



**RWSA BOARD OF DIRECTORS**  
**Minutes of Regular Meeting**  
**August 23, 2022**

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Tuesday, August 23, 2022 at 2:15 p.m. via Zoom.

**Board Members Present:** Mike Gaffney, Lauren Hildebrand, Ann Mallek, Brian Pinkston, Michael Rogers, and Quin Lunsford, attending as alternate for Gary O'Connell.

**Board Members Absent:** Gary O'Connell, Jeff Richardson.

**Rivanna Staff Present:** Bill Mawyer, Lonnie Wood, David Tungate, John Hull, Jennifer Whitaker, Jeff Southworth, Andrea Bowles, Katie McIlwee.

**Attorney(s) Present:** Valerie Long.

***1. CALL TO ORDER***

Mr. Gaffney called the August 23, 2022, regular meeting of the Rivanna Water and Sewer Authority to order at 2:15 p.m.

***2. STATEMENT FROM THE CHAIR***

Mr. Gaffney read the following statement aloud:

“This is Mike Gaffney, Chair of the Rivanna Water and Sewer Authority. I would like to call the August 23, 2022 meeting of the Board of Directors to order.

“Notwithstanding any provision in our Bylaws to the contrary, as permitted under the City of Charlottesville’s Continuity of Government Ordinance adopted on March 7, 2022, Albemarle County’s Continuity of Government Ordinance adopted on April 15<sup>th</sup>, 2020, and revised effective November 4, 2020 (Ordinance No. 20-A(16)) and Chapter 1283 of the 2020 Acts of the Virginia Assembly effective April 24, 2020, we are holding this meeting by real time electronic means with no Board member physically present at a single, central location.

“All Board members are participating electronically. This meeting is being held pursuant to the second resolution of the City’s Continuity of Government Ordinance and Section 6 of the County’s revised Continuity of Government Ordinance. All Board members will identify themselves and state their physical location by electronic means during the roll call which we will hold next. I note for the record that the public has real time audio-visual access to this meeting over Zoom as provided in the lawfully posted meeting notice and real time audio access over telephone, which is also contained in the notice. The public is always invited to send questions, comments, and suggestions to the Board through Bill Mawyer, the Authority’s Executive Director, at any time.”

Mr. Gaffney called the roll.

Ms. Lauren Hildebrand stated she was located at 305 4<sup>th</sup> Street Northwest in Charlottesville, VA.

Ms. Ann Mallek stated she was located at the County Office Building at 401 McIntire Road, Charlottesville, VA.

Mr. Quin Lunsford stated he was located at 168 Spotnap Road, Charlottesville, VA.

Mr. Brian Pinkston stated he was located at 1450 Leake Drive in Charlottesville, VA.

Mr. Rogers stated he was located at City Hall at 605 East Main Street, Charlottesville, VA.

Mr. Mike Gaffney stated he was located at 3180 Dundee Road in Earlysville, VA.

Mr. Gaffney stated the following Authority staff members and consultants were joining the meeting electronically: Bill Mawyer, Lonnie Wood, David Tungate, Jennifer Whitaker, John Hull, Jeff Southworth, Andrea Bowles, and Katie McIlwee.

Mr. Gaffney stated they were also joined electronically by Ms. Valerie Long of Williams Mullen, Counsel to the Authority.

### **3. AGENDA APPROVAL**

Mr. Gaffney asked if there were any suggested changes to the agenda or a motion to approve the agenda.

**Ms. Mallek moved to approve the agenda. Mr. Rogers seconded the motion, which passed unanimously (5-0). (Mr. Richardson and Mr. O'Connell were absent)**

### **4. MINUTES OF PREVIOUS BOARD MEETING**

*Minutes of Regular Board Meeting on July 26, 2022*

Mr. Gaffney asked if there were any comments or changes to the Board minutes. Hearing none, he asked if there was a motion.

**Mr. Rogers moved to approve the minutes of the July 26, 2022 meeting. Ms. Mallek seconded the motion, which passed unanimously (5-0). (Mr. Richardson and Mr. O'Connell were absent.)**

### **5. RECOGNITIONS**

There were no recognitions.

### **6. EXECUTIVE DIRECTOR'S REPORT**

Mr. Mawyer stated he would like to recognize two staff members, Chris Ward and Robbie McMullen, wastewater operators who both recently passed their Class 2 Operator licenses. He stated Mr. Ward began as a trainee and had moved through the licensing process for ten years. He

90 stated Robbie McMullen began in 2018 and in the last four years progressed from trainee to Class 2.  
91 He stated their efforts were appreciated.

92  
93 Mr. Mawyer stated that they were in discussions with the Virginia Department of Environmental  
94 Quality's Air Pollution Control Division about the fact that they did not obtain a permit for the  
95 emergency power generator, which served the Rivanna sewer pump station that was completed in  
96 2017. He stated they obtained a certificate to design, construct, and operate the pump station and  
97 generator, but there was an oversight and they did not get a permit to activate the emergency power  
98 generator.

