 36" pipe
- 2. 30% engineering design plans have been completed for the Central Water Line project to be constructed along Cherry Avenue. After review by our City/ACSA/RWSA team, any comments will be incorporated and design plans will move forward to 100% completion.

STRATEGIC PLAN GOAL: WORKFORCE DEVELOPMENT

Recognitions

The professional qualifications of our staff continue to improve and enhance our services. We congratulate the following employees for successfully completing the requirements for a license from the State:

- Blake Shifflett Class A Commercial Driver's License
- Maurice Whitlow Class A Commercial Driver's License

Team Building Event

Rivanna Authorities held its quarterly Team Building event on February 10th with a *Super Bowl Chili Cook-off* and potluck. Staff enjoyed and appreciated the delicious chili entries, homemade side dishes and desserts. We had six chili entries competing for top honors as Chili Champion. Congratulations to David Jeffries on his

winning recipe of Spicy Beef Chili!







MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: LONNIE WOOD, DIRECTOR OF FINANCE AND ADMINISTRATION

REVIEWED: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: DECEMBER MONTHLY FINANCIAL SUMMARY – FY 2023

DATE: FEBRUARY 28, 2023

Financial Snapshot

December ended with an overall net surplus of \$7,300. Operating rate revenues for the first six months of the fiscal year are above average, and we received the annual payment from the County for the septage receiving support agreement. However, operating expenses are currently over the prorated annual budget. Total revenues are \$1.038 million over budget estimates, and total expenses are \$1.031 million over budget. Revenues and expenses are summarized in the table below:

	Urban Water	Urban Wastewater	Total Other Rate Centers	Total Authority
Operations				
Revenues	\$ 4,790,451	\$ 5,259,183	\$ 1,304,288	\$ 11,353,922
Expenses	(4,832,502)	(5,335,234)	(1,299,197)	(11,466,933)
Surplus (deficit)	\$ (42,051)	\$ (76,051)	\$ 5,091	\$ (113,011)
Debt Service Revenues Expenses Surplus (deficit)	\$ 4,337,606 (4,313,173) \$ 24,433	\$ 4,743,168 (4,653,425) \$ 89,743	\$ 1,189,142 (1,182,968) \$ 6,174	\$ 10,269,916 (10,149,566) \$ 120,350
Total Revenues Expenses	\$ 9,128,057 (9,145,675)	\$ 10,002,351 (9,988,659)	\$ 2,493,430 (2,482,165)	\$ 21,623,838 (21,616,499)
Surplus (deficit)	\$ (17,618)	\$ 13,692	\$ 11,265	\$ 7,339

A more detailed financial analysis is in the following monthly report which reviews more closely actual financial performance compared to budgeted estimates. There are comments listed that reference the applicable line items in the financial statement for each rate center and each support department in the following pages. Please refer to the Budget vs. Actual financial statements when reviewing these comments.

Detailed Financials

The Authority's actual operating revenues through December are \$618,000 over the prorated annual budget estimates, and operating expenses exceed budget by \$731,000. The following comments help explain most of the budget vs. actual variances.

- A. Annual and Quarterly Transactions Some revenues and expenses are over the prorated year-to-date budget due to one-time receipts of revenues for the year and quarterly or annual payments of expenses. These transactions appear to be significant impacts on the budget vs. actual monthly comparisons, but usually even out as the year progresses. Septage receiving support revenue of \$109,440 is billed to the County annually in July. Annual payments are made for leases, health savings account contributions, and certain maintenance agreements. Insurance premiums are paid quarterly.
- B. Personnel Costs (Urban Water, Urban Wastewater, Maintenance, Engineering pages 2, 5, 9, 11) The Urban Water and Wastewater rate center salaries are higher than budget due to pay increases for plant operators who achieved higher licenses. The prorated budget amounts through December are calculated as 6/12 of the annual budget. Actual payroll is paid biweekly for a total of 26 pay periods annually. There have been 13 pay periods instead of 12 in the first 6 months of this fiscal year, which affects the comparison of budget vs. actual payroll costs.
- C. Professional Services (Urban Wastewater, Administration pages 5, 8) Urban Wastewater is over the prorated budget for engineering and technical services for various surveys and studies. The Administration department incurred \$71,000 of unbudgeted engineering and technical services for grant program strategy and application development.
- D. Other Services & Charges (Urban Water, Urban Wastewater, Administration pages 2, 5, 8) Urban Water paid some annual watershed management costs, as budgeted. Some of Urban Wastewater's costs in this category are running higher than originally estimated, such as odor control chemical costs for the Crozet Pump Station, the cost of sludge hauling for composting, permit costs, and utilities. The Administration department is currently over the prorated budget for bond trustee fees and safety training.
- E. Information Technology (Urban Water, Urban Wastewater, Administration, Engineering pages 2, 5, 8, 11) Urban Water incurred some unbudgeted computer hardware purchases. The Administration department has spent \$28,700 more than its annual budget for computer hardware. The Engineering and Administration departments paid some annual software maintenance and license fees similar to those noted in Note A. above. Urban Wastewater is over budget on SCADA Standard Graphics Rollout costs.
- F. Communication (Administration page 8) The Administration department switched to a new telephone system which was not included in the budget.
- G. Operations and Maintenance (Urban Water, Scottsville Water, Urban Wastewater, Maintenance pages 2, 4, 5, 9) Urban Water is \$110,500 over the prorated annual budget for chemical costs, which was primarily due to the purchase of a carbon exchange in September for \$102,400, but that was funded by GAC Reserves, as budgeted. Scottsville Water is over the prorated budget for chemicals due to a \$19,000 carbon exchange. Urban Water made its \$175,000 annual lease payment to UVA for the Observatory facility in August. (See Note A.) Urban Wastewater paid \$86,000 for an annual equipment maintenance contract, and its chemical costs are running higher than originally estimated. The Maintenance department is slightly over the prorated budget on supplies.

Rivanna Water & Sewer Authority Monthly Financial Statements - December 2022 Fiscal Year 2023

F

<u>Consolidated</u> <u>Revenues and Expenses Summar</u>	Ľ		Budget FY 2023	Ŷ	Budget lear-to-Date	Ŷ	Actual lear-to-Date		Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	20,614,425	\$	10,307,213	\$	10,795,100	\$	487,887	4.73%
Lease Revenue			85,000		42,500		58,264		15,764	37.09%
Admin., Maint. & Engineering Revenue			656,000		328,000		339,941		11,941	3.64%
Uther Revenues	G		639,036 150,000		319,518		352,688		33,170	10.38%
Interest Allocation	9		7 170		3 585		45 470		41 885	1168 34%
Total Operating Revenues		\$	22,151,631	\$	11,075,816	\$	11,693,863	\$	618,047	5.58%
Expenses									<i>/</i>	
Personnel Cost	А, В	\$	10,494,727	\$	5,247,363	\$	5,285,039	\$	(37,675)	-0.72%
Professional Services	C		629,900		314,950		340,607		(25,657)	-8.15%
Communications	A, D F		200 342		1,713,730		127 553		(199,030)	-11.01%
Information Technology	А. Е		816.626		408.313		696,805		(288,492)	-70.65%
Supplies	, , <u> </u>		39,950		19,975		23,639		(3,664)	-18.34%
Operations & Maintenance	A, G		5,222,531		2,611,266		2,846,402		(235,137)	-9.00%
Equipment Purchases			420,100		210,050		124,071		85,979	40.93%
Depreciation			900,000		450,000		450,000		-	0.00%
Total Operating Expenses		\$	22,151,636	\$	11,075,818	\$	11,806,875	\$	(731,057)	-6.60%
Operating Surplus/(Deficit)		\$	(5)	\$	(2)	\$	(113,013)			
Debt Service Budget vs. Actual										
Revenues										
Debt Service Rate Revenue		\$	19,522,929	\$	9,761,465	\$	9,761,466	\$	2	0.00%
Septage Receiving Support - County	Α		109,440		54,720		109,440		54,720	100.00%
Buck Mountain Lease Revenue			1,600		800		1,480		680	84.95%
Trust Fund Interest			990		495		65,446		64,951	13121.32%
Reserve Fund Interest		¢	64,230	¢	32,115	¢	332,086	¢	299,971	934.05%
Total Dept Service Revenues		Ψ	19,099,109	Ψ	3,043,333	φ	10,209,917	φ	420,322	4.27/0
Debt Service Costs										
Total Principal & Interest		\$	16,165,241	\$	8,082,621	\$	8,082,621	\$	-	0.00%
Reserve Additions-Interest			64,230		32,115		332,086		(299,971)	-934.05%
Debt Service Ratio Charge			725,000		362,500		362,500		-	0.00%
Reserve Additions-CIP Growth		_	2,744,717	<u> </u>	1,372,359	*	1,372,359	^	-	0.00%
Total Debt Service Costs Debt Service Surplus//Deficit)		\$	<u>19,699,188</u> 1	\$ \$	9,849,594	\$ \$	10,149,565	\$	(299,971)	-3.05%
		<u> </u>	•	Ŷ	•	Ψ	120,002	•		
			Summar	у						
Total Revenues		\$	41,850,820	\$	20,925.410	\$	21,963,780	\$	1,038.370	4.96%
Total Expenses		_	41,850,824		20,925,412		21,956,440	,	(1,031,028)	-4.93%
Surplus/(Deficit)		\$	(4)	\$	(2)	\$	7,339		/	

<u>Urban Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2023	Ye	Budget ear-to-Date)	Actual ⁄ear-to-Date	N	Budget vs. Actual	Variance Percentage
Operating Budget vs. Actual										
Bovenues	Notes									
Operations Rate Revenue		\$	9,014,863	\$	4,507,432	\$	4,620,438	\$	113,007	2.51%
Lease Revenue			60,000		30,000		42,383		12,383	41.28%
Miscellaneous Use of Reserves-GAC	G		- 150.000		- 75.000		6,405 102,400		6,405 27,400	36.53%
Interest Allocation	-		3,000		1,500		18,825		17,325	1154.97%
Total Operating Revenues		\$	9,227,863	\$	4,613,932	\$	4,790,451	\$	176,519	3.83%
Expenses										
Personnel Cost	В	\$	2,234,714	\$	1,117,357	\$	1,109,214	\$	8,143	0.73%
Other Services & Charges	A. D		716.300		358.150		426.425		(68.275)	-19.06%
Communications	,		100,920		50,460		51,881		(1,421)	-2.82%
Information Technology	Α, Ε		104,950		52,475		67,815		(15,340)	-29.23%
Supplies Operations & Maintenance	AG		5,400 2 511 396		2,700		4,133 1,333,917		(1,433) (78,219)	-53.07%
Equipment Purchases	Α, Ο		16,000		8,000		9,618		(1,618)	-20.23%
Depreciation			300,000		150,000		150,000		-	0.00%
Subtotal Before Allocations		\$	6,211,680 3,016,183	\$	3,105,840	\$	3,253,481	\$	(147,641)	-4.75%
Total Operating Expenses		\$	9,227,863	\$	4,613,932	\$	4,832,502	\$	(218,570)	-4.74%
Operating Surplus/(Deficit)		\$	(0)	\$	(0)	\$	(42,051)		• • •	
Debt Service Budget vs. Actual Revenues Debt Service Rate Revenue Trust Fund Interest		\$	8,302,224 400	\$	4,151,112 200	\$	4,151,112 23.953	\$	23.753	0.00% 11876.54%
Reserve Fund Interest			31,000		15,500		161,062		145,562	939.11%
Lease Revenue		¢	1,600	¢	800	¢	1,480	¢	680	84.95%
Total Debt Service Revenues		- P	0,335,224	φ	4,107,012	φ	4,337,000	φ	105,554	4.00%
Debt Service Costs										
Total Principal & Interest Reserve Additions-Interest Debt Service Ratio Charge Reserve Additions CIP Growth		\$	6,964,724 31,000 400,000	\$	3,482,362 15,500 200,000 460,750	\$	3,482,362 161,062 200,000 460,750	\$	- (145,562) -	0.00% -939.11% 0.00%
Total Debt Service Costs		\$	8,335,224	\$	4,167,612	\$	4,313,174	\$	(145,562)	-3.49%
Debt Service Surplus/(Deficit)		\$	-	\$	-	\$	24,433			
		Ra	te Center S	Sun	nmary					
		<u>^</u>	47.500.007	<u>^</u>		<u>^</u>	0.400.057	<u>^</u>	0.00 5.4.4	0.05%
Total Revenues Total Expenses		\$	17,563,087 17,563,087	\$	8,781,544 8,781,544	\$	9,128,057 9,145,675	\$	346,514 (364,132)	3.95% -4.15%
Surplus/(Deficit)		\$	(0)	\$	(0)	\$	(17,618)			
Costs per 1000 Gallons Operating and DS		\$ \$	2.72 5.17			\$ \$	2.77 5.25			
Thousand Gallons Treated			3,397,700		1,698,850		1,741,589		42,739	2.52%
or Flow (MGD)			9.309				9.465			

<u>Crozet Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2023	Ye	Budget ear-to-Date	Y	Actual ear-to-Date	v	Budget 's. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues		•		•	500 540	~	500 540	•		0.000/
Operations Rate Revenue		\$	1,197,084	\$	598,542	\$	598,542	\$	-	0.00%
Lease Revenues			25,000		12,500		15,881		3,381	27.05%
Interest Anocation Total Operating Revenues		\$	1 222 484	\$	611 242	\$	616,970	\$	5,728	0.94%
-		<u> </u>		Ψ	•••,=•-	*	010,010	¥	0,. =0	
Expenses		-		-		-		•		2.0404
Personnel Cost		\$	352,559	\$	176,280	\$	176,259	\$	20	0.01%
Protessional Services			22,900		11,450		2,698		8,752	76.43%
Other Services & Charges			118,700		59,350		66,539		(7,189)	-12.11%
			17,000		8,800 2,475		10,193		(1,393)	-15.8370
Information Technology			4,950		2,475		0,∠o i 702		(3,800) 18	-103.70%
Supplies			1,500		170 250		/ UZ 120 011		40 20 220	0.42%
Operations & maintenance			300,000		1 500		139,911		39,339	21.90/0
Equipment Futurases			5,000		20 000		30,000		-	0.00%
		\$	939 709	\$	460 855	¢	434 083	\$	35 772	7 61%
Allocation of Support Departments		φ	282 780	φ	141 390	ψ	147 524	Ψ	(6 134)	-4.34%
Total Operating Expenses		\$	1 222,489	\$	611.245	\$	581.607	\$	29.637	4.85%
Operating Surplus/(Deficit)		\$	(5)	\$	(3)	\$	35,362	<u> </u>	L ujuu.	
		<u> </u>		<u> </u>	<u> </u>	<u> </u>		:		
Debt Service Rudget vs Actual										
Debi del lice Duaget 10. Actual										
Revenues										
Debt Service Rate Revenue		\$	2,161,704	\$	1,080,852	\$	1,080,852	\$	-	0.00%
Trust Fund Interest			80		40		5,563		5,523	13807.15%
Reserve Fund Interest			1,200		600		6,310		5,710	951.60%
Total Debt Service Revenues		\$	2,162,984	\$	1,081,492	\$	1,092,724	\$	11,232	1.04%
Debt Service Costs		•		•		•		•		0.000/
Total Principal & Interest		\$	1,217,280	\$	608,640	\$	608,640	\$	-	0.00%
Reserve Additions-Interest			1,200		600		6,310		(5,710)	-951.60%
Reserve Additions-CIP Growth		*	944,500	*	472,250	*	472,250	*	-	0.00%
Total Debt Service Costs		<u>\$</u>	2,162,980	<u>\$</u>	1,081,490	\$ ¢	1,087,200	\$	(5,710)	-0.53%
Debt Service Surplus/(Denciry		φ		<u> </u>	۷	φ	5,525	•		
	P	ato	Contor Su							
	N	ale	Center Su	mn	lary					
		-	100	-		-		•		
Total Revenues		\$	3,385,468	\$	1,692,734	\$	1,709,694	\$	16,960	1.00%
Total Expenses			3,385,469		1,692,735		1,668,807	-	23,928	1.41%
Currelus//Deficit)		¢	(1)	¢	(1)	¢	40 007			
Surplus/(Dencit)		φ	<u> </u>	<u> </u>	<u> </u>	φ	40,007	-		
Costs per 1000 Gallons		¢	6.03			¢	5 15			
Operating and DS		φ ¢	16 70			φ ¢	14 77			
		φ	10.70			ψ	14.77			
Thousand Gallons Treated			202,697		101,349		112,959		11.611	11 46%
			202,00		101,010		112,000			
Flow (MGD)			0.555				0.614			

<u>Scottsville Water Rate Center</u> Revenues and Expenses Summary			Budget FY 2023	Ye	Budget ear-to-Date	Ye	Actual ear-to-Date	v	Budget s. Actual	Variance Percentage
Operating Budget vs. Actual										
	Notes									
Revenues										
Operations Rate Revenue		\$	569,556	\$	284,778	\$	284,778	\$	-	0.00%
Interest Allocation		*	200	•	100	•	1,182	•	1,082	1082.23%
Total Operating Revenues		Þ	569,756	\$	284,878	\$	285,960	\$	1,082	0.38%
Expenses										
Personnel Cost		\$	212,797	\$	106,399	\$	107,398	\$	(999)	-0.94%
Professional Services			5,000		2,500		6,932		(4,432)	-177.27%
Other Services & Charges			27,100		13,550		17,313		(3,763)	-27.77%
Communications			6,400		3,200		3,342		(142)	-4.44%
Information Lechnology			4,400		2,200		3,855		(1,655)	-75.24%
Supplies	c		100		50		138		(88)	-1/5.04%
Operations & Maintenance	G		97,925		48,963		01,338		(12,376)	-25.28%
Equipment Purchases			1,600		20,000		1,703		(903)	-112.90%
Subtotal Bofore Allocations		\$	395 322	\$	197 661	\$	20,000	\$	(24.358)	
Allocation of Support Departments		Ψ	174 433	Ψ	87 216	Ψ	89 288	Ψ	(2,071)	-2.38%
Total Operating Expenses		\$	569.755	\$	284.878	\$	311.307	\$	(26.429)	-9.28%
Operating Surplus/(Deficit)		\$	1	\$	0	\$	(25,347)			
Revenues Debt Service Rate Revenue Trust Fund Interest		\$	150,300 10	\$	75,150 5	\$	75,150 589	\$	- 584	0.00% 11680.00%
Reserve Fund Interest			850		425		4,317		3,892	915.79%
Total Debt Service Revenues		\$	151,160	\$	75,580	\$	80,056	\$	4,476	5.92%
Debt Service Costs										
Total Principal & Interest		\$	148,726	\$	74,363	\$	74,363	\$	-	0.00%
Reserve Additions-Interest			850		425		4,317		(3,892)	
Reserve Additions-CIP Growth			1,589		795		795		-	
Total Debt Service Costs		\$	151,165	\$	75,583	\$	79,475	\$	(3,892)	-5.15%
Debt Service Surplus/(Deficit)		Þ	(5)	Þ	(3)	Þ	502	-		
	F	Rate	Center Su	ımn	nary					
Total Revenues		\$	720.916	\$	360,458	\$	366.016	\$	5.558	1.54%
Total Expenses			720,920		360,460		390,782	-	(30,321)	-8.41%
Surplus/(Deficit)		\$	(4)	\$	(2)	\$	(24,765)	-		
Costs per 1000 Gallons		\$	33.07			\$	28.09			
Operating and DS		\$	41.84			\$	35.26			
Thousand Gallons Treated or			17,230		8,615		11,082		2,467	28.64%
Flow (MGD)			0.047				0.060			

<u>Urban Wastewater Rate Center</u> Revenues and Expenses Summary			Budget FY 2023	Y	Budget ear-to-Date	Y	Actual ear-to-Date	v	Budget rs. Actual	Variance Percentage
Operating Budget vs. Actual	Notes									
Revenues	10100									
Operations Rate Revenue		\$	9 033 662	\$	4 516 831	\$	4 891 711	\$	374 880	8 30%
Stone Robinson WWTP		Ψ	39,036	Ψ	19,518	Ψ	9,904	Ψ	(9,614)	-49.26%
Septage Acceptance			500,000		250,000		297,250		47,250	18.90%
Nutrient Credits			100,000		50,000		39,129		(10,871)	-21.74%
Miscellaneous Revenue			-		-		-		-	
Interest Allocation		_	3,300		1,650	_	21,189		19,539	1184.18%
Total Operating Revenues		\$	9,675,998	\$	4,837,999	\$	5,259,183	\$	421,184	8.71%
Expenses										
Personnel Cost	в	\$	1,325,384	\$	662,692	\$	734,936	\$	(72,244)	-10.90%
Professional Services	С		75,000		37,500		84,671		(47,171)	-125.79%
Other Services & Charges	A , D		2,276,980		1,138,490		1,261,807		(123,317)	-10.83%
Communications	-		1,900		950		5,535		(4,585)	-482.60%
Information Lechnology	E		110,400		55,200		/2,206		(17,006) 316	-30.81%
Supplies	^ G		1,200 1 608 660		000		204 1 061 852		010 (212 522)	0∠.00%
Operations & Mantenance	А, О		143 000		049,000 71 500		25 000		46 500	-23.02 /0
Depreciation			470.000		235,000		235,000		(0)	0.00%
Subtotal Before Allocations		\$	6.102.524	\$	3.051.262	\$	3.481.290	\$	(430.029)	-14.09%
Allocation of Support Departments		÷	3,573,476	Ŧ	1,786,738	+	1,853,944	Ŧ	(67,206)	-3.76%
Total Operating Expenses		\$	9,675,999	\$	4,838,000	\$	5,335,234	\$	(497,235)	-10.28%
Operating Surplus/(Deficit)		\$	(1)	\$	(1)	\$	(76,051)	_	•	
Revenues Debt Service Rate Revenue Septage Receiving Support - County Trust Fund Interest	A	\$	8,878,107 109,440 500	\$	4,439,054 54,720 250	\$	4,439,052 109,440 35,275	\$	(2) 54,720 35,025	0.00% 100.00% 14010.06%
Reserve Fund Interest			31,000		15,500		159,401		143,901	928.39%
Total Debt Service Revenues		\$	9,019,047	\$	4,509,524	\$	4,743,168	\$	233,645	5.18%
Debt Service Costs										
Total Principal & Interest		\$	7,808,347	\$	3,904,174	\$	3,904,174	\$	-	0.00%
Reserve Additions-Interest			31,000		15,500		159,401		(143,901)	-928.39%
Debt Service Ratio Charge			325,000		162,500		162,500		-	0.00%
Reserve Additions-UIP Growth		¢	854,700	¢	427,350	¢	427,350	¢	- (4.42,901)	0.00%
Iotal Debt Service Costs Debt Service Surplus//Deficit)			9,019,047	⊅ \$	4,509,524	ֆ Տ	4,053,425	¢	(143,501)	-3.13/0
Debt del vice dulpida (Dentity		Ψ		Ψ		Ψ	00,171	=		
		Rat	e Center S	um	mary					
Total Payanuan		¢	40 605 045	¢	0 247 522	¢	40 002 251	¢	654 920	7 01%
Total Expanses		φ	10,090,040	φ	9,341,323	Φ	0.088.650	φ	004,029 (6/1 136)	7.0170 -6.86%
ι σται εχρεπόεο			10,090,040		3,041,020		9,900,000	-	(041,130)	-0.0070
Surplus/(Deficit)		\$	(1)	\$	(1)	\$	13,692	=		
Costs per 1000 Gallons		\$	2.85			\$	2.91			
Operating and DS		\$	5.51			\$	5.44			
Thousand Gallons Treated or			3,390,400		1,695,200		1,836,228		141,028	8.32%
Flow (MGD)			9.289				9.980			

<u>Glenmore Wastewater Rate Center</u> Revenues and Expenses Summary		Budget FY 2023		Budget Year-to-Date		Actual Year-to-Date			Budget rs. Actual	Variance Percentage	
Operating Budget vs. Actual											
	Notes										
Revenues											
Operations Rate Revenue		\$	443,640	\$	221,820	\$	221,820	\$	-	0.00%	
Interest Allocation			150		75		955		880	1173.16%	
Total Operating Revenues		\$	443,790	\$	221,895	\$	222,775	\$	880	0.40%	
Expenses											
Personnel Cost		\$	115 815	\$	57 908	\$	64 401	\$	(6 4 9 4)	-11 21%	
Professional Services		Ψ	5 000	Ψ	2 500	Ψ	7 772	Ψ	(5,272)	-210.86%	
Other Services & Charges			35 750		17 875		18 894		(0,272) (1,019)	-5 70%	
Communications			-		-		1 662		(1,610)	0.1070	
Information Technology			4 4 2 5		2 213		6 903		(4,691)	-212 02%	
Supplies			-,+20		2,210		0,000		(4,001)	-212.0270	
Operations & Maintenance			134 950		67 475		46 930		20 545	30 45%	
Equipment Purchases			3 800		1 900		1 900		(0)	0.00%	
Depreciation			10,000		5 000		5 000		(0)	0.00%	
Subtotal Before Allocations		\$	309 740	\$	154 870	\$	153 462	\$	1 408	0.00%	
Allocation of Support Departments		Ŧ	134.045	Ŧ	67.022	Ŧ	66.832	Ŧ	190	0.28%	
Total Operating Expenses		\$	443.785	\$	221.892	\$	220,294	\$	1.598	0.72%	
Operating Surplus/(Deficit)		\$	5	\$	3	\$	2,480		,		
Revenues Debt Service Rate Revenue Trust Fund Interest Reserve Fund Interest		\$	20,484 - 80	\$	10,242 - 40	\$	10,242 - 332	\$	- - 202	0.00%	
Total Debt Service Revenues		\$	20 564	\$	10 282	\$	10 574	\$		0.00%	
Total Debt Service Revenues		Ψ	20,004	Ψ	10,202	Ψ	10,074	Ψ		0.0070	
Debt Service Costs											
Total Principal & Interest		\$	18,717	\$	9.359	\$	9,359	\$	-	0.00%	
Reserve Additions-CIP Growth		•	1.761	+	881	Ŧ	881	Ŧ	-	0.00%	
Reserve Additions-Interest			80		40		332		(292)	-730.13%	
Total Debt Service Costs		\$	20,558	\$	10,279	\$	10,571	\$	(292)	-2.84%	
Debt Service Surplus/(Deficit)		\$	6	\$	3	\$	3	-			
	F	Rate	Center Su	mm	ary						
Total Decomposition		¢	404.054	¢	000 477	¢	000 040	۴	4 470	0 500/	
Total Revenues		\$	464,354	\$	232,177	\$	233,349	\$	1,172	0.50%	
i otal Expenses			464,343		232,171		230,866	-	1,306	0.56%	
Surplus/(Deficit)		\$	11	\$	6	\$	2,483	-			
Costs par 1000 Gallons		¢	10 72			¢	11 26				
Onerating and DS		φ	11.72			φ Φ	11.20				
		Ψ	11.22			Ψ	11.00				
Thousand Gallons Treated			41,401		20,701		19,573		(1,128)	-5.45%	
Flow (MGD)			0.113				0.106				

<u>Scottsville Wastewater Rate Center</u> Revenues and Expenses Summary			Budget FY 2023		Budget Year-to-Date		Actual ear-to-Date	I	Budget /s. Actual	Variance Percentage	
Operating Budget vs. Actual	[
	Notes										
Revenues											
Operations Rate Revenue		\$	355,620	\$	177,810	\$	177,810	\$	-	0.00%	
Interest Allocation		¢	255 740	¢	60	¢	173	¢	713	1188.32%	
Total Operating Revenues		ф.	355,740	φ	177,070	φ	170,505	φ	/13	0.40%	
Expenses											
Personnel Cost		\$	115,795	\$	57,898	\$	64,401	\$	(6,504)	-11.23%	
Professional Services			5,000		2,500		930		1,570	62.79%	
Other Services & Charges			26,650		13,325		14,797		(1,472)	-11.05%	
Communications			3,770		1,885		1,864		21	1.13%	
Information Technology			4,125		2,063		8,702		(6,639)	-321.91%	
Supplies Operations & Maintenance			- 52 000		- 26,000		20 999		- 5 001	19 24%	
Equipment Purchases			3 800		20,000		20,995		(0)	0.00%	
Depreciation			20,000		10 000		10 000		(0)	0.00%	
Subtotal Before Allocations		\$	231 140	\$	115 570	\$	123 593	\$	(8 023)	-6.94%	
Allocation of Support Departments		Ψ	124,604	Ψ	62,302	Ψ	62,396	Ψ	(94)	-0.15%	
Total Operating Expenses		\$	355,744	\$	177,872	\$	185,989	\$	(8,117)	-4.56%	
Operating Surplus/(Deficit)		\$	(4)	\$	(2)	\$	(7,406)	Ŧ	(*,,		
Revenues Debt Service Rate Revenue	•	\$	10,110	\$	5,055	\$	5,058	\$	3	0.06%	
Trust Fund Interest			-		-		65		65		
Reserve Fund Interest			100		50		664		614	1228.54%	
Total Debt Service Revenues		\$	10,210	\$	5,105	\$	5,788	\$	683	13.37%	
Daht Camies Casta											
		¢	7 4 4 7	۴	0.704	¢	0.704	¢		0.000/	
Total Principal & Interest		\$	7,447	\$	3,724	\$	3,724	\$	-	0.00%	
Reserve Auditions-Interest			2 667		1 334		1 334		(014)	0.0%	
EStimated New Finicipal & Interest Total Debt Service Costs		\$	10 214	\$	5 107	\$	5 721	\$	(614)	-12 03%	
Debt Service Surplus/(Deficit)		\$	(4)	\$	(2)	\$	66	Ψ	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	~ 12.00 /0	
			\ <i>i</i>		· · ·			:			
		Rate	Center Su	umi	mary						
Total Payanuas		¢	265 050	¢	192 075	¢	19/ 371	¢	1 306	0.76%	
Total Exponses		Ф	365,950	Ф	102,973	Ф	104,371	Ф	1,390	0.70%	
Total Expenses			303,930		102,979		191,711	•	(0,752)	-4.7770	
Surplus/(Deficit)		\$	(8)	\$	(4)	\$	(7,340)				
Costs per 1000 Gallons		\$	15.05			\$	20.91				
Operating and DS		\$	15 48			\$	21.55				
		Ψ	10.10			Ψ	21.00				
Thousand Gallons Treated or			23,643		11,822		8,895		(2,927)	-24.76%	
Flow (MGD)			0.065				0.048				

