



# RIVANNA WATER & SEWER AUTHORITY

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## RWSA BOARD OF DIRECTORS Minutes of Special Meeting and Board Retreat June 25, 2009

The Rivanna Water & Sewer Authority (RWSA) Board of Directors held a Board Retreat on Thursday, June 25, 2009 at 2:00 p.m., in the lower level Board Room of the Albemarle County Service Authority, 168 Spotnap Road, Charlottesville, Virginia.

**Board Members Present:** Ms. Holly Edwards, Mr. Gary Fern, Mr. Michael Gaffney – Presiding, Ms. Judith Mueller, Mr. Gary O’Connell, Ms. Sally Thomas, and Mr. Robert Tucker.

**Authority Staff Present:** Ms. Tamara Ambler, Mr. David Atkins, Mr. Bruce Edmonds, Mr. Tom Frederick, Mr. Chuck Kent, Ms. Mary Knowles, Mr. Cary Lang, Ms. Michelle Simpson, Ms. Jennifer Whitaker, Dr. Robert Wichser, and Mr. Lonnie Wood.

**Also Present:** Mr. Kurt Krueger – RWSA Attorney, members of the public, and media representatives.

### **1.0 Call To Order**

The special Board Meeting and Retreat of the RWSA Board of Directors was called to order by Mr. Gaffney on Thursday, June 25 2009 at 1:00 p.m., and he noted that a quorum was present.

### **2.0 Items from the Public**

Mr. Kevin Lynch, who resides at 609 Locust Avenue, Charlottesville, VA, commented that he was “very happy” that the Board was holding a retreat today. He felt it was “well past time that Rivanna did a little soul searching as to what exactly it was doing and will continue to do for the next several years with respect to water.” He further stated that he became “a little less” confident after reading the written material prepared for this retreat. Mr. Lynch claimed that he could summarize the PowerPoint® presentation in “about five seconds, which is ‘pay no attention to what is going on around you; just keep the money coming.’” He then read the following from the slide in the “Water Supply” presentation that listed the recommendations of the Independent Technical Review Team (ITRT): “A shallower foundation will be acceptable from a strength standpoint. Seepage can be mitigated by a grout curtain.” Although Mr. Lynch felt the foundation statement was not “untrue,” there appeared to be some concerns about leakage. He believed that the seepage question related to the manner in which “they would have to dig before it won’t leak.” For those who had not yet done so, Mr. Lynch suggested that they read ITRT’s report and “not rely on the PowerPoint® simplification of [their conclusions].” He then referred to the statement on that slide that read, “A simple and cost-effective approach to address Interstate 64 drainage issues should be pursued,” but he also noted that it does not mention how this would be pursued, whether it would be pursued, and its cost. Mr. Lynch next questioned the statement about early 2013 being a realistic completion goal. He felt that the ITRT report stated that the 2010 completion goal was “unrealistic and that 2013 might be more realistic.” [Editor’s Note: The schedule RWSA developed in 2005 called for completion by



2011.] He noted that there was an opportunity at the end of this presentation for questions, and he hoped that Board would ask RWSA staff some questions. Mr. Lynch then suggested the following question: "How much longer will Rivanna continue to throw good money after bad on this project?" He would also ask if RWSA planned to "look at any other potential project options," which was one of the last recommendations made by the Authority's consultant, Gannett Fleming, before they were "summarily ejected from this project." He next stated that if RWSA did proceed with the new Ragged Mountain Dam, Gannett Fleming had also recommended that "this option should include reevaluating the South Fork Rivanna Reservoir pipeline and pump station cost" and "whether a phased expansion of the existing dam ...along with dredging - might accomplish your water supply goals." He felt that "it would make sense" to look at the existing dam as recommended by RWSA's consultant.

Mr. Lynch next commented on the presentation concerning "Water and Wastewater Rates." He thought it was "interesting" that the numbers were based on the 2008 Capital Improvement Plan (CIP) numbers. He did not "blame" the Authority for using those figures since 2008 was a "really bad year for Rivanna" as well as for "a lot of companies." Mr. Lynch felt there were a "lot of companies that wished they could go to their Board of Directors and say, 'Let's just pretend last year didn't happen and use the numbers for the year before that.'" He also believed that the "escalating" numbers for all the Authority's projects should be "reflected in any current numbers going forward." Mr. Lynch next commented about a slide in the presentation that included a "graph of the projected annual debt for the City," which reflects that it will "triple between now and 2016, with two-thirds of the increase due to growth and one-third for maintenance." He then questioned if the two-thirds number was a "typo", since he believed that the City's water use has been declining since 1990. He further suggested that the Board ask the staff how this could be possible.

Mr. Lynch next addressed the last presentation concerning "Trends." He noted the absence of "water usage trends" since he felt that "would be a big one." He then reiterated his claim that "water usage was going down." He further stated that "while this body - Rivanna - really hasn't done anything since 2002 to increase the supply of water ... the community has done a lot. We've decreased our water usage by about 25%. That's the equivalent of the community building you all a new dam ...the savings that have been incorporated by the community through using low-flow appliances, through less watering ..." He felt it was "positive" that some of those water conservation measures were "championed by your retail agencies." Mr. Lynch further commented that "to go forward without at least acknowledging that trend I think is irresponsible."

Mr. Betty Mooney, who resides at 201 Sunset Avenue, Charlottesville, VA, next commented that she was "most disappointed" that she was not hearing any of the Board members or "many of our elected officials" expressing their concern about the cost of the water supply plan that they were going to implement. She was "greatly" appreciative of "Ms. Edwards and the City Council for demanding that we get those costs, which we do not have now." She then claimed that Mayor Norris has stated publicly that "the dredging estimates you have are highly inflated ...but yet this body will not pay for getting an accurate estimate." Ms. Mooney then stated that the "public is paying for everything you do" and she felt that "when they see what you are spending money on, they are not happy ... their water rates are going up, but they don't have any more water supply."

She believed that “nothing has been done here but spend money” and the information being used to move forward on the new plan “is totally inaccurate and you all know that ... you don’t speak out in public about this.” Ms. Mooney felt that the only elected official speaking publicly about this issue are “our City Council and [Mr.] Lindsay Dorrier - the sole Supervisor who has spoken out and said that cost matters.” She believed that “luckily we have some candidates that are going to run for election who are speaking out - Duane Snow is speaking - Mr. Fenwick is speaking out - Mr. Thomas is speaking out ... saying the cost matters - they want to see the dredging cost so they can compare it to the plan that you all are so adamant to push forward, and you don’t care about the cost of it. You just want to do it.” She further commented that “many people wonder why” but she was not going to discuss that aspect today.

Ms. Mooney next stated that “the City is now demanding - and the ratepayers are demanding - accurate cost information for dredging, for the dam, and for the pipeline.” She felt that “you must compare dredging costs to the dam and the pipeline.” She believed that the RFP put out by the Authority for \$25,000 would not produce an “accurate cost estimate ... You don’t have a cost for the dam after spending \$55,000 now, and you’re about to spend much more - and you’re demanding accurate estimates for the dam.” Ms. Mooney believed that the “project isn’t the dam. The project is the dam and the pipeline.” She felt that RWSA needed the same level of detail about the cost of the pipeline as there will be on the dam, which should then be compared to dredging. She then claimed that what RWSA knew about dredging at this time was inaccurate. Referring to Mr. Lynch’s previous comments, Ms. Mooney stated that the amount of water that this community is voluntarily saving “would build you a new reservoir ... and yet their rates are going up.” She also asked the Board to consider that “in 50 years we’re not going to water our lawns with drinking water; we’re not going to flush our toilets with drinking water.” She believed that this community will use much less water and claimed that the Authority’s data has shown that the amount of water usage by this community has decreased and “what the consultants told us was going to be going on, is not going on” because this community has “already dropped 25% below what [the consultants] said.” She further commented that the conservation level in the Water Supply Plan is 5%, which she felt was “way too low” and would “cost us hundreds of millions of dollars - the ratepayers.”

Ms. Mooney next commented that she believed there were no “good reasons” for wanting to build the dam. She also claimed that the Authority’s reasons are not “necessarily to look at the cost - the most affordable water plan - you may have environmental reasons for doing it - you may want to build huge water supply because you think we’re going to have unlimited growth forever and ever in Charlottesville.” If that was the reasoning, Ms. Mooney explains, then she felt that the City and the County should change their Comprehensive Plans to reflect their desire for “unlimited growth ...” She believed the amount of water should be based on those Comprehensive Plans, which she felt was not currently being done by the City and the County. She also felt that the City and County were not “looking at conservation and you are not looking out for the ratepayers.” She next expressed her belief that all the Board members “have comfortable salaries, most of you live in nice houses, many of you drive expensive cars.” Ms. Mooney next claimed that “your ratepayers don’t and in this economy, they’re hurting - they cannot afford to be burdened with costs that are unnecessary.” She also felt that the ratepayers “were angry” about this situation at the Authority. Ms. Mooney believed that the Board needed to take “a hard look at yourselves and reevaluate and get accurate information for the ratepayers

so you can give them a safe water supply, an adequate water supply, and an affordable water supply above all.”

Ms. Dede Smith 2652 Jefferson Park Circle, Charlottesville, VA, first distributed a handout (attached) to the Board members. She then commented that she reviewed the Board’s “orientation materials” and was “impressed with the repeated references to the *Four-Party Agreement*,” because she felt it was “particularly relevant to the Community Water Plan.” Ms. Smith next stated that she was “disappointed” that only “Section 7” of the agreement was cited in the presentation. She further commented that she felt “Section 4.3 that deals with new facilities ... that is the section that is most relevant to the Community Water Plan.” She then informed the Board that a copy of that section is located at the top of the handout she just distributed.

Ms. Smith next expressed her disappointment with the lack of reference to “Gannett Fleming’s *Demand Analysis*, dated May 2004, which is also available on RWSA’s website and was the document “used to determine the safe yield - at least the amount of water in million gallons per day predicted to be needed in 2055.” She therefore believed that “it is the *Demand Analysis* that determined the massive size of this project.” Ms. Smith felt that “even more important, it is the Gannett Fleming *Demand Analysis* that has been cited as the reason to dismiss the possibility of dredging the South Fork Rivanna Reservoir as part of the 50-year water plan.” For those reasons, she believed that it was “odd that the *Demand Analysis* is absent or perhaps I just missed it.” She then claimed that “there’s overwhelming evidence that the *Demand Analysis* is now in 2009 simply wrong ... it is inconceivable to me that you all would not insist on revisiting this crucial variable.” Ms. Smith next explained that she felt the report was not “so far off base” because of population projections but was due to Gannett Fleming not being able “at the time to predict the success of our water conservation in this community - at least what we have seen in the last five to ten years.”