99  
100 Mr. Mawyer stated operation of the generator did not violate any environmental standard and with  
101 assistance from Williams Mullen, they completed a consent order with VDEQ and paid a fine that  
102 was reduced significantly from the originally proposed fine. He stated all the corrective measures  
103 had been completed and they had asked VDEQ to close the consent order.

104  
105 Mr. Mawyer stated the strategic plan update recommended increasing Rivanna's leadership profile  
106 in the community for environmental services, so they put an advertisement in the UVA football  
107 program this year for the Rivanna Water and Sewer Authority and for the Rivanna Solid Waste  
108 Authority.

109  
110 Mr. Mawyer stated they understood the local emergency ordinances would require the return to in-  
111 person Board meetings next month on September 27, so both the Solid Waste and the Water and  
112 Sewer Boards would be meeting in the administration building conference room.

113  
114 Mr. Mawyer stated they had advertised the Elliot House and 2.2 acres of the Buck Mountain  
115 property for sale as discussed with the Board over the last few months. He stated that advertisement  
116 and bidding process would close on September 14. He stated next week on August 30 would be the  
117 pre-bid conference and open house at the site for interested bidders.

118  
119 Mr. Gaffney asked if there were any questions for the Executive Director. Hearing none, he moved  
120 to the next item.

## 121 122 **7. ITEMS FROM THE PUBLIC**

### 123 *Matters Not Listed for Public Hearing on the Agenda*

124  
125 Mr. Gaffney asked for confirmation that there were no public hearings scheduled for the day.

126  
127 Mr. Mawyer stated that was correct,

128  
129 Mr. Gaffney asked Mr. Hull if there were any members of the public who wished to speak at this  
130 time.

131  
132 Mr. Hull stated that Ms. Dede Smith wished to speak.

133  
134 Mr. Gaffney welcomed Ms. Smith.  
135

Ms. Smith greeted the Board. She stated she resided at 2652 Jefferson Park Circle and was a customer of the City. She stated she wanted to follow up on a few comments she made at the last meeting and address some of the issues they would be hearing about today. She stated that Mr. Mawyer was correct in that taking the dam down at South Fork was not in the Nature Conservancy plan.

Ms. Smith stated she was commenting that decommissioning a defunct reservoir, one that was basically written out of the community water plan, and certainly written out of their operational strategy, with switching over to Ragged Mountain, was a dam doing nothing other than destroying tens of miles of a scenic river. She stated this, along with the algae problem they would be discussing today, was further polluting their primary water source, so her point was that taking the dam down was the environmentally responsible thing to do. She apologized for conflating those two issues.

Ms. Smith stated that brought her to what they would be talking about today, which was the state of their reservoirs. She requested that they discuss the future of the reservoirs that were being decommissioned in operational terms. She stated she was speaking not only of South Fork but to Sugar Hollow as well; once that pipeline that linked Ragged Mountain and South Fork was in, they would not be drawing water from that reservoir anymore, so she would like to know if there was a plan to free that river, Mormons River from a dam.

Ms. Smith stated South Fork and Mormons River were probably the only rivers worth discussing regarding plans for the future. She stated this all came back to updating the strategic plan. She stated that if they wanted to be good environmental stewards, she requested they at least discuss freeing the rivers from the dams that were no longer needed. She thanked the Board and stated she appreciated their time.

Mr. Gaffney thanked Ms. Smith. He asked Mr. Hull if there were any other members of the public who wished to speak.

Mr. Hull stated that concluded the public discussion for today.

Mr. Gaffney stated they would close items from the public and open the responses to public comments.

## **8. RESPONSES TO PUBLIC COMMENTS**

Mr. Mawyer stated he would need to talk with Ms. Smith, because in the community water supply plan, all of the reservoirs would continue to be utilized. He stated that even though they were piping water from the Rivanna Reservoir to the Ragged Mountain Reservoir, a lot of the water that came to South Rivanna was from the Sugar Hollow Reservoir, so all three of their urban reservoirs would still be essential components of the community water supply plan.

Mr. Mawyer stated removing the dam at South Rivanna could severely limit the amount of water they were able to take out of the South Rivanna River. He stated there were 70 million gallons per day overflowing the dam right now, so there was a plentiful supply, but that may not be the case all

the time if the dam was removed and they withdrew from a river-type setup. He reiterated that all three of the urban reservoirs were essential to the short- and long-term water supply plans.

Mr. Gaffney asked if there were any Board members who wished to speak at this time. Hearing none, he closed responses to public comments.

## **9. 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. Staff Report on Drought Monitoring*
- f. Award Construction Contract and Amend Capital Improvement Plan – South Rivanna Hydropower Plant Decommissioning Project – English Construction Company, Inc.*
- g. Award Professional Services Agreement – Moores Creek AWRFF Engineering and Administration Building Addition and Renovation Project – Short Elliot Hendrickson Inc.*
- h. Authorization of Professional Engineering Services; SCADA Standards Project – Short Elliot Hendrickson Inc.*
- i. Resolution to Amend FY 2022 – 2023 Water Rates and Charges; Authorization to Schedule a Public Hearing*

Mr. Gaffney asked if there were any items on the consent agenda that Board members would like to pull for comments or questions. Hearing none, he asked if there was a motion.