Rivanna Water & Sewer Authority Monthly Financial Statements - December 2022

Administration

<u>Administration</u>			Budget FY 2023	Y	Budget ear-to-Date	Ye	Actual ear-to-Date	v	Budget s. Actual	Variance Percentage
Operating Budge	t vs. Actual									
Revenues		Notes								
Payment for Services SWA Bond Proceeeds Funding Bo	nd Issuance Costs		\$ 654,000	\$	327,000	\$	327,000	\$	-	0.00%
Miscellaneous Revenue			2,000		1,000		8,693		7,693	769.34%
	Total Operating Revenues		\$ 656,000	\$	328,000	\$	335,693	\$	7,693	2.35%
Expenses										
Personnel Cost			\$ 2,450,092	\$	1,225,046	\$	1,187,311	\$	37,735	3.08%
Professional Services		С	170,000		85,000		104,636		(19,636)	-23.10%
Other Services & Charges		D	162,600		81,300		92,308		(11,008)	-13.54%
Communications		F	24,780		12,390		41,393		(29,003)	-234.08%
Information Technology		A, E	404,876		202,438		438,132		(235,694)	-116.43%
Supplies			23,000		11,500		14,359		(2,859)	-24.86%
Operations & Maintenance			67,850		33,925		30,342		3,583	10.56%
Equipment Purchases			13,100		6,550		6,550		(0)	0.00%
Depreciation			-		-		-		-	
	Total Operating Expenses		\$ 3,316,298	\$	1,658,149	\$	1,915,030	\$	(256,881)	-15.49%

	Depa	rtm	ent Summ	ary	,			
Net Costs Allocable to Rate Centers		\$	(2,660,298)	\$	(1,330,149)	\$ (1,579,337)	\$ 249,188	-18.73%
Allocations to the Rate Centers								
Urban Water	44.00%	\$	1,170,531	\$	585,266	\$ 694,908	\$ (109,643)	
Crozet Water	4.00%	\$	106,412		53,206	63,173	(9,968)	
Scottsville Water	2.00%	\$	53,206		26,603	31,587	(4,984)	
Urban Wastewater	48.00%	\$	1,276,943		638,472	758,082	(119,610)	
Glenmore Wastewater	1.00%	\$	26,603		13,301	15,793	(2,492)	
Scottsville Wastewater	1.00%	\$	26,603		13,301	15,793	(2,492)	
	100.00%	\$	2,660,298	\$	1,330,149	\$ 1,579,337	\$ (249,188)	

Maintonanco

<u>Maintenance</u>			Budget		Budget	Actual	ļ	Budget	Variance
			FY 2023		Year-to-Date	Year-to-Date	V	s. Actual	Percentage
Operating Budget vs. Actual									
	Notes								
Revenues									
Payment for Services SWA		\$	-	\$	-	\$ -	\$	-	
Miscellaneous Revenue			-		-	-		-	
Total Operating Revenues		\$	-	\$	-	\$ -	\$	-	
Expenses									
Personnel Cost	в	\$	1,477,565	\$	738,783	\$ 728,107	\$	10,676	1.45%
Professional Services			-		-	1,562		(1,562)	
Other Services & Charges			33,600		16,800	9,387		7,413	44.13%
Communications			24,500		12,250	6,387		5,863	47.86%
Information Technology			32,500		16,250	10,380		5,870	36.12%
Supplies			2,500		1,250	657		593	47.40%
Operations & Maintenance	G		104,900		52,450	66,408		(13,958)	-26.61%
Equipment Purchases			212,600		106,300	64,300		42,000	39.51%
Depreciation									
Total Operating Expenses		\$	1,888,165	\$	944,083	\$ 887,188	\$	56,895	6.03%
		Dep	partment S	um	nmary				
Net Costs Allocable to Rate Centers		\$	(1,888,165)	\$	(944,083)	\$ (887,188)	\$	(56,895)	6.03%
Allocations to the Rate Centers									
Urban Water	30.00%	\$	566,450	\$	283,225	\$ 266,156	\$	17,069	
Crozet Water	3.50%	5	66,086		33,043	31,052		1,991	
Scottsville Water	3.50%	0	66,086		33,043	31,052		1,991	
					E22 407	501 261		22.440	
Urban Wastewater	56.50%)	1,066,814		535,407	501,201		32,140	
Urban Wastewater Glenmore Wastewater	56.50% 3.50%))	1,066,814 66,086		33,043	31,052		32,146 1,991	
Urban Wastewater Glenmore Wastewater Scottsville Wastewater	56.50% 3.50% <u>3.00%</u>		1,066,814 66,086 56,645		33,043 28,322	 31,052 26,616		32,146 1,991 1,707	

Laboratory

<u>Laboratory</u>			Budget FY 2023	Ye	Budget ear-to-Date	Ye	Actual ar-to-Date	v	Budget s. Actual	Variance Percentage
Operating Budget vs. Actual		<u> </u>								
Revenues	Notes									
N/A										
Expenses										
Personnel Cost Professional Services		\$	415,324 -	\$	207,662	\$	207,561 -	\$	101	0.05%
Other Services & Charges			11,780		5,890		444		5,446	92.47%
Communications			1,700		850		585		265	31.18%
Information Technology			1,000		500		-		500	100.00%
Supplies			1,250		625		1,115		(490)	-78.42%
Operations & Maintenance			121,050		60,525		66,444		(5,919)	-9.78%
Equipment Purchases			1,700		850		850		(0)	0.00%
Depreciation			-		-		-		-	
Total Operating Expenses		\$	553,804	\$	276,902	\$	276,999	\$	(97)	-0.03%
								_		
	Depa	rtme	ent Summ	ary	/					
Net Costs Allocable to Rate Centers		\$	(553,804)	\$	(276,902)	\$	(276,999)	\$	97	-0.03%
Allocations to the Rate Centers										
Urban Water	44.00%	\$	243,674	\$	121,837	\$	121,879	\$	(42)	
Crozet Water	4.00%		22,152		11,076		11,080		(4)	
Scottsville Water	2.00%		11,076		5,538		5,540		(2)	
Urban Wastewater	47.00%		260,288		130,144		130,189		(45)	
Glenmore Wastewater	1.50%		8,307		4,154		4,155		(1)	
Scottsville Wastewater	1.50%		8,307		4,154		4,155		(1)	
	100.00%	\$	553,804	\$	276,902	\$	276,999	\$	(97)	

Engineerin

<u>Engineering</u>			Budget FY 2023	Budget Year-to-Date	Actual Year-to-Date	V	Budget s. Actual	Variance Percentage
Operating Budget vs. Actual		<u> </u>						
Pavanuaa	Notes							
Payment for Services SWA		\$	-	\$ -	\$ 4 248	\$	4 248	
Total Operating Revenues		\$	-	\$ -	\$ 4,248	\$	4,248	
Expenses								
Personnel Cost	в	\$	1,794,680	\$ 897,340	\$ 905,450	\$	(8,110)	-0.90%
Professional Services			125,000	62,500	30,929		31,571	50.51%
Other Services & Charges			18,000	9,000	4,845		4,155	46.17%
Communications			18,772	9,386	4,713		4,673	49.79%
Information Technology	Α, Ε		145,000	72,500	82,531		(10,031)	-13.84%
Supplies			5,000	2,500	2,251		249	9.95%
Operations & Maintenance			75,300	37,650	18,261		19,389	51.50%
Equipment Purchases			21,500	10,750	10,750		0	0.00%
Depreciation			-	-	-		-	
Total Operating Expenses		\$	2,203,252	\$ 1,101,626	\$ 1,059,729	\$	41,897	3.80%

Net Costs Allocable to Rate Centers		\$ (2,203,252)	\$ (1,101,626)	\$ (1,055,482)	\$ (37,649)	3.42
Allocations to the Rate Centers						
Urban Water	47.00%	\$ 1,035,528	\$ 517,764	\$ 496,076	\$ 21,688	
Crozet Water	4.00%	88,130	44,065	42,219	1,846	
Scottsville Water	2.00%	44,065	22,033	21,110	923	
Urban Wastewater	44.00%	969,431	484,715	464,412	20,304	
Glenmore Wastewater	1.50%	33,049	16,524	15,832	692	
Scottsville Wastewater	1.50%	33,049	16,524	15,832	692	
	100.00%	\$ 2,203,252	\$ 1,101,626	\$ 1,055,482	\$ 46,144	
Rivanna Water and Sewer Authority Flow Graphs







www.rivanna.org

MEMORANDUM

TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: DAVE TUNGATE, DIRECTOR OF OPERATIONS

- **REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR**
- SUBJECT: OPERATIONS REPORT FOR JANUARY 2023
- **DATE: FEBRUARY 28, 2023**

WATER OPERATIONS:

The average and maximum daily water volumes produced in January 2023 were as follows:

Water Treatment Plant	Average Daily Production (MGD)	Maximum Daily Production in the Month (MGD)
South Rivanna	7.99	8.76 (1/19/2023)
Observatory	0.00	0.00 (All Month)
North Rivanna	<u>0.40</u>	0.47 (1/25/2023)
Urban Total	8.39	9.18 (1/19/2023)
Crozet	0.53	0.61 (1/13/2023)
Scottsville	0.04	0.059 (1/5/2023)
Red Hill	<u>0.0020</u>	0.003 (1/9/2023)
RWSA Total	8.96	-

- All RWSA water treatment facilities were in regulatory compliance during the month of January.
- Observatory Water Treatment Plant has been off-line for the renovation project since 12/01/2022.

Status of Reservoirs (as of February 20, 2023):

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

WASTEWATER OPERATIONS:

All RWSA Water Resource Recovery Facilities (WRRFs) were in regulatory compliance with their effluent limitations during January 2023. Performance of the WRRFs in January was as follows compared to the respective VDEQ permit limits:

WRRF	Average Daily Effluent	Average (pp	age CBOD ₅ (ppm) Averag Suspend (pp		e Total ed Solids m)	Average Ammonia (ppm)	
	Flow (MGD)	RESULT	LIMIT	RESULT	LIMIT	RESULT	LIMIT
Moores Creek	9.56	<ql< th=""><th>9</th><th><ql< th=""><th>22</th><th><ql< th=""><th>2.2</th></ql<></th></ql<></th></ql<>	9	<ql< th=""><th>22</th><th><ql< th=""><th>2.2</th></ql<></th></ql<>	22	<ql< th=""><th>2.2</th></ql<>	2.2
Glenmore	0.117	2.6	15	3.8	30	NR	NL
Scottsville	0.07	3.0	25	5.3	30	NR	NL
Stone Robinson	0.002	NR	30	NR	30	NR	NL

NR = Not Required

NL = No Limit

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

Nutrient discharges at the Moores Creek AWRRF were as follows for January 2023.

State Annual A (lb./yr.) P	Allocation ermit	Average Monthly Allocation (lb./mo.) *	Moores Creek Discharge January (lb./mo.)	Performance as % of monthly average Allocation*	Year to Date Performance as % of annual allocation
Nitrogen	282,994	23,583	8,471	36%	3%
Phosphorous	18,525	1,544	196	13%	1%

*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







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: FEBRUARY 28, 2023

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

For the current, approved CIP, please visit: <u>https://www.rivanna.org/wp-content/uploads/2022/06/Final-2023-2027-CIP.pdf</u>

Under Construction

- 1. South Rivanna and Observatory Water Treatment Plant Renovations
- 2. Airport Road Water Pump Station and Piping
- 3. MC 5kV Electrical System Upgrades

Design and Bidding

- 4. Ragged Mtn Reservoir to Observatory WTP Raw Water Line and Pump Station
- 5. South Fork Rivanna to Ragged Mtn. Raw Water Line Birdwood to Old Garth
- 6. Beaver Creek Dam, Pump Station and Piping Improvements
- 7. South Fork Rivanna River Crossing
- 8. Central Water Line
- 9. Moores Creek Administration Building Renovation and Addition
- 10. Upper Schenks Branch Interceptor, Phase II
- 11. Red Hill Water Treatment Plant Upgrades
- 12. Emmet Street Water Line Betterment
- 13. Scottsville WRRF Whole Plant Generator and ATS
- 14. Crozet Pump Station Rehabilitation
- 15. MCAWRRF Structural and Concrete Rehabilitation
- 16. MCAWRRF Building Upfits and Gravity Thickener Improvements

Planning and Studies

17. S. F. Rivanna Reservoir to Ragged Mtn Reservoir Water Line Right-of-Way

- Asset Management Plan
 SFRR to RMR Pipeline Pretreatment Pilot Study
- 20. MCAWRRF Biogas Upgrades

Other Significant Projects

- 21. Urgent and Emergency Repairs
- 22. Security Enhancements

Under Construction

1. South Rivanna and Observatory Water Treatment Plant Renovations

Design Engineer:	Short Elliot Hendrickson, Inc. (SEH)
Construction Contractor:	English Construction Company (Lynchburg, VA)
Construction Start:	May 2020
Percent Complete:	80%
Base Construction Contract +	
Change Orders to Date = Current Value:	36,748,500 + 1,141,441 = 37,889,941
Completion:	June 2023
Budget:	\$43,000,000

<u>Current Status</u>: Lead paint abatement activities in the SR Filter Building continue. Work at the OBWTP includes the new Chemical Storage Building, GAC Building expansion, a large retaining wall, Intermediate Pump Station improvements, installation of a new settled water flume, filter rebuilds and installation of a sludge control vault. Shutdown of the OBWTP is planned for December 5, 2022 – March 12, 2023 pending any modifications due to unforeseen conditions.

2. Airport Road Water Pump Station and Piping

Design Engineer:	Short Elliot Hendrickson (SEH)
Construction Contractor:	Anderson Construction, Inc. (ACI) (Lynchburg, VA)
Construction Start:	December 2021
Percent Complete:	35%
Base Construction Contract +	
Change Order to Date = Current Value:	\$8,520,312
Completion:	March 2024
Budget:	\$10,000,000

<u>Current Status</u>: The pump cans have been installed, backfill is up to grade, and they are tying steel and placing forms for the building footings. Installation of two parallel water lines is on-going along Berkmar Drive between the pump station site and Timberwood Blvd, however, production has been slow due to the amount of rock encountered.

3. MCAWRRF 5kV Electrical System Upgrades

Design Engineer:	Hazen and Sawyer (Hazen)
Construction Contractor:	Pyramid Electrical Contractors (Richmond, VA)

Construction Start:	May 2022
Percent Complete:	15%
Base Construction Contract +	
Change Order to Date = Current Value:	\$5,180,000 - \$970,000 = \$4,210,000
Completion:	June 2024
Budget:	\$5,050,000

<u>Current Status</u>: Ductbank installation continues at the site. This portion of the work will connect the new switchgear to the existing ductbank network, allowing the necessary cable replacements to take place later in the project. This portion of the work will likely continue throughout the winter months, into the spring.

Design and Bidding

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

Design Engineer:	Kimley-Horn
Project Start:	August 2018
Project Status:	Design (50%)
Construction Start:	2024
Completion:	2028
Budget:	\$44,000,000

<u>Current Status</u>: Preparation of engineering plans and specifications continues as well as easement and property negotiations with UVA and the UVA Foundation. Most of the focus continues to be on the pump station site, however, design work is beginning for portions of the pipeline on UVA Foundation property.

5. S. F. Rivanna Reservoir to Ragged Mtn. Reservoir Raw Water Line – Birdwood to Old Garth

Kimley-Horn
June 2021
90% Design
June 2023
June 2024
\$4,000,000

<u>Current Status</u>: Engineering plans and specifications are substantially complete for a 0.25-mile section of this 36" raw water pipe from Birdwood to Old Garth Road. One remaining easement is under negotiation with the UVA Foundation for this phase of the project. The railroad permit application was finalized with information from the remaining soil boring on the UVAF property which was completed in December 2022. The WPO/VESCP permit application was submitted to the County in January 2023.

6. <u>Beaver Creek Dam, Pump Station and Piping Improvements</u>

Design Engineer:	Schnabel Engineering (Dam)
Design Engineer:	Hazen & Sawyer (Pump Station)

Project Start:	February 2018
Project Status:	95% NRCS Planning Process
Construction Start:	2024
Completion:	2027
Budget:	\$43,000,000

<u>Current Status</u>: A Joint Permit Application and supporting documents were submitted to VDEQ in October 2022, and are under review. The revised Plan-Environmental Assessment was approved by the NRCS National Water Management Center on October 18, 2022, and the Draft Report was posted for public comment from November 4-December 19, 2022. The final report is under review by NRCS with approval anticipated by the end of April 2023. A funding request for final design of the spillway upgrades is under review by NRCS. Construction funds will be requested near the end of the design phase. Staff is working with Hazen and Sawyer to develop a scope and fee for design of the new raw water pump station, intake, and hypolimnetic oxygenation system (HLOS). Preliminary design work is expected to begin in spring 2023.

7. S. F. Rivanna River Crossing

Design Engineer:	Michael Baker International (Baker)
Project Start:	November 2020
Project Status:	70% Design
Construction Start:	Summer 2023
Completion:	Summer 2024
Budget:	\$7,000,000

<u>Current Status</u>: Easement acquisition work is on-going. RWSA met with County of Albemarle Parks Department in the field and addressed all concerns while walking the proposed water line alignment and river crossing location on Brook Hill River Park property along Rio Mills Road. A required easement on the south side of the river is on a remnant property from the VDOT Berkmar Bridge project and we cannot finalize that easement until the property transfer back to the original property owner is complete. Submission of the Joint Permit Application was completed prior to Thanksgiving and RWSA was issued a VMRC permit at the end of December 2022.

8. <u>Central Water Line</u>

Design Engineer:	Michael Baker International (Baker)
Project Start:	July 2021
Project Status:	30% Design
Construction Start:	2024
Completion:	2028
Budget:	\$41,000,000

<u>Current Status</u>: Baker's 30% design submittal was distributed to the City and ACSA for review in early February 2023. Coordination of a stakeholder design workshop is anticipated in late February/early March 2023.

9. <u>Moores Creek Administration Building Renovation and Addition</u> Design Engineer: SEH

Project Start:	October 2022
Project Status:	10% Design
Construction Start:	March 2024
Completion:	June 2026
Budget:	\$10,000,000

Current Status: Conceptual layouts will be completed in early March.

10. Upper Schenks Branch Interceptor, Phase II

Design Engineer:	Frazier Engineering, P.A.
Project Start:	July 2021
Project Status:	Design
Construction Start:	TBD
Completion:	TBD
Budget:	\$4,725,000

<u>Current Status</u>: Project, easement and valuation information was submitted to the County for review. The County has provided some initial comments related to tree protection which are being evaluated for project impacts.

11. Red Hill Water Treatment Plant Upgrades

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	July 2022
Project Status:	95% Design
Construction Start:	September 2023
Completion:	May 2024
Budget:	\$450,000

<u>Current Status</u>: The design engineer is currently addressing comments from the January review meeting. Further, the addition of granular activated carbon (GAC) contactors and inspection of the existing hydropneumatics tank are being considered for incorporation into the design. As a result, the project schedule has been slightly modified. This project was selected by Albemarle County to receive ARPA grant funding.

12. Emmet Street Water Line Betterment

Design Engineer:	Whitman, Requardt & Associates (WRA)
Project Start:	September 2021
Project Status:	Ivy Corridor Public Realm – Complete
	Contemplative Commons – Complete
	Emmet Streetscape – Preliminary Design
	Hydraulic/29 – Preliminary Scoping
Completion:	2030
Budget:	\$2,900,000

<u>Current Status</u>: WRA and RWSA are developing a scope of work for design of a 24-30" water main in Emmet Street as part of the City's Emmet Streetscape Phase I project. RWSA has initiated discussion with VDOT on potential pipe routing in the upcoming design-build Hydraulic/29 project.

13. Scottsville WRRF Whole Plant Generator and ATS

Design Engineer:	Wiley Wilson
Project Start:	December 2021
Project Status	65% Design
Completion:	December 2024
Budget:	\$520,000

<u>Current Status:</u> The 90% design submission and subsequent review has occurred. The design engineer is currently working on addressing review comments and associated action items. A grant application has been submitted to VDEM, and incorporation of the timeline associated with grant review, approval and award may delay the start of construction until the end of this calendar year.

14. Crozet Pump Station Rehabilitation

Design Engineer:	Wiley Wilson
Project Start:	Fall 2022
Project Status:	Work Authorization Development
Completion:	2025
Budget:	\$1,004,400

Current Status: A work authorization is being executed for completion of this project.

15. MCAWRRF Structural and Concrete Rehabilitation

Design Engineer:	Hazen and Sawyer (Hazen)
Project Start:	Spring 2023
Project Status:	Work Authorization Development
Completion:	Spring 2026
Budget:	\$13,550,000

<u>Current Status:</u> A scoping meeting was held with Hazen and work authorization development is underway.

16. MCAWRRF Building Upfits and Gravity Thickener Improvements

Design Engineer:	Short Elliot Hendrickson (SEH)
Project Start:	Spring 2023
Project Status:	Work Authorization Development
Completion:	Winter 2025
Budget:	\$5,000,000

<u>Current Status:</u> This project was created to combine the following projects at the MCAWRRF into one bid package for efficiency and coordination purposes: Operations and Maintenance Building

Upfits, New Actuators for Secondary Clarifiers, and the MCAWRRF Gravity Thickener Pumping and Chem Feed Improvements. A work authorization is being developed with SEH.

Planning and Studies

17. S. F. Rivanna Reservoir to Ragged Mtn. Reservoir Water Line Right-of-Way

Design Engineer:	Michael Baker International (Baker)
Project Start:	October 2017
Project Status:	Easement Acquisition
Completion:	2023
Budget:	\$2,295,000

<u>Current Status</u>: Progress continues in our efforts to acquire 8 miles of easements and agreements (with VDOT) for this 36" water line. Discussions continue for remaining easements with the UVA Foundation.

18. Asset Management Plan

Design Engineer:	GHD, Inc.
Project Start:	July 2018
Project Status:	CMMS Implementation – 90% Complete
	AMP Implementation – 22% Complete
Completion:	CMMS Implementation – April 2023
	AMP Implementation – 2024
Budget:	\$1,180,000

<u>Current Status</u>: For implementation of the new Computerized Maintenance Management System (CMMS), GHD has completed updates to our facility geodatabase and is continuing the software configuration process. A recent software update has complicated the process, but GHD and RWSA staff worked with Cityworks to resolve it. Work continues to fully implement the Asset Management program across all applicable Authority facilities with a detailed review of our asset register and continued development of default asset attributes which will be used to evaluate asset condition and lifespan.

19. SFRR to RMR Pipeline – Pretreatment Pilot Study

SEH/DiNatale August 2020
100% Complete (Phase 2), 0% Phase 3
December 2023
\$116,401 (Phase 2), TBD Phase 3

<u>Current Status</u>: Final efforts by the consultant to better clarify operations of the raw water transfer system and associated reservoir levels during drought conditions have been completed. The final results are currently under review by staff. The next phase of the study is being planned, which will

include installation of nutrient monitoring/measuring equipment, as well as a summary write-up detailing the effectiveness of the equipment.

20. MCAWRRF Biogas Upgrades

Design Engineer:	SEH
Project Start:	October 2021
Project Status:	Preliminary Engineering/Study (99%)
Completion:	December 2024
Budget:	\$2,145,000

<u>Current Status</u>: This project now includes the Methane Sphere Rehabilitation, in addition to the Cogeneration Upgrades. Manufacturers and stakeholders in the Biogas Industry are being interviewed and additional information is being gathered to determine next steps for the overall project.

Other Significant Projects

21. Urgent and Emergency Repairs

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

Project No.	Project Description	Approx. Cost
2022-09	CZI Force Main ARV Replacements	\$300,000
2022-02/05/12	Miscellaneous MCI/PCI/RVI MH Repairs	\$70,000
2023-01	Finished Water System ARV Repairs	TBD
2023-02	WWM 32-02 Valve Replacement	\$40,000
2023-03	Crozet Waterball Drain Line Leak	\$20,000
2023-04	ACSA Tapping Valve Repair @ Sunset Ave Ext	\$10,000

- <u>CZI Force Main ARV Replacements:</u> Over the past several years, staff have been monitoring the condition of the air release valves (ARVs) up and down the force main portions of the Crozet Interceptor, as they have been continuing to degrade. These valves are 1980s-vintage, and while they have been serviced and partially rebuilt over the years by the RWSA Maintenance Department, replacement of the tapping saddle and corporation stop has not been possible, since shutdown of the force main is required. Historically, it has taken several hours to drain the force main to allow for the work to take place, and by the time that has occurred, the upstream pump stations need to turn on to prevent overflow. Now with the Flow Equalization Tank complete, this work can take place with the force main offline for up to a 24-hr period. Staff is waiting for the final few required materials to arrive and is coordinating with VDOT on necessary permitting requirements. The work was anticipated to start in December, however, the air valves required for this work have not yet arrived due to supply chain issues. As of February, they have now arrived, and the work is planned to start in March.
- <u>Miscellaneous MCI/PCI/RVI MH Repairs</u>: Over the past several months, staff have identified issues with various manholes on the Moores Creek, Powell Creek, and Rivanna Interceptors (MCI, PCI, and RVI, respectively). These include one manhole on MCI that needs to be raised, as it was

historically buried but found in Summer 2021 by the RWSA Maintenance & Engineering Departments, one manhole on RVI that needs a failing HDPE liner to be removed and cementitious mortar to be installed, and one manhole each on PCI and MCI that need to be coated with cementitious mortar due to root intrusion and groundwater infiltration. This work will be performed through the On-Call Maintenance contract with Digs, and staff visited the site with the Contractor on July 15th. The appropriate MH on MCI was raised on November 1st, 2022. The remaining coating efforts were completed during the week of January 30th.

- <u>RWSA Finished Water ARV Repairs:</u> RWSA Engineering staff recently met with Maintenance staff, to identify a list of Air Release Valves (ARVs) that need to be repaired, replaced, or abandoned. Several of these locations will require involvements of RWSA On-Call Maintenance Contractors, due to the complexity of the sites (proximity to roadways, depth, etc.). The initial round will include six (6) sites, all along the South Rivanna Waterline, and will be completed starting in April, following the Observatory Shutdown.
- <u>WWM 32-02 Replacement:</u> An 8" gate valve at RWSA's Wholesale Water Meter site 32 was identified as defective during a recent meter calibration effort. Staff is coordinating the replacement efforts for this valve for after the Observatory WTP shutdown with its On-Call Maintenance Contractor, as well as ACSA and the RWSA Water & Maintenance Departments.
- <u>Crozet Waterball Drain Line Leak:</u> A small leak was identified during the week of January 30th coming into the valve vault at RWSA's Crozet Waterball tank, on the Crozet WTP site. Upon excavating down to the drain pipe, staff found a cracked pipe just outside the vault, causing the leak. The RWSA Maintenance Department repaired this leak with all-new piping, as well as a drain valve while the work was underway. Staff is also making repairs to the outlet of the drain line, as the current outlet is buried below grade.
- <u>ACSA Tapping Valve Repair @ Sunset Avenue Extended:</u> On Sunday February 5th around 8 AM, staff was notified of a significant water leak on Sunset Avenue Extended, near the intersection with Swan Ridge Road. Upon arrival at the site, RWSA staff was able to isolate the leak using isolation valves on its Southern Loop Waterline, making the area safe and allowing excavation to commence. ACSA crews were also on the scene and performed the excavation work, since the leak seemed to be originating from near its 12" tapping valve, which connects ACSA's 12" waterline to RWSA's 20" Southern Loop Waterline. Upon exposing the valve, it was identified that several bolts had rusted and come out of the valve, causing the leak. RWSA had a valve in its inventory that was utilized to replace the tapping valve's bonnet assembly, which allowed the main to be expediently returned to service around 3 PM.

22. Security Enhancements

Design Engineer:	Hazen & Sawyer
Construction Contractor:	Security 101 (Richmond, VA)
Construction Start:	March 2020
Percent Complete:	95% (WA5), 0% (WA6), 0% (WA7)
Based Construction Contract +	
Change Orders to Date = Current Value:	\$718,428 (WA1) + \$611,764 (WA2-7)
Completion:	October 2022 (WA5), May 2023 (WA6)
Budget:	\$2,810,000

<u>Current Status:</u> WA5, which authorizes card access installation at Glenmore Water Resource Recovery Facility (GWRRF), Scottsville Water Resource Recovery Facility (SVWRRF), and Red Hill Water Treatment Plant (RHWTP), began during the week of June 20th. Conduit and cable pulling is

complete at all facilities covered in the WA, and the only work that remains is programming work at each site, likely to be completed by this Spring. WA6 will include card access installation at RWSA's remote sites, including all dams and pump stations. This work was authorized in early August, with completion scheduled for May 2023. WA7, which includes a pilot of a program that will test electronic padlocks at several RWSA facilities, has been authorized. These electronic padlocks have the potential to add an extra layer of security to unmanned facilities such as tanks, dams, and other facilities. If the pilot is successful, wide scale implementation of this technology is possible. Staff has also kicked off final design of a project with Hazen & Sawyer to improve the front entrance of MCAWRRF and install additional fencing, gates, and card access. This will allow staff to better control access to the facility and provide staff with the means to vet access by visitors, vendors, consultants, and contractors. Design is underway, with submittal of permitting documents anticipated in the next several weeks. Staff is also working with Dominion Energy, as relocation of existing electrical infrastructure will likely be required.