Ms. Smith next commented about the second item on her handout related to the “language” contained in the *Demand Analysis* about how the 5% water conservation figure was derived. She then claimed that today’s water use is 25% below the Gannett Fleming’s projections. She referred to the graph on her handout, which is the one used in the Gannett Fleming *Demand Analysis* to predict this community’s future water needs, which is about 12.5 million gallons per day. She then pointed out the graph on the other side of the handout, which is produced by RWSA to illustrate the “Urban Monthly Production.” Ms. Smith noted that the current monthly water production is about 9.5 million gallons per day versus the 12.5 million gallons per day projected by Gannett Fleming.

Ms. Smith then appealed to the City representative on the Board to “ask hard questions today in light of the ‘Four-Party Agreement’ as it relates to new facilities and how the cost share will be allocated for those facilities ... to expand the water supply.” She also hoped that all of the Board members would “demand that RWSA revisit predictions for future water and reconsider your options in light of a new report.”

Mr. Bob Fenwick, who resides in the City of Charlottesville, VA, next commented that he wanted to “echo what [Ms.] Betty Mooney said.” He thought she was “very eloquent.” He further stated that the “people I speak with are very concerned about the cost of this option,

especially when it seems that dredging is getting the shorter shrift.” He then commented on a newspaper article that appeared a couple weeks ago that indicated some “fractured rocks were found in the area where the dam was to be situated.” Mr. Fenwick next asked that one of the Board members address the issue of exactly where the “fractured rock” was found in relation to the “dam and the watershed.”

Mr. Gaffney thanked the members of the public who provided comments at today’s meeting.

### **3.0 Business Meeting**

In regards to **Item 3a) Approval of Minutes of the regular meeting of the Board on May 18, 2009**, Mr. Frederick noted one correction to page 7. Ms. Thomas’s comment on the ninth line from the top of the page currently reads, “group management project purposes,” which needs to be changed to “growth management project purposes.” Ms. Thomas then stated that Ms. Knowles had consulted her about this proposed change to the minutes after the Board packets had been distributed, and Ms. Thomas was in agreement with the edit as presented today.

**Mr. Tucker moved that the Board of Directors vote to approve the minutes of the regular meeting of the Board held on Monday, May, 2009, as amended by Mr. Frederick, seconded by Ms. Thomas. The motion was approved by a 7 - 0 vote.**

In regards to **Item 3b) Consent Agenda**, Mr. Gaffney asked if there were any items that the Board members would like to pull for questions or further discussion.

- 1) Staff Report on Finance
- 2) Staff Report on Operations
- 3) Staff Report on On-going Projects

**Mr. Tucker moved that the Board of Directors vote to approve all three Consent Agenda items, seconded by Mr. Fern. The motion was approved by a 7 - 0 vote.**

### **4.0 Strategic Issues Reports from Staff**

In regards to **Item 4a), Moores Creek WWTP Nutrient Removal Improvements**, Mr. Frederick recognized Dr. Wichser who would make this presentation. As there was some technical problem with viewing the PowerPoint® presentation at this time, Dr. Wichser asked that the Board and the members of the public in attendance refer to the handout included in the Board packet as he presented the information.

Dr. Wichser began his presentation by referring to the second slide entitled “Project Objectives/Overview.” He stated that the plant upgrades for nutrient removal was a “wonderful” project even though it was mandated by the Virginia Department of Environmental Quality (DEQ) to protect the James River, the Rivanna River, and the Chesapeake Bay. Some of the important benefits from this project include not only enhanced nutrient removal capability of the Moores Creek WWTP, which will remain at its currently rated flow of 15 million gallons per day (MGD), but also upgrading and replacing the aging infrastructure, the ability to generate electricity on-site, thereby reducing the Authority’s “dependence on “off-site electrical generated

energy, implementation of Phase 1 of the odor control improvements, and improve water quality in our streams.

Dr. Wichser next discussed the “Key Features” of the project. The facility will be using biological and chemical nutrient removal as a result of this project. Advanced filtering will also be utilized to remove some of the “trace phosphorus.” The expansion and upgrade to the existing four aeration basins and the addition of a fifth aeration basin will allow for advanced nutrient removal through “biological phosphorus removal and biological nutrient nitrification removal.” Ms. Thomas then inquired if any component of this project would “enlarge the capacity to deal with the extra wastewater that comes in with the rainwater since the facility’s current flow rating would not be expanded. Dr. Wichser replied that the plant would increase its peak wet weather capacity to 37.5 MG. Ms. Thomas then asked about the facility’s current capacity to handle the rainfall, and Dr. Wichser stated that the facility can treat about 18 MGD to 19 MGD of wet weather flow.

Returning to his discussion on “Key Project Features,” Dr. Wichser stated that “advanced filtration” will be added as well as “biological, chemical, and physical phosphorous removal”. An ultraviolet disinfection system, will replace the existing chlorination system. The facility will have “a dedicated septage receiving and odor control station, which the Authority will have in operation by the 12<sup>th</sup> month of the project. As mentioned previously, the project will provide for “energy recovery and generation systems” by generating electricity from biogas.

Dr. Wichser then discussed the slide that listed the “Project Design Parameters.” He stated that in the wasteload allocations mandated by DEQ, the Moores Creek WWTP was permitted at an annual average of 6 milligrams per liter (mg/L) total nitrogen and 0.5 mg/L for total phosphorus. RWSA decided, with the Board’s approval, that the facility could do “better” than those wasteload allocations and went to 5 mg/L for total nitrogen and 0.3 mg/L for total phosphorus. In order to meet those wasteload allocations, the Authority plans to upgrade and replace aging facility infrastructure. The north-side facility became operational in 1960, and the south-side facility in 1981. Related to this issue, the facility experienced a major failure of the clarifier equipment this past April, piping has been replaced due to continued leaks and failures, the blower engines have been rebuilt multiple times to the point that additional rebuilds are not recommended, and the digester equipment originates from the early 1960s and will be replaced.

Dr. Wichser next addressed the slide that illustrates the “Present and Estimated Future Nitrogen Loads to the James River”. He stated that the Moores Creek WWTP will be “capped at 167,201 lbs.” of total nitrogen as of January 1, 2011. At this time, the facility is “well over 500,000 lbs. of total nitrogen.” Referring to the next slide, he noted that facility will be decreasing the amount of total nitrogen from about 550,000 lbs. to about 152,000 lbs. in 2011 with the potential option to generate over 5,000 credits at up to \$2.00 a credit. As the process is “brought on line and optimized in 2012,” RWSA expects to be able to remove more nitrogen and double the amount of credits it could receive. Mr. Fern then asked if the increase in the amount of nitrogen being reduced from 2011 to 2013 was the result of bringing new equipment on-line for each year. Dr. Wichser affirmatively replied and added that the Authority planned to get the filters “up and running” by 2011, but the addition of the fifth aeration basin will not be completed until later. It will take “a while to truly optimize those processes,” and when the upgrade project is completed

and fully optimized, RWSA expects a greater reduction in the total nitrogen and total phosphorus loads. Ms. Thomas then asked if the credits would become more profitable during this process. Dr. Wichser stated that currently the value of the credits are set through approximately 2014 with the Virginia Nutrient Credit Exchange (Exchange). After 2014, the Exchange will reevaluate that figure and there is a possibility that the value could experience a small increase. Concerning the Exchange's operation, Mr. Frederick next clarified that the buyer's cost is fixed but the seller's receipts float, depending on the amount of available credits on the market. There is no guarantee at this time that the receipts per pound of nitrogen or phosphorus would be as high as the purchase price Dr. Wichser quoted earlier; when there are excess credits available over credits purchased, the price realized by the seller goes down.

Dr. Wichser then discussed the slide that illustrated the "Present and Estimated Future Phosphorus Loads to the James River. He noted that the facility will be "capped at 22,842 lbs. as of January 1, 2011." The next slide shows that the Authority currently "put[s] out a little more than 116,000 lbs of phosphorus." In 2013, the figure will decrease to about 10,000 lbs. He noted that the figures reflect going to 0.3 ml/L on an annual average. There was the opportunity for the Authority to receive approximately 12,000 credits for phosphorus in 2013.

Mr. Tucker next asked if the caps listed on the slide for total nitrogen and total phosphorus were the minimum caps required by the state and federal governments or could the improvements being undertaken at the Moores Creek facility allow RWSA to do "even better" than those figures. Dr. Wichser replied that those figures reflect that the Authority is proposing to "do better" than the minimum requirements.

Dr. Wichser next addressed the "Environmental Benefits" derived from this project, which included improving water quality in the Rivanna River, James River, and at the mouth of the Chesapeake Bay, the reduction of odor emissions that are detectable off-site, improved energy efficiency, and reduction in the amount of greenhouse gases and carbon footprint.

Dr. Wichser then referred to the plant diagram on the next slide. The plant processes colored in yellow on the diagram are the new aeration basin and new secondary clarifier. The red-colored processes are the tertiary filter, the ultraviolet system, and some of the chemical feed necessary for the "biological/chemical removal of nitrogen and phosphorus."

Dr. Wichser next commented on the slide that discussed the "Digester (Biogas) Use for Plant Energy Needs." A hot water boiler will be installed to increase the reliability of the digester heating to produce methane. A process "devoid of oxygen" will also be used to reduce pathogens. The optimization of the digester heating will result in the production of more electricity. This process will also reduce the amount of the facility's "greenhouse gas" from approximately 1,132 tons of carbon dioxide per year to an estimated 665 tons of carbon dioxide per year. Mr. Gaffney then inquired about the value of the electricity that will be produced. Dr. Wichser stated that although he did not have those estimates available to him at this time, he could provide that information to the Board.