**Ms. Hildebrand moved for the Board to adopt the Consent Agenda as presented. Ms. Mallek seconded the motion, which passed unanimously (5-0). (Mr. Richardson and Mr. O’Connell were absent)**

## **10. OTHER BUSINESS**

- a. Presentation: Wastewater Program Review*

Mr. Tungate thanked the Chair. He stated that the image displayed was from a recent drone flight over the Moores Creek facility. He continued that the Rivanna Water and Sewer Authority operated four wastewater facilities in the County, the largest being the Moores Creek Advanced Water Resource Recovery Facility. He stated a small facility was located at Stone Robinson School with larger wastewater treatment plants located in Glenmore subdivision and the Town of Scottsville.

Mr. Tungate stated that at Moores Creek, the “wet side” of the facility was the portion closest to Interstate 64. He stated as the sewage processed through the facility, there were band screens and grit removal equipment, which removed insoluble materials from the sewage, and two equalization basins, which under normal operations were empty. He stated the basins were used when high rain events occurred and there was a sudden increase in sewage/water into the plant. Moores Creek has to adjust the treatment system to prepare for the high flows and in the meantime the excess sewage is temporarily stored in the equalization (EQ) basins. He stated the primary clarifiers were the covered basins with odor control facilities which eliminated odors from the primary clarifiers. He

224 stated these were covered three or four years ago to reduce odors in the community. He stated the  
225 large aeration basins were noticed by most people when coming to the facility; it was where the  
226 biological treatment took place. He stated there were four secondary clarifiers that continued the  
227 treatment process.

228  
229 Mr. Tungate showed an aerial image of the “wet side” of the plant looking east. He indicated the  
230 two holding ponds can be used to store excess sewage flows from a rain event. The bypass to the  
231 holding ponds is different from the EQ basin use, as the bypass to the holding ponds forgo the band  
232 screens and grit removal. The water is temporarily stored in the holding ponds and pumped back to  
233 the headworks when the influent water flow rates decrease.

234  
235 Mr. Tungate showed an image of the “dry side” of the plant which is closest to the facility entrance.  
236 He stated there were five anaerobic digesters, where the solids collected on the “wet side” were  
237 pumped to be digested for 15-20 days by microbes. He stated there were pumps that conveyed the  
238 solids from the digesters to the solids handling building, where a centrifuge dewatered the solids so  
239 they can be hauled to a composting facility in Waverly, Virginia for final disposal.

240  
241 Mr. Tungate pointed out a large construction area near the digesters is the location of the removed  
242 clarifiers. It was a recent project as they were no longer in use. The same project also removed a  
243 dry lime silo that was no longer in use as well. He stated there were tertiary filters that removed  
244 any small particulates that might remain in the water before the water passed through the ultra-violet  
245 (UV) light disinfection system and flowed underground to the outfall. He stated the outfall location  
246 was where the treated wastewater entered Moores Creek. He stated there was a methane sphere  
247 where methane was stored for use at the facility.

248  
249 Mr. Tungate stated there are two influent sewer pump stations: Rivanna and Moores Creek. He  
250 stated that the Crozet area and most of the sewer system south of UVA drain to the Moores Creek  
251 Pump Station. The Rivanna Pump station was relocated to the Moores Creek property in 2017 from  
252 Riverview Park. He stated that the Rivanna Pump Station was their largest influent sewer pump  
253 station. He stated the Moores Creek Pump Station was located closest to the entrance. He stated  
254 both of these stations pumped the sewage to the headworks area so the sewage passes through the  
255 band screens and grit removal processes.

256  
257 Mr. Tungate stated the map on the slide provided a visual explanation of where the sewage came  
258 from for each of the two influent sewer pump stations. He stated the Rivanna Pump Station handled  
259 all the sewage from the northern area of the City and County, estimated to be 60%-70% of the flow  
260 in the community. He stated this area encompassed everything north of UVA up to near the  
261 northern County line. He stated Moores Creek Pump Station handled the southern area of the City  
262 and County, which included the Crozet area, with a series of four pump stations that took the  
263 sewage from Crozet to the Urban area adjacent to the John Deere dealership on Route 250 West.  
264 From that location, the sewage flows by gravity to Moores Creek.

265  
266 Mr. Tungate stated that RWSA spends approximately \$390,000 per year to control the odors at the  
267 Crozet sewer pump stations because they have open-top wet wells. He continued with an image of  
268 the band screens at Moores Creek. These band screens catch the insoluble materials that came  
269 through the influent sewer pump stations. The band screens operate on a timer or on an as-needed

basis. He stated the solids that came off the band screens were concentrated, dried out, and the materials are dropped into a dumpster. He stated this material was hauled off every two weeks.

Mr. Tungate stated the slide showed images of the grit removal system, which was added within the last six years. The grit system will remove sand and other dense insoluble material from the sewage. This material is dewatered and placed in a dumpster and hauled away every two weeks as well. He stated typically, when there was a higher flow event, more solids are washed into the system. He showed an image of the primary clarifiers. He stated this was the first part of the treatment process, where the heavier sludge settled into these primary clarifiers and floating greases and oils were removed. He stated in the summer, they did not see as much of the oils and greases as they did in the winter months when the water was colder.