History

Under Construction

1. South Rivanna and Observatory Water Treatment Plant Renovations

An informational meeting with prospective contractors was held on September 26, 2019 to maximize interest in the project. A project kickoff meeting with staff was held on November 14, 2018 and 30% of design documents were provided in February. A Value Engineering Workshop took place the week of April 8, 2019, and a memo summarizing the results has been completed. Agreed upon results were incorporated into the project. The project was advertised, and bids were received. English Construction was awarded the contract and a Notice to Proceed was issued on May 18, 2020. Coordination with UVA and Dominion on a new electrical easement at the plant has been completed and documents are being finalized.

Observatory: This project will upgrade the plant from 7.7 to 10 MGD capacity. Costs to upgrade the plant to 12 MGD were determined to be too high at this time. Much of the Observatory Water Treatment Plant is original to the 1953 construction. 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. The flocculator systems were replaced and upgraded as part of the Drinking Water Activated Carbon and WTP Improvements project (GAC). Four additional GAC contactors will be included in the design.

South Rivanna: The work herein includes 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; of new metal building to cover the existing liquid lime feed piping and tanks. The scope of this project will not increase the 12 MGD plant treatment capacity.

2. Airport Road Water Pump Station and Piping

The Rt. 29 Pump Station and Pipeline master plan was developed in 2007 and originally envisioned a multi-faceted project that reliably connected the North and South Rivanna pressure bands, reduced excessive operating pressures, and developed a new Airport pressure zone to serve the highest

elevations near the Airport and Hollymead Town Center. The master plan update was completed in June of 2018 to reflect the changes in the system and demands since 2007. This project, along with the South Rivanna River Crossing and North Rivanna Transmission Main project, will provide a reliable and redundant finished water supply to the North Rivanna area. The proposed pump station will be able to serve system demands at both the current high pressure and future low-pressure conditions. These facilities will also lead to future phase implementation which will include a storage tank and the creation of the Airport water pressure zone. The North Rivanna Transmission Main improvements included under a separate CIP project have been added to this project to allow connection of the pump station to the distribution system.

Bids were opened on October 7, 2021 and this work was awarded at the October 2021 Board of Directors meeting. The contract was signed, and the pre-construction conference was held on December 9, 2021.

3. MCAWRRF 5 kV Electrical System Upgrades

After discussions through the Moores Creek Facilities Master Plan, it was identified that several areas of the MCAWRRF, including the Blower Building, Sludge Pumping Building, Grit Removal Building, Moores Creek Pumping Station, and the Administration Building are all still connected to the original 5kV switchgear in the Blower Building. This equipment, including the associated cabling, switchgear, transformers, and motor control centers (MCCs), has a useful life expectancy of 20-30 years. Most of this equipment was installed around 1980. With the equipment having well exceeded its useful life expectancy at this point, safety is a concern given the large electric loads that the cabling and other equipment are handling on a day-to-day basis. Failure of the existing 5kV infrastructure could also result in temporary outages of certain treatment processes, and repairs could take weeks to months given the lead times associated with equipment of this age. A technical memo was provided in July 2020 by Hazen & Sawyer, which recommended that a CIP Project be added immediately to encompass replacement of the original 1980s-vintage 5kV cables, switchgear, transformers, and MCCs. A CIP Amendment Recommendation and Engineering Services Work Authorization was approved during the August 2020 Board of Directors Meeting. The Design Work Authorization was executed on October 6, 2020.

A Design Kickoff Meeting was held virtually on October 20, 2020. A site visit was attended on November 5, 2020 by Hazen & Sawyer staff, as well as RWSA Maintenance and Engineering Department staff. 50% Design Documents were provided in Spring 2021, with staff feedback provided soon thereafter. A follow-up site visit by Hazen was performed in July 2021, in order to confirm the availability of spare conduits across the site and plan for the associated cable replacements. 95% Design Documents were provided by Hazen in September 2021, and staff returned comments in October 2021. Field work was conducted in Fall 2021 to evaluate the condition of conduits within the existing duct bank network, as well as verify pathways and connectivity within the network.

A Request for Bids (RFB) was issued on December 22, 2021, and bids were submitted on February 3, 2022. A Construction Contract Award for Pyramid Electrical Contractors was approved by the RWSA Board of Directors on February 22, 2022, and a Notice of Award (NOA) was provided to Pyramid on March 4, 2022. Notice to Proceed (NTP) was issued on May 17, 2022.

Design and Bidding

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

A Work Authorization was executed in December 2018 with Michael Baker International for the raw water line routing study, preliminary design, plat creation and the easement acquisition process for this portion of the project. Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant (WTP) by way of two 18-inch cast iron pipelines, which have been in service for more than 110 and 70 years, respectively. The increased frequency of emergency repairs and expanded maintenance requirements are one impetus for replacing these pipelines. The proposed water line will be able to reliably transfer water to the expanded Observatory plant. The new pipeline will be constructed of 36-inch ductile iron and will be approximately 2.6 miles feet in length. The segment of the project immediately east of the RMR will constitute a portion of the proposed South Rivanna Reservoir to RMR raw water main project as part of the approved 50-year Community Water Supply Plan.

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

Both Design Work Authorizations received Board of Directors approval on July 27, 2021. A kickoff meeting was held on September 17, 2021, and a meeting to begin establishing boundary conditions for the RMR Pump Station was held on October 25, 2021. An internal RMR Pump Station Operations workshop was held on February 23, 2022 to set the boundary conditions for the facility, and this information was provided promptly to the Design Consultant to allow design efforts to continue progressing. The waterline was the primary focus throughout the Spring and Summer months. A subsequent workshop was held on November 1, 2022, in which pump type and other internal staff preferences were confirmed.

5. South Rivanna Reservoir to Ragged Mtn. Reservoir Raw Water Line -Birdwood to Old Garth

This project is the continuation of the SRR to RMR 36" raw water pipeline built on the Birdwood Golf Course. Design efforts were authorized in June 2021 with construction anticipated in Summer 2023.

6. <u>Beaver Creek Dam and Pump Station and Piping Improvements</u>

Dam: A spillway upgrade alternative for the dam has been selected and was presented in a public meeting on October 6, 2021. A new raw water pump station site and pipe access route were selected and approved by the Board in August 2021. RWSA operates the Beaver Creek Dam and reservoir as the sole raw water supply for the Crozet Area. In 2011, an analysis of the Dam Breach inundation areas and changes to Virginia Department of Conservation and Recreation (DCR) *Impounding Structures Regulations* prompted a change in hazard classification of the dam from Significant to High

Hazard. This change in hazard classification requires that the capacity of the spillway be increased. This CIP project includes investigation, preliminary design, public outreach, permitting, easement acquisition, final design, and construction of the anticipated modifications. Work for this project will be coordinated with the new relocated raw water pump station and intake and a reservoir oxygenation system project.

Schnabel Engineering developed three alternatives for upgrading the capacity of the Beaver Creek Dam Spillway in 2012. Following the adoption of a new Probable Maximum Precipitation (PMP) Study on December 9, 2015 and the release of DCR guidelines for implementing the PMP study in March of 2016, RWSA determined it would proceed with an updated alternatives analysis and Preliminary Engineering Report for upgrading the dam spillway. Following the completion of an updated alternatives analysis by Schnabel Engineering, staff met with members of Albemarle County and ACSA staff to discuss the preferred alternative. It was determined that staff would proceed with design of a labyrinth spillway and chute through the existing dam with a bridge to allow Browns Gap Turnpike to cross over the new spillway.

In 2020, staff received grant funding for a planning and environmental study from the Natural Resources Conservation Service (NRCS). The project kicked off in August 2020 and is expected to be completed in early 2023. Following completion of the study and acceptance of the Plan-Environmental document by NRCS, staff will pursue additional grant funding through NRCS that, if available, could cover up to 65% of final design and construction costs.

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

7. South Rivanna River Crossing

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. 29 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the new 24-inch water main in Rt. 29, there is a need to construct a new river crossing at the South Fork Rivanna River. Acquisition of right-of-way will be required at the river crossing.

8. Central Water Line

Route alignment determination, hydraulic modeling, and preliminary design were underway in 2017. Due to the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach was warranted, and we should complete the Finished Water Master Plan prior to moving forward with final design and construction of the Central Water Line (formerly referred to as the Avon to Pantops Water Main). The focus of this project was 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 were a starting point for this current project. An engineering contract was approved by the Board of Directors in July 2017. Recent efforts and modeling for the Urban Finished Water Infrastructure Master Plan have determined that a central water line corridor through the City is the best option to hydraulically connect the Observatory Water Treatment Plant to the Pantops area, with connections to City water lines to support the water distribution system in the City and County. The RWSA Board approved the Southern (Cherry Ave) Route in June 2022.

9. Moores Creek Administration Building Renovation and Addition

RWSA currently has its administrative headquarters in two buildings on the grounds of the Moores Creek Advanced Water Resource Recovery Facility. 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 between 2003-2010 that house the Engineering department. There is currently a need to house additional staff; increase office and meeting space; plan for the replacement of the trailers; bring the IT server workrooms to modern standards; and provide classroom space for educational outreach. This project was coordinated with the recent MCAWRRF Master Plan and expansion of the building will take place in the lower parking lot adjacent to the existing building.

10. Upper Schenks Branch Interceptor, Phase II

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 being evaluated to determine whether it will be installed in an easement on County property (baseball field and County Office Building) adjacent to McIntire Road or in McIntire Road itself.

11. <u>Red Hill Water Treatment Plant Upgrades</u>

The Red Hill WTP was constructed in a joint effort of ACSA and RWSA in 2009 and consists of a well, a pneumatic tank and pump house that provides treated water to the Red Hill Elementary School and adjoining neighborhood. The project was constructed in response to groundwater contamination as a result of a nearby leak of underground fuel storage tanks. Originally the facility was operated primarily as a well head and pump house. More recently the facility has operated more as a water treatment facility with a well as source water. As such, there have been several chemical process

additions, automation, online monitoring and an increase in operator wet chemistry testing. The current building is well beyond its physical capacity and this project will serve to expand the building and improve the configuration of the process and laboratory needs of the WTP.

12. Emmet Street Water Line Betterment

The Urban Finished Water Master Plan identified several necessary upgrades to the urban water distribution system to improve system performance and reliability. One of the identified improvements is an upgrade and extension of the existing RWSA water main along the Emmet Street corridor from the University of Virginia to Hydraulic Road. This project will utilize planned road, streetscape, utility, and development projects along the Emmet Street corridor to complete portions of the Emmet Street water main improvements as betterment, with the goal of completing the water main improvements by 2030. The project scope includes planning and coordination between RWSA, UVA, the City of Charlottesville, and VDOT, design services for the betterment and "gap" sections of water line, construction funding, and construction management services. Current identified projects with betterment opportunities include: the UVA Ivy Corridor Redevelopment, UVA Contemplative Commons, the City of Charlottesville Emmet Streetscape Projects (multiple phases), and VDOT intersection improvements at Barracks Road, the US-250/Emmet Street Interchange, and Hydraulic Road. Upgrading a section of 16" water main in Emmet Street to 30" as part of the UVA Ivy Corridor Public Realm project is complete. Upgrading a section of 16" water main adjacent to the Dell Pond to 30" as part of the UVA Contemplative Commons project was completed December 1, 2022.

13. Scottsville WRRF Whole Plant Generator and ATS

The current back-up power generator at the Scottsville Water Treatment Plant does not power the entire plant, serving only the facilities needed to send flow to the lagoons. This project will offer greater treatment flexibility and monitoring capability for the operations staff, particularly when the plant is unmanned and monitored remotely.

14. Crozet Pump Station Rehabilitation

The Crozet Pump Stations were constructed in the 1980's and many of the components are original. This project includes the replacement of pump and valves and other components at Pump Station 2 to improve pumping capabilities at this location, as well as Pump Stations 1 and 3 as the pumps are reaching the end of their useful life. It also includes roof replacements at all four pump stations, siding replacement for the wet well enclosure at Pump Station 3, and installation of new wells at pump stations 3 and 4. This project also now intends to include new back-up generators at Pump Stations 1 through 3 as the generators have also reached the end of their useful life.

15. MCAWRRF Structural and Concrete Rehabilitation

This project includes work associated with the following CIP projects: Digester Repair, Compost Shed Roof Rehabilitation, Miscellaneous Concrete Repair, Structural Modifications, and Primary Clarifier Rehabilitation. For the Digester Repair work, the facility has a total of five digester vessels. The two smaller digesters were part of the original 1958 plant construction. The three larger digesters were part of the 1979 plant upgrades following construction of the bridge over Moores Creek and the south side of the plant. Although numerous upgrades have been constructed at the digester complex over the last 11 years (including heating, mixing, gas compression, and roof repairs), the overall condition of the concrete and complex is reaching its useful life. Furthermore, through the Moores Creek master planning process, Hazen has identified future plant improvements which will need to be installed in this area. This project includes addressing remaining repairs to the existing digester complex,

including safety repairs, to extend the useful life approximately 10-15 years while RWSA plans, designs, and constructs a new digester complex at another location on the Moores Creek site.

For the Compost Shed Roof work, In the early 1980's a large metal-framed shed roof was constructed to house the biosolids composting operations. Subsequent to stopping composting at Moores Creek AWRRF, the shed serves as an equipment maintenance yard, solids handling facility and material storage lock-up. The shed roof is showing signs of rafter deterioration and ongoing drainage issues. This project will evaluate and perform remediation needs at this facility.

For the miscellaneous concrete repair work, the two Holding Ponds and the two Equalization Basins were built with the 1977 Moores Creek Upgrades and are critical to the plant infrastructure to contain wet weather flows. The 40-year-old concrete is showing signs of degradation. Following inspections in the Fall 2020, Hazen recommended we implement concrete repairs soon to extend the life of the concrete basins. Work will include crack repair, spalling repair, joint repair, and coating of miscellaneous metals and valves in the basins.

For the structural modifications work, the aeration basins located at Moores Creek are a series of chambers that each have uniquely controlled oxygen and nutrient loading conditions. Mid-way thru the basins are ten nitrogen recycle (NRCY) pumps. Due to the corrosive atmosphere, these submersed pumps require being pulled and rebuilt frequently. To remove the pumps, staff must currently hire a long boom crane. This project will provide the permanent means to pull, move, and load the pumps during maintenance activities. Also, two of the six pumps in the Rivanna Pump Station are smaller and were designed to be replaced if future average day flows warrant increased capacity. The current configuration resulted in several valves being located approximately 40 feet above the pump floor level. Valve maintenance activities have been challenging due to their height. This project will install a catwalk from the upper mezzanine level to each valve to provide a safer, walkable access to each valve.

For the Primary Clarifier rehabilitation work, in September 2021, an inspection was performed on the two existing Primary Clarifiers at MCAWRRF, in which several deficiencies were noted. Most notably, both clarifier drives had structural and mechanical components in need of repair or replacement, and due to advanced corrosion of metal components within the clarifiers, coatings were recommended to avoid additional deterioration. This project will utilize consultant assistance to provide design services for the project, develop bidding documents, assist with the administration of the contract and provide specialty inspections as needed.

16. MCAWRRF Building Upfits and Gravity Thickener Improvements

This project includes work associated with the following projects: Operations and Maintenance Building Upfits, New Actuators for Secondary Clarifiers, and the MCAWRRF Gravity Thickener Pumping and Chem Feed Improvements. The Moores Creek Maintenance and Operations Department facilities are over 40 years old, and no longer meeting current staffing and operational needs. In accordance with the Moores Creek Master Plan dated 6-25-21, this project will increase and update personnel spaces such as offices, lunchrooms, labs, and locker rooms in the Maintenance, Blower, and Sludge Pumping Buildings to meet needs over an interim timeframe of approximately 15 years. Additionally, the project will construct increased oil and grease storage facility that will meet all current best practices for safety and address the need for additional parts storage.

As part of the existing gravity thickener system, RWSA added temporary provisions to dose polymer

to improve settling and thickening performance, which has proved to be effective and increased operational performance. The current polymer feed system consists of a bulk polymer tote stored on grade adjacent to the gravity thickener rapid mix and splitter structure. The current system is located on grade, uncovered, and manually operated with totes being moved as needed for chemical feed. This project will allow for a permanent polymer feed system with proper provisions for chemical deliveries and weather protection, to include additional space for sodium hypochlorite chemical storage and feed as part of the gravity thickener odor control system. The relocation of the odor control sodium hypochlorite storage and feed will also allocate spacing needs as part of the previously discussed operational building renovations in the existing sludge pumping building. Furthermore, access points will be installed on the thickener effluent line feeding the existing sludge pumps to allow for flushing, cleaning, and inspection efforts to occur.

The current secondary clarifier influent gate valves are manually operated, which can be time consuming, and during a wet weather event, the clarifiers need to be placed in service as quickly and safely as possible. The use of SCADA controlled actuators would streamline the process immensely. This work includes the installation of 8 new actuators on the influent gates of the secondary clarifiers.

Planning and Studies

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

The approved 50-year Community Water Supply Plan includes the construction of a raw water line from the South Rivanna Reservoir to the Ragged Mountain Reservoir. This water line will replace the existing Upper Sugar Hollow Pipeline and increase raw water transfer capacity in the Urban Water System. The preliminary route for the water line followed the proposed Route 29 Charlottesville Bypass; however, the Bypass project was suspended by VDOT in 2014, requiring a more detailed routing study for the future water line. This project includes a routing study, preliminary design, and preparation of easement documents, as well as acquisition of water line easements along the approved route. Baker has completed the routing study. Preliminary design, plat creation and the acquisition of easements are underway. Property owners were contacted to request permission to access properties for topographical surveying. A community information meeting was held in June 2018.

18. Asset Management Plan

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 also assisted RWSA with the procurement of a new CMMS software package to facilitate the overall program. Cityworks was selected and implementation has begun.

19. SRR to RMR Pipeline – Pretreatment Pilot Study

As part of the SRR to RMR Pipeline project, the impact of sending raw water from the SRR to RMR has been previously studied and a significant amount of pretreatment was initially identified as being needed to avoid reducing the quality of the raw water contained within the RMR. With the pipeline easement acquisition process well underway and additional information now available associated with the proposed timing of this overall project based on water demand projections, the intent of this project is to update the pretreatment needs anticipated.

The study is anticipated to be completed in 4 phases: 1. Analysis and Correlation of Existing Water Quality and Seasonal Weather Data 2. Enhanced Water Quality Sampling 3. Pretreatment Piloting 4. Level Setting for the Final Pretreatment Solution. Phase 1 commenced in January 2021 and was completed in July 2021. Phase 2 began in June 2021. The Excel Desktop Modeling portion of the analysis was completed in February 2022. The more detailed nutrient model development began in March 2022.

20. MCAWRRF Biogas Upgrades

The MCAWRRF has an existing cogeneration facility that was constructed in 2011. The purpose of the facility was to provide a beneficial use of the methane gas produced by the digester process at the plant, and in doing so, provide both digester heating and energy to the plant's electrical distribution system. Unfortunately, the existing cogeneration facility requires expensive recurring maintenance services, has proprietary equipment which further complicates servicing needs, and has had a number of operational issues that have impeded the benefit this facility was intended to provide. As a result, a Cogeneration System Analysis was performed to determine a recommended approach for proceeding with improvements to the existing facility, installation of a new cogeneration facility without the issues of the previous facility or removing the cogeneration facility altogether and providing a backup boiler. This project includes costs for installation of a new cogeneration facility as described in the Cogeneration System Analysis.

A state of the industry study was initiated, to confirm the appropriate manufacturers of such cogeneration units and to determine how the unit would be procured. This study began in December 2021.

Other Significant Projects

21. Urgent and Emergency Repairs

• <u>MCAWRRF Primary Clarifier Building 36</u>" Sanitary Sewer Leak: On July 7th, RWSA Engineering Staff was made aware of a small leak through the wall in the basement of the Primary Clarifier Building at MCAWRRF. An inspection was performed by Hazen & Sawyer on August 3rd, and a report with repair recommendations has been prepared. The repairs will include specialty grouting work to plug the voids discovered in the field in order to stop the leak, as well as possible installation of a coating system for further protection of the concrete. During the week of September 26th, RWSA Maintenance staff performed the required grouting work on the inside of the splitter box to stop the leak. Some further grouting work on the building side of the wall was completed on October 31st to ensure that the repair holds long-term, and then a coating system will be applied inside of the splitter box in the affected areas during the MCAWRRF Concrete Repairs CIP Project.

22. Security Enhancements

As required by the Federal Bioterrorism Act of 2002 and the American Water Infrastructure Act of 2018, water utilities must conduct Vulnerability Assessments and have Emergency Response Plans. RWSA recently completed an updated Risk Assessment of its water system in collaboration with the Albemarle County Service Authority (ACSA), City of Charlottesville (City), and University of Virginia (UVA). A number of security improvements that could be applied to both the water and wastewater systems were identified. The purpose of this project will be to install security improvements at RWSA facilities including additional security gate and fencing components, vehicle bollards, facility signage, camera system enhancements, additional security lighting, intrusion detection systems, door and window hardening, installation of industrial strength locks, communication technology and cable hardening, and an enhanced access control program.

RWSA Engineering staff held a meeting with Operations staff to discuss overall project needs and priorities in October 2018. Meetings with ACSA and City staff were held in Fall/Winter 2018-2019 to discuss how access control and intrusion detection systems have been implemented into the day-today operations of the two utilities. A Request for Proposal (RFP) for an Implementer to facilitate selection of an access control system, confirmation of design requirements based upon RWSA's facilities and project goals, and installation of the selected system was issued on June 6, 2019. RWSA conducted a Pre-Proposal Meeting on June 14, 2019, and proposals were opened on June 27, 2019. Interviews were conducted on July 15-16, 2019, and a Contract Award Recommendation was approved by the Board on July 23, 2019. Access Control System Installation at MCAWRRF began in March 2020. Access Control System Installation was completed in the Administration and Engineering Buildings by the week of November 30, 2020, completing installation of the physical access control system across the MCAWRRF site. Training for staff was completed on November 10, 2020. RWSA authorized improvements to locks and doors across the MCAWRRF site on May 4, 2021, in order to improve the condition of the hardware and subsequently, operations of the access control system. In addition, installation of the card access system on all exterior doors at the Scottsville and Crozet Water Treatment Plants (SVWTP and CZWTP, respectively) was authorized shortly thereafter. RWSA also authorized installation of security conduits not already included at SRWTP and OBWTP under the Improvements Project in August 2021.

Access Control on exterior doors at the CZWTP and SVWTP was substantially completed in November 2021. Conduit work at SRWTP and OBWTP was substantially complete in May 2022.

Access Control on Exterior doors at RHWTP, SVWRRF, and GWRRF was authorized in March 2022, and Access Control on Exterior Doors at remaining dams, pump stations, and other remote facilities (twelve total) was authorized in August 2022. A pilot program for electronic padlocks, utilized at remote facilities where traditional padlocks would normally be used, was authorized in September 2022.



TO:RIVANNA WATER & SEWER AUTHORITY
BOARD OF DIRECTORSFROM:JENNIFER WHITAKER, DIRECTOR OF ENGINEERING &
MAINTENANCEREVIEWED BY:BILL MAWYER, EXECUTIVE DIRECTORSUBJECT:WHOLESALE METERING REPORT FOR JANUARY 2023DATE:FEBRUARY 28, 2023

The monthly and average daily Urban water system usages by the City and the ACSA for January 2023 were as follows:

	Month	Daily Average	
City Usage (gal)	127,504,278	4,113,041	49.0%
ACSA Usage (gal)	132,534,385	4,275,303	51.0%
Total (gal)	260,038,663	8,388,344	

The *RWSA Wholesale Metering Administrative and Implementation Policy* requires that water use be measured based upon the annual average daily water demand of the City and ACSA over the trailing twelve (12) consecutive month period. The *Water Cost Allocation Agreement (2012)* established a maximum water allocation for each party. If the annual average water usage of either party exceeds this value, a financial true-up would be required for the debt service charges related to the Ragged Mountain Dam and the SRR-RMR Pipeline projects. Below are graphs showing the calculated monthly water usage by each party, the trailing twelve-month average (extended back to February 2022), and that usage relative to the maximum allocation for each party (6.71 MGD for the City and 11.99 MGD for ACSA). Completed in 2019 for a cost of about \$3.2 M, our Wholesale Metering Program consists of 25 remote meter locations around the City boundary and 3 finished water flow meters at treatment plants.



Figure 1: City of Charlottesville Monthly Water Usage and Allocation

Figure 2: Albemarle County Service Authority Monthly Water Usage and Allocation







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 FORK RIVANNA RESERVOIR TO RAGGED MOUNTAIN RESERVOIR PIPELINE, INTAKE & FACILITIES PROJECT – TOPOGRAPHIC SURVEY– KIMLEY-HORN

DATE: FEBRUARY 28, 2023

This request is to authorize an aerial and topographic survey of the planned pipe alignment from the South Fork Rivanna Reservoir to Old Garth Road for an amount not to exceed \$241,945.

Background

The South Fork Rivanna Reservoir (SFRR) to Ragged Mountain Reservoir (RMR) pipeline is a part of the approved and permitted Community Water Supply Plan. The pipeline and associated facilities will give RWSA the ability to move water between the two reservoirs and two water treatment plants. This flexibility will enhance the operational capabilities of the Urban Water System and provide increased drinking water supply to support our community during drought conditions. This section of the new raw water pipe is expected to be constructed of 36-inch ductile iron and will span approximately 6.5 miles, extending from the South Rivanna WTP to Old Garth Road.

RWSA entered into a term agreement with Kimley-Horn and Associates on May 4, 2021, for Professional Water & Sewer Engineering Services. Under this current authorization, Kimley-Horn will provide aerial and ground topographic survey of the raw water pipe alignment. This work is being expedited to perform the survey prior to full spring foliage in the wooded portions of the alignment.

Board Action Requested:

Authorize the Executive Director to execute a work authorization with Kimley-Horn and Associates for Professional Survey services for the SFRR to RMR Pipeline, Intake & Facilities Project, for an amount not to exceed \$241,945, and any amendments needed to complete the tasks identified above, not to exceed 25% of the original contract amount.



TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: BETTERMENT AGREEMENT WITH VICTORIAN HEIGHTS, LLC – SOUTH RIVANNA RESERVOIR TO RAGGED MOUNTAIN RESERVOIR PIPELINE, INTAKE, & FACILITIES PROJECT

DATE: FEBRUARY 28, 2023

This request is to authorize the Executive Director to execute a Betterment Agreement with Victorian Heights, LLC to construct approximately 380 linear feet of 36" raw water main in the Woodburn Road area for an estimated not-to-exceed cost of \$688,019.

Background

Since 2019, RWSA has been working to obtain easements for the future South Rivanna Reservoir to Ragged Mountain Reservoir Raw Water Line. During negotiations with two adjoining property owners on Woodburn Road, RWSA was made aware of development plans for those two parcels. The developer, Victorian Heights, LLC, and RWSA determined there was mutual benefit to installing this section of the raw water line across those two parcels ahead of the project schedule (currently 2027-2033) while the housing development was under construction. This would eliminate the need for a temporary construction easement, saving RWSA easement acquisitions costs and increasing the developable area on the parcels, avoid impacts to future residents by completing the installation prior to completion of the housing development, and minimize or eliminate road, sidewalk, landscaping, and other restoration costs.

The developer and RWSA have developed a Betterment Agreement establishing fair and reasonable terms for the developer to install the water main while construction at the site is ongoing. Utility construction is expected to begin in spring-summer 2023. The developer has provided unit price estimates of material and labor costs for this work based on design drawings provided by RWSA, which will include installation of approximately 380 LF of ductile iron pipe, traffic control in Woodburn Road to maintain traffic to and from the South Rivanna Water Treatment Plant, water main testing, and restoration of the road surface for a not-to-exceed cost of \$688,019. Payment will be based on the actual work required plus any change orders for unforeseen conditions agreed to by the RWSA. This cost is comparable to other recent water main projects, including the betterment at Ivy Corridor and Contemplative Commons (UVA). Funding is in the CIP budget for the South Fork Rivanna Reservoir to Ragged Mountain Reservoir Pipeline, Intake, and Facilities project approved by the Board of Directors in May 2022.

Board Action Requested:

Authorize the Executive Director to execute the Betterment Agreement with Victorian Heights, LLC with an estimated not-to-exceed cost of \$688,019 for construction of approximately 380 LF of the South Rivanna to Ragged Mountain Raw 36" Water Main, and any change orders up to 10% of original agreement amount.



TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

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

REVIEWED BY: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: AWARD OF TERM CONTRACT FOR GEOTECHNICAL, MATERIALS TESTING, AND PROFESSIONAL ENGINEERING SERVICES – SCHNABEL ENGINEERING, LLC

DATE: FEBRUARY 28, 2023

This request is to authorize award of an Engineering Services Agreement with Schnabel Engineering, LLC for a Term Contract to provide Geotechnical, Materials Testing, and Professional Engineering Services, and future work authorizations under the conditions of the Term Agreement. Fees for each work authorization will be negotiated based on the services required and hourly rates from the consultant which have been approved by staff. The term of the contract will be for one year, with the option for three one-year renewals.

Background

The RWSA and RSWA have needs for various materials testing and professional engineering services of a geotechnical consultant for on-going and future projects. A Request for Proposals (RFP 22-09) for a new term contract to serve both Authorities was developed and advertised on December 12, 2022. Three proposals were received on January 19, 2023. Based on the qualifications of the firms, the RFP selection committee decided to schedule interviews with all three firms. Interviews were conducted on January 30, 2023, and the committee determined that Schnabel Engineering, LLC was the most meritorious candidate and selection of this firm would be in the best interests of the Authorities. Work tasks under this contract may include items such as: construction investigations of subsurface conditions, soil borings, foundation analysis, materials testing, steel inspections and other professional engineering services as needed. The term of the contract will be for one year, with the option for three one-year renewals.