Dr. Wichser then addressed the slide that listed the "Project Timeline." The overall construction period is 42 months. The formal groundbreaking was held on May 27, 2009 with Governor

Timothy Kaine in attendance. The contractor began work on June 1 and is progressing so far on schedule. RWSA is committed to completing the septage and odor control components in 12 months. Albemarle County has agreed to fund the Septage Receiving Station. RWSA is also committed to complete the filtration and ultraviolet systems in 22 months. It is expected that the total project will be completed by late Fall 2012, and the “plant start-up and optimization” by January/February 2013.

Mr. Gaffney next inquired about the “expected life of the plant once [the upgrade] is finished. Dr. Wichser replied that generally plants similar to the Moores Creek WWTP are designed for a life span estimated between 25 to 30 years. Some components of the ultraviolet system may need replacement after about 5 years.

Mr. O’Connell then asked about the bid amounts for this project. Dr. Wichser stated that the low bid came in at \$40.3 million, with \$21.7 million being funded through the Water Quality Improvement Fund (WQIF) and the remainder to be funded through state or local funds.

Dr. Wichser next commented that he felt the “community should be proud of [Rivanna’s] stance in wanting to do better than what we’re required to do. He also thanked the Board for their approval of this project and commended the collaborative effort of staff and consultants that resulted in this being a “real good project.” Ms. Thomas then referred to Governor Kaine’s statement that he thought these upgrades “should be a model for other communities,” which she felt was a “nice” reflection on this project.

In regards to **Item 4b), Wastewater Interceptors and Comprehensive Sanitary Sewer Study**, Mr. Frederick first referred to a question addressed to him at a staff meeting concerning the best way that RWSA could “promote going green.” He had responded that the best way was to “fix our sewers.” He also felt it was an “extremely important topic,” and RWSA was “dedicated” to maintaining its sewers and preventing improperly treated wastewater from “polluting” our environment. He felt that it would take proper operation and updated infrastructure to succeed in meeting this goal.

Mr. Frederick then referred to the slide that listed the “Objectives,” which included a “Master Plan going forward.” It also required “multi-agency coordination.” He used a tall oak tree as an example of this multi-agency approach, with one side of the tree representing the City of Charlottesville and the other side the urban area of Albemarle. The trunk represents the interceptors that RWSA is required to maintain that serve both the City and the County. Several branches and leaves represent the City’s collection system on one side, with the many branches and leaves on the other side representing the County’s collection system. Viewing the tree as a whole, “it’s not three trees; it’s one tree, and it’s an integrated system.” The outlook needs to be long term, which means a focus until 2040 or 2060 instead of just the next three to five years. The next item called “Get Ahead” reminded him that when he first arrived at the Authority, there was not very much information available in terms of sewer planning as a basis to move forward on this project. During the process of gathering information, some serious “limitations” in the Meadow Creek Interceptor were discovered, which created decisions that were a “surprise” for a couple of projects that were being proposed for development in Albemarle County. In response to a question from an Albemarle County Supervisor about how to prevent future surprises,

Mr. Frederick had responded that in order to prevent such surprises, the Authority needed to be prepared in advance about capacity issues for certain systems and also continually measuring critical points in the system to advance plans for renewal at the appropriate earlier time rather than waiting until the system is at 100% capacity. Two key provisions of the "Four-Party Agreement" that affect wastewater interceptors relate to RWSA's responsibility when requested by the City or the ACSA "to provide additional assistance to handle additional flow." Under this agreement, RWSA also has the "right to allocate the flow that exists in sewer pipes in order to avoid the environmental consequences of having too much wastewater in too small a pipe." Regulatory compliance also is a factor and can sometimes appear to be in conflict with the "Four-Party Agreement." The Authority felt that with proper planning that these two can be "integrated as a whole." DEQ and EPA have certain provisions on wastewater pipes and how to handle the situation when capacity has been reached. RWSA currently has a low-interest loan from DEQ for the Moores Creek WWTP. As an example, regulatory agencies review the amount of wet weather flow in our combined systems, and without also being cognizant of regulatory goals in proper planning and timing, this can become an issue in future funding and prevent the Authority from taking advantage of future funding opportunities.

Mr. Frederick next addressed the "Concept" for this project. The Authority's goal is to "optimize the combined total of our resources," which he felt "ties back" to his discussion on "Multi-Agency Coordination." The two ways to maintain capacity involve expanding the sizes of RWSA's interceptors and reduce the amount of wet weather flow that enters the combined systems by coordinating goals and implementing rehabilitation projections. He referred to the next slide, which he felt graphically shows that vision. The green line on the graph represents the costs for expanding interceptors, which are reduced as wet weather flow is removed. The fuchsia-colored line represents the increased costs associated directly with the removal of wet weather flow through rehabilitation. The yellow line, which is a combination of the two, is considered to be by RWSA as the most important of the colored lines. Generally, EPA has found with sewer systems that there is a "U" shape with most all systems. The optimum point is found by the combination of removing the wet weather flow and expanding downstream interceptors that provides the lowest overall cost and yet achieves the environmental objectives of this community. The challenge for the Authority is where that target is for this project. Ms. Thomas then commented that this was her "favorite chart in this whole presentation today," and she felt that it was the duty of this Board to keep "an eye on the yellow line." She was "eager" to be provided the "dollar figures that are connected to both of those lines so that we can find that point."

Mr. O'Connell next stated that he would be interested in seeing how the Board's decisions related to line replacements throughout the systems would impact the retail rates of both the City and County ratepayers. Mr. Frederick replied there will be decisions that will be coming before this Board in terms of rehabilitation of RWSA's interceptor system, which will be reflected in RWSA's Capital Improvement process. There will be rehabilitation that the City of Charlottesville is proposing for its collection system that will need City Council approval. ACSA will also have rehabilitation issues that it will present to its Board. The staffs of those agencies want to coordinate those efforts to achieve the goals presented today. This information will then need to be provided to all those Boards so that there will be a consolidated decision to the chosen goal. Ms. Thomas then commented that if each entity attempted "to keep the cost as

low as possible, we'll end up with a more expensive system as a whole and that in turn will be reflected in the charges." Mr. O'Connell next inquired if there was a "common report" that would be presented to all four boards outlining this consolidated process and impacts to each system. Mr. Frederick next stated that he felt all participants were "on target with this vision," but the details, costs, and reporting as it related to the chosen target still need to be resolved. Mr. Gaffney then inquired if it would be possible to combine the designing efforts of the three entities into one project. Mr. Fern replied that it was not possible because the City, ACSA, and RWSA were each evaluating their own collections system. Ms. Thomas next asked if television cameras were used to view inside the pipes and what percentage of the piping system was examined in this manner. Mr. Fern stated that many miles of pipes were viewed by television cameras, but he did not have the exact percentage for the ACSA at this time. O'Brien & Gere were the consultants used by ACSA to evaluate its sewer system for just the Meadow Creek drainage basin, and they used television cameras for this survey. Ms. Mueller added that the City is also using well monitoring to identify the areas in the City's system that were experiencing wet weather flow, which will be a long process to determine the most cost-effective approach to addressing this issue. Mr. Fern then commented that ACSA has assessed the problem in just the Meadow Creek drainage basin. The next step is to undertake the rehabilitation and then conduct future monitoring to evaluate the effectiveness of the rehabilitation work, which then can be used as a gage for the future basin. Ms. Thomas next questioned how RWSA sized its interceptors, and Mr. Fern replied that it was the "crux" of the problem. He further commented that assumptions are made on what they think will be achieved through the rehabilitation. The next issue to address is how to convey that information to RWSA so that the interceptors can be sized. Mr. Gaffney then asked Mr. Frederick about the number of interceptors that have been inspected through television cameras and flow meters. Mr. Frederick replied that the Schenks Branch has been almost completed and then asked Ms. Whitaker about the status of the other interceptors. Ms. Whitaker stated the Meadow Creek Interceptor has been thoroughly evaluated as well as portions of the Powell Creek Interceptor. There has also been some focus on the 60-inch diameter Rivanna Interceptor and the Crozet Interceptor. A variety of measuring techniques were utilized during those evaluation processes.

Returning to his presentation, Mr. Frederick referred to the slide that listed the "Project Milestones." He noted that there were a couple of dates that still need to be provided in the future. The Rivanna Pump Station and the Moores Creek Pump Station were the two major facilities that pumped wastewater from the interceptors, which comes from both collection systems into the Moores Creek WWTP. RWSA sees a need for some improvement at both of those facilities to handle wet weather flow, and the big question concerns the criteria to be used for expansion. As discussed previously, the City, ACSA, and RWSA are working very diligently to compile detailed information on those systems, which will be a long and tedious process to determine cost-effectiveness through wet weather reductions. Preliminary assumptions might need to be made in order to set criteria for projects that must be done now for the benefit of all three agencies, recognizing that the criteria will change or adapt as more information is compiled.

Mr. Frederick then referred to the last slide in his presentation that identifies the interceptor systems with "near-term 'radar screen' issues strictly for RWSA." The Moores Creek Interceptor is in the advanced stages of design and expects that the project will be ready to go out to bid for construction of the new pipeline in the next couple of months. There have been some significant

discussions concerning the Schenks Branch Interceptor, which serves Charlottesville mainly in the downtown area, and is the oldest piping system currently maintained by RWSA. One concern is whether to increase the pipeline size or rehabilitate what is currently underground, which depends upon the wet weather data being evaluated now. He previously discussed the Rivanna Pump Station and the Moores Creek Pump Station, and Ms. Whitaker addressed the Crozet Interceptor. There are some issues west of the Lickinghole Creek Reservoir in Crozet that may need to be addressed. Some tentative strategies at that location include wet weather rehabilitation and possibly some additional storage. Ms. Thomas then commented that she used to get some complaints about the “bad smells” on the Crozet Interceptor, and she has not any of those complaints for a long time. Mr. Frederick complimented Dr. Wichser and Mr. Cary Lang on that particular issue for their close monitoring efforts on that chemical system.

In regards to **Item 4c), Water Supply**, Ms. Whitaker stated that she would be covering a lot of material today and encouraged questions whenever clarification was needed during her presentation.

Ms. Whitaker referred to the first slide that listed the items that would be highlighted on this project, which included background information, the Ragged Mountain Dam from a design wetland, and stream mitigation perspective, the South Fork to Ragged Mountain Pipeline, and the South Fork Rivanna Reservoir Dredging Feasibility Study.