Mr. Tungate stated there is an odor control filter unit that handles the foul air from underneath the primary clarifier covers which has significantly reduced the odors at Moores Creek. He showed an image of the aeration basins where the enhanced nutrient removal process occurs. This is where mechanical blowers inject compressed air into the sewage to keep microbes alive and remove dissolved nutrients.

Mr. Tungate stated from the aeration basins, the wastewater flowed to the secondary clarifiers, which provided another opportunity for solids to separate out and clearer water to continue to the sand filters. The sand filters are the final clarification step before UV disinfection. He showed an image of the UV facility, which had a series of four redundant UV channels for disinfection. He stated the sewage flows could change dramatically depending on the weather conditions in the sewer system. The UV system is meant to handle a variety of flow rates. He stated the images on the slide showed the water leaving the UV chambers and the water entering Moores Creek.

Mr. Tungate showed an image of one of the two centrifuges, which dewater sludge from the digesters. A centrifuge will essentially spin the water out of the sludge and allow the dried solids to fall into the trailer. He stated those solids were accumulated into trailers, stored at the compost yard, and then hauled by a contract service to Waverly, Virginia. He stated 15-22 loads of solids were hauled per week. He stated this material was mixed with other biosolids and organic materials to create a commercially available compost at the Waverly, Virginia facility.

Mr. Tungate stated that Moores Creek was an enhanced nutrient removal facility. He stated they had regulations that were based on the amount of nitrogen and phosphorous they were allowed to discharge on an annual basis into Moores Creek, which flowed into the Rivanna River, to the James River, and into the Chesapeake Bay. He stated the annual allotment of Nitrogen (N) and Phosphorous (P) was 282,994 pounds of nitrogen and 18,525 pounds of phosphorous. The monthly N and P allocation is simply the annual amount divided by 12. He stated shown on the slide was the actual monthly amount for June 2022. He stated they discharged only 25% of their allowable nitrogen and 65% of their allowable phosphorous for the month. He stated that the last column provided a year-to-date calculation of the N and P removal performance at Moores Creek. He stated that it was important to note that if the Moores Creek facility discharges less than the allotted amount of N and P, the surplus can be sold as nutrient credits and serve as a revenue stream for the Authority. He stated up to \$150,000 per year was earned by selling N and P nutrient credits in previous years.

316  
317 Mr. Tungate stated that Moores Creek is the largest RWSA wastewater facility as well as a nutrient  
318 removal facility. It has testing requirements to be reported each month to VDEQ. He stated that  
319 each day tests for dissolved oxygen and pH were done, as well as five times a week for total  
320 suspended solids and ammonia, and four times a week for Escherichia coli bacteria, twice per week  
321 for total phosphorous and total nitrogen concentration, and once a week testing was completed for  
322 chemical biological oxygen demand.

323  
324 Mr. Tungate showed an image of the septic receiving station at Moores Creek. He stated that in  
325 2020, there were 6,515 individual transactions of receiving septic trucks; in 2021 there were 7,816,  
326 and in 2022 there were 6,914. He stated the average sewage flow at Moores Creek was  
327 approximately 9 million gallons per day (MGD) and on an annual basis, Moores Creek receives  
328 about 8 MG of septage from these trucks. He continued that Moores Creek facility was a Class I  
329 facility that treated all wastewater from the City of Charlottesville and Albemarle County. He stated  
330 there was a 15 MGD capacity and the facility was staffed 24/7, 365 days per year, with two  
331 operators per shift with four shifts per week, working 12-hour shifts alternating between days and  
332 nights every two weeks.

333  
334 Mr. Tungate stated the Glenmore facility was a bit smaller and rated as a Class III facility which  
335 was staffed four hours per day, 365 days per year. He stated that Scottsville also was a Class III  
336 facility staffed four hours per day, 365 days per year. He stated the same Operator was responsible  
337 for monitoring Glenmore, Scottsville and Stone Robinson wastewater facilities. He stated there was  
338 a total of sixteen wastewater operators as well as two relief operators, who were licensed operators  
339 that filled in positions when needed. He stated there were three members of management staff, a  
340 manager, assistant manager, and supervisor.

341  
342 Mr. Tungate stated there were six Class 1 Operators and five Class 2 Operators. He stated this was  
343 the most Class 2 wastewater licenses in recent history at Moores Creek. He stated there were two  
344 Class 3 Operators and three unlicensed trainees. He stated it took at least six months of hands-on  
345 experience before being able to qualify to take an exam.

346  
347 Mr. Tungate stated that there was an industrial waste pretreatment program and the purpose of the  
348 program being to protect the sewer system and the processes in the wastewater treatment plants by  
349 having discharge limits, as required by the Environmental Protection Agency and Virginia  
350 Department of Environmental Quality.