Board Action Requested:

Authorize the Executive Director to execute an Engineering Services Agreement with Schnabel Engineering, LLC for a Term Contract to provide Geotechnical, Materials Testing, and Professional Engineering Services, and future work authorizations under the conditions of the Term Agreement.



TO: RIVANNA WATER & SEWER AUTHORITY BOARD OF DIRECTORS

FROM: BILL MAWYER, EXECUTIVE DIRECTOR

SUBJECT: INTRODUCTION OF THE FY 2024 – 2028 CAPITAL IMPROVEMENT PLAN

DATE: FEBRUARY 28, 2023

We are pleased to present the proposed FY 2024 – 2028 Capital Improvement Plan (CIP) totaling \$326.1 M for your consideration. We continue to strategically plan for the drinking water supply and treatment, as well as wastewater purification, facilities required to meet or exceed the requirements of Federal and State regulations. This CIP will provide significant advancements towards completion of the community's water supply plan, our defense against a changing climate and the resulting extended drought conditions. The five-year plan will also expand our advanced drinking water treatment system and improve water facilities in the Rt. 29 North area. Collectively, we will continue to meet the quantity, quality, and reliability expectations of the public drinking water and wastewater customers in our community. While generational inflation has significantly increased our budget, we have collaborated with the ACSA and City Utilities to achieve these objectives in a financially responsible manner with the projects included in this proposed CIP.

During this five-year period, the CIP will significantly strengthen our drinking water systems with expenditures of \$192.2 M for essential projects including:

- Accelerating completion of the South Fork Rivanna Reservoir to Ragged Mtn Reservoir Water Pipe and Pumping Project from 2033 to 2030
- Additional Granular Activated Carbon Water Filtering Facilities at the Crozet and Red Hill Water Treatment Plants, utilizing \$3.17 M in grant funding for the \$5 M project
- Replacement of Raw Water Piping and Pumping Stations from Ragged Mountain Reservoir to the Observatory Water Treatment Plant
- A Major Urban Area Water Distribution Pipe, the Central Water Line
- Modifications to the Beaver Creek Reservoir Dam, Pump Station and Piping
- Additional Water Pipe Crossings of the South and North Fork Rivanna River
- Completion of the Airport Road Water Pump Station

We will also complete significant improvements to our wastewater treatment and piping facilities to ensure regulatory compliance and environmental protection. The proposed CIP includes \$58.2 M for essential wastewater projects including:

- Replacement of Major Electrical Systems at Moores Creek
- Renovations and Repairs to Wastewater Facilities (Moores Creek, Scottsville, Glenmore, and Crozet Pump Stations and Piping)
- Repairs and Replacement of Wastewater Piping and Manholes (Crozet, Albemarle-Berkley, Powell Creek, Moores Creek, Upper Rivanna Interceptors)

This proposed CIP will continue the efforts of the Authority to provide reliable drinking water and wastewater infrastructure for our community.

Board Action Requested:

The FY 24 - 28 CIP totaling \$326.1 M is provided for review by the Board of Directors. Adoption of the CIP will be requested during the Board's regular meeting on May 23, 2023.

Capital Improvement Plan Fiscal Years 2024-2028 Draft February 2023





OUR MISSION

Our knowledgeable and professional team serves the Charlottesville, Albemarle, and UVA community by providing high-quality water and wastewater treatment, refuse, and recycling services in a financially responsible and sustainable manner.







Rivanna Water & Sewer Authority 695 Moores Creek Lane Charlottesville, Virginia 22902



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Introduction

The Capital Improvement Plan (CIP) for Fiscal Years 2024-2028 has been prepared as a strategic and financially responsible plan for the Rivanna Water and Sewer Authority (RWSA) to complete major infrastructure construction projects. The projects included in the CIP are necessary to achieve the RWSA's core mission of providing safe, high-quality drinking water and environmentally responsible wastewater treatment services for the City of Charlottesville and the Albemarle County Service Authority (ACSA). The CIP is a 5-year planning document which provides an estimated budget and schedule for projects as they advance through the design and construction process.

The infrastructure requirements of the Capital Improvement Plan are developed through our Asset Management and Master Planning programs to address water and wastewater capacity demands, regulatory mandates and rehabilitation needs. Each year, these projects are reviewed and prioritized by the RWSA management team and brought forth for review by the Board of Directors.

During the past year, several capital projects were completed, and as such are being removed from the 2024-2028 CIP. These projects account for approximately \$8.74 million or 4% of the FY 2023-2027 CIP. These projects include:

- 17 Scottsville Water Treatment Plan Lagoon Liner Replacement
- 20 Crozet Interceptor Rehabilitation
- 21 Crozet Flow Equalization Tank
- 25 Moores Creek AWRRF Aluminum Slide Gate Replacement
- 37 Glenmore WRRF Influent Pump and VFD Addition
- 38 Radio Upgrades

The total 5-year 2024-2028 CIP is approximately \$326.1 million, with the previous expenditures on active projects totaling \$35.6 million, leaving a net proposed 5-year projected expenditure of \$290.5 million.

There are six (6) new projects added to the CIP this year. The total estimated expenditures for the projects equal \$7.7 million and include:

- 16 Berkmar Drive Ext. Waterline Phase 2
- 17 Urban Storage Evaluation and Tank(s) Addition
- 20 South Rivanna WTP-PAC Upgrades
- 39 Interceptor Sewer and Manhole Repair Phase 3
- 47 Moores Creek AWRRF MCPS Slide Gates, Valves, Bypass & Septage Receiving Upgrades
- 56 Climate Change Flood Resilience Enhancements

There were two (2) projects with mid-year cost additions totaling \$0.685 million:

• 17 Scottsville Water Treatment Plant Lagoon Liner Replacement

• 19 South Rivanna Water Treatment Plant Improvements

There were seventeen (17) projects that rolled in to the 5-Year CIP totaling \$6.966 million:

- 06 South Fork Rivanna Reservoir Aeration & Ragged Mountain Reservoir HLOS Systems
- 08 Urban WTP's GAC Building Dehumidification
- 09 OBWTP Backwash Basin Sludge Removal and Inspection
- 13 Avon, Pantops and Observatory Tank Painting
- 14 Second N. Rivanna River Crossing & Select Pipe Replacement
- 24 Buck's Elbow Tank and Waterball Painting
- 25 Crozet WTP GAC Building Dehumidification
- 26 Crozet AC Pipe Replacement
- 28 Crozet Finished Water Greyrock Pump Station
- 29 Scottsville WTP Upgrade
- 31 Scottsville AC Pipe Replacement
- 33 Scottsville WTP GAC Building Dehumidification
- 35 Maury Hill Branch Sewer Replacement
- 37 Albemarle Berkley Pump Station Upgrade
- 49 Scottsville WRRF Lagoon Outfall Rehabilitation
- 50 Scottsville WRRF Polymer Feed Addition
- 51 Glenmore WRRF Polymer Feed Addition

There were three (3) projects whose timeline was accelerated totaling \$39.545 million:

- 04 SFRR to RMR Pipeline, Intake & Facilities
- 27 Crozet WTP Full GAC Treatment
- 32 Red Hill WTP Full GAC Treatment

There were twenty-three (23) projects that were subject to inflation and scope progression resulting in a total proposed increase of \$74.964 million. Below are those projects showing the existing amount and the recommended total CIP amount:

- 02 Ragged Mountain Reservoir to Observatory WTP Raw Water Line (\$16.9 million existing / \$33 million proposed)
- 03 Ragged Mountain Reservoir to Observatory WTP Raw Water Pump Station (\$8.8 million existing / \$11.3 million proposed
- 05 SRR to RMR Birdwood to Old Garth (\$1.9 million existing / \$3.8 million proposed)
- 10 Central Water Line (\$24 million existing / \$41 million proposed)
- 11 South Fork Rivanna River Crossing (\$5.8 million existing / \$6.9 million proposed)
- 15 Emmet Street Betterment (\$2.9 million existing / \$10.6 proposed)
- 21 North Rivanna WTP Decommissioning (\$2.4 million existing / \$2.7 million proposed)
- 22 Beaver Creek Dam Alteration (\$16.1 million existing / \$22.7 million proposed)
- 23 Beaver Creek New Raw Water Pump Station (\$15.6 million existing / \$20.2 million proposed)
- 30 Red Hill WTP Upgrades (\$0.41 million existing / \$0.44 Million proposed)
- 34 Upper Schenks Branch Interceptor (\$4.7 million existing / \$5.3 million proposed)
- 36 Crozet Pump Station 1, 2, 3 Rehabilitation (\$0.590 million existing / \$10.3 million proposed
- 38 Interceptor Sewer and Manhole Repair Phase 2 (\$0.965 million existing / \$1.2 million proposed)
- 40 Moores Creek AWRRF Engineering and Administration Building (\$8.5 million existing / \$10.5 million proposed)
- 41 Moores Creek AWRRF Biogas Upgrades (\$2.9 million existing / \$3.6 million proposed)
- 42 Moores Creek AWRRF Building Upfits and Gravity Thickener Improvements (\$4.2 million existing / \$4.5 million proposed)
- 46 Moores Creek AWRRF Structural and Concrete Rehabilitation (\$8.9 million existing / \$11.3 million proposed)
- 44 Moores Creek AWRRF 5kV Electrical System Upgrade (\$5 million existing / \$5.6 million proposed)
- 45 Moores Creek AWRRF Yard Piping Upgrades (\$0 existing / \$0.315 million proposed)
- 47 Moores Creek AWRRF MCPS Slide Gates, Valves, Bypass & Septage Receiving Upgrades (\$0 existing / \$3.6 million proposed)
- 48 Scottsville WRRF Whole Plant Generator and ATS (\$0.2 million existing / \$0.5 million proposed)
- 53 Security Enhancements (\$2.8 million existing / \$2.9 million proposed)
- 55 ACM Remediation (\$0 existing / \$0.94 million proposed)

In summary, the FY 24-28 CIP is largely driven by an increase in project costs and accelerated projects. The impact of all cost factors can be seen in Table 1 below:

Table 1									
FY Line Item	Cost								
23-27 Capital Improvement Plan	\$205,120,000								
Mid-Year Additions	\$ 685,000								
FY 28 Projects	\$ 6,966,000								
Inflation and Scope Additions	\$ 74,946,000								
New Projects	\$ 7,700,000								
Accelerated Projects	\$ 39,545,000								
Completed Projects	\$ (8,915,000)								
Total	\$326,125,000								

FINANCIAL SUMMARY

MAJOR SYSTEM CATEGORIES

FINANCIAL SUMMARY Major System Categories – Water

	Five-	-Year Capital Progr	am		Projecte					
System Description	Current CIP	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in- Progress
Urban Water (UW)										
Community Water Supply Plan	\$33,565,000	\$54,540,000	\$7,400,000	\$6,195,000	\$13,170,000	\$16,250,000	\$22,000,000	\$23,090,000	\$88,105,000	\$2,160,511
Observatory WTP & Ragged Mountain/Sugar Hollow Reservoir System	\$23,000,000	\$250,000	\$23,000,000	\$0	\$0	\$0	\$0	\$250,000	\$23,250,000	\$9,090,262
Finished Water Storage/Distribution	\$42,750,000	\$30,300,000	\$13,235,000	\$9,280,000	\$10,635,000	\$15,375,000	\$13,875,000	\$10,650,000	\$73,050,000	\$2,947,593
South & North Fork Rivanna Water System	\$23,150,000	\$2,035,000	\$21,795,000	\$160,000	\$2,440,000	\$790,000	\$0	\$0	\$25,185,000	\$17,919,462
Subtotal (UW)	\$122,465,000	\$87,125,000	\$65,430,000	\$15,635,000	\$26,245,000	\$32,415,000	\$35,875,000	\$33,990,000	\$209,590,000	\$32,117,828
Non-Urban Water (NUW)										
Crozet Water System	\$31,800,000	\$19,510,000	\$2,278,000	\$7,297,000	\$18,530,000	\$17,500,000	\$4,005,000	\$1,700,000	\$51,310,000	\$1,186,926
Scottsville Water System	\$410,000	\$1,010,000	\$410,000	\$101,000	\$134,000	\$95,000	\$0	\$680,000	\$1,420,000	\$0
Subtotal (NUW)	\$32,210,000	\$20,520,000	\$2,688,000	\$7,398,000	\$18,664,000	\$17,595,000	\$4,005,000	\$2,380,000	\$52,730,000	\$1,186,926
WATER TOTAL	\$154,675,000	\$107,645,000	\$68,118,000	\$23,033,000	\$44,909,000	\$50,010,000	\$39,880,000	\$36,370,000	\$262,320,000	\$33,304,754

FINANCIAL SUMMARY Major System Categories – Wastewater

	Five-	Year Capital Prog	am		Projecte					
System Description	Current CIP	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in- Progress
Urban Wastewater (UWW)										
Wastewater Interceptors and Pumping Stations	\$6,280,000	\$11,665,000	\$5,690,000	\$1,150,000	\$7,295,000	\$2,745,000	\$0	\$1,065,000	\$17,945,000	\$93,054
Moores Creek AWRRF	\$30,460,000	\$9,815,000	\$10,355,000	\$9,055,000	\$14,855,000	\$5,640,000	\$0	\$370,000	\$40,275,000	\$495,350
Subtotal (UWW)	\$36,740,000	\$21,480,000	\$16,045,000	\$10,205,000	\$22,150,000	\$8,385,000	\$0	\$1,435,000	\$58,220,000	\$588,404
Non-Urban Wastewater (NUWW)										
Scottsville WRRF	\$200,000	\$371,000	\$191,000	\$304,000	\$25,000	\$0	\$0	\$51,000	\$571,000	\$5,000
Glenmore WRRF	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0	\$30,000	\$30,000	\$0
Subtotal (NUWW)	\$200,000	\$401,000	\$191,000	\$304,000	\$25,000	\$0	\$0	\$81,000	\$601,000	\$5,000
WASTEWATER TOTAL	\$36,940,000	\$21,881,000	\$16,236,000	\$10,509,000	\$22,175,000	\$8,385,000	\$0	\$1,516,000	\$58,821,000	\$593,404
All Systems Security & Technology	\$4,590,000	\$394,000	\$3,722,000	\$848,000	\$320,000	\$0	\$0	\$94,000	\$4,984,000	\$1,748,910
TOTAL	\$196,205,000	\$129,920,000	\$88,076,000	\$34,390,000	\$67,404,000	\$58,395,000	\$39,880,000	\$37,980,000	\$326,125,000	\$35,647,068

PROJECT DETAILS

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Completed Projects

During fiscal year 2023, several capital improvement projects were completed, were advanced to the final phases of close-out, or were determined to be no longer necessary. As such they will be removed from consideration in future planning documents. Presented in the table below are the six (6) completed projects, pertinent information on the adopted budgets, as well as the projected final costs and any anticipated savings. There was a total completed project cost savings of \$0.5 million.

- 17. <u>Scottsville Water Treatment Plant Lagoon Liner Replacement</u>: The Scottsville Water Treatment Plant has two waste lagoons that receive filter backwash water, filter-to-wastewater, and flow from the sedimentation basin sludge collectors. These basins also receive drainage flows from the flocculator and sedimentation basins. The lagoons were initially lined in 2007, but that liner reached the end of its useful life and was showing sections of wear and degradation. In order to maintain the integrity of the lagoons, new HDPE liners were installed. Albemarle County awarded this project an ARPA Grant of \$315,000.
- 20. <u>Crozet Interceptor</u>: The Crozet Interceptor is located in western Albemarle County and serves the Crozet and Ivy areas. Flow metering indicated that the interceptor experienced substantial inflow and infiltration and required rehabilitation. In order to minimize future infrastructure improvements, ACSA and RWSA agreed to rehabilitate this interceptor and the sewers that flow to the interceptor. The initial phase of rehabilitation to repair the highest priority defects in manholes and pipelines contributing to the inflow and infiltration in the interceptor upstream of Crozet Pump Station No. 4 was completed under a previous project. Evaluation of the entire interceptor downstream of Crozet Wastewater Pump Station No. 4 (CZWWPS4), as well as remaining rehabilitation upstream of CZWWPS4, was completed under this latest project. While wet weather flows have moderately improved based on the initial phase of work, the ACSA and RWSA continue to investigate and remediate deficiencies along the entire interceptor. Rehabilitation efforts downstream of Crozet Pump Station No. 4 will take place in Phase 2 of the Interceptor Sewer and Manhole Repair Project.
- 21. <u>Crozet Flow Equalization Tank</u>: Rehabilitation work in the RWSA and ACSA sewer systems is on-going to meet the Inflow and Infiltration (I/I) reduction goals in the Crozet Interceptor. The results of the 2016 Comprehensive Sanitary Sewer Model & Study confirmed the need to proceed with the construction of a flow equalization tank in the Crozet Area. Based on those results, a preliminary engineering evaluation and siting analysis of a flow equalization tank upstream of Crozet Pump Station No. 4 was performed. Design, permitting and construction of the facility is complete, and it is ready for operation to meet projected two-year storm flow targets.
- 25. <u>Moores Creek AWRRF Aluminum Slide Gate Replacement</u>: In the fall of 2022 RWSA completed replacement of several leaky slide gates at the Ultraviolet disinfection facility, which restored the full capacity of the facility. Two additional gates in the holding pond pump station from the original 1977 Moores Creek facility construction were non-operational and were replaced as part of this work. In addition, motor operated valves were added at the

headworks to improve wet weather operations related to the new grit facility, and three broken mud valves from the original 1977 Moores Creek facility construction were replaced.

Through separate procurements, inspections of the large aluminum slide gates at the influent side of the Moores Creek Pump Station have been conducted to determine the extent of repairs needed to stop them from leaking. Results of these investigations will be used to design a new project in the next CIP to repair the existing slide gates and add new gates so staff can have the flexibility to stop or divert flow to perform maintenance activities.

- 37. <u>Glenmore WRRF Influent Pump and VFD Addition</u>: The Glenmore WRRF is owned by ACSA and operated by the RWSA. The facility is an extended aeration treatment facility for domestic wastewater. A 2014 capacity evaluation confirmed that the facility was designed for growth in the Glenmore neighborhood and surrounding jurisdictional areas and could accommodate expansion. The Glenmore neighborhood reached the point where a third pump is now necessary. A new pump and VFD have been installed.
- 38. <u>Radio Upgrades</u>: The regional 800 MHz Public Safety Communication System, in which the Rivanna Water and Sewer Authority participates in to provide internal and emergency radio communication, was nearing the end of its service life. Because of technology changes (software and hardware) the Charlottesville-UVA-Albemarle County Emergency Communications Center (ECC) needed to upgrade or replace the system to keep it useable. This project planned for the upgrade or replacement of major technology components and equipment of the existing system include electronic components at all tower sites and the prime site at the ECC facility; new console equipment at the regional ECC; equipment such as tower site generators and UPS systems; an additional tower site (to improve service in southern Albemarle County); microwave backbone; and replacement of the system recording facilities. RWSA was apportioned a part of the project cost proportionately based on the number of radios.

Completed Projects

				Five-Year Capita	l Program	
Line No.	Proj. No.	Project Description	Adopted Budget 5/2022	Previous Expenditures (6/30/2022)	Final Projected Costs/Close Out	Savings
17	21.04	Scottsville Water Treatment Plant Lagoon Liner Replacement	\$540,000	\$235,153	\$456,970	\$83,030
20	20.27	Crozet Interceptor	\$880,000	\$262,251	\$880,000	\$0
21	20.28	Crozet Flow Equalization Tank	\$5,400,000	\$4,745,954	\$5,112,970	\$287,030
25	20.36	Moores Creek AWRRF Aluminum Slide Gate Replacement	\$950,000	\$553,727	\$900,000	\$50,000
37	20.42	Glenmore WRRF Influent Pump and VFD Addition	\$370,000	\$288,513	\$330,853	\$39,147
38	20.44	Radio Upgrades	\$600,000	\$341,164	\$600,000	\$0
		TOTAL	\$8,740,000	\$6,426,762	\$8,280,793	\$459,207

CIP 23-27 Total	CIP 24-28 Completed or Removed	CIP 24-28 Remaining	CIP 24-28 New Funding	CIP 24-28 New Total
\$205,120,000	\$8,915,000	\$196,205,000	\$129,920,000	\$326,125,000

Community Water Supply Plan

The Community Water Supply Plan represents the program developed with substantial community input to fulfill RWSA's contractual obligation to the City of Charlottesville (City) and the Albemarle County Service Authority (ACSA) to provide adequate drinking water for their future needs. This initiative started in 2003 to find a long-term solution that could achieve both local support and meet federal and state requirements. After multiple community meetings, updates with local officials, and frequent consultations with federal and state agencies, local support was obtained to apply for federal and state permits to expand the Ragged Mountain Reservoir and build a future pipeline between the South Rivanna and Ragged Mountain Reservoirs, with stream and wetlands mitigation to be provided through property in the Buck Mountain Creek area and property adjacent to a lower reach of Moores Creek near its confluence with the Rivanna River. Federal and state permits were granted in 2008 and amended in 2011.

The first phase of this long-term program centered around the expansion of the Ragged Mountain Reservoir, a project that would simultaneously address a legal obligation to correct safety deficiencies on the existing site. Through a combination of technical investigations, engineering evaluations, and continued public discussion, a decision was reached in February 2011 through the City Council and Board of Supervisors to build the new dam as an earthen dam, with the initial phase raising the reservoir pool height by 30 feet. The decision also outlined an objective of the further pursuit of water conservation through the City and ACSA, and the pursuit of opportunities for dredging of the South Rivanna Reservoir, with the second phase of reservoir expansion in the future.

Project Descriptions:

- 1. <u>South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way</u>: The approved 50-year Community Water Supply Plan includes the future construction of a new raw water pipeline from the South Fork Rivanna River to the Ragged Mountain Reservoir. This new pipeline will replace the Upper Sugar Hollow Pipeline along an alternative alignment to increase raw water transfer capacity in the Urban Water System. The project includes a detailed routing study to account for recent and proposed development and road projects in Albemarle County and the University of Virginia. Preliminary design, preparation of easement documents, and acquisition of water line easements along the approved route is also being completed as part of this project.
- 2. <u>Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line</u>: Raw water is transferred from the Ragged Mountain Reservoir (RMR) to the Observatory Water Treatment Plant (OBWTP) by way of two 18-inch cast iron water lines which have been in service for more than 110 and 70 years, respectively. In addition to the need to increase transfer capacity between the RMR and OBWTP, increased frequency of emergency repairs and expanded maintenance requirements necessitates replacement of these water lines with a single, new raw water main. This new raw water main is expected to be constructed of 36-inch ductile iron pipe and will span a distance of approximately 21,400 linear feet, including the connection of the proposed RMR raw water pump station with the Southern terminus of the Birdwood raw water line completed in 2019.

- 3. <u>Ragged Mountain Reservoir to Observatory Water Treatment Plan Raw Water Pump Station</u>: The Ragged Mountain Reservoir (RMR) to Observatory Water Treatment Plant (OBWTP) raw water pump station is planned to replace the existing Stadium Road and Royal Pump Stations, which have exceeded their design lives and would require significant upgrades to reliably meet the upgraded capacity of the Observatory WTP. The pump station will be designed initially to pump up to 10 million gallons per day (MGD) to the expanded Observatory WTP and will be integrated with the planned South Fork Rivanna Reservoir (SFRR) to RMR pipeline for improved operational flexibility and cost efficiencies. This integrated pump station will include the capacity to transfer up to 16 MGD of raw water from RMR back to the South Rivanna WTP, as well as boost water from SFRR up to RMR and OBWTP. The pump station property is being purchased as part of the SFRR to RMR raw water main preliminary design and right of way acquisition project.
- 4. South Rivanna Reservoir to Ragged Mountain Pipeline, Intake and Facilities: The South Fork Rivanna Reservoir (SFRR) to Ragged Mountain Reservoir (RMR) Pipeline is a part of the approved and permitted Community Water Supply Plan. The pipeline and associated facilities will give RWSA the ability to move water between the two reservoirs, further enhancing the management capabilities of the Urban System water supply. The SFRR to RMR Pipeline, Intake, and Facilities Project is intended to allow for continued analysis on the transfer system, including the need and magnitude of pretreatment required in order to remove excess nutrients and convey water between the two reservoirs. To date, this has included study of existing water quality data from the two reservoirs, as well as a detailed nutrient model which helped staff better understand the fate of any nutrients transferred between the reservoirs. Analysis continues to determine the suitable alternatives to transfer water safely and effectively between the two reservoirs. In addition, this project currently includes the design and construction of approximately 380 LF of piping along the alignment, as a betterment opportunity through the Victorian Heights development, located on Woodburn Road. The previously separate Westover Project has been reincorporated into this project.
- 5. South Rivanna Reservoir to Ragged Mountain Reservoir WL Birdwood to Old Garth: RWSA is planning construction of a portion of the future South Rivanna to Ragged Mountain 36-inch raw water main from the northern end of the Birdwood Raw Water Line to the UVA Foundation Westover Property at Old Garth Road. This project will enable pipeline work to proceed ahead of planned redevelopment of the two adjacent Ivy Road Parcels to prevent subsequent disruption to the properties and decrease future construction and site restoration costs. This work includes approximately 1,200 linear feet of 36-inch raw water main, plus two trenchless crossings at Ivy Road and CSX Railroad.
- 6. South Rivanna Reservoir Aeration & Ragged Mountain Reservoir Hypolimnetic Oxygenation Systems: Through RWSA's ongoing Reservoir Water Quality Monitoring Program and the South Fork Rivanna Reservoir (SFRR) to Ragged Mountain Reservoir (RMR) Pretreatment Evaluation Study, water quality benefits for an Aeration System at SFRR and a Hypolimnetic Oxygenation System (HLOS) at RMR have been identified. While these systems would be configured differently for each reservoir, the purpose of each system is to inject Oxygen into the depths of each reservoir. Iron and manganese concentrations are reduced, thus improving water quality within the reservoir and for downstream treatment processes. In addition, the systems can potentially mitigate concerns with excess phosphorus and other nutrients by

locking them in the cooler depths of the reservoir and preventing the nutrients from reaching the warmer, upper portions where algae growth is more likely.

Community Water Supply Plan

			Five	-Year Capital Pro	gram			Projec	ted Future Expe	enses by Year		
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
1	20.01	South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right-of-Way	\$2,740,000		\$2,740,000						\$2,740,000	\$1,710,291
2	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	\$16,900,000	\$16,100,000	\$700,000	\$3,200,000	\$8,000,000	\$9,000,000	\$8,000,000	\$4,100,000	\$33,000,000	\$221,153
3	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	\$8,840,000	\$2,460,000	\$375,000	\$1,800,000	\$2,500,000	\$2,700,000	\$3,000,000	\$925,000	\$11,300,000	\$121,843
4	20.48	South Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities	\$3,105,000	\$32,760,000	\$1,605,000	\$675,000	\$1,370,000	\$4,550,000	\$11,000,000	\$16,665,000	\$35,865,000	\$32,398
5	22.01	South Rivanna Reservoir to Ragged Mountain Reservoir Birdwood to Old Garth	\$1,980,000	\$1,820,000	\$1,980,000	\$520,000	\$1,300,000				\$3,800,000	\$74,826
6	23.02	South Rivanna Reservoir Aeration and Ragged Mountain Reservoir HLOS Sytems		\$1,400,000						\$1,400,000	\$1,400,000	
		TOTAL	\$33,565,000	\$54,540,000	\$7,400,000	\$6,195,000	\$13,170,000	\$16,250,000	\$22,000,000	\$23,090,000	\$88,105,000	\$2,160,511

Observatory WTP and Ragged Mountain/Sugar Hollow Reservoir System

The Observatory Water Treatment Plant (OBWTP) and Ragged Mountain/Sugar Hollow Reservoir System is comprised of the water treatment facility on Observatory Mountain and the associated raw water infrastructure that stores and conveys source water to the plant. The raw water storage system includes the new Ragged Mountain Dam (constructed in 2014, with a useable raw water storage capacity of 1.44 billion gallons) and the Sugar Hollow Dam (originally constructed in 1947, upgraded in 1999 and downstream discharge improvements completed in September 2014, with a useable raw water storage capacity of 339 million gallons as updated by a 2015 bathymetric survey). The system also includes 17.6 miles of 18-inch raw water cast-iron mains, originally installed in 1908, 1922, and 1946. The Sugar Hollow Raw Water Main historically conveyed water from the Sugar Hollow Dam to the Observatory Water Treatment Plant, however, as a result of the New Ragged Mountain Dam project, the main now discharges directly into Ragged Mountain Reservoir. The remaining downstream section of the Sugar Hollow main now conveys raw water from the Ragged Mountain Reservoir to the treatment plant. The line crosses the Mechums River (where an abandoned pumping station is sited) on its way to Ragged Mountain Reservoir, and eventually passes through the Royal Pumping Station and terminates at the OBWTP. The Ragged Mountain Raw Water Main conveys water from the Ragged Mountain Reservoir through the Stadium Road Pumping Station and terminates at the OBWTP.

Project Descriptions:

7. Observatory Water Treatment Plant Improvements: The Observatory Water Treatment Plant was originally constructed in the mid-1950s, and since very little has been replaced or upgraded at the facility, much of the original equipment remains. As a result, that equipment is inefficient, prone to unexpected failure, and does not have readily accessible replacement parts. Based on a Needs Assessment Study, the plant will undergo a wholesale upgrade including improvements to the flocculators, sedimentation basins, filters, and chemical feed facilities to enhance future reliability. In addition, the existing reinforced concrete flume, which conveys treated water from the sedimentation basins to the filters, is in need of replacement, filter control valves and piping will be replaced, and electrical and SCADA control systems upgraded. A portion of this project was completed during the Granular Activated Carbon (GAC) project, where the flocculator systems were upgraded with new mechanical and electrical equipment, including variable speed drives for optimal efficiency.