Ms. Whitaker then presented a very brief background summary. In 2006, a preferred alternative for the water supply was identified after a long public and regulatory review process. A decision was made by all the elected and appointed boards to expand the Ragged Mountain Reservoir, which included constructing a new dam immediately downstream from the existing dam. This project also achieves the Dam Safety requirements, meets the storage requirements to satisfy the 50-year projected water demand, and in turn improves stream flow below the existing dams. Associated with this project is the construction of a new pipeline from the South Fork Rivanna Reservoir to Ragged Mountain. There are other components to the plan, but she will be focusing on these particular issues.

Ms. Whitaker next reported that in June 2008 City Council voted to reaffirm the Water Supply Plan with a few amendments, which included a request for a dredging study and for the City and ACSA to increase conservation efforts.

Ms. Whitaker then stated that in November 2008 the four boards met to discuss the status of the water supply process. The perceived direction from that meeting entailed proceeding with the design activities for the new Ragged Mountain Dam, and performing an independent review of the South Fork to Ragged Mountain pipeline conceptual design due to concerns expressed at that meeting about the cost estimating as well as the alignment and assumptions made about the pipeline. There was also discussion about a Dredging Feasibility Study for the South Fork Rivanna Reservoir and a request for a Water Conservation Study by ACSA and the City. Mr. Fern next inquired if the RFP for the independent review of the South Fork to Ragged Mountain Conceptual Design had gone out. Ms. Whitaker confirmed that the RFP has been issued.

Ms. Whitaker next addressed the Ragged Mountain Reservoir and Dam. She stated that currently it was really a two-dam system, consisting of the Lower Ragged Mountain Dam and the Upper Ragged Mountain Dam. The upper dam was built approximately in 1885, and the lower dam was built approximately in 1908. This was Charlottesville's first reservoir. Both dams are listed with Virginia Dam Safety, which is under the Virginia Department of Conservation and Recreation. RWSA has conditional operating permits on both facilities due to spillway and stability concerns. Specific concerns with the lower dam relate to the compaction of the soil that abuts the lower dam, as well as the spillway being substantially undersized for the required design storm. Ms. Thomas then asked if the water level been lowered the way it usually is in the summer. Dr. Whitaker responded that the water level is in the process of being lowered as preparedness in the event of a hurricane. Ms. Whitaker then stated that due to its topography, even if the Reservoir was completely empty, it would not be able to handle the "probable maximum flood storm" that RWSA was required to design toward. There were concerns that even with a "good-sized storm" there would be issues with the capacity of that spillway, as well as the downstream "repercussions."

Ms. Whitaker then discussed the Ragged Mountain Dam Design efforts to date. The key studies included geotechnical investigations, preliminary dam design and possible shifts in alignment, site investigations, and the review by the Independent Technical Review Team (ITRT). Ms. Whitaker next stated that there were three issues being looked at related to this project, which included the foundation depth, the "core walls," and Interstate 64. She referred to the next three slides that illustrated the "Geotechnical Investigation." On the first of those slides, she pointed out the location of the existing Lower Ragged Mountain Dam and the proposed new alignment for the dam, which is immediately downstream. The preliminary geotechnical investigations that were performed leading up to August 2008 identified a few areas of concern. Those areas of concern then led to "proportional cost to address those areas of concern." She focused on the foundation itself, which consists of very hard rock that "weathers deep." The result is very "competent" rock with zones that have "less competent rock." The question concerned the potential impacts of those zones of "less competent rock" - whether or not they pose a problem, whether or not you can treat those areas, and what are the "implications." At the time of the August discussion, it was recommended that treatment involve "digging 60-feet deep and excavating out beneath the entire dam." She explained that a dam is basically a "triangle." The base of a "triangle" is wider, so the more volume you have to remove, the more volume you have to put back in, which increases the cost. Additionally, the cost to remove the hard rock is very expensive so that you can treat the "partially weathered seams." She then pointed out the section where the dam is situated. The "core walls" or "wing walls" on the side are "treatments of the abutments, which are ridges and the dam is being "tied into those ridges." The concern is how the "water seep" goes through that soil. The August recommendation involved excavating these "ridge lines," coming in with a "concrete core wall at full depth and then fill back in on both sides," which is a very expensive way to deal with some of the issues. The ITRT later looked at this as one of the areas of possible considerations for change in design.

Ms. Whitaker next discussed the slide concerning the "Geophysics Imaging" or "MASW" of the dam. The procedure involves placing a large camera and a large spike into the ground, and a shock wave is sent through the earth. Sensors are placed all around that pick up "how fast those sound waves bounce off the rock and come back." The slide is a "graphical representation of

what that information showed.” MASW is now “definitive” and is used in combination with “bore holes” and historical information. The “cooler colors are slower speed sound waves.” The “hotter colors” represent much denser rock. On the west end of the dam, there is a “cool color” that “dips down deeper than the rest.” The questions concern whether that is a true representation, what information is needed about that “dip,” and do you “treat the whole dam foundation in order to address that dip.” Ms. Thomas then commented that she thought that “blue was good.” Ms. Whitaker stated that “blue is slower speed, which means coarser rock” and is an issue of concern. She further explained that “the looser the material, the softer the stone, the sound waves bounce around in the stone and rock and work their way slower to the surface.” She reiterated that this is used as a “tool” in combination with other geotechnical investigations. There were some trench holes that were dug that “countermanded” some of this information.

Ms. Whitaker then referred to the slide that showed the MASW image of the east end of the dam, which presents some different issues. The red and yellow colors at the surface indicate “hard competent rock,” but there is a “little pocket of blue that slides in underneath” that area, which is the area of concern. She included the MASW imaging information so that the Board could better “appreciate the complexity of the analysis” currently underway.

Ms. Whitaker next noted that the next slide pictures Interstate 64 at the upper end of the proposed and existing Ragged Mountain Reservoir. She pointed out the embankment area that is currently 140 feet tall, and there is an 8 x 8 foot box culvert that runs under this area and is 750 feet long. The issues of “pushing water up against that box culvert” meant that VDOT and the Federal Highway Administration have to approve whatever is done in this area. To date, those agencies have been “very supportive of the ideas and the concepts” but the details need to be discussed further. VDOT has had some different policy discussions on what their policy should be regarding this project, and there are “different theories amongst different groups of people on what level of hydraulic protection this embankment requires.” The expense is “directly related to what level of storm that box culvert and that embankment need to be protected to.”

Ms. Thomas next inquired if drillings had been done to identify the rock composition.

Ms. Whitaker replied that she was correct, and added that it “appeared that the ridge on either side were blasted and bulldozed into the hole.” It is “basically a rock-filled dam with big boulders in that entire fill section.” Mr. Gaffney then questioned about whether it was a large watershed above that stream. Ms. Whitaker stated it was a “very small watershed,” and the watershed “currently drains to the present reservoir.” The issue is that with the raised dam height the pool will be actually backed up into additional areas. The entire basin is “less than 1.8 square miles both upper and lower.

Ms. Whitaker then commented that the issues she just discussed that impacted cost had raised staff concerns. Subsequently, RWSA stopped the project work and brought to the Board the concept of the ITRT. The Authority then hired the ITRT, which consisted of three “world-class” dam experts. The ITRT evaluated all the project information to date and provided “some general observations” that staff spent a considerable amount of time discussing with the ITRT members. The ITRT were “generally in agreement” on the following items:

- “A shallower foundation will be acceptable from a strength standpoint.” Ms. Whitaker added that foundations “hold your dam up and they keep water from moving under it.”

One of the key questions related to whether there was a “foundation stability problem and a seepage problem or do we have a potential seepage problem or do we have neither.” The general feeling among the ITRT group was that the foundation could be substantially raised and that it was not a stability problem. They also felt that the seepage issue could be “mitigated by a grout curtain.” The fact that Ragged Mountain is a “100-year-old dam located immediately upstream on the same rock formations that have very minimal seepage was partly “driving some of the discussion.” The ITRT felt after their initial field investigations that the “geological formation has some merit” and further investigations were needed “to pinpoint how we best treat these areas.”

Mr. O’Connell next asked if the colored areas on the “Geophysics Imaging” slides represented fractured rock. Ms. Whitaker explained that the colored areas were “sound waves through the rock”, and it was intended to indicate the degree to which the rock was weathered. The “loose rock seams” or “partially weathered rock” that develop over time were initially the issue of greatest concern, but was not a condition “unique to this site.” Mr. O’Connell then inquired if the “knowledge” of the presence of “partially weathered rock” was obtained through “extensive core drillings.” Ms. Whitaker stated that “core drillings” were done at this site. She added that what the ITRT is actually recommending is to do “test trenches,” which she explained is actually accomplished by conducting a “surface exploration.” She referred to the original construction pictures of the old Ragged Mountain Dam from the early 1900s that illustrates the irregular surface. The ITRT “fully believe that that is going to be what our foundation looks like but that is not an unbuildable foundation. It’s just going to be highly irregular, and we need to make provisions in the design to deal with that [issue].”

- “Their general belief was that the wing walls were not necessary.” They felt that “either grouting or some other form of treatment in those abutment contacts could be done at a much lower cost.”
- It was also the “general feeling” of the ITRT to “pursue I-64 with a consultant with specific experience in dealing with VDOT highway drainage issues.” It was also recommended that RWSA continue its negotiations with VDOT to “achieve what is a reasonable standard generally held within the state and the across the nation” and that the Authority not pursue the “most conservative way of dealing with that highway abutment,” because they felt the reasonable general standard was “achievable.”

Mr. Frederick then stated that RWSA was “looking for the pragmatic solution that works but protects the roadway” and “doesn’t require [RWSA] to spend unnecessary money.” Initial discussions are conducted with field engineers at the VDOT level who “tend to be very, very conservative.” The Authority needs to “remember that the first answer is not necessarily the right answer, and [RWSA] needs to keep [asking] the questions and keep looking for alternatives.” He felt this issue would involve more of a “negotiation process between two agencies” than a “technical process.”

- The ITRT felt “realistically that 2011 was not achievable and at the time they thought a 2013 date was more achievable.”