351  
352 Mr. Tungate stated the VDEQ required that they submit an annual report for the pretreatment  
353 program by January 31 of each year. He continued that the Albemarle County Service Authority  
354 and City of Charlottesville have aggressive Fats, Oils, and Grease (FOG) programs to limit the  
355 amount in the sewer system. The pretreatment program has nutrient limits for sewer discharges, pH  
356 limits, and biological oxygen demand. He stated the RWSA, City of Charlottesville, and Albemarle  
357 County Service Authority system has three Significant Industrial Users.

358  
359 He stated there is a new company that RWSA staff have been working with that is going in the  
360 former State Farm facility, that will be the fourth business in the pretreatment program and a  
361 Significant Industrial User, but they are not yet online. He asked if there were any questions.



362  
363 Mr. Mawyer asked if Mr. Tungate could explain why they had an industrial pretreatment program.

364  
365 Mr. Tungate stated that the program protected the sewer system, which includes the pipes that  
366 convey the sewage to the treatment plant, and also protected the treatment plant if there was a low  
367 or high pH or waste that could possibly damage the facility.

368  
369 Mr. Mawyer asked about the bugs.

370  
371 Mr. Tungate stated if they had some damaging material that came into the plant, it was possible it  
372 could harm the microbes in the aeration basins, which could be catastrophic. The facility would  
373 have to be re-seeded with new microbes to get the plant operational again.

374  
375 Ms. Mallek asked if where the outflow was going into the Moores Creek stream had measures in  
376 place to prevent erosion.

377  
378 Mr. Tungate stated he believed there was but he would confirm it.

379  
380 Ms. Mallek asked if the metals mentioned in a slide were removed or only measured.

381  
382 Mr. Tungate stated they wanted to know what was to be discharged by companies, so they asked for  
383 that information, then they would make the decision on whether they could handle those  
384 constituents. He stated it was primarily based on how close they were to the facility, whether they  
385 discharged continuously, if they had on-site treatment, if they discharged everything over one day or  
386 multiple days, and other factors.

387  
388 Mr. Mawyer asked if the federal standards had maximum discharge limits on those metals.

389  
390 Mr. Tungate stated yes.

391  
392 Mr. Mawyer stated regulated metals could only be discharged into the public sewer system at a  
393 limited concentration.

394  
395 Mr. Mawyer stated if an industrial facility had a higher discharge concentration, it was incumbent  
396 on the facility to install its own treatment process to reduce the levels of those contaminants before  
397 going into the sewer system.

398  
399 Ms. Mallek asked if they could require them to do that.

400  
401 Mr. Tungate stated yes.

402  
403 Ms. Mallek stated one of her concerns about biosolids from industrial sites was the heavy metals  
404 that they were not even testing for that then were dropped on farm fields around their area and then  
405 bioaccumulated. She stated she was glad they were testing for all these things and encouraged them  
406 to be even tougher. She stated she was certain they would be learning more about what Bonumose  
407 would be producing at Pantops.

408  
409 Mr. Pinkston asked if they charged for the service of individual septic trucks.  
410

411 Mr. Tungate stated they charged by the gallon and charged more if it was from outside Albemarle  
412 County and the City.  
413

414 Mr. Pinkston stated they showed an image of the outfall coming from the dry side of the facility. He  
415 asked if they had a sense of the percentage of water that was going out versus what was coming in if  
416 looking at it from a mass balance perspective.  
417

418 Mr. Tungate asked if he was referring to where they discharged to Moores Creek.  
419

420 Mr. Pinkston asked how much of it was what was coming into the plant.  
421

422 Mr. Tungate stated as a mass balance, they discharged a volume similar to what came into the plant.  
423 They had storage in the basins when a high-flow event happened, so they could store some volume  
424 in the facility, but it was essentially equal. He stated after a storm event, the flow level coming into  
425 the plant rose and fell relatively quickly.  
426

427 Mr. Pinkston thanked Mr. Tungate.  
428

429 Mr. Rogers asked Mr. Tungate to return to the discussion regarding odor management. He asked  
430 how it was handled and what the impact was on the surrounding areas. He asked what the  
431 process was for receiving and processing complaints.  
432

433 Mr. Tungate responded that there was a recent exchange with the Willow Tree Facility adjacent  
434 to Moores Creek because there was an EQ basin in service and the neighbors noticed an odor. He  
435 explained some people emailed RWSA staff and the manager directly to ask questions and  
436 submit complaints. He noted some calls came through the administration phone number. He  
437 stated the odor control filters utilized a biological process to remove odors. He stated the odor  
438 control program for the Crozet wastewater system used chemicals to minimize odors in that  
439 conveyance system.  
440

441 Mr. Mawyer stated when he started working for the Authority, they received a number of odor  
442 complaints. He stated on his first day of work, odor was an issue. He noted that the two  
443 equalization basins used to frequently be filled with wastewater. He stated now, they piped the  
444 water directly to the primary clarifiers. He stated the clarifiers used to be uncovered, so there was  
445 open and exposed wastewater which created odors.  
446

447 Mr. Mawyer stated part of the odor mitigation program was to stop routinely putting water in the  
448 equalization basins and to cover the clarifiers with aluminum covers. He stated there was a  
449 vacuum system that pulled the gases from under the covers and piped it through a biofilter to  
450 clean the odors before the air was exhausted. He noted that part of the odor control system cost  
451 about \$10M. He stated the wastewater from Crozet was chemically treated to minimize sulfide  
452 odors.  
453

Mr. Mawyer noted on days with heavy rain when the equalization basins may be needed to store excess water, there may be an odor. He stated they removed the water from the basins as soon as possible.