In addition to providing needed equipment upgrades, these improvements will increase the plant's capacity from 7.7 million gallons per day to 10 million gallons per day based on a feasibility analysis performed during the Preliminary Engineering phase of the project. It was determined that the capacity upgrades could be performed economically and would provide needed reliability and redundancy in the Urban System. As part of this capacity increase, it was also determined that the plant's GAC treatment capacity should increase as well. As a result, this project also includes efforts required for the addition of four GAC contactors.

It should be noted that the Observatory Water Treatment Plant is sited on land leased to RWSA by the University of Virginia. A new 49-year lease was signed which commenced on July 1, 2020.

- 8. <u>Urban WTPs GAC Building Dehumidification</u>: Granular Activated Carbon (GAC) treatment was installed at the Urban water treatment plants (South Rivanna and Observatory) in 2018. The buildings constructed around the GAC vessels were not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in these buildings, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the buildings. As a result, the purpose of this project is to install permanent industrial dehumidification systems in the GAC buildings associated with the Urban water treatment plants. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.
- 9. <u>OBWTP Backwash Basin Sludge Removal and Inspection</u>: The concrete backwash basins were built in the 1920's and 1950's as part of the original water treatment plant to be used as open storage for the filtered water. They are currently used to settle solids out of the backwash water before it is decanted to the sanitary sewer system. This project involves removal of the settled sludge and a complete inspection of the basins to determine the extent of concrete repairs needed to extend their useful life.

Observatory Water Treatment Plant and Ragged Mountain/Sugar Hollow Reservoir System

		`	Five	-Year Capital Pro	gram			Projec	ted Future Expe	enses by Year		
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
7	20.06	Observatory Water Treatment Plant Improvements	\$23,000,000		\$23,000,000						\$23,000,000	\$9,090,262
8	23.04	Urban Water Treatment Plants - GAC Building Dehumidification		\$200,000						\$200,000	\$200,000	
9	23.05	Observatory Water Treatment Plant - Backwash Basin Sludge Removal and Inspection		\$50,000						\$50,000	\$50,000	
		TOTAL	\$23,000,000	\$250,000	\$23,000,000	\$0	\$0	\$0	\$0	\$250,000	\$23,250,000	\$9,090,262

Finished Water Storage/Transmission – Urban System

The urban finished water storage and transmission system serves to provide transmission of treated water from the three RWSA water plants (Observatory, South Rivanna, and North Rivanna) to the distribution networks of the Albemarle County Service Authority, the City of Charlottesville, and the University of Virginia. The system includes approximately 40 miles of pipeline, six water storage tanks: Avon Street (2 MG), Pantops (5 MG), Piney Mountain (0.7 MG), Stillhouse (0.7 MG), Observatory (3 MG), and Lewis Mountain (0.5 MG), and the Alderman Road and Stillhouse pumping stations.

Project Descriptions:

- 10. Central Water Line: The southern half of the Urban Area water system is currently served by the Avon Street and Pantops 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 reducing system flexibility. In 1987, the City and ACSA developed the Southern Loop Agreement, outlining project phasing and cost allocations, as envisioned at the time. The first two phases of the project were constructed shortly thereafter. The third phase, known as the "Eastern Branch" is the subject of the current project. The initial funding for this project was used for route alignment determination, hydraulic modeling, and preliminary design. Due to the complicated nature of our finished water systems, it was decided at the August 2018 Board meeting that a more comprehensive approach was 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. The Finished Water Master plan was completed in 2021 and the Central Water Line project was prioritized for design and construction in coordination with the City and ACSA. The project will consist of approximately 5 miles of new 24-inch and 30-inch through the City to connect the Observatory Water Treatment Plant to an existing RWSA transmission main at East High and Long St. to ensure the increased hydraulic capacity of 10 MGD from the water treatment plant upgrades can be utilized.
- 11. <u>South Fork Rivanna River Crossing</u>: 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. 29 Solutions projects, including approximately 10,000 LF of 24-inch water main along Rt. 29 and 600 LF of 24-inch water main along the new Berkmar Drive Extension, behind the Kohl's department store. To complete the connection between the SRWTP and the new 24-inch water main in Rt. 29, there is a need to construct a new river crossing at the South Fork Rivanna River. The selected alternative will include a trenchless river crossing to minimize environmental impacts. Acquisition of right-of-way will be required at the river crossing and along Rio Mills Road.

- 12. Airport Rd. Pump Station and North Rivanna Transmission Main: 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 was updated in 2018 to reflect the changes in the system and demands since 2007. This project, along with the South Rivanna River Crossing project, will provide a reliable and redundant finished water supply to the North Rivanna area. Once the North Rivanna Water Treatment Plant is abandoned, the Airport Road Pump Station will be the primary means to supply water to the North Zone. The proposed pump station will be able to serve system demands at both the current high pressure and a future lowpressure condition. These facilities will also lead to a future phase implementation which will include a storage tank and the creation of the Airport pressure zone. To complete the connection between the new 24-inch water main in Rt. 29 and the pump station, construction will include two "gap" sections of 24-inch water main between the already completed sections in the vicinity of Kohl's. Much of the new water main route is within VDOT right-of-way; however, acquisition of right-of-way was required on the Kohl's Property at Hollymead Town Center. This project is under construction.
- 13. <u>Avon, Pantops, and Observatory Tank Painting</u>: The Avon, Pantops and Observatory Ground Storage Tanks have volumes of 2-million, 3-million, and 5-million gallons respectively, and each of the tanks are located within the Urban Pressure Band of RWSA's Finished water Distribution System. The Urban Pressure Band services most of the City and ACSA critical customers (UVA, UVA/MJ Hospital, Senior Living Facilities, Defense Contractors, etc.). Each of the tanks plat a pivotal role in maintaining system pressures and providing increased flows during fires and other system emergencies.

RWSA inspects its tanks on a regular basis and following recent inspections of the interior and exterior of each of the three tanks it was determined that these tanks are due for rehabilitation and necessary repairs. Each tank is slated to have its interior and exterior coatings rehabilitated, taken out of service, in turn, in order to complete repairs. While each tank is offline, roofing/structural repairs and safety enhancements will be made as appropriate to further protect the integrity of the tank.

- 14. <u>Second N. Rivanna River Crossing & Select Pipe Replacement</u>: The North Rivanna water distribution system has a 12-inch water line crossing of the North Rivanna River which is difficult to access and vulnerable to erosion and washout. The Finished Water Master Plan recommended we install a second redundant river crossing to ensure water can be conveyed north of the river to the Piney Mountain Tank from the new Airport Road Pump Station once the North Rivanna Water Treatment Plant is decommissioned. Approximately 1.2 miles of cast iron water line which has the highest system pressures and has experienced numerous emergency line breaks would be replaced as part of this project to improve system resiliency.
- 15. <u>Emmet Street Betterment</u>: The Urban Finished Water Master Plan identified several necessary upgrades to the urban water distribution system to improve system performance and reliability. One of the identified improvements is an upgrade and extension of the existing RWSA water main along the Emmet Street corridor from the UVA Dell Pond to Hydraulic Road. This project

will utilize planned road, streetscape, utility, and development projects along the Emmet Street corridor to complete portions of the Emmet Street water main improvements as betterment, with the goal of completing the approximately 2-mile-long water main by 2030. The project scope includes planning and coordination between RWSA, UVA, the City of Charlottesville, and VDOT, design services for the betterment and "gap" sections of water line, construction funding, and construction management services. Current identified projects with betterment opportunities include: the UVA Ivy Corridor Redevelopment, UVA Contemplative Commons, the City of Charlottesville Emmet Streetscape Projects (multiple phases), and intersection improvements at Barracks Road, the US-250/Emmet Street Interchange, and Hydraulic Road.

- 16. <u>Berkmar Drive Ext. Waterline Phase 2</u>: This water line project will be completed as betterment with the construction of the last section of the VDOT Berkmar Drive Extended project. VDOT has begun preliminary design, however, the construction is not anticipated for several years. This betterment will include approximately 1,000 feet of 16-inch waterline which will connect the new Airport Road Pump Station to an RWSA main in Airport Road. This second feed out of the new pump station will provide more redundancy to supply the North Zone once the North Rivanna Water Treatment Plant is decommissioned
- 17. <u>Urban Storage Evaluation and Tank(s) Addition</u>: The Finished Water Master Plan outlined the need to evaluate our water storage system for fire suppression, to address frequent tank cycling, and to evaluate alternatives for realizing more useable volume in each tank. Once an evaluation is completed, this project will determine the best pressure bands to add storage to ease operational constraints. This project envisions the addition of two more water storage tanks which may be at existing tank locations or new ones.

Finished	Water	Storage/	Transmi	ission —	Urban	System
		0				

			Five	-Year Capital Pro	gram			Projec	ted Future Expe	enses by Year		
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
10	20.10	Central Water Line	\$24,000,000	\$17,000,000	\$3,300,000	\$1,000,000	\$5,800,000	\$12,500,000	\$12,400,000	\$6,000,000	\$41,000,000	\$541,686
11	20.12	South Fork Rivanna River Crossing	\$5,850,000	\$1,050,000	\$1,100,000	\$4,400,000	\$1,400,000				\$6,900,000	\$143,901
12	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	\$10,000,000		\$6,880,000	\$3,120,000					\$10,000,000	\$1,965,920
13	20.50	Avon, Pantops and Observatory Tank Painting		\$2,200,000					\$100,000	\$2,100,000	\$2,200,000	
14	20.58	Second North Rivanna River Crossing and Select Pipe Replacement		\$30,000						\$30,000	\$30,000	
15	23.06	Emmet Street Betterment	\$2,900,000	\$7,750,000	\$1,955,000	\$540,000	\$2,845,000	\$2,235,000	\$1,075,000	\$2,000,000	\$10,650,000	\$296,086
16	24.09	Berkmar Drive Ext. Waterline - Phase 2		\$1,400,000		\$220,000	\$590,000	\$590,000			\$1,400,000	
17	24.12	Urban Storage Evaluation and Tank(s) Addition		\$870,000				\$50,000	\$300,000	\$520,000	\$870,000	
		TOTAL	\$42,750,000	\$30,300,000	\$13,235,000	\$9,280,000	\$10,635,000	\$15,375,000	\$13,875,000	\$10,650,000	\$73,050,000	\$2,947,593

South and North Rivanna Water Systems

The South Rivanna Water System is comprised of the source water, storage, conveyance and treatment infrastructure currently serving the urban area from the South Fork Rivanna River. The system includes the South Fork Rivanna Reservoir and Dam (built in 1966). The Dam is colocated with the raw water intake and pump station, as well as a small hydroelectric generation facility. The source water from the South Rivanna Reservoir is treated at the South Rivanna treatment plant (12-mgd rated capacity).

The North Rivanna Water System is comprised of a river intake and raw water pumping station on the North Fork of the Rivanna River, as well as the North Fork Water Treatment Plant (2-mgd rated capacity built in 1973). The North Rivanna System provides water to the ACSA service area located along US Route 29, between Forest Lakes subdivision and Piney Mountain Road.

Project Descriptions:

18. <u>South Rivanna Hydropower Plant Decommissioning</u>: The South Fork Hydropower Plant is a small hydroelectric generating facility constructed in 1987. The plant had historically operated intermittently, as river flows allow. The generated power was used at the South Rivanna Water Treatment Plant, thereby reducing power purchased off the electric grid. During an effort to troubleshoot and repair the turbine, a large rain and lightning event caused unexpected flooding into the facility. Insurance paid damages to more recent improvements, but not the pre-existing needs to repair the turbine. Engineering investigations in 2013 associated with the failed mechanical equipment and flood event confirmed the need for further disassembly and inspection of the turbine shaft and blade linkages from a remote factory location.

Due to the complexity of possible rehabilitation, the associated Federal Energy Regulatory Commission (FERC) dam permitting, and the numerous variables in the economic analysis, proposals were solicited from national hydropower experts to initiate a feasibility study to determine the cost effectiveness of rehabilitating the hydropower plant while making sure to account for FERC-related costs and issues. The feasibility study was completed in May 2016 and determined that rehabilitation of the facility had a small likelihood for a positive return on investment. This conclusion was brought to the Board of Directors along with a recommendation to initiate the surrender of the exemption to licensure and decommission the facility. The Board approved this recommendation and staff filed the Surrender Application with FERC. The application was approved in 2020 and the decommissioning of the facility, which includes removing defunct electrical components, abandoning components of the turbine and re-establishment of the penstock as a reservoir drain will follow.

19. <u>South Rivanna Water Treatment Plant Improvements</u>: The South Rivanna Water Treatment Plant recently completed limited upgrades as part of the Urban Granular Activated Carbon project. Over the course of that project, several other significant needs were identified and assembled into a single project within this Capital Plan. The project components include, but are not limited to, the following: a new alum and fluoride storage facility; installation of two additional filters to meet firm capacity needs and new filter control panels; building around the lime storage facilities; the addition of a second variable frequency drive at the Raw Water

Pump Station as well as other general pump station improvements; the relocation for the electrical gear from a sub terrain location at the Sludge Pumping Station to a new aboveground enclosure; a new administration building on site for additional office, meeting, and storage space; high service pump improvements and the addition of variable frequency drives to three of the pumps; sedimentation basin improvements; replacement of filter inlet valves and actuators; remodeling of the existing filter building for better lab and control space and painting throughout; new clarifier drives; and incoming electrical system improvements for the facility. Currently this facility operates at 80-90% of capacity and the identified upgrades will improve reliability and resiliency, particularly at higher flow rates.

- 20. <u>South Rivanna Water Treatment Plant PAC Upgrades</u>: The SRWTP currently utilizes a repurposed lime silo reconfigured to feed powdered activated carbon (PAC). PAC is fed in the mixing basin where it is mixed with the raw water prior to entering the rapid mix basins. The PAC storage silo and feed system has reached the end of its useful life and requires frequent maintenance attention to maintain operations. The purpose of this project is to replace the existing PAC system with a new modern PAC storage and slurry feed system similar to the one installed at the Crozet WTP and the one under construction at the Observatory WTP. This project would include demolition of the existing PAC silo and feed pumps, site work and grading required for the new PAC silo location and installation of a new PAC storage and slurry feed system complete with all necessary dry feed equipment, metering pumps, HVAC equipment and electrical and control equipment.
- 21. <u>North Rivanna Water Treatment Plant Decommissioning</u>: The North Rivanna Water Treatment Plant (NRWTP) has been in use since the 1970's with minimal upgrades aside from the addition of Granular Activated Carbon in 2018. A Needs Assessment was performed that identified additional improvements that would be required for the plant to continue to reliably provide drinking water to the North Rivanna Pressure Zone. Due to the anticipated expense of these proposed improvements, a feasibility study was performed to determine if the NRWTP should be upgraded or decommissioned. The study concluded that the plant should be decommissioned, and expenses saved could be better applied to other improvements throughout the Urban Water System. As a result, this project includes demolition of the plant facilities, removal of the low head dam on the North Fork Rivanna River and returning the property to its pre-existing conditions.

			Five	-Year Capital Pro	gram		Projected					
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
18	20.15	South Rivanna Hydropower Plant Decommissioning	\$725,000	\$285,000	\$1,010,000						\$1,010,000	\$205,591
19	20.16	South Rivanna Water Treatment Plant Improvements	\$20,000,000	\$400,000	\$20,400,000						\$20,400,000	\$17,637,761
20	24.01	South Rivanna Water Treatment Plant - PAC Upgrades		\$1,100,000		\$60,000	\$250,000	\$790,000			\$1,100,000	
21	20.18	North Rivanna Water Treatment Plant Decommissioning	\$2,425,000	\$250,000	\$385,000	\$100,000	\$2,190,000				\$2,675,000	\$76,110
		TOTAL	\$23,150,000	\$2,035,000	\$21,795,000	\$160,000	\$2,440,000	\$790,000	\$0	\$0	\$25,185,000	\$17,919,462

South and North Rivanna Water Systems

Crozet Water System

The Crozet Water System includes the source water, raw water conveyance, finished water treatment, transmission and storage infrastructure for the Crozet community in western Albemarle County. The source water for this system is the Beaver Creek Reservoir and Garnett Dam which were built in 1964 with a current useable storage capacity of 521 million gallons. Raw water is treated at the Crozet Water Treatment Plant (1.0 mgd rated capacity, soon to be 2 mgd) and provides finished water to the Albemarle County Service Authority. The system includes the Crozet Elevated (Waterball) Tank (0.05 MG) for water treatment plant backwash; the Crozet Ground Storage Tank (0.5 MG) and pump station, and the Buck's Elbow Storage Tank (2.0 MG).

Project Descriptions:

- 22. <u>Beaver Creek Dam Alteration</u>: RWSA operates the Beaver Creek Dam and reservoir as the sole raw water supply for the Crozet Area. In 2011, an analysis of the Dam Breach inundation areas and changes to the 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. Following the completion of a planning study in 2023, staff will proceed with final design and construction of a labyrinth spillway and chute with a bridge to allow Browns Gap Turnpike to cross over the new spillway. Work for this project will be coordinated with the new relocated raw water pump station and intake. Federal funding through the Natural Resources Conservation Service is being pursued to cover a portion of the design and construction costs.
- 23. <u>Beaver Creek New Raw Water Pump Station & Intake</u>: The existing Raw Water Pump Station and Intake at the Beaver Creek Reservoir was constructed in 1964 and is located at the foot of the Beaver Creek Dam. Obligatory dam safety upgrades to the Beaver Creek Dam spillway necessitate moving the pump station away from its current location downstream of the dam. Additionally, the Drinking Water Infrastructure Plan for the Crozet water service area recommends installation of a new Raw Water Pump Station and Intake 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 new pump station will be constructed adjacent to the dam on the Beaver Creek Reservoir. The new intake structure will include enhanced controls as well as a Hypolimnetic Oxygenation System that will serve to enhance water quality within the reservoir.
- 24. <u>Buck's Elbow Tank and Waterball Painting</u>: The 2,000,000-gallon Buck's 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 (CZWTP). Routine inspections of these tanks in 2012 indicated that the tanks would require recoating by 2020. The current coating system has lasted beyond this initial prediction and as such was moved to 2028. The project includes recoating the interior and top-coating the exterior of both tanks to prevent corrosion. Minor repairs and improvements to both tanks will also be included in this work, such as foundation repairs and safety enhancements. The repairs will precede the painting work due to necessity of repairs.

- 25. <u>Crozet Water Treatment Plant GAC Building Dehumidification</u>: Granular Activated Carbon (GAC) treatment was installed at the Crozet Water Treatment Plant in 2018. The building constructed around the GAC vessels was not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in this building, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the building. As a result, the purpose of this project is to install a permanent industrial dehumidification system in the GAC building. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.
- 26. <u>Crozet AC Pipe Replacement</u>: This project includes the installation of approximately 5,000 linear feet of new 18-inch ductile iron water line along Three Notched Road in Crozet. It will replace the final remaining section of 12-inch RWSA transite (asbestos cement) pipe built in the 1970's which is difficult to repair due to health and safety hazards. The new water line will connect the new Crozet Finished Water Pump Station at the Water Treatment Plant to the end of the previous transite replacement project at the entrance to Western Ridge and will provide more reliable service to carry the capacity of the recent water treatment plant upgrades.
- 27. <u>Crozet Water Treatment Plant Full GAC Treatment</u>: In order to enhance RWSA's resiliency and commitment to long term finished water quality, the Authority has committed to expanding the Granular Activated Carbon (GAC) capacity at the Crozet WTP to match the current plant capacity. GAC has been identified as a leading best management practice to remove disinfection by product pre-cursers and similar potential contaminants from source water and can be used to manage removal of other emerging contaminants and compounds that are under consideration for regulation in the future. As a result, full GAC treatment capacity will provide the Crozet WTP with the flexibility to provide high quality drinking water under various future conditions. This project includes an expansion of the existing GAC building, additional GAC vessels and the necessary pumps, piping, and electrical components to connect the expanded facility to the existing treatment plant.
- 28. <u>Crozet Finished Water Greyrock Pump Station</u>: RWSA's Bucks Elbow Ground Storage Tank (BET) currently can only be cycled as low as 26-feet (11-feet below overflow), due to the high elevation of several homes in the Greyrock area of Crozet. This results in about 0.6 million gallons (MG) of the total 2 MG being available for use. As a part of the proposed improvements, a small booster station will be installed near the tank site with a series of pressure reducing valves in order to allow the tank to cycle as low as 18-feet, making an additional 0.4 MG of water inside BET available for use. This will allow RWSA staff to cycle the tank lower, reducing water age and improving overall water quality in this area of the distribution system.

Crozet Water System

			Five	-Year Capital Pro	gram		Projected	l Future Expense	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
22	20.19	Beaver Creek Dam Alteration	\$16,150,000	\$6,550,000	\$1,225,000	\$2,750,000	\$8,300,000	\$8,300,000	\$2,125,000		\$22,700,000	\$884,033
23	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	\$15,650,000	\$4,550,000	\$1,053,000	\$3,097,000	\$7,150,000	\$7,100,000	\$1,800,000		\$20,200,000	\$302,893
24	21.01	Buck's Elbow Tank and Waterball Painting		\$1,180,000			\$80,000		\$80,000	\$1,020,000	\$1,180,000	
25	23.10	Crozet Water Treatment Plant - GAC Building Dehumidification		\$50,000						\$50,000	\$50,000	
26	23.13	Crozet AC Pipe Replacement		\$450,000						\$450,000	\$450,000	
27	23.14	Crozet Water Treatment Plant - Full GAC Treatment		\$6,550,000		\$1,450,000	\$3,000,000	\$2,100,000			\$6,550,000	
28	23.30	Crozet Finished Water Greyrock Pump Station		\$180,000						\$180,000	\$180,000	
		TOTAL	\$31,800,000	\$19,510,000	\$2,278,000	\$7,297,000	\$18,530,000	\$17,500,000	\$4,005,000	\$1,700,000	\$51,310,000	\$1,186,926

Scottsville Water System

The Scottsville Water System is comprised of the raw water conveyance, finished water treatment, transmission and storage infrastructure for the Town of Scottsville in southern Albemarle County. The source water for this system is the Totier Creek Intake, and the backup supply is the Totier Creek Reservoir, which was built in 1971 with a current useable capacity of 182 million gallons. Raw water is treated at the Scottsville Water Treatment Plant (0.25 mgd rated capacity) and provides finished water to the Albemarle County Service Authority. The system includes the Scottsville Storage Tank (0.25 MG).

Project Description:

- 29. <u>Scottsville Water Treatment Plant Upgrade</u>: The Scottsville Water Treatment Plant was originally constructed in 1967, and other then the addition of Granular Activated Carbon (GAC) treatment and interior finished water piping improvements, much of the original plant, including process and electrical equipment, remains in service. As a result, a needs assessment for the plant was completed that identified a number of additional improvements required to maintain a high level of treatment and water quality for the Scottsville community. Improvements include upgrades to the raw water pump stations, general electrical system upgrades, construction of a building addition to allow for more effective chemical storage and other general space needs, rehabilitation of the existing lab space, and other treatment process based upgrades.
- 30. <u>Red Hill Water Treatment Plant Upgrades</u>: The Red Hill Water Treatment Plant was constructed in a joint effort of ACSA and RWSA in 2009 and consists of a well, pneumatic tank and pump house that provides treated water to the Red Hill Elementary School and adjoining neighborhood. Originally the facility was operated primarily as a well head and pump house. More recently the facility has operated as a water treatment facility with a well as source water. As such, there have been several chemical process additions, automation, online monitoring and an increase in operator wet chemistry testing. The current building is well beyond its physical capacity and this project will serve to expand the building and improve the configuration of the process and laboratory needs of the WTP.
- 31. <u>Scottsville Asbestos-Cement Pipeline Replacement</u>: This project is intended to replace all remaining RWSA waterline in Scottsville that is constructed of asbestos-cement not included under ACSA's Phase 4 Waterline Replacement Project. The scope of the project includes approximately 500 LF of raw waterline replacement between the filter building and Totier Creek intake behind Scottsville WTP.
- 32. <u>Red Hill WTP Full GAC Treatment</u>: In order to enhance RWSA's resiliency and commitment to long term finished water quality, the Authority has committed to adding Granular Activated Carbon (GAC) treatment at the Red Hill WTP, sized to match the current plant capacity. GAC has been identified as a leading best management practice to remove disinfection by product pre-cursers and similar potential contaminants from source water and can be used to manage removal of other emerging contaminants and compounds that are under consideration for regulation in the future. As a result, full GAC treatment capacity will provide the Red Hill WTP with the flexibility to provide high quality drinking water under various future

conditions. This project includes the addition of a GAC vessel into the building expansion currently be designed and constructed under the Red Hill Water Treatment Plant – Upgrades project, as well as piping, valves and pumping improvements necessary to incorporate these components into the existing treatment plant.

33. <u>Scottsville Water Treatment Plant – GAC Building Dehumidification</u>: Granular Activated Carbon (GAC) treatment was installed at the Scottsville Water Treatment Plant in 2018. The building constructed around the GAC vessels was not conditioned and only included unit heaters and portable dehumidifiers. As a result of the large GAC vessels in this building, the humidity levels in the area tend to promote condensation which can then lead to corrosion of the equipment and general degradation. While the portable dehumidifiers were beneficial, they tended to be unreliable and insufficient to maintain lower humidity levels in the building. As a result, the purpose of this project is to install a permanent industrial dehumidification system in the GAC building. This project would include the dehumidification units as well as the necessary ductwork, electrical improvements, and architectural modifications required for a complete installation.

Scottsville Water System

			Five-Year Capital Program				Projected					
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
29	22.06	Scottsville Water Treatment Plant - Upgrade		\$550,000						\$550,000	\$550,000	
30	22.07	Red Hill Water Treatment Plant - Upgrades	\$410,000	\$35,000	\$410,000	\$35,000					\$445,000	
31	23.16	Scottsville AC Pipe Replacement		\$80,000						\$80,000	\$80,000	
32	23.17	Full GAC Treatment - Red Hill Water Treatment Plant		\$295,000		\$66,000	\$134,000	\$95,000			\$295,000	
33	23.18	Scottsville Water Treatment Plant - GAC Building Dehumidification		\$50,000						\$50,000	\$50,000	
		TOTAL	\$410,000	\$1,010,000	\$410,000	\$101,000	\$134,000	\$95,000	\$0	\$680,000	\$1,420,000	\$0

Wastewater Interceptors/Pumping Stations

The RWSA wastewater interceptors and pumping stations convey wastewater from the collection systems of the City of Charlottesville and Albemarle County Service Authority to the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF). This grouping includes: the Crozet Interceptor and four associated pumping stations; the Moores Creek Interceptor and Relief Sewer; the Morey Creek, Maury Hills, Powell Creek, Meadow Creek, Schenks Branch, Woodbrook and Rivanna Interceptors; as well as the Albemarle-Berkley Interceptor and associated Albemarle Pumping Station. Also included in this system are the two primary pump stations into the MCAWRRF, the Rivanna and Moores Creek Pump Stations.

Project Descriptions:

- 34. Upper Schenks Branch Interceptor: The Schenks Branch Interceptor is located in the eastern part of the City of Charlottesville and ties into the Meadowcreek Interceptor. The interceptor was constructed in the mid-1950s of 21-inch clay and concrete pipe. The existing interceptor is undersized to serve present and future wet weather flows as determined by the City, and is to be upgraded to 30-inch pipe. The Upper Schenks Branch Interceptor consists of two sections along McIntire Road. Both of these sections have been designed with the first phase of this project located in the City's Schenks Branch Greenway, completed in early 2016. The second phase of the Upper Schenks Interceptor will be replaced by RWSA in coordination with the City of Charlottesville's sewer upgrades as easement negotiations with Albemarle County are completed.
- 35. <u>Maury Hill Branch Sewer Replacement</u>: The Maury Hill Branch Sewer is an 8-inch diameter clay sewer constructed in the 1970's. It ties into the Morey Creek Interceptor and primarily collects wastewater from the UVA Fontaine Research Park and a small portion of the adjacent City of Charlottesville neighborhoods. As a result of growth at the research park and increasing wastewater flows, the sewer line will need to be upsized to 12-inch diameter ductile iron pipe to properly convey flows for current and future needs. Since the existing pipe is also a clay sewer, the system has experienced a significant amount of inflow and infiltration (I&I). Installing a new ductile iron pipe and concrete manholes will reduce the I&I in the system and have a positive impact on the capacity of downstream sewers as well.
- 36. <u>Crozet Pump Station 1, 2, and 3 Rehabilitation</u>: The Crozet Interceptor Pump Stations were constructed in the 1980's and many of the components are original. This project initially included the replacement of pumps and valves at Pump Station 2 in order to improve pumping capabilities at this location and provide spare parts for the pumps at Pump Station 1. It also included roof replacements at all four pump stations, siding replacement for the wet well enclosure at Pump Station 3, and installation of new wells at Pump Stations 3 and 4. The pump station improvements now also include new electrical motor control centers as they are obsolete and past their useful life, generators and power transfer switches.
- 37. <u>Albemarle Berkley PS Upgrade</u>: The Albemarle-Berkeley Pump Station was constructed in 1975 and conveys flows from several Albemarle County Public Schools (ACPS) and other ACSA customers into RWSA's gravity Albemarle-Berkeley Interceptor. Recently, the pump station's run times have increased, with the pumps running nearly continuously for some

periods. It is anticipated that much of the pumping infrastructure has reached or exceeded its expected lifespan, and that the equipment may be in need of replacement.

A Capacity Analysis of the existing pump station has been completed, utilizing present flow rates, area-specific population projections, and known development projects on and adjacent to the ACPS campus in order to provide pump station buildout sizing to serve the area for the next 50 years. With the Capacity Analysis complete, this Pump Station Upgrade Project will utilize consultant assistance in order to formulate a set of bidding documents that will include the construction of a new pumping station that is sized to meet the current and future flows as determined by the Capacity Analysis, along with all equipment necessary for staff to safely remove individual pumps from service for maintenance purposes or temporarily bypass the station entirely as needed. Once the new pump station has been constructed and is in service, the existing pump station will be demolished, with that portion of the site returned to pre-existing conditions. This project is also being coordinated with the ongoing ACPS Master Planning Process.