Ms. Whitaker then discussed the slide that listed the Ragged Mountain Dam “Design and Construction Schedule”, which she qualified as being ranges and not exact dates. She stated that initially it was felt that in early 2010 the “sub-surface investigations” would be finished, which included some of the “test trenches.” The cost estimate update was scheduled to be completed in Spring 2010 with a “completed design” by Fall 2010. Construction would begin in early 2011 and the project completed by 2013.

Mr. Tucker next commented that many are questioning why RWSA cannot obtain cost estimates as early as possible in order to make a comparison. He added that there “is a phasing and a process” as to why it takes longer to get a final estimate. Mr. Tucker then requested that RWSA staff briefly explain “why we don’t have a solid number.” Mr. Frederick responded that there needs to be a better understanding of the geological ground conditions at the site in order to develop a “reliable cost estimate.” Mr. Tucker acknowledged the public’s frustration of not being provided with that cost estimate, but he felt there was a process that was being undertaken in order to get to a “better number.” Mr. O’Connell equated the process to building a house on property that contains rocks, which impacts the final cost of the house. Mr. Frederick then stated that the challenge of a dam foundation is “greatly enhanced ... because your holding back a vast body of water that weighs a tremendous amount,” which makes the geology issues “more critical and more magnified.” Ms. Whitaker next commented that she felt that the “test trenches” will provide a “clearer picture of the elevation,” which drives the volume of material and therefore the cost of the project. Mr. Tucker then stated that he felt that eliminating the need for the wing walls as originally proposed would help reduce the project cost. Mr. O’Connell next stated that he was not clear “how you substitute for the use of the wing walls”. Ms. Whitaker responded that the issue relates to “how much you can treat with grout.” She further explained that at the bottom of the dam is “very tall water,” which provides “a lot of driving force,” so the rock formation needs to be “tighter near the foundation of the dam.” In the abutments, the amount of water that is a driving force through that “column of earth gets less and less,” so “less resistant force” is needed to control water seepage. The “general feeling” of the ITRT was “what was proposed at some substantial cost was more than what will be required to reasonably treat seepage through those abutments ...” Mr. O’Connell then asked if the “grout curtain” concept would be used for the foundation, and Ms. Whitaker replied that it would be used on the foundation as well as the core wall areas. She further explained the process, which involves drilling holes, filling the holes with grout, and the grout then “squeezes into all the spaces.” This essentially creates “a subsurface wall,” which keeps the water from moving through the area. Mr. O’Connell next asked if this was a “common technique,” and Ms. Whitaker affirmatively replied. Mr. Gaffney then equated this process with placing a liner into a pool.

Ms. Whitaker next discussed the Franklin Street “Wetland Mitigation Site,” which is associated with the water supply project. She stated that 4.1 acres of wetland will be created. This project is currently in the design phase and anticipated construction to begin in 2010. Ms. Thomas then asked if this area would be converted into a park. Ms. Whitaker stated that there have been some discussions about it becoming a public educational area. Mr. Frederick added that RWSA has been working toward retaining the site’s “agricultural nature for the benefit and the enjoyment of the tenants who are out there.” No decisions have been on any long-term plans for that site. Some people who live in that area might “oppose turning it in to a public park,” and RWSA is trying to “recognize and work” with those individuals. Ms. Whitaker then asked Ms. Thomas if

her question dealt specifically with the wetland mitigation site or to the Buck Mountain site as well. Ms. Thomas responded that she was referring the Franklin Street site, and Mr. Frederick clarified that he was discussing the Buck Mountain site. Ms. Whitaker added that there have been some discussions about doing public education on wetland sites and making the area available for “school tours.” One of the issues dealt with the close proximity of the stockyard and the animals’ access to the wetland site. Mr. Frederick further stated RWSA will be required by regulation to “fence the site” and will not allow the public to “walk the site at will” due to the performance goals that RWSA needs to meet with respect to the mitigation. Ms. Ambler and staff are working toward the possibilities of allowing educational tours, as well as some “kiosks” being developed by some “science classes” as part of an educational experience about wetlands.

Ms. Whitaker then addressed the slide concerning the “Stream Mitigation” at the Buck Mountain Creek area. She stated that this mitigation project involved the creation of approximately 59,800 linear feet of wooded buffer for the Buck Mountain Creek and its tributaries that are within the RWSA property area. Project design is currently in progress and construction is scheduled to begin in 2010.

Ms. Whitaker next discussed the South Fork Rivanna to Ragged Mountain Pipeline project. She stated that “as proposed” with Community Water Supply Plan, federal, state, and local permits were granted for this project. She then referred to the slide that graphically showed the pipeline route, which consists of about 9.5 miles of 36-inch pipe. The selection of this particular alignment was to maximize the portion of the route going through publicly owned land as well as larger tracts of land. She noted that there were alternative alignments, and she felt that as the preliminary design work moved forward, a decision would be made on the final route.

Moving on to the slide that discussed the “Pipeline Review,” Ms. Whitaker reported that the RFP for the review has been issued, and the scope of the work addresses specific requests made at the November 2008 meeting of the four boards. The schedule is as follows: Receive proposals by July 15, 2009; consultant contract to be finalized by September 2009, and the review to be completed by December 2009. Mr. Tucker inquired about when RWSA anticipated receiving the cost estimates from this review process. Mr. Frederick stated that the conceptual level cost estimate would be provided after the review is completed in December 2009. Mr. Gaffney next asked about the total number of miles of pipeline that are currently in RWSA’s system. Ms. Whitaker stated that she was not certain about the exact number, but the Sugar Hollow pipeline just from the reservoir to Ragged Mountain is 12 miles long. Mr. Gaffney further clarified by asking about the number of total miles of pipeline in the water systems of the City, ACSA, and RWSA. Ms. Whitaker responded that she would estimate the number to be in the thousand range if you included water systems of all three entities. Mr. Gaffney also asked if “putting in water lines” is done regularly. Ms. Whitaker commented that pipelines are “put in pretty frequently and they are put in relatively successfully in this region.” She added that there are challenges with this work, but there is also generally “more flexibility” due to being able to change the routing to meet certain obstacles and the different techniques available based on the depth and location of the pipelines. Since this work is done by every municipality in every state, the industry is “pretty refined.” She added that she was not trying to simplify “the challenges of getting 9.5 miles of pipe into the ground,” but she found that most difficulties that could be encountered can be “overcome and dealt with.” Mr. Frederick then highlighted one of the key

comments that he heard Ms. Whitaker just make concerning this project. A pipeline like this is under pressure, and it is the “easiest kind of pipe to put in the ground.” Ms. Whitaker added that the placement of sewer pipes is more challenging because it is gravity-based, so you are constantly attempting to make sure that the pipeline is “constantly going downhill,” which is not an issue with water pressure pipes. Mr. Gaffney next questioned about the number of other RWSA water pipeline projects that are either currently in design or need upgrading.

Ms. Whitaker responded that there are several different projects, which includes Route 29 and the second half of the Southern Loop at some point in the future, which is basically a pipeline from the Observatory Water Treatment Plant to Avon Street, and eventually a second “piece that goes from Avon Street over to Pantops.” She was aware that the ACSA plans to put in some new mains, and the City has some projects involving smaller diameter mains. Currently, one of RWSA’s 18-inch main located on Rio Road is being relocated as part of a VDOT project.

Mr. O’Connell then asked about the length of the main being relocated, and Ms. Whitaker stated that it was about 2,000 to 2,500 feet of pipeline. She further stated that during Airport Road project, the Authority’s water main from the Airport to Route 29 was relocated as part of that work. Ms. Mueller next inquired if RWSA was planning to replace the pipeline from Ragged Mountain to the Observatory Water Treatment Plant. Ms. Whitaker stated that there are plans to replace that pipeline at some point in the future.

Mr. O’Connell then asked Ms. Whitaker to briefly discuss the relationship of the pipeline to the Ragged Mountain Dam project. Ms. Whitaker stated that currently the Sugar Hollow pipeline serves to not only transport water to the Observatory Water Treatment Plant, but it also brings water to the Ragged Mountain Reservoir. Most reservoirs that are permitted under the current regulatory climate are “pumped storage reservoirs.” Both the state and federal regulatory agencies view creating a reservoir by placing a dam in the middle of a “running” river as less desirable. Ragged Mountain Reservoir “for all intents and purposes” is a “pumped storage reservoir.” What is typically done is locate a ravine, aside from the stream serving as the water source, a dam is built in the ravine, and water is pumped into the new reservoir within the ravine when water levels in the source stream are higher, and water is withdrawn from this “pumped storage reservoir” during drought conditions. This allows for both the provision of water supply for human needs and the use of some of that storage to release into the streams. The Ragged Mountain Reservoir is a pumped storage reservoir since water is currently brought in from the Sugar Hollow Reservoir. The new larger reservoir at Ragged Mountain will necessitate putting in a larger pipeline to bring more volume of water from a water source. The size of the pipeline and the water source can be determined by the safe yield modeling that had been conducted. The options evaluated were to use the Sugar Hollow Reservoir or the South Fork Reservoir. The Sugar Hollow Reservoir is very steep and has an 18 square mile drainage basin. The South Fork Reservoir has a 260 square mile drainage basin, which means that “a lot more water comes to that reservoir.” The “idea” was to allow water to flow from Sugar Hollow in the streams, which would provide more water for the stream, to the South Fork Reservoir. The pipeline would take water from the South Fork Reservoir to the Ragged Mountain Reservoir, which then creates “essentially an interconnection of the two sides of [Rivanna’s] raw water system.” She then pointed out the location of the Sugar Hollow Reservoir, the Ragged Mountain Reservoir, the Observatory Water Treatment Plant, the South Rivanna Reservoir, and the North Rivanna Reservoir on the graph related to the “South Fork Reservoir to Ragged Mountain Reservoir Pipeline.” The two reservoirs on the “raw water side are not really interconnected.” This

proposed pipeline will allow the storage of water back and forth at both locations and also utilize the treatment capacity of those treatment plants. Mr. O'Connell then commented that when the dam is finished, the reservoir will naturally fill from the streams coming into that system. Ms. Whitaker replied that the Ragged Mountain Reservoir will fill somewhat from that source, but will mostly utilize the water from the Sugar Hollow Reservoir until the new South Fork pipeline is built. The existing Sugar Hollow pipeline has restrictions on the amount of water that can be transferred to the Ragged Mountain Reservoir. The Authority anticipates that the fill time will vary, depending on the weather. At some later point, the new pipeline will be built, which will be used as the primary source of the water to the Ragged Mountain Reservoir. Mr. O'Connell next questioned if he was correct that Sugar Hollow pipeline is an 18-inch line and the new pipeline will be a 36-inch line. Ms. Whitaker replied that he was correct. Mr. O'Connell further inquired if the difference in pipe size would double the amount of water that could flow to the reservoir. Mr. Frederick stated that it "more than doubles the amount of water" that can be provided to the Ragged Mountain Reservoir.