Mr. Gaffney stated that the Board had authorized more than \$30M over the last 20 years, and the Authority had implemented odor controls over the entire plant to address the odors the community had experienced. He requested information be provided at the next meeting as to how many days per year residents communicated experiencing odors.

Ms. Hildebrand stated in regard to pretreatment of wastewater, there were certain regulations and requirements for the Authority, and those were mirrored in the City code and the ACSA rules and regulations to pass the requirements onto the customers.

Ms. Mallek stated she remembered a County budget item to cover the extra cost of the County's septic flow. She asked if the funding was continuous, or if it was one time.

Mr. Mawyer responded the funding was ongoing, and the County paid the Authority about \$100K a year to reimburse the debt service for construction of one of the septage receiving stations. He stated there were two septic receiving stations, and most of the septage came from the County.

Ms. Mallek stated they wanted to encourage pump outs to help with the water quality and to ensure septic systems were not overtaxed.

Mr. Wood stated \$109K a year was received from the County for the septage station.

Mr. Wood stated the payment represented the debt service on the construction of the septage receiving station.

Mr. Gaffney stated under Moore's Creek nutrients, the performance percentage for June was exceeded for nitrogen and phosphorous. He stated he assumed it was seasonal, and he asked if it was related to farming.

Mr. Tungate responded that the allocation was 1,500 lbs. for phosphorous, and they discharged 1,000 lbs., so they were not over for the month, but they were higher than normal. He stated they had too much sludge in the gravity thickener and in the secondary clarifiers, so they had to move more sludge. He stated it was not related to farming, it was an internal practice from efforts to optimize the treatment process.

Mr. Mawyer stated the percentage was for the month, so the Authority was at 25% of the allocation for the month for nitrogen, and at 65% of the allocation for the month for phosphorous.

Mr. Gaffney stated they discussed credits with low allocation. He stated he saw in the budget there was a mention of additional credits that had been received that year. He asked for more information regarding the credits.

Mr. Wood explained the total credits available to the Authority was 282,994 for nitrogen, and about 18,000 for phosphorous, and those values had been the same since the plant was updated. He stated every year, the performance was different, so the excess of what they discharged compared to what they were allowed was then sold. He stated the value of the credits did not stay the same. He stated members of the Nutrient Exchange were paying more for nitrogen and phosphorous credits than a year ago.

Mr. Wood stated in FY22, the Authority received \$104K, and they had received \$60K to date in FY23.

Mr. Wood clarified that the credits were sold so that other utilities that had not made investments in enhanced nutrient removal were able to buy the credits. He stated there were downstream communities that purchased the credits because it was more economical than upgrading facilities.

*b. Presentation: Annual Reservoir Report, Results from 2021*

Ms. Andrea Bowles, Water Resources Manager, stated she would discuss the results from the 2021 Reservoir Monitoring report and provide an update on the status for the year.

Ms. Bowles stated she would begin with an overview of the watersheds and water supply sources. She stated the South Fork Rivanna Reservoir had the largest watershed, and the Ragged Mountain Reservoir had the smallest watershed.

Ms. Bowles noted that each reservoir was unique. She stated South Fork Rivanna had a watershed area of 259 square miles. She stated they estimated about 65 million gallons of water would flow over the South Fork Rivanna dam today. She stated the Ragged Mountain Reservoir was only able to receive water from Sugar Hollow Reservoir via a pipeline, and the pipeline could transfer about 3 million gallons per day. She stated the plan was to build a pipeline from South Fork Rivanna and use peak flows from that reservoir to fill Ragged Mountain when needed.

Ms. Bowles stated there was a detailed reservoir monitoring program. She stated the main program goal was to collect data to understand the biological processes in each of the reservoirs to inform and optimize the water treatment process. She stated a base-line monitoring program began in 2014, and there was an annual review of the data by an expert who helped identify trends or changes. She stated the consultant made recommendations for changes in what was sampled and if additional sampling needed to be completed.

Ms. Bowles explained that biweekly sampling was performed at the urban reservoirs—South Fork Rivanna and Ragged Mountain—and monthly sampling was performed at Sugar Hollow. She stated valuable information was collected to provide a better understanding of each reservoir. She stated they currently performed enhanced total phosphorous and total nitrogen sampling for Ragged Mountain and South Fork Rivanna reservoirs. She stated the sampling would inform treatment decision making for the South Fork Rivanna to Ragged Mountain pipeline and any pretreatment needs. She explained the data was used to make operational and

capital decisions.