- 38. Interceptor Sewer and Manhole Repair Phase 2: This project is used to conduct assessments of various interceptors as well as rehabilitation of interceptors that do not have a separate CIP project. Phase 1 of the Interceptor Sewer and Manhole Repair Project included completion of the baseline evaluation of all RWSA interceptors (except the 42/48" Upper Rivanna Interceptor & those replaced with new pipe), as well as completion of rehabilitation on the Upper Morey Creek Interceptor and high-priority rehabilitation on the Powell Creek and Woodbrook Interceptors. Planned projects for Phase 2 include completion of the baseline evaluation by performing closed-circuit television (CCTV) inspections of the Upper Rivanna Interceptor, as well as cleaning as necessary. Cleaning and CCTV inspections will also be performed on the gravity portions of the Crozet Interceptor, in order to complete investigations associated with the Crozet Wastewater Pump Station Rehabilitation Project. In addition, the force mains on the Crozet and Albemarle-Berkely Interceptors will be inspected, as well as inverted siphons on the Powell Creek and Moores Creek Interceptors. These inspections will require specialty equipment to complete due to the vastly different flow conditions in these portions of the interceptors. Additional high-priority rehabilitation will be completed under this phase as funds allow, with more substantial rehabilitation efforts to take place under Phase 3. Sanitary sewer evaluation includes identification of inflow & infiltration (I & I), as well as structural defects and other maintenance issues to enable overall program planning and future rehabilitation scoping. Rehabilitation of existing sanitary sewer pipe and manholes reduces Inflow & Infiltration (I & I) in the system, thus reducing the chance for sanitary sewer overflows (SSOs) during high flow events and protecting downstream treatment processes.
- 39. Interceptor Sewer and Manhole Repair Phase 3: This project is used to conduct assessments of various interceptors as well as rehabilitation of interceptors that do not have a separate CIP project. Phase 2 of the Interceptor Sewer and Manhole Repair Project, which is currently underway, includes completion of the baseline evaluation of all RWSA interceptors, including the 42 to 48-inch Upper Rivanna Interceptor, gravity portions of the Crozet Interceptor (downstream of Crozet Pump Station No. 4), force mains on the Crozet and Albemarle-Berkeley Interceptors, as well as inverted siphons on the Powell Creek and Moores Creek Interceptors. Phase 3 of this project will take data from the previous two phases and utilize that

to perform rehabilitation on RWSA's largest interceptors, including the Moores Creek Interceptor, Upper Rivanna Interceptor, Crozet Interceptor, and others. Rehabilitation is anticipated to include continued usage of cured in place piping (CIPP) and point replacements of pipe as necessary, as well as cementitious manhole coatings and frame and cover replacements.

Urban Wastewater Interceptors/Pumping Stations

			Five-Year Capital Program				Projecte					
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
34	20.25	Upper Schenks Branch Interceptor	\$4,725,000	\$575,000	\$4,725,000		\$575,000				\$5,300,000	\$50,787
35	20.29	Maury Hill Branch Sewer Replacement		\$350,000						\$350,000	\$350,000	
36	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	\$590,000	\$9,760,000	\$535,000	\$570,000	\$6,500,000	\$2,745,000			\$10,350,000	\$42,267
37	20.31	Albemarle Berkley Pump Station Upgrade		\$115,000						\$115,000	\$115,000	
38	21.07	Interceptor Sewer and Manhole Repair (Phase 2)	\$965,000	\$265,000	\$430,000	\$580,000	\$220,000				\$1,230,000	
39	24.02	Interceptor Sewer and Manhole Repair (Phase 3)		\$600,000						\$600,000	\$600,000	
		TOTAL	\$6,280,000	\$11,665,000	\$5,690,000	\$1,150,000	\$7,295,000	\$2,745,000	\$0	\$1,065,000	\$17,945,000	\$93,054

Moores Creek Advanced Water Resource Recovery Facility

The Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) is the largest wastewater treatment facility within the RWSA system. The plant was originally constructed in 1958 and upgraded and expanded in 1981 and 1982, and currently has a rated capacity of 15 mgd. From 2009 thru 2012 the facility was upgraded to provide enhanced nutrient removal, and increased wet weather pumping and treatment capacity. This site includes the infrastructure for the wastewater treatment process as well as the RWSA administration facilities.

Project Descriptions:

- 40. <u>Moores Creek AWRRF Engineering and Administration Building</u>: RWSA currently has its administrative headquarters in two buildings on the grounds of the Moores Creek Advanced Water Resource Recovery Facility. 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. There is currently a need to house additional staff; increase office and meeting space; plan for the replacement of the trailers; bring the IT server workrooms to modern standards; and provide classroom space for education outreach. This project was coordinated with the recent MCAWRRF Master Plan and expansion of the building will take place in the lower parking lot adjacent to the existing building.
- 41. <u>Moores Creek AWRRF Biogas Upgrades</u>: This project combines the previous Moores Creek AWRRF (MCAWRRF) Cogeneration Upgrades and Gas Sphere Rehabilitation into a single project. The MCAWRRF has an existing cogeneration facility that was constructed in 2011. The purpose of the facility was to provide a beneficial purpose for using the gas produced by the digester process at the plant, and in doing so provide both process heating fluid to the digester tanks and electrical energy to the plant's electrical distribution system. Unfortunately, the existing cogeneration facility requires expensive recurring maintenance services, has proprietary equipment which further complicates servicing needs, and has had a number of operational issues that have impeded the benefit this facility was intended to provide. After an evaluation of the current status of the cogeneration industry, it was identified that many facilities are seeing the same issues. Some are trending away from cogeneration systems altogether, with a new focus towards other emerging technologies such as microturbines and treatment of digester gas with injection into nearby natural gas pipelines.

As the preliminary biogas evaluation is completed and a method to beneficially reuse the gas is finalized, staff will utilize consultant assistance to design and bid a project that not only allows the chosen technology to be implemented, but also performs critical spot and coating repairs to the existing gas sphere that was constructed in the 1980s. The work will also include adjustments as appropriate to the biogas processing system in order to make the process as efficient and suitable as possible for the chosen utilization technology.

42. <u>Moores Creek AWRRF Building Upfits and Gravity Thickener Improvements</u>: This project will address the renovation needs of the current Maintenance and Operations building space requirements, improvements to the existing gravity thickener system, and installation of

actuators on the secondary clarifier influent gate valves. The Moores Creek Maintenance and Operations Department facilities are over 40 years old, no longer meeting current staffing and operational needs. In accordance with the Moores Creek Master Plan, this project will increase and update personnel spaces such as offices, lunchrooms, labs, and locker rooms in the Maintenance, Blower, and Sludge Pumping Buildings to meet needs over an interim timeframe of approximately 15 years. Additionally, the project will construct increased oil and grease storage that will meet all current best practices for safety and address the need for additional parts storage. As part of the existing gravity thickener system, RWSA added temporary provisions to dose polymer to improve settling and thickening performance, which has proved to be effective and increased operational performance. The current polymer feed system consists of a bulk polymer tote stored on grade adjacent to the gravity thickener rapid mix and splitter structure. The current system is uncovered-and manually operated with totes being moved as needed for chemical feed. This project will allow for a permanent polymer feed system with proper provisions for chemical deliveries and weather protection, including additional space for sodium hypochlorite chemical storage and feed as part of the gravity thickener odor control system. The relocation of the sodium hypochlorite storage and feed will also allocate spacing needs as part of the previously discussed operational building renovations in the existing Sludge Pumping Building. Furthermore, access points will be installed on the thickener effluent line feeding the existing sludge pumps to allow for flushing, cleaning and inspection efforts to occur. Finally, the current secondary clarifier influent gate valves are manually operated, which can be time consuming, and during a wet weather event, the clarifiers need to be placed in service as quickly and safely as possible. The use of SCADA controlled actuators would streamline the process immensely. This work includes the installation of eight (8) new actuators on the influent gates of the secondary clarifiers.

43. <u>Moores Creek AWRRF Meter and Valve Replacements</u>: As part of the 2018 Odor Control Phase II Project, the post digestion clarifiers were eliminated from use and the gravity thickener overflow was diverted through existing piping directly to the Moores Creek Pump Station at the head of the treatment facility. This resulted in less odor generation, however, the gravity thickener overflow lost its metering location at the post digestion clarifiers. A new metering manhole location was installed near the Moores Creek Pump Station where several plant recycle flows come together. Unfortunately, this meter location has been problematic and is subject to backwater flows from the pump station and meter fouling from grease and solids. This project involves installation of individual meters on each recycle flow line at locations that will provide less operation and maintenance problems.

The circulation of Waste Activated Sludge (WAS) and Return Activated Sludge (RAS) is important in the wastewater process to maintain a healthy balance of microorganisms. The existing WAS and RAS flow meters are original to the 1980's construction of the facility and are nearly 40 years old. These meters can no longer be calibrated and replacement parts are not available. Replacement of these existing meters, in addition to installation of new meters for the primary and thickened sludge is necessary for process and operational efficiency and is currently under construction.

44. <u>Moores Creek AWRRF 5kV Electrical System Upgrade</u>: After discussions through the Moores Creek Facilities Master Plan, it was identified that several areas of the MCAWRRF, including

the Blower Building, Sludge Pumping Building, Grit Removal Building, Moores Creek Pumping Station, and the Administration Building are all still connected to the original 5kV switchgear in the Blower Building. This equipment, including the associated cabling, switchgear, transformers, and motor control centers (MCCs), has a useful life expectancy of 20-30 years. Most of this equipment was installed around 1980. With the equipment having well exceeded its useful life expectancy at this point, safety is a concern given the large electric loads that the cabling and other equipment are handling on a day-to-day basis. Failure of the existing 5kV infrastructure could also result in temporary outages of certain treatment processes, and repairs could take weeks to months given the lead times associated with equipment of this age. In July 2020, staff recommended that a CIP Project be started as soon as possible to encompass replacement of the original 1980s-vintage 5kV cables, switchgear, transformers, and MCCs. Design work has been completed, and construction is under way. All work has been coordinated with the Moores Creek Facilities Master Plan

- 45. <u>Moores Creek AWRRF Yard Piping Upgrades</u>: The original 36-inch Rivanna Pump Station force main was constructed around 1980 and carried flow from the original 25 MGD pump station in Riverview Park. Now that the pump station has been relocated to MCAWRRF and upsized to 53 MGD, it is desirable to install a second force main based on the age of the pipe and for redundancy. This work will include construction of a second parallel 36-inch force main from the Rivanna Pump Station, across Moores Creek, and up to the headworks.
- 46. <u>Moores Creek AWRRF Structural and Concrete Rehabilitation</u>: This project comprises rehabilitation, repair and installation of multiple structural components throughout the MCAWRRF facility, to include concrete repairs in both the equalization basins and holding ponds, rehabilitation to the existing primary clarifiers and associated influent splitter box, installation of a bridge crane over the aeration basins for NRCY pump removal, improved access to the elevated valves and associated actuators in the Rivanna pump station, and rehabilitation to both the digester complex and compost shed roof and drainage system.

The existing holding ponds and equalization basins were constructed in 1977 and are showing signs of degradation. With now completed condition assessment inspections and subsequent recommendations, this project includes crack repair, spalling repair, joint repair, and coating of miscellaneous metals and valves associated with these critical structures. Inspections performed on the two existing primary clarifiers and associated influent splitter box noted several deficiencies including structural and mechanical components, concrete degradation and corrosion around pipe penetrations in need of repair or replacement. This project will provide for the rehabilitation, replacement and/ or coatings of these previously identified components within the primary clarifiers and influent splitter box.

The aeration basins located at Moores Creek are a series of chambers that each have uniquely controlled oxygen and nutrient loading conditions. Mid-way thru the basins is ten nutrient recycle (NRCY) pumps. When maintenance or replacement of these pumps are required, staff must currently hire a long boom crane, which can be costly and disruptive to operations, especially in emergency conditions. This project will provide for the permanent means to remove and reinstall existing NRCY pumps.

Two of the six pumps in the Rivanna Pump Station are smaller and were designed to be replaced if future average day flows warrant increased capacity. The current configuration resulted in some valves being located approximately 40 feet above the pump floor level. Valve maintenance activities have been challenging due to their height. A project is proposed to either modify the piping configuration or install a catwalk from the upper mezzanine level to each valve to provide a safer means of accessing each valve.

Moores Creek AWRRF has five (5) digester vessels. The two smaller digesters were part of the original 1958 plant construction. The three larger digesters were part of the 1979 plant upgrades following construction of the bridge over Moores Creek and the south side of the plant. Although numerous upgrades have been constructed at the digester complex over the last 11 years (including heating, mixing, gas compression, and roof repairs), the overall condition of the concrete and complex is reaching its useful life. This project includes addressing remaining repairs to the existing digester complex, including safety repairs, to extend the useful life approximately 10-15 years while RWSA plans, designs, and constructs a new digester complex at another location on the Moores Creek site.

Finally, in the early 1980's a large metal-framed roof was constructed to house the biosolids composting operations, which has subsequently ceased operation. The area was repurposed as a covered equipment maintenance yard, solids handling facility and material storage lock-up. The roof system is exhibiting signs of rafter deterioration and ongoing drainage and leakage issues. This project will evaluate and perform remediation needs at this facility.

47. Moores Creek AWRRF MCPS Slide Gates, Valves and Bypass & Septage Receiving Upgrades: Through separate procurements, previous inspections of the large aluminum slide gates at the influent side of the Moores Creek Pump Station have been conducted to determine the extent of repairs needed to stop them from leaking. Results of these investigations will be used to design the repair of the existing slide gates and add new gates so staff can have the flexibility to stop or divert flow to perform maintenance activities. In addition, this project will include the repair of 3 control valves within the pump station and provide permanent bypass connections so the entire pump station can be bypassed more efficiently in the future when needed. To reduce odors and address maintenance concerns at the existing north septage receiving station, the project will enclose the leachate discharge pit, modify the station to accommodate a wider variety of haulers, provide for better containment of discharged materials, and install rock traps and grinders with all associated process piping to prevent downstream blockages at the Moores Creek Pump Station.
Moores Creek Advanced Water Resource Recovery Facility

			Five	-Year Capital Pro	gram		Projected	l Future Expense	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
40	20.34	Moores Creek AWRRF Engineering and Administration Building	\$8,500,000	\$2,000,000	\$225,000	\$975,000	\$5,900,000	\$3,400,000			\$10,500,000	
41	20.67	Moores Creek AWRRF Biogas Upgrades	\$2,985,000	\$610,000	\$2,235,000	\$1,130,000	\$230,000				\$3,595,000	\$8,240
42	20.68	Moores Creek AWRRF Building Upfits and Gravity Thickener Improvements	\$4,240,000	\$315,000	\$440,000	\$825,000	\$2,515,000	\$720,000		\$55,000	\$4,555,000	
43	21.11	Moores Creek AWWRF Meter and Valve Replacements	\$775,000		\$775,000						\$775,000	\$38,597
44	21.18	Moores Creek AWRRF 5kV Electrical System Upgrade	\$5,050,000	\$585,000	\$3,430,000	\$1,950,000	\$255,000				\$5,635,000	\$433,063
45	22.10	Moores Creek AWRRF Yard Piping Upgrades		\$315,000						\$315,000	\$315,000	
46	22.12	Moores Creek AWRRF Structural and Concrete Rehabilitation	\$8,910,000	\$2,390,000	\$3,250,000	\$3,845,000	\$3,900,000	\$305,000			\$11,300,000	\$15,450
47	24.08	Moores Creek AWRRF MCPS Slide Gates, Valves, Bypass and Septage Receiving Upgrades		\$3,600,000		\$330,000	\$2,055,000	\$1,215,000			\$3,600,000	
		TOTAL	\$30,460,000	\$9,815,000	\$10,355,000	\$9,055,000	\$14,855,000	\$5,640,000	\$0	\$370,000	\$40,275,000	\$495,350

Scottsville Wastewater System

The Scottsville Wastewater System includes the influent pumping station, the water resource recovery facility constructed in 1983, and the historical treatment lagoon (now incorporated into the plant operation). The water resource recovery facility has a rated capacity of 0.2 mgd.

Project Descriptions:

- 48. <u>Scottsville WRRF Whole Plant Generator and ATS</u>: The current back-up power generator at the Scottsville Water Resource Recovery Facility does not power the entire plant. It serves only the facilities needed to send flow to the lagoon for storage. This project will provide back-up power for the entire plant and will offer greater treatment flexibility and monitoring capability for the operations staff, particularly when the plant is unmanned and monitored remotely.
- 49. <u>Scottsville Lagoon Outfall Rehabilitation</u>: The Scottsville Wastewater Lagoon outfall is original to the wastewater plant from its construction. The overflow tower was recently inspected in 2021 by Bander Smith and recommended a few repairs. The concrete tower has 4 intakes, and the 4th intake is currently buried under debris. The tower is in fair condition and could use some general concrete repairs the 4th intake is buried under material. All valves are recommended for replacement and removal of 2-3 feet of material is recommended from around the outflow tower.
- 50. <u>Scottsville WRRF Polymer Feed Addition</u>: The Scottsville WRRF Polymer Feed system has reached the end of its useful life and needs replacement. This project will focus on constructing a new polymer feed system and an enclosure to house the chemicals for the plant.

_				Five	-Year Capital Pro	gram		Projected	l Future Expense	s by Year			
	Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
	48	21.12	Scottsville WRRF Whole Plant Generator and ATS	\$200,000	\$320,000	\$191,000	\$304,000	\$25,000				\$520,000	\$5,000
	49	23.24	Scottsville WRRF Lagoon Outfall Rehabilitation		\$25,000						\$25,000	\$25,000	
	50	23.25	Scottsville WRRF Polymer Feed Addition		\$26,000						\$26,000	\$26,000	
ſ			TOTAL	\$200.000	\$371.000	\$191.000	\$304.000	\$25.000	\$0	\$0	\$51.000	\$571.000	\$5.000

Scottsville Water Resource Recovery Facility

Glenmore Wastewater System

The 0.381-mgd water resource recovery facility, located within the Glenmore subdivision, is operated by RWSA. The facility includes an influent pumping station located immediately adjacent to the treatment facility.

Project Descriptions:

51. <u>Glenmore WRRF Polymer Feed Addition</u>: The Glenmore WRRF currently has two existing automated chemical feed systems, one of which includes polymer. The polymer system is primarily used to feed polymer to the WAS as a settling aid for the sludge holding tank. The current systems are near the end of their useful life and are in need of replacement. The new polymer feed system will consist of drums or totes and chemical feed pumps to dose polymer to the WAS to improve sludge settling in the digester.

			Five	-Year Capital Pro	gram		Projected	l Future Expense	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
51	23.26	Glenmore WRRF Polymer Feed Addition		\$30,000						\$30,000	\$30,000	
		TOTAL	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0	\$30,000	\$30,000	\$0

Glenmore Water Resource Recovery Facility

All Systems

Project Descriptions:

- 52. <u>Asset Management</u>: Asset management is the practice of managing infrastructure to minimize the total cost of owning and operating assets while providing desired levels of service. By doing so, asset management ensures planned maintenance activities occur and that capital assets are replaced, repaired, or upgraded at the right time, while guaranteeing that the necessary resources are available to perform these activities. 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. To continue building the program, a consultant was procured to assist with a four-phase process. Phase one includes facilitation and development of an asset management strategic plan; phase two includes development and management of a pilot study where the results of the strategic plan were applied to a specific facility; phase three includes procurement of software to facilitate the overall program; and phase 4 includes assistance through full implementation of the complete asset management program.
- 53. Security Enhancements: Water utilities are required by federal law to conduct vulnerability assessments (VA) and have emergency response plans. RWSA completed an update of its VA for the water system in collaboration with other regional partners and identified a number of security improvements that could be applied to both its water and wastewater systems. The purpose of this project will be to install security improvements at RWSA facilities, with the initial focus on an enhanced access control program. Other improvements will include: industrial strength door and window components, security gate and fencing modifications, an improved lock and key program, facility signage, closed circuit television (CCTV) enhancements, intrusion detection systems (IDS), additional security lighting, mass emergency notification systems, and emergency call stations/panic buttons. In addition, upgrades will be made to the entrance of MCAWRRF, to better secure the facility and vet individuals as they enter. In order to implement an access control system at Authority-owned facilities, staff has procured an Implementer that will finalize system design/requirements, procure all necessary equipment, and install the chosen system. Implementation of the access control system has been completed at the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF), Crozet Water Treatment Plant (CZWTP), and Scottsville Water Treatment Plant (SVWTP), and implementation work is underway at several other RWSA water and wastewater facilities, including South Rivanna Water Treatment Plant (SRWTP), Observatory Water Treatment Plant (OBWTP), Red Hill Water Treatment Plant (RHWTP), Glenmore Water Resource Recovery Facility (GWRRF), Scottsville Water Resource Recovery Facility (SVWRRF), and all RWSA pump stations and dams.
- 54. <u>IT Infrastructure</u>: At many remote water storage tank sites, control panels and PLCs associated with operation and monitoring of the tanks are located in valve vaults. These locations are a concern based on limited access to the electrical and instrumentation components as well as the condition of the space and the associated impact to the longevity of the devices. This project includes installation of new control panels and PLCs aboveground in weatherproof enclosures under a self-supporting canopy that would protect staff from direct weather impacts during operation or maintenance activities at seven water storage tank sites throughout the

RWSA water distribution system. The components located in the valve vaults would be demolished after the new components were installed to minimize monitoring downtime.

- 55. <u>ACM Remediation</u>: Based on the age of many RWSA facilities, the potential for the presence of Asbestos-Containing Materials (ACM) in various buildings has been assumed. A 2005 Workplace Assessment that evaluated the presence of ACM at the Moores Creek Advanced Water Resource Recovery Facility (MCAWRRF) was performed and then many facilities had individual assessments prior to construction projects where the ACM needed to be disposed of properly before refurbishment of the existing building or as a part of a larger demolition process. In order to confirm the presence of any ACM at all remaining RWSA facilities, an asbestos survey was completed in 2022. Based on this report, additional abatement procedures were identified for seven buildings at the MCAWRRF that had not been remediated previously and the filter building at the Scottsville Water Treatment Plant. This project includes proper removal and disposal of these ACM and refurbishment of the associated building components required as a result.
- 56. <u>Climate Change Flood Resilience Enhancements</u>: RWSA owns and operates a number of water and wastewater facilities that may be at risk of future flooding. One of the ways climate change is expected to manifest itself in Central Virginia is via more frequent and intense rainfall and flooding events. While RWSA facilities were generally designed to perform during 100-year flood level conditions, future flooding could result in higher water levels that would require facility improvements to ensure continued operation during these events. This project includes installation of flood mitigation measures at vulnerable assets/facilities throughout the RWSA system that are likely to be impacted by these potential higher flood levels. Necessary improvements have been identified at six separate facilities and multiple structures and building at many of the sites. Improvements include raising electrical and control equipment to higher levels, replacement of existing pumps with submersible style/rated pumps, raising HVAC intakes and exhausts to higher elevations, and dry floodproofing structures when feasible to minimize floodwater intrusion.

All Systems

			Five	-Year Capital Pro	gram		Projected	d Future Expense	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
52	20.45	Asset Management	\$1,180,000		\$1,012,000	\$133,000	\$35,000				\$1,180,000	\$672,876
53	20.46	Security Enhancements	\$2,810,000 \$170,000		\$2,410,000	\$285,000	\$285,000				\$2,980,000	\$1,076,034
54	20.47	IT Infrastructure	\$600,000		\$300,000	\$300,000					\$600,000	
55	23.27	ACM Remediation	n \$94,000							\$94,000	\$94,000	
56	24.06	Climate Change Flood Resiliance		\$130,000		\$130,000					\$130,000	
		TOTAL	\$4,590,000	\$394,000	\$3,722,000	\$848,000	\$320,000	\$0	\$0	\$94,000	\$4,984,000	\$1,748,910

APPENDICES

CIP Financial Summary Water System Summary Wastewater System Summary All Systems Summary

CIP Financial Summary

			Five	-Year Capital Prog	gram		Projecte	d Future Expense	s by Year			
Line No.	Proj. No.	Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
1	20.01	South Rivanna Reservoir to Ragged Mountain Reservoir Water Line Right of-Way	\$2,740,000	\$0	\$2,740,000						\$2,740,000	\$1,710,291
2	20.03	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Line	\$16,900,000	\$16,100,000	\$700,000	\$3,200,000	\$8,000,000	\$9,000,000	\$8,000,000	\$4,100,000	\$33,000,000	\$221,153
3	20.04	Ragged Mountain Reservoir to Observatory Water Treatment Plant Raw Water Pump Station	\$8,840,000	\$2,460,000	\$375,000	\$1,800,000	\$2,500,000	\$2,700,000	\$3,000,000	\$925,000	\$11,300,000	\$121,843
4	20.48	South Rivanna Reservoir to Ragged Mountain Pipeline, Intake & Facilities	\$3,105,000	\$32,760,000	\$1,605,000	\$675,000	\$1,370,000	\$4,550,000	\$11,000,000	\$16,665,000	\$35,865,000	\$32,398
5	22.01	South Rivanna Reservoir to Ragged Mountain Reservoir - Birdwood to Old Garth	\$1,980,000	\$1,820,000	\$1,980,000	\$520,000	\$1,300,000				\$3,800,000	\$74,826
6	23.02	South Rivanna Reservoir Aeration and Ragged Mountain Reservoir HLOS Sytems	\$0	\$1,400,000	\$0					\$1,400,000	\$1,400,000	
7	20.06	Observatory Water Treatment Plant Improvements	\$23,000,000	\$0	\$23,000,000						\$23,000,000	\$9,090,262
8	23.04	Urban Water Treatment Plants - GAC Building Dehumidification	\$0	\$200,000	\$0					\$200,000	\$200,000	
9	23.05	Observatory Water Treatment Plant - Backwash Basin Sludge Removal and Inspection	\$0	\$50,000	\$0					\$50,000	\$50,000	
10	20.10	Central Water Line	\$24,000,000	\$17,000,000	\$3,300,000	\$1,000,000	\$5,800,000	\$12,500,000	\$12,400,000	\$6,000,000	\$41,000,000	\$541,686

			Five	e-Year Capital Prog	gram		Projecte	ed Future Expense	s by Year		1	
Line No.	Proj. No.	Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
11	20.12	South Fork Rivanna River Crossing	\$5,850,000	\$1,050,000	\$1,100,000	\$4,400,000	\$1,400,000				\$6,900,000	\$143,901
12	20.13	Airport Rd. Pump Station and North Rivanna Transmission Main	\$10,000,000	\$0	\$6,880,000	\$3,120,000					\$10,000,000	\$1,965,920
13	20.50	Avon, Pantops and Observatory Tank Painting	\$0	\$2,200,000	\$0				\$100,000	\$2,100,000	\$2,200,000	
14	20.58	Second North Rivanna River Crossing and Select Pipe Replacement	\$0	\$30,000	\$0					\$30,000	\$30,000	
15	23.06	Emmet Street Betterment	\$2,900,000	\$7,750,000	\$1,955,000	\$540,000	\$2,845,000	\$2,235,000	\$1,075,000	\$2,000,000	\$10,650,000	\$296,086
16	24.09	Berkmar Drive Ext. Waterline - Phase 2	\$0	\$1,400,000	\$0	\$220,000	\$590,000	\$590,000			\$1,400,000	
17	24.12	Urban Storage Evaluation and Tank(s) Addition	\$0	\$870,000	\$0			\$50,000	\$300,000	\$520,000	\$870,000	
18	20.15	South Rivanna Hydropower Plant Decommissioning	\$725,000	\$285,000	\$1,010,000						\$1,010,000	\$205,591
19	20.16	South Rivanna Water Treatment Plant Improvements	\$20,000,000	\$400,000	\$20,400,000						\$20,400,000	\$17,637,761
20	24.01	South Rivanna Water Treatment Plant - PAC Upgrades	\$0	\$1,100,000	\$0	\$60,000	\$250,000	\$790,000			\$1,100,000	

			Five	-Year Capital Prop	gram		Projecte	ed Future Expense	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
21	20.18	North Rivanna Water Treatment Plant Decommissioning	\$2,425,000	\$250,000	\$385,000	\$100,000	\$2,190,000				\$2,675,000	\$76,110
22	20.19	Beaver Creek Dam Alteration	\$16,150,000	\$6,550,000	\$1,225,000	\$2,750,000	\$8,300,000	\$8,300,000	\$2,125,000		\$22,700,000	\$884,033
23	20.20 21.15	Beaver Creek New Raw Water Pump Station & Intake	\$15,650,000	\$4,550,000	\$1,053,000	\$3,097,000	\$7,150,000	\$7,100,000	\$1,800,000		\$20,200,000	\$302,893
24	21.01	Buck's Elbow Tank and Waterball Painting	\$0	\$1,180,000	\$0		\$80,000		\$80,000	\$1,020,000	\$1,180,000	
25	23.10	Crozet Water Treatment Plant - GAC Building Dehumidification	\$0	\$50,000	\$0					\$50,000	\$50,000	
26	23.13	Crozet AC Pipe Replacement	\$0	\$450,000	\$0					\$450,000	\$450,000	
27	23.14	Crozet Water Treatment Plant - Full GAC Treatment	\$0	\$6,550,000	\$0	\$1,450,000	\$3,000,000	\$2,100,000			\$6,550,000	
28	23.30	Crozet Finished Water Greyrock Pump Station	\$0	\$180,000	\$0					\$180,000	\$180,000	
29	22.06	Scottsville Water Treatment Plant - Upgrade	\$0	\$550,000	\$0					\$550,000	\$550,000	
30	22.07	Red Hill Water Treatment Plant - Upgrades	\$410,000	\$35,000	\$410,000	\$35,000					\$445,000	