Ms. Whitaker then proceeded to the last item in her presentation, which was the status of the "Preliminary Feasibility Study for the South Fork Rivanna Reservoir Dredging." She clarified that RWSA was acting as the "coordinating agency" for the other entities involved in this process. The scope of work outlined in the RFP came out of the discussions among the four boards and included technical support for legal opinion on wetlands that either currently exist or could be established in the future, a bathymetric survey, pre-dredge survey, volume analysis, sediment analysis, processing and disposal site analysis, dredging alternatives analysis, and forebay analysis.

Ms. Whitaker further reported that eight proposals for the Dredging Study were received on June 17, 2009. The Selection Committee is composed of City, County, ACSA, RWSA staff, plus two citizen members. The committee plans to meet sometime in early July to review the proposals that have been received and to create a "short list" for interviews. Mr. Frederick next confirmed that the first meeting of the Selection Committee will be Wednesday, July 8, 2009 at 3:00 p.m. and will be held in Conference Room A of the Albemarle County Office Building on Fifth Street. The meeting is open to the public.

Ms. Whitaker then discussed the schedule for the Dredging Study. The consultant contract will be completed by September 2009, and the study completed by Spring 2010.

Ms. Whitaker next briefly summarized the information provided in her presentation. She stated that RWSA is currently pursuing all of the November 2008 objectives that were presented to the Authority by the four boards, which includes "pursuing" the Ragged Mountain Dam Design with ITRT recommendations, proceeding with the Mitigation Plans, releasing an RFP on the independent review of the Ragged Mountain to South Fork Rivanna pipeline, and releasing a second RFP to perform the South Fork to Rivanna Reservoir Dredging Feasibility study.

Mr. O'Connell then inquired if the ITRT had completed its work. Ms. Whitaker replied that its work has been completed "for this round." RWSA structured the ITRT so that there would be the capability to receive their input when needed on another technical issue or review.

Mr. Tucker next asked about whether the water demand figures that reflect a decreasing trend have been factored into the plan or been re-evaluated. Mr. Frederick commented that it was a fair statement that water demand is currently in a “down cycle.” Similar to the stock market, water demand trends over a longer period of time reflect both “up cycles and down cycles.” When a 50-year plan is being developed, many years of historical data as is possible should be analyzed in order to build a long-term trend. If a trend is being graphed for only the next few months, then it can be used for short-term projections but will likely be mistaken as a long-term prediction. RWSA has not undertaken an update of long-term demand projections. If the Authority were to undertake this update, then the study should account for historical consumption data back to the 70s or 80s and bringing forward to the current time. He stated that the important thing to understand about “trending” data is that “no forecast is going to be exact in 20-20 hindsight” and what is being sought during this process is “overall trends for planning purposes and not exact answers.” If the water conservation effort is greater than the projection made by Gannett Fleming a few years ago and RWSA proceeds with the permitted plan, it has been stated previously that this community could have a 60-year or 70-year plan instead of a 50-year plan, which many people have indicated is a positive benefit for “future generations.” Mr. Tucker then commented that technology will improve related to energy-saving devices, which he felt that Gannett Fleming took into account as well. He further stated that this community was required to “at least look at a 50-year plan for these water and sewer needs,” whereas Comprehensive Plans “are required to look at 20-year plans.” He felt this was the difficulty at times to “merging the two plans.” Ms. Thomas next stated that an examination of water use ten years ago at least from the ACSA showed that it was being used by a lot of industries that are no longer there. She also noted that the University of Virginia’s water usage is starting to increase again, and University officials have assured the County that they have utilized all the possible water conservation measures. Mr. Tucker then stated that at one time the largest water user in the County was Con Agra, which is not longer in operation here. He noted that if an industry similar to Con Agra were to locate in the County, the business would be designed to use less water. Mr. O’Connell next displayed a chart that illustrated peak water usage, which he felt would be helpful for water supply planning purposes. He further noted that peak usage normally occur during the summer months, which is normally when water restrictions are implemented.

Ms. Edwards then stated that she would find it helpful to have a chart that showed the timelines for all the water supply projects, such as the dredging study, the dam design, and the pipeline project, and how all of them are connected. She also wondered if the chart that Mr. O’Connell just discussed related to water demand numbers could somehow also be incorporated into the “visual” about the water supply projects. Ms. Edwards also commented on her uncertainty about the “balances” between information contained in a Comprehensive Plan over the next 20 years or a 50-year plan, but she felt that water is a “health and safety issue.” She wondered about water demand levels if a flu pandemic were to occur. Ms. Edwards further noted that she did not want this community “to be in the business of also hoarding water.” She wanted to ensure that appropriate planning was being conducted and that water was also affordable to all the citizens.

In regards to **Item 4d), Financial Planning and Reserves**, Mr. Wood referred to the first slide that shows the Authority’s financial position as of April 30, 2009 and included “Assets” and Liabilities.” He stated that RWSA currently has fixed assets of \$135 million in plant, equipment

and land. When depreciation is applied, there is \$87 million in "Total Depreciated Assets." Concerning liabilities, revenue bonds are long-term liabilities. To fund the \$87 million in capital assets, the Authority has used long-term debt. The short-term debt in the amount of \$1.1 million represented invoices that will be paid to the Authority's vendors over the next accounting period. Some of the short-term liabilities include interest payable on the Authority's bonds and some of the employee benefits.

Mr. Wood then stated that the "two cash-related reserve items" that were discussed at the last Board meeting are separated into "Unrestricted and Restricted Assets." The "Unrestricted" amount is \$21 million and is made up of "working capital/cash" and "Accounts Receivable," which represent the bills that have gone out at the end of the month but have not been paid. The "Restricted Assets" are funds that are "held in an account at the Bank of New York" because they are the trustee for the bonds issued by the Authority. The "Bond Fund" in the amount of \$2.2 million represents the amount of funds that Rivanna accumulates each month to make the principal and interest payment when it is due on October 1, 2009. The amount in this account on September 30, 2009 will be up to \$5.5 million, which is equal to the next bond payment. The account "clears out" and the cycle begins again on October 1. The "Debt Reserve" amount of \$5.5 million is the amount of money on deposit for the benefit of the bond holders only and represents one-year's worth of the highest year of debt service. He noted that next month the Authority would bring some closing documents to the Board on the \$20 million State Revolving Loan Fund that will fund the ENR project. Because of the federal leveraging requirements, the Authority will need to use its own money to fund the "Debt Service Reserve." In the previous State Revolving Load Funds, the Authority was allowed to "take off the top of the bond proceeds" an amount to fund that deposit requirement into that account. Because of this new requirement, this will no longer be allowed and approximately \$1.4 million of the Authority's "Discretionary Reserves" will need to be transferred to the "Restricted Reserves." The \$491,000 figure listed for the "Unamortized Bond Issuance Costs" is mainly an accounting number where the costs of bond issuances are accumulated, which include fees for lawyers, bond rating agencies, and underwriters. The \$500,000 for the "Minimum Required Capital Reserve" is a requirement in the original 1979 bond indenture that a minimum of \$500,000 be in the capital improvement fund. If it went below that figure, the water and sewer rates have to immediately be increased to fund that account.

Mr. Wood next addressed the slide concerning the "Detail of Discretionary Reserves." He commented that funds, revenues, and expenses for the six rate centers are tracked separately. The two Urban rate centers have multiple funds within them. The "Discretionary Reserve" funds for each rate center are accumulated based on budget estimates and a major use is for transfers to the "Capital Fund." The project accounting assumes the role of tracking capital funds after those transfers occur. The "Capital Fund" was up to \$8.7 million at the beginning of the year and is now at \$4.4 million because the capital cash is being spent down in readiness to issue bonds. Mr. Fern then asked if the over \$3 million of capital funds were spent on consultant fees. Mr. Wood replied that most of it was spent on design fees for the Meadow Creek Interceptor project, as well as for Schenks Branch. Mr. Wood next discussed the "Rate Stabilization" fund that was established after the 2002 drought "to handle the most severe drought events where revenues are being forced down because flows are being [reduced] due to the [water] restrictions in place." As more debt is issued, the need for that "Rate Stabilization Fund" becomes greater. The

“Watershed Management Fund” was set up around the same time at the discretion of the Board to fund water quality projects. There was some discussion related to using that fund for the dredging study. Mr. Fern next referred to the wording that a “portion may be used for the Dredging Study” and inquired if part of the “Watershed Management Fund” was being “earmarked for something.” Mr. Wood explained that this fund was charged to both customers [the City and ACSA], and since one customer was “refusing to pay for a portion of the study,” the entire amount of the fund could not be spent on that study.

Mr. Gaffney then asked about the “dollar amount” goal when the “Watershed Management Fund” was established. Mr. Wood stated that the goal was initially \$50,000 each year and was established after the 2002 drought to specifically look at dredging and to stop erosion upstream of the South Fork Rivanna Reservoir. Ms. Thomas next inquired if any of the fund went to pay for the Watershed Manager, and Mr. Wood explained that this position is paid out of rate revenues each year. He further stated that none of the funds have been used since its establishment. Mr. Frederick added that this fund could be a topic of discussion as to whether it should be maintained or moved to “Discretionary Reserves” for other purposes. Ms. Thomas then commented that there has often been discussion about whether the funds could be used to fund the Conservation Reserve Enhancement Program (CREP), which is the main way of protecting the watershed runoff in agricultural areas. Mr. Tucker then stated that he believed there had been some discussion about using those funds for that purpose.