Ms. Bowles stated in spring, there were nutrients flowing into the reservoirs from streams and groundwater. She continued that those nutrients provided a food source for algae in the reservoir. She stated that the algae eventually die and sink to the bottom of the reservoirs creating an anoxic zone—an area without dissolved oxygen. She stated the anoxic zone was beneath the layer of water known as the thermocline, a layer dividing the reservoir into pieces—the lower area, known as the hypolimnion, was a colder area with little to no oxygen; and the upper area, known as the epilimnion, was warmer and the only place where fish could survive. She stated when oxygen was lost from the bottom of the reservoir, nutrients were released from the bottom sediment.

Ms. Bowles stated in the fall, nutrient flows continued into the reservoir from streams and groundwater, but as the temperature decreased and the water cooled, the nutrient layers in the reservoir reversed. She explained that as the water cooled, nutrients released beneath the thermocline in the hypolimnion when the water was anoxic would move into the upper layers of the reservoir.

Ms. Bowles stated Beaver Creek Reservoir was the most active reservoir in terms of blue-green algae blooms. She stated at times, the water was sampled more frequently than biweekly, and in the summer it was sampled often more than once a week. She stated at Beaver Creek, by early May, the thermocline was already developing and the water was already anoxic about 3 meters deep and below. She stated the turnover process in the fall was late at Beaver Creek, occurring in early November. She stated blooms had been seen at the reservoir through the end of November. She stated they continued to have abundant nutrients coming into the reservoir warranting algae treatments. She stated they used copper sulfate, and they were planning to install a hypolimnetic oxygenation system at Beaver Creek. She stated the system was included in the CIP, and it was intended to oxygenate the water to keep minimize algae blooms.

Ms. Bowles stated South Fork Rivanna Reservoir was more like a river than a reservoir because so much water flowed through it. She stated the South Fork Rivanna Reservoir stratified—another term for developing a thermocline—in May and turned over in October. She stated in 2020, the largest algae concentrations to date requiring treatment had been recorded.

Ms. Bowles stated Ragged Mountain Reservoir was deep and stratified in early May and turned over in late November. She stated water quality improved compared to 2020 when the first blue-green algae bloom was recorded at the reservoir. She stated in the review by the expert consultant, they recommended additional algae samples be recorded at different depths.

Ms. Bowles provided the number of algacide applications for control of blue-green algae in each of the reservoirs. She noted the 2021 data for Ragged Mountain should contain an asterisk next to the ‘1’ because it indicated a green algae bloom. She stated Ragged Mountain experienced a blue-green algae bloom in 2020 and had not seen one in 2021. She stated throughout 2021, there were eight treatments for blue-green algae at Beaver Creek, and in 2022, there had been five. She stated the blooms for 2022 came earlier in the season, but they had not needed to do a treatment for longer than a month at this time. She stated no treatments had to be

done at South Fork Rivanna, Sugar Hollow, or Totier Creek for the year.

Ms. Bowles stated they performed reservoir surveillance where they surveyed the shorelines from boats on the reservoir. She stated surveillance was performed twice a year for Beaver Creek, South Fork Rivanna, and Ragged Mountain and once a year for Sugar Hollow and Totier. She stated they looked for trash, dumpsites, illicit discharges, unauthorized withdrawals, and invasive plants and weeds. She stated information they collected was provided to the County for review if there was a potential violation of the Water Protection Ordinance.

Ms. Bowles noted the reservoirs received nutrient flows from a large area of land. She stated the existing County Water Protection Ordinance was one of the best tools to protect water quality in the reservoirs. She stated it protected a 200-foot buffer around each reservoir and a 100-foot buffer around the other streams in the County. She stated they coordinated with the City and the County on recreational access, law enforcement, and safety. She stated a Memorandum of Understanding (MOU) had been drafted outlining reservoir responsibilities for discussion between the City, the County, and RWSA.

Ms. Bowles stated that there is a source water protection program in place. She stated the Authority received funding from VDH at the end of 2021 to install drinking water protection area signs. She stated VDOT had never been asked to install a sign for a watershed smaller than the Chesapeake Bay, but VDOT and VDH were supportive. She stated in each of the areas where signs were installed, there were two signs leading to the reservoir crossings.

Ms. Bowles stated RWSA participated in Rivanna River Fest and in the City's Climate Action Liaison Committee, and they would participate in the upcoming Rivanna River Basin Commission Conference.

Ms. Bowles addressed the Sugar Hollow Reservoir minimum instream flow (MIF) policy. She explained the MIF was part of the permit requirements for the urban system from DEQ and Army Corps of Engineers. She stated the MIF specified that the Authority must monitor overflows and make changes to the release twice a week, and the Authority must begin flow releases the third day after the reservoir has stopped spilling.

Ms. Bowles explained the rubber bladder on the top of the Sugar Hollow dam expanded and contracted due to the sun, air temperature, and water temperature, so the water could overflow at different points in the day depending on how expanded the bladder was. She stated video cameras were installed that allowed physical monitoring of the dam, and there was a level sensor that provided data as to the water level of the dam. She stated the cameras and sensor were reviewed every day.