			Five	-Year Capital Prog	gram		Projecte	d Future Expenses	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
31	23.16	Scottsville AC Pipe Replacement	\$0	\$80,000	\$0					\$80,000	\$80,000	
32	23.17	Full GAC Treatment - Red Hill Water Treatment Plant	\$0	\$295,000	\$0	\$66,000	\$134,000	\$95,000			\$295,000	
33	23.18	Scottsville Water Treatment Plant - GAC Building Dehumidification	\$0	\$50,000	\$0					\$50,000	\$50,000	
34	20.25	Upper Schenks Branch Interceptor	\$4,725,000	\$575,000	\$4,725,000		\$575,000				\$5,300,000	\$50,787
35	20.29	Maury Hill Branch Sewer Replacement	\$0	\$350,000	\$0					\$350,000	\$350,000	
36	20.30	Crozet Pump Station 1, 2, 3 Rehabilitation	\$590,000	\$9,760,000	\$535,000	\$570,000	\$6,500,000	\$2,745,000			\$10,350,000	\$42,267
37	20.31	Albemarle Berkley Pump Station Upgrade	\$0	\$115,000	\$0					\$115,000	\$115,000	
38	21.07	Interceptor Sewer and Manhole Repair (Phase 2)	\$965,000	\$265,000	\$430,000	\$580,000	\$220,000				\$1,230,000	
39	24.02	Interceptor Sewer and Manhole Repair (Phase 3)	\$0	\$600,000	\$0					\$600,000	\$600,000	
40	20.34	Moores Creek AWRRF Engineering and Administration Building	\$8,500,000	\$2,000,000	\$225,000	\$975,000	\$5,900,000	\$3,400,000			\$10,500,000	

			Five	-Year Capital Prog	gram		Projecte	d Future Expense	s by Year]	
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
41	20.67	Moores Creek AWRRF Biogas Upgrades	\$2,985,000	\$610,000	\$2,235,000	\$1,130,000	\$230,000				\$3,595,000	\$8,240
42	20.68	Moores Creek AWRRF Building Upfits and Gravity Thickener Improvements	\$4,240,000	\$315,000	\$440,000	\$825,000	\$2,515,000	\$720,000		\$55,000	\$4,555,000	
43	21.11	Moores Creek AWWRF Meter and Valve Replacements	\$775,000	\$0	\$775,000						\$775,000	\$38,597
44	21.18	Moores Creek AWWRF 5kV Electrical System Upgrade	\$5,050,000	\$585,000	\$3,430,000	\$1,950,000	\$255,000				\$5,635,000	\$433,063
45	22.10	Moores Creek AWRRF Yard Piping Upgrades		\$315,000						\$315,000	\$315,000	
46	22.12	Moores Creek AWRRF Structural and Concrete Rehabilitation	\$8,910,000	\$2,390,000	\$3,250,000	\$3,845,000	\$3,900,000	\$305,000			\$11,300,000	\$15,450
47	24.08	Moores Creek AWRRF MCPS Slide Gates, Valves, Bypass and Septage Receiving Upgrades		\$3,600,000		\$330,000	\$2,055,000	\$1,215,000			\$3,600,000	
48	21.12	Scottsville WRRF Whole Plant Generator and ATS	\$200,000	\$320,000	\$191,000	\$304,000	\$25,000				\$520,000	\$5,000
49	23.24	Scottsville WRRF Lagoon Outfall Rehabilitation	\$0	\$25,000	\$0					\$25,000	\$25,000	
50	23.25	Scottsville WRRF Polymer Feed Addition	\$0	\$26,000	\$0					\$26,000	\$26,000	

			Five	e-Year Capital Prog	gram		Projecte	ed Future Expenses	s by Year			
Line No.		Project Description	Current CIP Adopted 5/2022	Proposed Changes	Current Capital Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Recommended CIP	Work-in-Progress (Prev. Expenses 6/30/2022)
51	20.42	Glenmore WRRF Polymer Feed Addition	\$0	\$30,000	\$0					\$30,000	\$30,000	
52	20.45	Asset Management	\$1,180,000	\$0	\$1,012,000	\$133,000	\$35,000				\$1,180,000	\$672,876
53	20.46	Security Enhancements	\$2,810,000	\$170,000	\$2,410,000	\$285,000	\$285,000				\$2,980,000	\$1,076,034
54	20.47	IT Infrastructure	\$600,000	\$0	\$300,000	\$300,000					\$600,000	
55	23.27	ACM Remediation	\$0	\$94,000	\$0					\$94,000	\$94,000	
56	24.06	Climate Change Flood Resiliance		\$130,000		\$130,000					\$130,000	
		Total	\$196,205,000	\$129,920,000	\$88,076,000	\$34,390,000	\$67,404,000	\$58,395,000	\$39,880,000	\$37,980,000	\$326,125,000	\$35,647,068

Water System Summary

	Sum	mary			Proje	cted Future Expenses	by Year			
Urban Water System	Current CIP	Proposed Changes	Current Capital Budget	FY24	FY25	FY26	FY27	FY28	Recommended CIP	Work-in - Progress
PROJECT COSTS										
Community Water Supply Plan	\$ 33,565,000	\$ 54,540,000	\$ 7,400,000	\$ 6,195,000	\$ 13,170,000	\$ 16,250,000	\$ 22,000,000	\$ 23,090,000	\$ 88,105,000	\$ 2,160,510
Observatory WTP/Ragged Mtn/Sugar Hollow Systems	23,000,000	250,000	23,000,000	-	-	-	-	250,000	23,250,000	9,090,262
Finished Water Storage/Distribution - Urban System	42,750,000	30,300,000	13,235,000	9,280,000	10,635,000	15,375,000	13,875,000	10,650,000	73,050,000	2,947,593
South & North Fork Rivanna WTP and Reservoir System	23,150,000	2,035,000	21,795,000	160,000	2,440,000	790,000	-	-	25,185,000	17,919,462
Total Projects Urban Water Systems	\$ 122,465,000	\$ 87,125,000	\$ 65,430,000	\$ 15,635,000	\$ 26,245,000	\$ 32,415,000	\$ 35,875,000	\$ 33,990,000	\$ 209,590,000	\$ 32,117,827
FUNDING SOURCES URBAN SYSTEM - TO DATE										
Work-in-Progress			\$ 32,041,700	\$ -	\$-	\$ -	\$-	\$ -	\$ 32,041,700	
Debt Proceeds - 2018 & 2021Bond			24,925,000	-	-		-	-	24,925,000	
Capital Funds Available				-	-	-	-	-	-	
SUBTOTAL			56,966,700	-	-		-	-	56,966,700	
FUNDING SOURCES URBAN SYSTEM - NEEDS										
Future Cash reserve transfer to Capital Fund				\$ 1,000,000	\$ 500,000	\$ 500,000	\$ 1,000,000	\$ 500,000	\$ 3,500,000	
New Debt Needed			8,463,300	14,635,000	25,745,000	31,915,000	34,875,000	33,490,000	149,123,300	
SUBTOTAL			8,463,300	15,635,000	26,245,000	32,415,000	35,875,000	33,990,000	152,623,300	
TOTAL URBAN WATER FUNDING			\$ 65,430,000	\$ 15,635,000	\$ 26,245,000	\$ 32,415,000	\$ 35,875,000	\$ 33,990,000	\$ 209,590,000	
									\$209,590,000	
Estimated Bond Issues					\$48,843,300		\$100,280,000		\$149,123,300	

		Sum	nma	ary					Projec	ted I	Future Expenses	i by Y	'ear					
Non-Urban Water System	с	Current CIP		Proposed Changes	Cı	urrent Capital Budget		FY24	FY25		FY26		FY27	FY28	Re	commended CIP	Work	k-in -Progress
PROJECT COSTS																		
Crozet Water System	\$	31,800,000	Ċ,	\$ 19,510,000	\$	2,278,000	\$	7,297,000	\$ 18,530,000	\$	17,500,000	\$	4,005,000	\$ 1,700,000	\$	51,310,000	\$	1,186,926
Scottsville Water System		410,000		1,010,000		410,000		101,000	134,000		95,000		-	680,000		1,420,000		-
Total Rural Water Systems	\$	32,210,000	\$	\$ 20,520,000	\$	2,688,000	\$	7,398,000	\$ 18,664,000	\$	17,595,000	\$	4,005,000	\$ 2,380,000	\$	52,730,000	\$	1,186,926
Non-URBAN FUNDING SOURCES																		
Work in Progress					\$	1,186,900	\$	-	\$ -	\$	-	\$	-	\$ -	\$	1,186,900		
Grants								3,176,898	8,049,932		7,595,000		1,738,170			20,560,000		
Capital Funds Available						-										-		
Debt Proceeds - 2018 & 2021Bond						-		-	-		-		-	-		-		
Future Cash reserve transfer to Capital Fund						-		450,000	450,000		100,000		-	-		1,000,000		
New Debt Needed						1,501,100		3,771,102	10,164,068		9,900,000		2,266,830	2,380,000		29,983,100		
TOTAL NON-URBAN WATER FUNDING					\$	2,688,000	\$	7,398,000	\$ 18,664,000	\$	17,595,000	\$	4,005,000	\$ 2,380,000	\$	52,730,000		
Estimated Bond Issues							\$1	5,436,300					14,546,800		\$2	29,983,100		

Wastewater System Summary

	Sumr	nary]	Projected Future Expenses by Year						
Urban Wastewater System	Current CIP	Proposed Changes	Current Capital Budget	FY24	FY25	FY26	FY27	FY28	Recommended CIP	Work-in - Progress
PROJECT COSTS										
Wastewater Interceptor/Pumping Stations	\$ 6,280,000	\$ 11,665,000	\$ 5,690,000	\$ 1,150,000	\$ 7,295,000	\$ 2,745,000	\$ -	\$ 1,065,000	\$ 17,945,000	\$ 93,054
Moores Creek WWTP	30,460,000	9,815,000	10,355,000	9,055,000	14,855,000	5,640,000	-	370,000	40,275,000	495,350
Total Urban Wastewater Systems	\$ 36,740,000	\$ 21,480,000	\$16,045,000	\$10,205,000	\$22,150,000	\$8,385,000	\$0	\$1,435,000	\$58,220,000	\$588,404
FUNDING SOURCES URBAN SYSTEM - IN PLACEA										
Work-in-Progress			\$ 588,400	\$-	\$ -	\$-	\$ -	\$-	\$ 588,400	
Debt Proceeds - 2018 & 2021Bond			547,300	-	-	-	-		547,300	
Capital Funds Available			2,000,000	-	-	-	-	-	2,000,000	
SUBTOTAL			3,135,700	-	-	-	-	-	3,135,700	
FUNDING SOURCES URBAN SYSTEM - NEEDS										
Future Cash Reserves			\$-	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ -	\$ 1,435,000	\$ 5,935,000	
New Debt Needed			12,909,300	8,705,000	20,650,000	6,885,000	-	-	49,149,300	
SUBTOTAL			12,909,300	\$10,205,000	22,150,000	8,385,000	-	1,435,000	55,084,300	
TOTAL URBAN WASTEWATER FUNDING			\$ 16,045,000	\$ 10,205,000	\$ 22,150,000	\$ 8,385,000	\$-	\$ 1,435,000	\$ 58,220,000	
Estimated Bond Issues					\$ 42,264,300		\$ 6,885,000		\$ 49,149,300	
	Sumr	nary			Projecte	ed Future Expenses	by Year			
Non-Urban Wastewater System	Current CIP	Proposed Changes	Current Capital Budget	FY24	FY25	FY26	FY27	FY28	Recommended CIP	Work-in - Progress
PROJECT COSTS										
Glenmore WWTP	\$-	\$ 30,000	\$-	\$-	\$-	\$-	\$-	\$ 30,000	\$ 30,000	\$-
Scottsville WWTP	200,000	371,000	191,000	304,000	25,000	-	-	51,000	571,000	5,000
Total Rural Wastewater Systems	\$200,000	\$401,000	\$ 191,000	\$ 304,000	\$ 25,000	\$-	\$-	\$ 81,000	\$ 601,000	\$ 5,000
FUNDING SOURCES RURAL SYSTEM - NEEDS										
Work in Progress			\$ 5,000	\$-	\$-	\$-	\$-	\$-	\$ 5,000	
Debt Proceeds - 2018 & 2021Bond			\$-	\$-					-	
Future Cash Reserve			-	-	-	-			-	
New Debt Needed			186,000	304,000	25,000	-	-	81,000	596,000	
TOTAL RURAL WASTEWATER FUNDING			\$ 191,000	\$ 304,000	\$ 25,000	\$ -	\$ -	\$ 81,000	\$ 601,000	
Estimated Bond Issues					\$ 515,000					

All Systems Summary

	Sum	mary			Projected					
Shared Projects - All Rate Centers	Current CIP	Proposed Changes	Current Capital Budget	FY24	FY25	FY26	FY27	FY28	Recommended CIP	Work-in - Progress
PROJECT COSTS										
Authority Wide Projects	\$ 4,590,000	\$ 394,000	\$ 3,722,000	\$ 848,000	\$ 320,000	\$-	\$-	\$ 94,000	\$ 4,984,000	\$ 1,748,909
Total Projects Urban Water Systems	\$ 4,590,000	\$ 394,000	\$ 3,722,000	\$ 848,000	\$ 320,000	\$-	\$-	\$ 94,000	\$ 4,984,000	\$ 1,748,909
FUNDING SOURCES										
Work in Progress			\$ 1,748,900						\$ 1,748,900	
Possible Future Reserves			\$-	\$-	\$0				\$-	
New Debt Needed			\$ 1,973,100	\$ 848,000	\$ 320,000	\$-	\$-	\$ 94,000	\$ 3,235,100	
									-	
TOTAL URBAN WATER FUNDING			\$ 3,722,000	\$ 848,000	\$ 320,000	\$-	\$-	\$ 94,000	\$ 4,984,000	
Estimated Bond Issues					\$3,235,100					

Summary mormation		2024 - 2028 Proposed <u>CIP</u>	:	2023 - 2027 Adopted <u>CIP</u>	<u>Change \$</u>
Project Cost					
Urban Water Projects Urban Wastewater Projects	\$	209,590,000 58,220,000	\$	122,465,000 44,370,000	\$ 87,125,000 13,850,000
Non-Urban Projects & Shared		58,315,000		38,285,000	20,030,000
Total Project Cost Estimates	\$	326,125,000	<u>\$</u>	205,120,000	\$121,005,000
Funding in place					
Work-in-Progress (paid for)	\$	35,570,900	\$	23,146,700	12,424,200
Debt Proceeds Available		25,472,300		46,355,250	(20,882,950)
Cash-Capital Available		2,000,000	_	4,000,000	(2,000,000)
Einancing Noods	Ş	63,043,200	Ş	/3,501,950	\$ (10,458,750)
Financing weeus					
Possible Future Reserves	\$	10,435,000	\$	9,950,000	485,000
Grants		20,560,000		-	20,560,000
New Debt		232,086,800		121,668,050	110,418,750
	\$	263,081,800	\$	131,618,050	\$ 131,463,750
Total Funding	\$	326,125,000	\$	205,120,000	\$121,005,000
Percentage of funding in place		19.3%		35.8%	
Ratio of debt to expense		89.9%		93.2%	
Ratio of grant to expense		6.3%			
Ratio of cash to expense		3.8%		6.8%	

Summary Information Detail by Major Systems	Total Proposed <u>CIP</u>		Urban Water <u>Projects</u>		Urban Wastewater <u>Projects</u>		Shared <u>Projects</u>		Water Non-Urban <u>Projects</u>		Wastewater Non-Urban <u>Projects</u>	
Project Cost												
Urban Water Projects	\$	209,590,000	\$	209,590,000	\$	-			\$	-	\$	-
Non-Urban Projects & Shared		58,315,000				-		4,984,000		52,730,000		601,000
Total Project Cost Estimates	\$	326,125,000	\$	209,590,000	\$	58,220,000	\$	4,984,000	\$	52,730,000	\$	601,000
Funding in place												
Work-in-Progress (paid for)	\$	35,570,900	\$	32,041,700	\$	588,400	\$	1,748,900	\$	1,186,900	\$	5,000
Debt Proceeds available		25,472,300		24,925,000		547,300		-		-		-
Cash-Capital Available		2,000,000		-		2,000,000		-		-		-
Subtotal	\$	63,043,200	\$	56,966,700	\$	3,135,700	\$	1,748,900	\$	1,186,900	\$	5,000
Financing Needs												
Possible Future Reserves	\$	10,435,000		3,500,000		5,935,000		-		1,000,000		-
Grants		20,560,000		-		-		-		20,560,000		
New Debt		232,086,800		149,123,300		49,149,300		3,235,100		29,983,100		596,000
Subtotal	\$	263,081,800	\$	152,623,300	\$	55,084,300	\$	3,235,100	\$	51,543,100	\$	596,000
Total Funding	\$	326,125,000	\$	209,590,000	\$	58,220,000	\$	4,984,000	\$	52,730,000	\$	601,000
Percentage of funding in place		19.3%		27.2%		5.4%		35.1%		2.3%		0.8%
Ratio of debt to expense		89.9%		83.0%		85.4%		64.9%		56.9%		99.2%
Ratio of cash to expense		3.8%		1.7%		13.6%		0.0%		1.9%		0.0%

Rivanna Water and Sewer Authority CIP 2024-2028

	FY 2022*	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
City of Charlottesville Charges												
Urban Water												
Operating Rate Per 1000 gal. % Change	\$ 2.346 12.0%	\$ 2.653 13.1%	\$ 2.944 11.0%	\$ 3.121 6.0%	\$ 3.308 6.0%	\$ 3.506 6.0%	\$ 3.717 6.0%	\$ 3.94 6.0	0 \$ 4.176 % 6.0%	5 \$ 4.427 % 6.0%	\$ 4.692 6.0%	\$ 4.974 6.0%
Debt Service Charge Per month	246,188 27.2%	249,497 1.3%	307,200 23.1%	367,058 19.5%	418,361 14.0%	477,024 14.0%	535,923 12.3%					
Revenue Requirements: Operating Rate Revenue Annual Debt Service Revenues Annual	\$ 3,906,000 2,954,300	\$ 4,417,300 2,994,000	\$ 4,801,700 3,686,400	\$ 5,089,802 4,404,693	\$ 5,395,190 5,020,327	\$ 5,718,902 5,724,287	\$ 6,062,036 6,431,078	\$ 6,425,75	58 \$ 6,811,303 -	3 \$ 7,219,981 -	\$ 7,653,180 -	\$ 8,112,371 -
Total	\$ 6,860,300	\$ 7,411,300	\$ 8,488,100	\$ 9,494,495	\$ 10,415,517	\$ 11,443,189	\$ 12,493,114	\$ 6,425,75	8 \$ 6,811,303	3 \$ 7,219,981	\$ 7,653,180	\$ 8,112,371
\$ Change % Change		\$ 551,000 8.0%	\$ 1,076,800 14.5%	\$ 1,006,395 11.9%	\$ 921,022 9.7%	\$ 1,027,671 9.9%	\$ 1,049,925 9.2%	\$ 363,72	2 \$ 385,545	5 \$ 408,678	\$ 433,199	\$ 459,191
Urban Wastewater												
Operating Rate Per 1000 gal. % Change	2.517 6.2%	2.664 5.8%	2.919 9.6%	3.123 7.0%	3.311 6.0%	3.509 6.0%	3.720 6.0%	3.9 6.0	43 4.180 0% 6.0%	0 4.431 % 6.0%	4.696 6.0%	4.978 6.0%
Debt Service Charge Per month	376,036 -7.7%	\$ 384,637 2.3%	394,890 2.7%	406,962 3.1%	419,902 3.2%	432,492 3.0%	445,282 3.0%					
Bayanya Baguiramanta												
Operating Rate Revenue Annual	\$ 4,096,900	\$ 4,245,800 4,615,644	\$ 4,552,300 4,738,680	\$ 4,870,961 4,883,540	\$ 5,163,219 5,038,820	\$ 5,473,012	\$ 5,801,392 5 343 380	\$ 6,149,47	6 \$ 6,518,445	5 \$ 6,909,551	\$ 7,324,124	\$ 7,763,572
Total	\$ 8 609 400	\$ 8 861 444	¢ 0 200 080	\$ 9754 501	\$ 10 202 030	\$ 10 662 912	\$ 11 144 772	\$ 614947	-	- \$ \$ 6 909 551	\$ 7 324 124	\$ 7 763 572
i Utai	\$ 0,003,400	\$ 252.044	\$ 429 536	\$ 463 521	\$ 10,202,033	\$ 460.873	\$ 481 861	\$ 348.08	0 \$ 0,310,443	5 <u>5 0,303,331</u> 5 \$ 391.107	\$ 1,524,124 \$ 414,573	\$ 1,703,372
\$ Change % Change		¢ 232,044 2.9%	4.8%	5.0%	4.6%	4.5%	401,001 4.5%	φ 340,00	φ 300,303	σφ 331,107	φ 4 14,575	φ 455,447
Total all Rate Centers												
Operating Rate Revenue Debt Service Revenues	\$ 8,002,900 7,466,800	\$ 8,663,100 7,609,644	\$ 9,354,000 8,425,080	\$ 9,960,763 9,288,233	\$ 10,558,409 10,059,147	\$ 11,191,913 10,914,187	\$ 11,863,428 11,774,458	\$ 12,575,23 11,774,45	4 \$ 13,329,748 8 11,774,458	3 \$ 14,129,533 3 11,774,458	\$ 14,977,305 11,774,458	\$ 15,875,943 11,774,458
Total City All Revenues	\$15,469,700	\$ 16,272,744	\$ 17,779,080	\$ 19,248,996	\$ 20,617,556	\$ 22,106,100	\$ 23,637,886	\$ 24,349,69	2 \$ 25,104,206	5 \$ 25,903,991	\$ 26,751,763	\$ 27,650,401
\$ Change		\$ 803,044	\$ 1,506,336	\$ 1,469,916	\$ 1,368,560	\$ 1,488,545	\$ 1,531,786	\$ 711,80	6 \$ 754,514	\$ 799,785	\$ 847,772	\$ 898,638
% Change		5.2%	9.3%	0.3%	7.170	1.2%	0.9%	1 011 23	5 725 025	E11 E09	690 725	056 426
10-Year CIP Debt Service				249 048	636 571	1 143 834	1 929 768	2 941 10	3 3 666 128	4 177 636	4 867 361	5 823 787
Total Estimated Charge	\$15,469,700	\$ 16.272.744	\$ 17.779.080	\$ 19.498.044	\$ 21.254.127	\$ 23.249.934	\$ 25.567.654	\$ 27,290,79	5 \$ 28.770.334	\$ 30.081.627	\$ 31.619.124	\$ 33.474.188
% Change		\$ 0	9.3%	9.7%	9.0%	9.4%	10.0%	6.7	% 5.4%	4.6%	5.1%	5.9%
			0.070	0.1.70	0.070	••••					0.170	
	Additional A	nnual Revenues	\$ 1,506,336 9,3%	\$ 1,718,964 9.7%	\$ 1,756,083 9,0%	\$ 1,995,808 9.4%	\$ 2,317,720 10,0%	\$ 1,723,14 6.7	1 \$ 1,479,539 % 5.4%	\$ 1,311,293 6 4.6%	\$ 1,537,497 5.1%	\$ 1,855,064 5,9%

		FY 2022*	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
ACSA Charges													
Urban Water													
Operating Rate	Per 1000 gal.	2.346	2.653	2.944	3.121	3.308	3,506	3.717	3.94	0 4.176	4.427	4.692	4.974
51 5	% Change	12.0%	0.0%	11.0%	6.0%	6.0%	6.0%	6.0%	6.00	% 6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	\$ 388.956	\$ 442.355	542.282	648.984	746.826	851.640	957.358					
- 5		21.1%	8.1%	22.6%	19.7%	15.1%	14.0%	12.4%					
Revenue Requirements:													
Operating Rate Revenue	Annual	\$ 4,065,500	\$ 4,597,600	\$ 5,201,900	\$ 5,514,014	\$ 5,844,855	\$ 6,195,546	\$ 6,567,279	\$ 6,961,316	6 \$ 7,378,995	\$ 7,821,734 \$	8,291,038 \$	8,788,501
Debt Service Revenues	Annual	4,667,500	5,308,200	6,507,384	7,787,808	8,961,914	10,219,674	11,488,294	-	-	-	-	-
Total		\$ 8,733,000	\$ 9,905,800	\$ 11,709,284	\$ 13,301,822	\$ 14,806,769	\$ 16,415,220	\$ 18,055,573	\$ 6,961,310	6 \$ 7,378,995	\$ 7,821,734 \$	8,291,038 \$	8,788,501
	\$ Change		\$ 1,172,800	\$ 1,803,484	\$ 1,592,538	\$ 1,504,947	\$ 1,608,451	\$ 1,640,353	\$ 394,037	7 \$ 417,679	\$ 442,740 \$	469,304 \$	497,462
	% Change		13.4%	18.2%	13.6%	11.3%	10.9%	10.0%					
	-												
Urban Wastewater													
Operating Rate	Per 1000 gal.	2.517	2.664	2.919	3.123	3.311	3.509	3.720	3.94	3 4.180	4.431	4.696	4.978
	% Change	0	5.8%	9.6%	7.0%	6.0%	6.0%	6.0%	6.0	% 6.0%	6.0%	6.0%	6.0%
Debt Service Charge	Per month	\$ 337,983	\$ 355,205	383,403	413,498	441,408	469,318	497,228					
		0.215005716	5.1%	7.9%	7.8%	6.7%	6.3%	5.9%					
Revenue Requirements:													
Operating Rate Revenue	Annual	\$ 4,438,300	\$ 4,787,800	\$ 5,344,000	\$ 5,718,080	\$ 6,061,165	\$ 6,424,835	\$ 6,810,325	\$ 7,218,944	4 \$ 7,652,081	\$ 8,111,206 \$	8,597,878 \$	9,113,751
Debt Service Revenues	Annual	4,055,800	4,262,460	4,600,836	4,961,976	5,296,896	5,631,816	5,966,736	-	-	-	-	-
Total		\$ 8,494,100	\$ 9,050,260	\$ 9,944,836	\$ 10,680,056	\$ 11,358,061	\$ 12,056,651	\$ 12,777,061	\$ 7,218,944	4 \$ 7,652,081	\$ 8,111,206 \$	8,597,878 \$	9,113,751
	\$ Change		\$ 556,160	\$ 894,576	\$ 735,220	\$ 678,005	\$ 698,590	\$ 720,410	\$ 408,619	9 \$ 433,137	\$ 459,125 \$	486,672 \$	515,873
	% Change		6.5%	9.9%	7.4%	6.3%	6.2%	6.0%					
Non-Urban Rate Centers													
Operating Rate Revenue	Annual	\$ 2,303,900	\$ 2,565,900	2,804,600	3,000,922	3,180,977	3,371,836	3,574,146	3,788,595	5 4,015,911	4,256,865	4,512,277	4,783,014
Debt Service Revenues	Annual	2,004,000	2,342,600	2,585,800	2,844,600	3,103,400	3,362,200	3,621,000	-				
I otal		\$ 4,307,900	\$ 4,908,500	\$ 5,390,400	\$ 5,845,522	\$ 6,284,377	\$ 6,734,036	\$ 7,195,146	\$ 3,788,59	5 \$ 4,015,911	\$ 4,256,865 \$	4,512,277 \$	4,783,014
			\$ 600,600	\$ 481,900	→ 455,122 → 455,12 → 455,122	→ 438,855 → 7.6% → 7.6	३ 449,659 ₹ 00/	\$ 461,110	a 214,443	9 \$ 227,316		ه ∠55,412 ¢	210,737
Total all Bata Contara			13.9%	9.0%	0.4%	7.5%	1.2%	0.0%					
Operating Rate Revenue		¢ 10 907 700	\$ 11 051 200	\$ 12 250 500	¢ 14 222 016	¢ 15.096.007	¢ 15 002 217	\$ 16 951 750	\$ 17 069 95	5 ¢ 10 0/6 096	¢ 20.490.905 ¢	21 401 104 \$	22 695 265
Debt Service Revenues		\$ 10,807,700 10 727 300	\$ 11,951,300 11,913,260	3 13,350,500	φ 14,233,010 15 504 384	\$ 15,000,997 17 362 210	\$ 15,992,217 10,213,600	\$ 10,951,750 21.076.030	21 076 030	5 \$ 15,040,500 0 21 076 030	φ 20,109,005 φ 21.076.030	21,401,194 \$	22,005,205
		\$ 21 535 000	\$ 23.864.560	\$ 27 044 520	\$ 29,827,400	\$ 32 449 207	\$ 35 205 907	\$ 38,027,780	\$ 39.044.88	5 \$ 10 123 016	\$ 11 265 835 \$	21,070,030 A2 477 224 \$	43 761 295
Total AddA All Revenues		Ψ21,000,000	\$ 2 2 2 0 560	\$ 2170 060	¢ 23,027,400	¢ 02,440,207	¢ 00,200,301	\$ 2,921,700	\$ 1,017,100	5 ¢ 40,120,010	¢ 41,200,000 ¢	<u>42,411,224 </u>	1 284 072
	\$ Change		\$ 2,329,500 10.99/	\$ 3,179,900 42.20/	φ 2,702,000 10.2%	φ 2,021,007 0 00/	φ 2,750,700 9 E9/	\$ 2,021,073	\$ 1,017,103	5 \$ 1,070,131	φ 1,142,015 φ	ο 1,211,300 φ	1,204,072
	% Change		10.078	13.370	10.5%	0.076	0.5%	0.078					
10-Year CIP Debt Service					574,419	1.511.603	2,698,096	4,207,913	6.024.30	1 7.005.452	7,760,703	8.676.074	9,845,100
Total Estimated Charge	4	\$21,535,000	\$ 23,864,560	\$ 27.044.520	\$ 30.401.819	\$ 33,960,810	\$ 37,904,003	\$ 42,235,693	\$ 45,069,180	5 \$ 47,128,468	\$ 49.026.538 \$	51,153,297 \$	53,606,395
% Change			\$ 0	13.3%	12.4%	11.7%	11.6%	11.4%	6.79	4.6%	4.0%	4.3%	4.8%
70 Onlango			, v	10.070				11.470	0.1		4.0 /0	4.070	-1.070
		Additional An	nual Revenues	\$ 3,179,960	\$ 3,357,299	\$ 3,558,991	\$ 3,943,193	\$ 4.331.690	\$ 2,833.493	3 \$ 2.059.282	\$ 1.898.070 \$	2.126.759 \$	2.453.098
				13.3%	12.4%	11.7%	11.6%	11.4%	6.79	4.6%	4.0%	4.3%	4.8%