Mr. Wood then briefly discussed the next three slides on “why reserves are sound planning,” which he felt were self-explanatory and presented “real-life examples” on how the reserves were used. He referred to the picture on that first slide of a major line break at the Sugar Hollow Reservoir. This repair work was costly, and if the reserves were not in place, the Authority would have had a major deficit requiring a rate increase. The composting decision that was discussed on the second slide was another example of how reserves are used. On the third slide, the impact that fluctuations in flow have on revenues, especially for wastewater, was discussed. The main point of building reserves and using cash to fund capital projects, to handle unbudgeted maintenance items and unpredictable changes in flow are all the reasons why Rivanna’s bond rating increased from A+ to AA at its last bond rating in 2005. Ms. Thomas then asked if having these reserves and the dependence on flow for revenue “counterbalance each other.” Mr. Wood responded that as Rivanna issues more debt, there is a greater need to set aside reserves to cover that fixed cost. He could not directly correlate flow to determine the exact amount of reserves because flows are a “moving target” from year to year. Mr. Frederick then commented that the “financial world would have much greater concern about the fluctuations in flow if [Rivanna] did not have the reserves to act as a cushion.” Ms. Thomas then asked how the AA rating compared to the ratings that other authorities receive. Mr. Wood stated that comparison is difficult because a lot of smaller authorities go through the Virginia Resources Authority (VRA) Program rather than the bond market and do not need to obtain a bond rating. Although Rivanna has gone through VRA previously, this has not been done very often because their loans cannot be refinanced; therefore, Rivanna has historically issued its own debt which requires a bond rating. The Authority has however taken advantage of decreasing interest rates on several occasions at a significant savings by using the VRA loans. Ms. Thomas next inquired about the number of other authorities that were not rated. Mr. Wood responded that a lot of the smaller authorities do not have their own bond rating or they go through an insurance company and buy a AAA rating.

Mr. Wood then proceeded to his presentation on “Wholesale Rate Setting and Four Party Agreement.” He reiterated that RWSA has six rate centers and four support departments due to the managers needing to be in control of their departmental costs. The four support departments include the Laboratory, Administration, Engineering, and Maintenance. At the end of each month, all those costs are reconciled into the six rate centers. The “Four Party Agreement” describes the rates and how they are to be calculated. The two Urban rate centers for water and wastewater are shared costs by both the City and the ACSA. The four other smaller rate centers, sometimes referred to as the “Rural Rate Centers,” are paid 100% by the ACSA. Their rates are computed by taking the cost and dividing it by 12 months to calculate the monthly cost. Those rate centers do not have to rely on flow to generate revenues.

Concerning the two Urban rate centers, Mr. Wood next reported that the “Four Party Agreement” states that a uniform rate has to be charged “per volume flow of 1,000 gallons of water delivered or wastewater treated”. This means that there are two main rates, which includes the “Operations” rate and a “Debt Service” rate for the two Urban systems. The total costs based on the operating budget for each Urban system is divided by the estimate of the amount of water treated or delivered to get a per thousand gallon rate. This figure must be applied to the actual flow for the rest of the year.

Mr. Wood next addressed the calculation of “Debt Service” rates. He stated that they are calculated in the same manner as the “Operations” rate, but it is not a uniform cost that is being applied. The costs for many of the newer projects that were not “contemplated within the ‘Four Party Agreement’” are now being split between the City and the ACSA based on cost share agreements between those two entities. Applying a rate that is based on estimates presents difficulties in being able to charge the two customers an equitable portion of their expenses.

Mr. Wood then noted that the rate setting processes he just discussed are the only way that RWSA can charge rates. Many utilities can charge connection fees, development fees, or can negotiate with developers to offset the cost of growth. The “Four Party Agreement” is specific about the way the Authority can charge and it is the only way it can charge.

Mr. Wood then referred to the slide that addressed “Rate Computation and Rate Charges.” He stated that the actual numbers from 2007 were used to estimate flows for budget purposes and the actual flows on which charges occurred for Wastewater. RWSA estimated that it would treat 3.5 billion gallons of wastewater in 2007 and then had to estimate the split between the City and ACSA. As an example, a “fictitious project” was used that required \$750,000 in “Debt Service” costs, and the desired cost split was projected to be 40% City and a 60% ACSA. The rate was calculated by dividing the flow by the cost that you need to cover. The computed rate based on those estimates was \$0.15 per thousand gallons for the City and \$0.29 per thousand gallons for the ACSA. Those rates are then applied to the actual flow that occurs during that year. If one assumed RWSA actually treated more wastewater in that year than what was expected, based on the way the actual flows were reported to RWSA in the retail system, the Authority would have actually charged 38% to the City and 62% to the ACSA. As the Authority issues more debt, more inequities will occur in the way the charges are calculated.

Mr. Wood then discussed the next slide that illustrated in the short term the fluctuations in flows, which makes it difficult to estimate future rates for budget purposes.

Mr. Wood next addressed the slide that provides a perspective on the next five years. He stated that the \$87 million figure for "Total Depreciated Assets" in the first column is the same figure as was listed in the first slide for that item. The five-year capital plan could add \$150 million in new capital assets, which is a 172% increase in assets. Ms. Thomas then asked if that figure included the Water Supply Plan. Mr. Wood explained that figure applies to only the first five years of the CIP and includes some of the preliminary work of the pipeline. Mr. Frederick clarified that only a very small amount of the pipeline work is included. Mr. Frederick added that much of the \$150 million is actually on the wastewater side, but it does include the Ragged Mountain Dam project. Mr. Gaffney then inquired if the \$150 million included the Moores Creek WWTP upgrades. Mr. Frederick stated that it did include the costs of that project as well as the Route 29 pipeline, which was previously mentioned by Ms Whitaker during her presentation. The figure also did not include the costs for dredging the South Fork Rivanna Reservoir. Mr. O'Connell then questioned if the Meadow Creek Interceptor Project was included in that figure. Mr. Wood stated affirmatively, adding that it included the "three big sewer projects" with about \$80 to \$90 million being designated for wastewater projects. Mr. Wood added that to finance that kind of investment in Rivanna's infrastructure could require \$112 million in new debt, which is a 246% increase in the debt load. As a comparison, Mr. Wood thought that the City's debt load is around \$60 to \$70 million at this time. Mr. Tucker then pointed out that most of those projects, especially wastewater, are mandated. Mr. Frederick also noted that much of the public discussions give the impression that capital improvements are discretionary, but very large amounts of capital improvements are non-discretionary across the country and are being mandated by tighter and tighter standards from the environmental protection agencies. Ms. Mueller then inquired if the difference between the \$150 million and \$112 million figures is based on the rates. Mr. Wood replied that some of it was due to cash funding and grant monies.

Mr. Wood then referred to the slide that provided a summary on the rates and charges. Mr. Wood stated that rates are based on volume flow and is the only source of revenue for the Authority. The operational rates are simple to compute, but fluctuating flows affect the "revenue stream." "Debt Service" rates present the same problems as they are "susceptible to flow and are more difficult to compute because of the allocation agreements between the City and the County." During a period of tremendous capital investment, Rivanna has only one source to generate revenue to pay for those investments.

In regards to **Item 4f), Wholesale Rate Review by Municipal & Financial Services Group**, Mr. Wood stated that due to the difficulties of calculating rates, the Authority contracted with this firm to conduct a rate analysis. Mr. David Hyder with Municipal & Financial Services Group was in attendance today to present the findings of his firm.

Mr. Hyder first briefly summarized the items that he would be presenting today, which included background information, revenue requirements, rate structure alternatives, and their findings and conclusions.

Mr. Hyder next stated that the primary objective of the study was “to keep rates and fees stable through sound financial management at a level that fully recovers the costs of providing services and appropriately allocates costs to customers.” In order to meet those objectives, a model is built that allows the input of different costs over time as costs change and from that process determine the rates. The process would also “to some degree validate the fact that the structure of the agreements” in place now “is not even a model.” The structure is “challenging” and “complex,” due to the number of cost allocations and the estimation of flows as a basis for future rates. Another objective would be to provide input on possibly “streamlining” the present structure and also provide alternative rate structures.

Mr. Hyder then referred to the slide that discussed the “Rate Setting Process.” The steps in the process are as follows: *1) Identify the objectives and issues; 2) Identify the cost of providing services; 3) Allocate costs among customers; 4) Design rate structure; and 5) Implementation.* The implementation step insures that the Authority has a full understanding of how the model works.

Mr. Hyder next addressed “Revenue Requirements.” He then referred to the slide that illustrated the “Building Blocks” that included “Operating and Maintenance Expense, Outstanding Debt, Planned Capital Improvement Projects, and Contribution to Reserves.” He stated that the Authority’s tracking of these “Building Blocks” for each of its cost centers complicates the process.

Mr. Hyder then discussed the slide that included graphs to illustrate the FY 10 Operating and Maintenance (O&M) Expenses for Water and Wastewater. For the water rate centers the O&M expenses totaled about \$4.8 million, and for wastewater, about \$5.5 million.

Mr. Hyder next briefly commented on the slide that showed the “Existing Annual Debt Payments” for both the water and wastewater rate centers. He noted that the majority of the “data” is for the Urban systems.

Mr. Hyder then addressed the CIP. The numbers on the slide he showed were based on the 2008 CIP. He noted that the \$29.69 figure for “Urban Wastewater” in the FY 09 column is incorrect. The correct figure is \$12.68, which changes the total “Wastewater and Water” figure to about \$27 million.

Mr. Hyder next discussed the graph projecting the “debt service based on the 2008 CIP and the 2003 Agreement, which broke down the allocation of those costs to “Growth” and to “Maintenance” for the City and the ACSA. Ms. Thomas then asked how “growth” was defined for this purpose. Mr. Hyder replied that “growth is essentially the availability from a cost standpoint to provide more capacity.” He added that the “2003 Agreement basically allocates costs based on retail sales.” Mr. Wood added that the main projects in the CIP covered by the 2003 agreement relates to water supply, which is the majority of all the Urban water projects. Until there was a new agreement in place, those projects would be “counted as growth.”

Mr. Hyder then referred to the slide that illustrated the “Total Annual Existing Debt and Annual Projected Debt” for the water system based on the 2008 CIP and 2003 Agreement for the City and the ACSA. The graph reflects the increase in future “New Debt.”