Ms. Bowles stated the MIF requirements were developed in 2008 in coordination with the Nature Conservancy, several state and regulatory agencies, and interested stakeholders. She stated the policy was designed to mimic natural stream flow conditions. She stated when water was not being transferred, what water came into the reservoir would be released. She stated the requirement to mimic natural stream flow conditions meant there would be times when there was water in the river and times when it was dry.

Ms. Mallek asked if larger reservoirs were too big to use aeration techniques. She stated larger lakes had fountains. She asked if there were other solutions other than algaecide. She asked what the algaecide was and what the impacts were on the ecology of the reservoirs.

Ms. Bowles stated when analysis began in 2014, DiNatale Water Consultants created the monitoring program. She stated the impetus for the program was because the Board wanted to evaluate ways to minimize the use of algaecides. She stated the study looked at several methodologies for controlling algae other than copper sulfate, and there were other options. She mentioned hypolimnetic oxygenation.

Ms. Bowles noted larger reservoirs were able to receive oxygenation treatments. She stated the Authority was working with the consultant for additional phosphorous and nitrogen sampling and monitoring South Fork Rivanna and Ragged Mountain. She stated they were investigating using a hypolimnetic oxygenation system at South Fork Rivanna. She stated the hypolimnetic oxygenation system worked by piping oxygen into the hypolimnion without breaking the thermocline.

Ms. Mallek stated there was a debate as to the strength of the water protection ordinance. She asked if tributary studies were being performed.

Ms. Bowles mentioned copper sulfate was used as the algaecide. She stated studies had been done to evaluate copper accumulation in the reservoirs, and they found the numbers to be higher at Beaver Creek than South Fork Rivanna, but they were within the normal range.

Ms. Bowles stated there were a few regular upstream sites as part of the water quality monitoring program. She stated a special study had been performed at Beaver Creek for upstream tributary evaluations. She stated they monitored and followed DEQ and stream data.

Ms. Mallek clarified gas engines were not allowed on any of the reservoirs.

Ms. Bowles stated that was correct.

Ms. Mallek asked if drinking water protection signs were installed along Moormans Creek Reservoir. She stated Millington Road and Free Union Road were heavily traveled.

Ms. Bowles stated the program that provided funding for the signs was specifically limited to water supplies that served less than 10,000. She stated because Sugar Hollow and Moormans Creek were part of the urban system, the funding was not available for those locations.

Ms. Bowles noted that Rivanna, the County, the Soil and Water Conservation District, the City, and RCA were involved in the Rivanna Regional Stormwater Educational Partnership which included several outreach activities.

Mr. Pinkston asked what the Totter Creek Reservoir water was used for.

Ms. Bowles stated the reservoir was the drinking water supply for Scottsville, and it was sourced from a tributary of Totier Creek. She stated they exercised the reservoir pumps but primarily used the creek.

Mr. Mawyer noted the reservoir had an intake if they wanted to use it to serve the Scottsville Water Treatment Plant.

Mr. Pinkston asked about the Beaver Creek Reservoir.

Ms. Bowles explained Beaver Creek was its own watershed and flowed into the Mechums River which was part of the South Fork Rivanna watershed. She stated Beaver Creek was a limited source for Crozet and had no other connection to the urban system.

Mr. Pinkston asked if instream water removal could be accomplished rather than having a large dam at South Fork Rivanna Reservoir.

Ms. Bowles stated no detailed study had been performed, but it was a shallow reservoir. She stated impounding the water kept it at a usable volume.

Mr. Mawyer noted the South Fork Rivanna watershed went from almost Greene County to Batesville. He stated removing the dam from the largest water supply area would be risky in the case of a drought. He stated the water for Ragged Mountain came from South Fork Rivanna, so if there was no dam and an extreme drought, the reservoirs would be empty.

Mr. Pinkston stated he was interested in an MOU with interested stakeholders. He noted a longstanding issue between the City and the County about activities around Ragged Mountain Reservoir.

Ms. Bowles stated it also included South Fork Rivanna.

Mr. Mawyer stated Mr. Richardson suggested the MOU be drafted to decide who would be responsible for maintenance and other tasks around the reservoirs. He stated it had been drafted, and they intended to restart the discussion on the MOU to firm up the agreement.

Mr. Pinkston noted biking was also an issue. He stated he hoped the parties could come to an agreement.

## ***11. OTHER ITEMS FROM BOARD/STAFF NOT ON AGENDA***

Ms. Mallek stated Ragged Mountain was a reservoir, not a park, and if they wanted to have future drinking water, they had to do everything possible to protect it. She stated other places in the country did not allow visitation to watershed properties. She stated they had to protect the reservoirs.

## ***12. ADJOURNMENT***

**At 3:36 p.m., Mr. Rogers moved to adjourn the meeting of the Rivanna Water and Sewer**



729 **Authority. Ms. Mallek seconded the motion, which passed unanimously (5-0). (Mr.**  
730 **O'Connell and Mr. Richardson were absent.)**

731  
732 Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Jeff Richardson', is written over a horizontal line.

733  
734  
735  
736 **Mr. Jeff Richardson**  
737 **Secretary - Treasurer**  
738