			FY 2022*	FY 2023	FY 2024		FY 2025		FY 2026		FY 2027		FY 2028	FY 2029	FY 2030		FY 2031		FY 2032		FY 2033
RW	SA																				
Оре	erations Revenues																				
1	Jrban Water		\$ 7,971,500	\$ 9,014,900	\$ 10,003,600	\$	10,603,816	\$	11,240,045	\$	11,914,448	\$	12,629,315	\$ 13,387,073	\$ 14,190,298	\$	15,041,716	\$	15,944,219	\$	16,900,872
1	Jrban Wastewater		8,535,200	9,033,600	9,896,300		10,589,041		11,224,383		11,897,846		12,611,717	13,368,420	14,170,526		15,020,757		15,922,002		16,877,323
	Other Rate Centers		2,303,900	2,565,900	2,804,600		3,000,922		3,180,977		3,371,836		3,574,146	3,788,595	4,015,911		4,256,865		4,512,277		4,783,014
		Total	\$18,810,600	\$ 20,614,400	\$ 22,704,500	\$	24,193,779	\$	25,645,406	\$	27,184,130	\$	28,815,178	\$ 30,544,089	\$ 32,376,734	\$	34,319,338	\$	36,378,498	\$	38,561,208
		Change \$		1,803,800	2,090,100		1,489,279		1,451,627		1,538,724		1,631,048	1,728,911	1,832,645		1,942,604		2,059,160		2,182,710
		Change %		9.6%	10.1%	,	6.6%		6.0%		6.0%		6.0%	6.0%	6.0%		6.0%		6.0%		6.0%
Deb	t Service Charge Revenues																				
1	Jrban Water		7,621,800	8,302,200	10,193,784		12,192,501		13,982,241		15,943,961		17,919,372								
1	Jrban Wastewater		8,568,300	8,878,104	9,339,516		9,845,516		10,335,716		10,821,716		11,310,116								
	Other Rate Centers		2,004,000	2,342,600	2,585,800		2,844,600		3,103,400		3,362,200		3,621,000								
			\$18,194,100	\$ 19,522,904	\$ 22,119,100	\$	24,882,617	\$	27,421,357	\$	30,127,877	\$	32,850,488	\$ 32,850,488	\$ 32,850,488	\$	32,850,488	\$	32,850,488	\$	32,850,488
		Change \$		1,328,804	2,596,196		2,763,517		2,538,740		2,706,520		2,722,611								
		Change %		7.3%	13.3%		12.5%		10.2%		9.9%		9.0%								
То	tal RWSA Customer Revenue	s	\$37,004,700	\$ 40,137,304	\$ 44,823,600	\$	49,076,396	\$	53,066,763	\$	57,312,007	\$	61,665,666	\$ 63,394,577	\$ 65,227,222	\$	67,169,826	\$	69,228,986	\$	71,411,696
		Change \$		\$ 3,132,604	\$ 4,686,296	\$	4,252,796	\$	3,990,367	\$	4,245,244	\$	4,353,659	\$ 1,728,911	\$ 1,832,645	\$	1,942,604	\$	2,059,160	\$	2,182,710
		Change %		8.5%	11.7%		9.5%		8.1%		8.0%		7.6%	2.8%	2.9%		3.0%		3.1%		3.2%
	Additional for 10-Year CIP						823,467		2,148,174		3,841,930		6,137,681	8,965,404	10,671,580		11,938,339		13,543,435		15,668,887
	Total Estimated Charge		\$37,004,700	\$ 40,137,304	\$ 44,823,600	\$	49,899,863	\$	55,214,937	\$	61,153,937	\$	67,803,347	\$ 72,359,981	\$ 75,898,802	\$	79,108,165	\$	82,772,421	\$	87,080,583
	% Change			0.0%	11.7%	,	11.3%		10.7%		10.8%		10.9%	6.7%	4.9%		4.2%		4.6%		5.2%
					\$ 44.823.600	\$	49.899.863	\$	55.214.937	\$	61.153.937	\$	67.803.347	\$ 72.359.981	\$ 75.898.802	\$	79.108.165	\$	82.772.421	\$	87.080.583
			Additional An	nual Revenues	\$ 4,686,296	Ś	5.076.263	Ś	5.315.074	Ś	5,939,000	\$	6.649.410	\$ 4,556,634	\$ 3,538,821	Ś	3,209,363	\$	3.664.256	\$	4.308,162
					11.7%	-	11.3%	-	10.7%	-	10.8%	P	10.9%	6.7%	4.9%	-	4.2%	·	4.6%	<u> </u>	5.2%

Rivanna Water and Sewer Authority FY 2024 CIP Update Summary Analysis **5-Year Summary**

Year Summary			٨	lew rate revenue					
Five Year Summary of Revenue needed		<u>FY 2023</u>	Re	5-Year		<u>FY 2028</u>	Change <u>%</u>	Anı <u>5-year</u>	nual Average
City - Charges From RWSA									
Operating Rate Charges	\$	4 417 300	\$	1 644 736	\$	6 062 036	37.2%		
Debt Service Charges	Ψ	2 994 000	Ψ	3 437 078	Ψ	6 431 078	114.8%		
Bost Colvice Charges	\$	7 411 300	\$	5 081 814	\$	12 493 114	68.6%		
Urban Wastewater	<u> </u>	1,111,000	Ψ	0,001,011	Ψ	12,100,111	00.070		
Operating Rate Charges	\$	4 245 800	\$	1 555 592	\$	5 801 392	36.6%		
Debt Service Charges	*	4 615 700	Ŧ	727 680	Ŧ	5 343 380	15.8%		
	\$	8,861,500	\$	2.283.272	\$	11,144,772	25.8%		
Year 5-10 CIP	<u> </u>	0,000,0000	Ŧ	_,,	Ŧ	,	20.070		
Debt Service Charges	\$	-	\$	1,929,768	\$	1,929,768			
Total City Charges	\$	16.272.800	\$	9,294,854	\$	25.567.654	57.1%	11.4% \$	1 858 971
	Ψ	10,272,000	Ψ	3,234,034	Ψ	23,307,034	57.176	11.470 φ	1,000,971
ACSA - Charges From RWSA									
Urban Water									
Operating Rate Charges	¢	1 597 600	¢	1 969 679	¢	6 567 270	12.8%		
Debt Service Charges	Ψ	5 308 200	Ψ	6 180 004	Ψ	11 / 88 20/	42.0%		
Debt Service Charges	\$	9,005,200	¢	8 1/0 773	¢	18 055 573	82.3%		
Urban Wastewater	Ψ	5,505,000	Ψ	0,140,770	Ψ	10,000,070	02.070		
Operating Rate Charges	\$	4 787 800	\$	2 022 525	\$	6 810 325	42.2%		
Debt Service Charges	Ψ *	4 262 500	Ψ	1 704 236	Ψ	5 966 736	40.0%		
Dest belvice onlarges	\$	9 050 300	\$	3 726 761	\$	12 777 061	40.0%		
Other Rate Centers	<u> </u>	0,000,000	Ψ	0,120,101	Ψ	12,111,001	11.270		
Operating Rate Charges	\$	2 565 900	\$	1 008 246	\$	3 574 146	39.3%		
Debt Service Charges	Ψ	2,342,600	Ψ	1 278 400	Ψ	3 621 000	54.6%		
Best Colvice Charges	\$	4 908 500	\$	2 286 646	\$	7 195 146	46.6%		
Year 5-10 CIP	<u> </u>	1,000,000	Ψ	2,200,010	Ψ	1,100,110	10.070		
Debt Service Charges	\$	-	\$	4,207,913	\$	4,207,913			
Total ACSA Charges	\$	23,864,600	\$	18,371,093	\$	42,235,693	77.0%	15.4% \$	3,674,219
RWSA Customer Revenue Charges	<u>5</u>								
	•	0.011.000	¢	0.044.445	¢	10 000 045	10 10/		
	Ф	9,014,900	\$	3,014,415	\$	12,029,315	40.1%		
Orban Wastewater		9,033,600		3,578,117		12,011,717	39.0%		
Other Rate Centers		2,565,900	¢	1,000,240	¢	3,374,140	39.3%		
Dobt Sonvice Pate Povenues	\$	20,614,400	\$	8,200,778	\$	28,815,178	39.8%		
	¢	8 202 200	¢	0 617 170	¢	17 010 272	115 00/		
	Φ	0,302,200	φ	3,017,172	φ	11 310 116	07.40/		
Other Pete Contern		0,070,200		2,431,910		3 621 000	Z7.4%		
Other Rate Centers	<u>_</u>	2,342,000	¢	12 227 400	¢	3,021,000	04.0%		
Year E 10 CID	\$	19,523,000	Ф	13,327,488	\$	32,850,488	08.3%		
Debt Service Charres	¢		¢	6 407 004	¢	6 107 004			
Dept Service Unarges	\$	-	Ф	0,137,681	\$	0,137,681			

40,137,400 \$

27,665,947 \$ 67,803,347

\$

Total RWSA Customer Revenues

13.8% \$ 5,533,189

68.9%



Introduction of the FY 24-28 Capital Improvement Program

Presented to the Board of Directors by Bill Mawyer, Executive Director



FEBRUARY 28, 2023

Strategic Plan Goal

"Planning and Infrastructure"

"To address evolving needs by planning, delivering, and maintaining dependable infrastructure and facilities in a financially responsible manner."

FY 24 – 28 Capital Improvement Program

>56 Projects, \$326.1 M

• Urban Systems:	<u>Water</u> \$209.6 M	<u>Wastewater</u> \$58.2 M
Non-Urban & Shared Water &	Wastewater: \$58.3 M	1
<u>Funding</u>		
•Completed	\$35.6 IVI	
 Available 	\$27.5 M	
•Grants:	\$20.6 M	
•Reserves:	\$10.4 M	
•New Debt:	<u>\$232.0 M</u>	
	\$326.1 M	

Priorities of the FY 24 – 28 CIP

Complete the South Fork Rivanna Reservoir to Ragged Mtn Reservoir Pipeline and Pumping project <u>by 2030</u> rather than 2033.

 Accelerating this project will enhance the capacity, reliability and resiliency of our community's drinking water supply. Extended droughts and more intense storms are predicted. Completing this pipeline and increasing the water storage capacity in RMR by 700 MG will optimize our infrastructure and mitigate this concern.

> Provide additional Granular Activated Carbon treatment capacity at Crozet and Red Hill WTPs.

• Additional GAC facilities will enhance drinking water quality and serve anticipated growth while utilizing grant funding from VDH (currently \$3.17 M of \$5M budgeted).

Leverage partnerships with the City, UVA and VDOT on drinking water piping projects in Emmet Street.

• To reduce costs and disruption to the public in the Emmet Street corridor.

> Improve drinking water capacity and reliability in the Rt. 29 North area.

• Additional river crossings and the Airport Pump Station will strengthen our drinking water infrastructure, support growth opportunities, and allow decommissioning of the North Rivanna WTP.

FY 24 – 28 Charge Increases (%)

FY	24	25	26	27	28
City	9.3	9.7	9.0	9.4	10.0
ACSA	13.3	12.4	11.7	11.6	11.4

Charges include:

- 1. Albemarle County grants totaling \$750,000 in FY 23
- 2. VDH grant for GAC Filters (\$3.17 M, FY 22); FY 23 26 grant awards are pending
- 3. Federal NRCS grant for BCR (\$17.4 M)
- 4. Estimated annual increases in Operating expenses

Note: Additional grants totaling \$50 M have been requested for GAC, CWL, SVWRRF Generator, MC Security Gates, Flood Protection Study

	FY 24 – 28		FY 23 - 27	
	Projects: 56	In comparison with	Projects: 41	
	\$326.1 M		\$205.8 M	
Change	es to the 5-Yr CIP from last yea	ır:	\$120.3	B M increase
1. 23 e a. F b. 0 c. E d. 0 e. E f. 5	existing project budgets increa RMR to OBWTP WL and Pumping Central Water Line Beaver Creek Dam Modifications & Crozet WWPS Repairs Emmet St Betterment Water Pipin S. F. Rivanna River Crossing	ased due to inflation and sco \$18 M \$17 M & PS \$11 M \$10 M ng \$8 M \$1 M	ope progression:	+ \$75 M
2. 3 pr	rojects were accelerated: SFR	R – RMR Waterline; Crozet &	& Red Hill WTPs GAC	+\$39.5 M
3. 17 F	FY 28 projects moved into the	FY 24-28 CIP		+ \$6.9 M
4. 6 ne	ew projects were added			+ \$7.7 M
5. 6 ex	kisting projects were complete	d		< -\$8.8 M >

21-Year History of the RWSA CIP



15 Year CIP Planning

- FY 24-28 \$326 M*
- FY 29-33 \$218 M
- FY 34-38 <u>\$166 M</u>
 - \$710 M*

* \$20.6 M in grant funding anticipated to reduce debt services costs

Capital Assets: Facilities and Equipment \$320 M

5 Water Supply Reservoirs	3.3 billion gallons	
• Buck Mth Property	1312 acres	the second s
6 Water Treatment Plants		and the second
• 3 Urban	21.7 = 24 MGD in 2023	and the second
 3 Non-Urban 	2.25 MGD	A State of the second sec
4 Wastewater Treatment Plants		
• 1 Urban	15 MGD	
 3 Non-Urban 	0.588 MGD	
7 Wastewater Pump Stations		
11 Water Pump Stations		
 7 Raw Water 		
• 4 Finished Water		
Water Distribution Pipe	68 miles	
Valves	117	
Wastewater Collection Pipe	44 miles	
Manholes	717	
Stormwater Impoundment	Lickinghole Creek Basin	MCAWRRF



5 Water Supply Reservoirs





6 Water Treatment Plants



4 Wastewater Treatment Plants
Major Programs and Projects

- Upgrade Water Treatment Plants: \$48 M
 - South Rivanna & Observatory
 - Additional GAC Filters, Crozet & Red Hill
- Reliability / Redundancy : \$100 M
 - RMR to OB WTP Piping and Pumping
 - Central Water Line
 - MC 5kv Electrical System Upgrade
 - SR River Crossing
 - Scottsville WRRF Emergency Generator
 - Upper Schenks Branch Interceptor



- Operations and Maintenance / Safety: \$30 M
 - Security Enhancements
 - WW Piping and MH Repairs
 - MC Biogas Upgrades
 - MC Structural and Concrete Repairs
 - MC Building Upfits and Repairs



- Regulatory: \$43 M
 - Beaver Creek Dam, Pump Station and Piping
- Capacity: \$107 M
 - Airport Rd Water Pump Station and Piping
 - Admin Building Renovation & Addition
 - SRR to RMR Raw Water Piping
 - Emmet St Water Piping



Owensville	tootands Rd	Polo Grounde Rer	Water Supply Projec (February 10, 2023)	ts
2024-2030 \$80 M	1017 Ivy Creek Foundation	29 40	1. SR WTP Renovation 2020-2023	\$20 M
S-CASS	657 Jugande se 1 Commonwealt	. South Rivanna WTP Renovation 2020-2023 \$20 M	2. OB WTP Renovation 2020-2023	\$23 M
Farmington Country Club	Barracks Road	Square Center 63) 1445 76	3. RMR to OB WTP Raw Water Pipe & Pump Station 2024-2028	\$44 M
6. Raise RMR Water Level 2025-2026 Course C Mathematical Array	(302) Shopping Center 4.	2024-2028 \$41 M	4. Central Water Line 2024-2028	\$41 M
\$2 M	University of Virginia		5. SRR to RMR Raw Water Pipe 2024-2030 * <i>proposed</i>	\$80 M
702 782	Lefterran Charlotte	esville (vann-	6. Raise RMR Water Level 2025-2026* proposed	\$2 M
3. RMR to OWTP Raw Water Pipe & Pump Station 2024-2028 \$44 M	Construction	2. Observatory WTP Renovation 2020-2023 \$23 M	City: \$78 M ACSA: \$132 M	\$210 M

Airport Road Water Pump Station and Piping

- Connects north Rt. 29 area (Piney Mountain) and Urban pressure zones to improve reliability and capacity from the SRWTP
- Will supply the Piney Mountain Tank and be part of future Airport area pressure zone
- Completion: 2022 2024
- Budget: \$10 M
- 100% ACSA





MC 5 kv Electrical System Upgrade

- Replace major electrical cables and equipment installed in the 1980's to maintain reliability
- Completion: 2022 2024
- Budget: \$5 M
- 48% City / 52% ACSA



South Fork Rivanna River Crossing

- 2nd pipe to be installed 40 feet beneath the river to improve capacity, reliability and resiliency in the northern area of the Urban Water System
- Completion: 2023 2024
- Budget: \$7 M
- 100% ACSA



Granular Activated Carbon Filters, Crozet & Red Hill Water Treatment Plants

- Additional GAC vessels to filter drinking water produced at the Crozet and Red Hill WTPs.
 Will remove multiple contaminants including Disinfection By-Products and PFAS.
- 1 GAC vessel each for Crozet and Red Hill
- Completion: 2024 2026
- Budget: \$5 M; 100% ACSA*
- *\$3.17 M VDH grant in FY 22 (applying for FY 23 – 26 grants)









Renovation & Addition Administration Building

- Modernize I.T., Laboratory and existing office spaces constructed in the early 1980's
- Additional office and meeting /educational outreach spaces.
- Eliminate 15-year-old "temporary" Engineering trailers
- Completion: 2024 2026
- Budget: \$10 15M
- 48% City / 52% ACSA







Beaver Creek Dam, Pump Station & Piping Modifications

- Replace spillway to meet
 Va Dam Safety standards
- Replace the raw water pump station, intake, and pipe to the Crozet WTP
- Completion: 2024 2027
- Budget: \$43 M
- 100% ACSA
- Requesting Federal Funding (\$17 M)







Proposed Labyrinth Spillway thru Dam with Bridge



Existing Raw Water Pump Station to be demolished

Emmet St Water Line Betterment Program

- **Complete RWSA** piping projects #3, 4, & 11 concurrently with UVA, VDOT and City projects to reduce costs and impact to the public. Projects #1 & 2 have been completed.
- Schedule: 2024 2028
- Cost: \$10 M



Proposed Central Waterline Stream **UVA Campus** Park\Athletic Field

PLANNED PROJECTS

Contemplative Commons Ivy Corridor Redevelopment Phase 1 Public Realm City NDS Emmet St Streetscape Project Emmet St Multimodal Barracks Rd/Emmet St Intersection Improvements Rt 29, Angus Rd Continuous Green T Rt 29/Hydraulic Rd Intersection Improvements Hydraulic Rd/Hillsdale Dr 30" Water Transmission Main 24" Water Transmission Main 24" Water Transmission Main 10A (Alternate Alignment to Project 10) 11 24" Water Transmission Main 24" Water Transmission Main 11 A (Alternate Alignment to Project 11) 30" Water Transmission Main 30" Water Transmission Main 12A (Alternate Alignment to Project 12) 30" Water Transmission Main 12B (Alternate Alignment to Project 12)

➤The proposed FY 24 – 28 CIP supports the mission and goals of the RWSA and will:

1. Maintain our drinking water and wastewater infrastructure to provide reliable services which comply with or exceed regulatory requirements.

2. Complete the Rivanna Reservoir to Ragged Mtn Reservoir Pipeline and Pumping project by 2030 rather than 2033.

3. Provide additional GAC treatment capacity at Crozet and Red Hill WTPs.

4. Leverage partnerships with the City, UVA and VDOT on drinking water piping projects located on Emmet Street.

5. Improve drinking water capacity and reliability in the Rt. 29 North area.

6. Complete the CIP in an environmentally protective and financially responsible manner.

Summary FY 24 – 28 CIP

>56 Projects, \$326.1 M

• Water				<u>Wastewater</u>				
• Urban:	\$209.6 M			Urban:	\$58.2 M	N		
Non-Urban &	Shared Wa	iter & Wa	stewater	r: \$5	8.3 M			
•Grants	\$20.6 M							
•Cash Reserves:	\$10.4 M							
•New Debt:	\$232 M							
RWSA Charge Increases (%):		FY	24	25	26	27	28.	
		City		9.3	9.7	9.0	9.4	10.0
		ACSA		<u>13.3</u>	12.4	11.7	11.6	11.4
		RWSA O	verall	11.7	11.3	10.7	10.8	10.9

Questions?

Action Requested by the Board:

This budget is for introduction only. Adoption of the CIP will be considered at the Board's regular meeting on May 23, 2023.

Unregulated Contaminant Monitoring Rule 5

DAVE TUNGATE

DIRECTOR OF OPERATIONS

BOARD OF DIRECTORS MEETING

FEBRUARY 28, 2023



National Primary Drinking Water Regulation

• Step 1

• The Safe Drinking Water Act amendments of 1996 require the Environmental Protection Agency to publish a Contaminant Candidate List (CCL) every 5 years. This is a list of currently unregulated contaminants which may pose risks in drinking water.



• Step 2

• The EPA must choose no fewer than 5 contaminants from the CCL to determine whether to regulate them with a National Primary Drinking Water Regulation.

National Primary Drinking Water Regulation

- Step 3
 - The EPA issues a list of no more than 30 unregulated contaminants to be monitored by Public Water Supplies in the form of the Unregulated Contaminant Monitoring Rule (UCMR).



Contaminant Candidate List 5

- Published in November 2022 with 66 individual chemicals, three groups of chemicals, and 12 microbes on the list.
- The three chemical groups are :
 - Cyanotoxins Chemicals produced by blue green algae
 - Disinfection By-Products (DBPs) Chemicals produced during water treatment process when organic matter combines with a disinfectant like chlorine.
 - Per and Poly fluoroalkyl Substances (PFAS) A class of synthetic compounds used to make products resistant to water, heat, and stains. They are found in clothing, food packing, cookware, cosmetics, carpeting, and fire fighting foams. There are more than 4,000 PFAS compounds used since the 1940s.

Chemical Contaminant Candidate List 5

* Include 23 unregulated DBPs

** PFAS contaminants must meet certain Carbon-Fluoride structures

1,2,3-Trichloropropane 1,4-Dioxane 17-alpha ethynyl estradiol 2,4-Dinitrophenol 2-Aminotoluene 2-Hydroxyatrazine 6-Chloro-1,3,5-triazine-2,4-diamine Acephate Acrolein alpha-Hexachlorocyclohexane Anthraquinone Bensulide Bisphenol A Boron Bromoxynil Carbaryl Carbendazim (MBC) Chlordecone (Kepone) Chlorpyrifos Cobalt Cyanotoxins³ Deethylatrazine Desisopropyl atrazine Desvenlafaxine Diazinon Dicrotophos Dieldrin Dimethoate 23 Disinfection byproducts (DBPs) * Diuron Ethalfluralin Ethoprop Fipronil Fluconazole Flufenacet Fluometuron

Iprodione Lithium Malathion Manganese Methomyl Methyl tert-butyl ether (MTBE) Methylmercury Molybdenum Nonylphenol Norflurazon Oxyfluorfen Per-and polyfluoroalkyl substances (PFAS) Permethrin Phorate Phosmet Phostebupirim Profenofos Propachlor Propanil Propargite Propazine Propoxur Ouinoline Tebuconazole Terbufos Thiamethoxam Tri-allate Tribufos Tributyl phosphate Trimethylbenzene (1,2,4-) Tris(2-chloroethyl) phosphate (TCEP) Tungsten Vanadium

13 Microbes in Contaminants Candidate List 5

Adenovirus

Caliciviruses

Campylobacter jejuni

Enteroviruses

Escherichia coli (O157)

Helicobacter pylori

Legionella pneumophila

Mycobacterium abscessus

Mycobacterium avium

Naegleria fowleri

Pseudomonas aeruginosa

Shigella sonnei

Unregulated Contaminant Monitoring Rule

The Safe Drinking Water Act amendments of 1996 require the EPA to publish a list of 30 priority unregulated contaminants to be monitored by Public Water Supplies every five years. This monitoring requirement is known as the Unregulated Contaminant Monitoring Rule. RWSA will begin sampling for UCMR 5 in May of 2023.

Water System Size (# of people served)	UCMR 5 participation	
Small systems (fewer than 3,000)	800 randomly selected systems	
Small systems (3,300 – 10,000)	All surface water, ground water under direct influence, mixed water, and groundwater systems	
Large systems (10,000 and over)	All surface water, ground water under direct influence, mixed water, and groundwater systems	

UCMR 5 List

- EPA has only approved two laboratory methods (533 and 537.1) to test for PFAS in drinking water. These methods will test for 29 PFAS compounds.
- •Lithium is also on the UCMR 5 list







Contaminant	Minimum Reporting Level
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	0.005 µg/L
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.002 µg/L
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.003 µg/L
hexafluoropropylene oxide dimer acid (HFPO DA)	0.005 µg/L
nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.02 µg/L
perfluorobutanoic acid (PFBA)	0.005 µg/L
perfluorobutanesulfonic acid (PFBS)	0.003 µg/L
1H,1H, 2H, 2H-perfluorodecane sulfonic acid (8:2FTS)	0.005 µg/L
perfluorodecanoic acid (PFDA)	0.003 µg/L
perfluorododecanoic acid (PFDoA)	0.003 µg/L
perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.003 µg/L
perfluoroheptanesulfonic acid (PFHpS)	0.003 µg/L
perfluoroheptanoic acid (PFHpA)	0.003 µg/L
1H,1H, 2H, 2H-perfluorohexane sulfonic acid (4:2FTS)	0.003 µg/L
perfluorohexanesulfonic acid (PFHxS)	0.003 µg/L
perfluorohexanoic acid (PFHxA)	0.003 µg/L
perfluoro-3-methoxypropanoic acid (PFMPA)	0.004 µg/L
perfluoro-4-methoxybutanoic acid (PFMBA)	0.003 µg/L
perfluorononanoic acid (PFNA)	0.004 µg/L
1H,1H, 2H, 2H-perfluorooctane sulfonic acid (6:2FTS)	0.005 µg/L
perfluorooctanesulfonic acid (PFOS)	0.004 µg/L
perfluorooctanoic acid (PFOA)	0.004 µg/L
perfluoropentanoic acid (PFPeA)	0.003 µg/L
perfluoropentanesulfonic acid (PFPeS)	0.004 µg/L
perfluoroundecanoic acid (PFUnA)	0.002 µg/L
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.005 µg/L
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.006 µg/L
perfluorotetradecanoic acid (PFTA)	0.008 µg/L
perfluorotridecanoic acid (PFTrDA)	0.007 µg/L

29 PFAS chemicals in UCMR 5

Minimum Reporting Levels

9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	0.002 μg/L
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	0.003 µg/L
hexafluoropropylene oxide dimer acid (HFPO DA)	0.005 μg/L

1 microgram per liter (µg/L) is the same as
1 part in a billion parts
1 penny in \$10,000,000
1 second in 31 years

0.002 micrograms per liter (µg/L) = 2.0 nanograms per liter (ng/L) 2 parts in a trillion parts 1 penny in \$10,000,000 1 second in 31,709 years

UCMR 5 Sample Collection

• Water samples are collected after the final step in the water treatment process. This is called the entry point to the distribution system

•Sampling frequency is quarterly for 1 year at our five surface water treatment plants, and every six months for 1 year at Red Hill since it is a groundwater system.

• Sampling analysis costs will be approximately \$23,000.

•Scottsville and Red Hill water systems are included in the sampling program for parity.

UCMR 5 Sample Collection

• Our samplers must take the following steps on the day of sample collection:

- Avoid wearing clothing or boots containing Gore-Tex material or fabric softeners
- Avoid using cosmetics, moisturizer, or insect repellants
- Must use PFAS free sunscreens





UCMR 5 Sample Collection

- Samplers must take the following steps during sample collection:
 - Sample bottles must be labelled with ball point pens only
 - Samplers must wash their hands and immediately put on nitrile gloves during each sampling location

Field Reagent Blanks

- Measure the PFAS contribution from the sampling environment, personnel, and shipping conditions.
- PFAS-free water is provided for each sampling site and poured into sample bottles at every sample location.

UCMR 5 Sample Containers

Sampling Containers



Summary & Questions

•The data gathered from the UCMR 5 will help EPA regulators to determine the prevalence of unregulated contaminants in drinking water

•This may eventually lead to additional National Primary Drinking Water Standards

Carus Chemical's Facility Fire and Permanganate Production Status

Carus Chemical







Immediate application of permanganate

Carus Chemical



- Carus Chemical is the largest domestic producer of potassium and sodium permanganate, providing more than 50% of the U.S. supply.
- Permanganate is a strong oxidizer and is a secondary water treatment chemical for the removal of dissolved iron and manganese as well as taste and odors in drinking water.



Carus Chemical

- On January 11, 2023, Carus Chemical had a fire at its permanganate production facility
- Due to fire damage, Carus Chemical is unable to fill any orders for 90 days, which has led to a national shortage of potassium permanganate and sodium permanganate.
- Carus expected to start permanganate production by April 1, 2023



RWSA Sodium Permanganate usage

Season	Feed rate	Monthly total
January – April	10 gallons per day	300 gallons
May- December	30 gallons per day	900 gallons



What does this mean to RWSA?

- Current inventory is 5,000 gallons which is equal to 7 months of product
- We have been successful in leveraging relationships with other wholesale permanganate suppliers to maintain our inventory.



Summary

Questions?