Mr. Hyder next discussed the “Projected Debt” for the wastewater system based on the same criteria as the previous slides, with the breakdown of the costs allocated for “Growth” and “Maintenance” for the City and the ACSA. The slide shown by Mr. Hyder provided a breakdown of the “Existing Debt” and “New Debt” for the wastewater system based on same criteria as the previous slide.

Mr. Hyder then addressed the slide concerning “Repair, Replacement & Rehabilitation Reserve.” Based on an asset review, RWSA should be investing \$330,000 on the water side for fund replacement of aging infrastructure through “Debt Service” instead of the current amount of \$260,000. On the sewer side, RWSA is investing \$477,000 in the current fiscal year and their analysis recommended \$440,000.

Mr. Hyder then referred to the slide that graphically illustrated the “Revenue Requirements” for all of the water rate centers combined, which included a breakdown of operating and capital costs.

Mr. Gaffney next asked about the amount that Rivanna was funding for depreciation for water and sewer in 2002. Mr. Wood stated that the Authority was funding “pretty much nothing” at that time.

Mr. Fern then referred to the slide that illustrated the “Revenue Requirements” for all the water rate centers through 2019. He questioned that with the CIP only going up to year 2013, what would be utilized beyond that time period for capital costs. Mr. Hyder stated that the “Capital Costs” after 2013 was the “Debt Service” used for the capital projects, which why the numbers “level out.” Ms. Thomas next asked if she was correct that the figures were based on the 2008 CIP, so not all of the Water Supply Plan was represented in this chart. Mr. Hyder stated that she was correct.

Mr. Hyder next commented that the currently viewed slide lists the total “Revenue Requirements” from the totals of the “bars” shown on the previous slide for all the water rate centers for the next four years. The “increase in Revenue Requirements” is essentially the increase from FY 09 to FY 10, which was about 20%, but remains “fairly steady” over the next few years. The chart also included “Operating Cost” and “Capital Costs,” which shows the percentage breakdown of how they are allocated to each of the cost centers.

Mr. Hyder then stated that the current slide lists the “Net Revenue Requirements” for all water rate centers. In FY 10, the requirements would be \$13.14 million as compared to the revenues that would be generated under the current rates of \$11.12 million, which would mean a shortfall of \$2.02 million. In order to break even in FY 10, the Authority would potentially need an 18.2% increase in rates. He pointed out that these figures are based on the 2008 CIP, and as the actual numbers are fluctuating that is where the “smoothing out.” occurs. Mr. Hyder next stressed that if the Authority did not implement the 18.2% increase in FY 10 in order to generate

the \$13.19 in FY 11, the Authority would need a rate increase of 18.6%. If no increases are implemented until FY 13, the Authority would need a 22.5% rate increase. These figures could dramatically change based on an updated CIP.

Mr. O'Connell next inquired about the meaning of the term "smoothing out" that Mr. Hyder just used. Mr. Wood stated that this model being discussed incorporates each year's expenses on the capital projects. However, the Authority knows it will be saving funds during the year in preparation for a bond issuance. In the interim, all available sources of cash will be utilized for those capital expenses. The "smoothing out" occurs during these time periods.

Mr. Hyder then discussed the "Revenue Requirements" for the wastewater side that is broken down between the "Operating" and "Capital" costs. The total "Revenue Requirement" in FY 10 is \$10.6 million, which amounted to a 21.1% increase over FY 09. The chart also listed how the operating and capital expenses are allocated among the rate centers. Proceeding to the slide with the comparison of the "Net Revenue Requirement", the amount of revenues generated versus the "Net Revenue Requirement" in FY 10 is only short by about \$180,000.

Mr. Hyder then discussed the Rate Structures" that were considered for the Authority. Alternative A was based on the Authority's current rate structure. Alternative B involved a "hypothetical" unit rate per 1,000 gallons for Urban water and wastewater. Alternative C involved charging a fixed quarterly charge to recover "Debt Service" and a unit cost per 1,000 gallons to recover operating expenses and cash-funded capital costs.

Mr. Hyder next referred to the slide that included the rate structure for Alternative A. Listed were the operating rates and the capital rate for both the water and wastewater systems. The rates listed for FY 09 were the current rates, and the rates for FY 10 were the "break-even" numbers. The slide illustrating Alternative B shows a per gallon rate for the City and the ACSA for FY 10. The slide for Alternative C listed the fixed quarterly charge to cover the capital costs and the unit rate per 1,000 gallons for the operating expenses and cash-funded capital costs.

Mr. Hyder concluded that his firm felt it would be worth considering Alternative C as the fixed charge would simplify and streamline the rate setting process. It would allow some "mitigation" of the inequity that occurs when the actual volume of flows is different than the forecasted volumes. He noted that future cost allocation agreements may further complicate the process. The current methodology is complex due to the "multiple variables."

In response to a question about a final report, Mr. Hyder stated that a final report was expected to be issued in two weeks. His presentation today was to receive feedback from the Board in terms of any of the analysis that would be incorporated into the final report.

Mr. O'Connell then asked if the analysis included the rate setting that the ACSA and the City undertake for the retail customers. Mr. Hyder stated that his firm has been retained separately by ACSA to assist them in building a rate model that allows them to implement various rate increases from RWSA that can then be formulated into a rate for the customer. This has not yet been done for the City.

Mr. Gaffney next questioned if Alternative C has been shared with the City and the ACSA. Mr. Hyder replied that it had been discussed with ACSA. Mr. Gaffney then asked about any feedback from the ACSA Board. Mr. Fern stated that Mr. Hyder's recommendation was to move forward with something similar to Alternative C, and his Board agreed to implement a fixed charge on a quarterly basis. Regarding the City's input on this rate structure, Ms. Mueller and Mr. O'Connell both replied that this was the first time that they had received this information. Mr. O'Connell added that the City uses a different rate consultant and suggested that all three entities meet to discuss these recommendations. Ms. Mueller next received an affirmative response to her question as to whether the City would pay the same total amount under Alternative A as under Alternative C. Ms. Thomas then commented that ratepayers are currently aware that their bill increases when they seem to be conserving water "better." She felt that it would be helpful to present the idea of a "fixed charge" to the public, the City and the ACSA to get a better understanding of the rate-setting process. Mr. Gaffney added that this "understanding" could only occur if both the ACSA and the City implemented the same billing method. Mr. Hyder commented that the bill to the retail customer should not be any different under any of the three alternatives, but it should allow for greater stability as the costs would be known versus a volume-based rate structure. Mr. Fern then asked about the basis for the fixed charge for the City and for the ACSA in Alternative C. Mr. Hyder stated that the fixed charge would be based on their percentage of the "Debt Service." Mr. Frederick added that the numbers presented today were based on the current agreement between the City and ACSA. The "numbers going forward" would be based on any future agreements between the City and the ACSA. Mr. Frederick further commented that RWSA staff had some very positive conversations with the City budget staff this spring, and he felt it would be helpful if the staffs of the City, ACSA, and RWSA met early in the budget process to try to get agreement on the projections for future consumption. He thought this would be very helpful to the public process as well. Mr. Wood added that when RWSA undertakes a bond issue, the bond rating agency asks questions about the system as a whole, which includes not only RWSA but also the City and the ACSA.

In regards to **Item 4g), Trends and Future Challenges**, Mr. Frederick stated that he had broken down his presentation into four categories, which include "regulatory, legislative, economic, and human resources." He commented that regulations influence the water and wastewater business "far more than anything else." There are permit requirements and public health goals that impact the day-to-day operations of water and wastewater plants, and his presentation covers just a few of the "major trends." One of the biggest trends that affects wastewater operations are the issues related to the Chesapeake Bay. The health of the Bay has been graded a "D" for the past 10 years. President Obama recently issued an Executive Order to the Environmental Protection Agency (EPA) calling for "aggressive, stepped up efforts" to clean up the Chesapeake Bay. The power given to the EPA perhaps meant further regulations. The Chesapeake Executive Council consists of representatives of EPA and the several states that are in the Bay watershed. Virginia is represented by Governor Timothy Kaine. This Council recently recognized that deadlines have "come and gone in the past" related to cleaning up the Bay. The new "Ultimate Deadline" is 2025. EPA is currently engaged in discussions about the "Total Maximum Daily Load" requirements, which could potentially affect wastewater treatment plants throughout Virginia and the other states in the Bay watershed. The Moores Creek WWTP is in the early stages of construction as discussed previously based on "doing better than current targets that were set for

the [facility] by the Virginia State Water Control Board in 2005.” In response to the recent concerns about the 2010 goals not being met, the EPA has developed a new computer model for consideration that restricts nitrogen and phosphorus even further than the numbers used by Virginia in 2005. New stricter requirements enacted by EPA could move the “target” the ENR design is based upon even before the current construction process is completed. Virginia has taken the lead among the Bay states in point source allocations. DEQ is suggesting that “regulatory stability” is needed for those plants that are doing the most to clean up the Bay and EPA needs to look at other sources, including non-point sources, for these new regulations. There are some indications that EPA might not follow DEQ’s recommendation. It is possible that the Authority might receive a new goal during the middle of the construction period and would need to start a new design.

Mr. Frederick further reported that DEQ is currently looking at “Freshwater Nutrient Criteria” and looking beyond the Bay at the health of freshwater streams, like the Rivanna River. The research is now at the academic level, and some of the “straw numbers are very tight.” Some of those numbers are more stringent than what has been designed for the Moores Creek plant. There is uncertainty how that will affect the Authority. There is an adverse affect on the “aquatic eco health” when too many nutrients are removed from streams. Nutrient is actually food for small organisms.

Mr. Frederick then discussed the drinking water regulations. There are many traces of elements that can be potential health concerns that exist in the global environment. Those elements can sometimes get into the water supply sources and concerns from such presence could “revolutionize the water treatment industry.” During the water supply planning process, RWSA identified in the 2015 time frame that the Authority seriously consider upgrading the treatment process at the Observatory Water Treatment Plant. This plant still utilizes the early 1950s technology. The Authority needs begin planning for improving its technology in order to address the potential for future regulations to address these trace elements.

Mr. Frederick next addressed legislative issues. Congress is considering “Carbon ‘Cap and Trade’” legislation. The forecast by the Water Environment Federation (WEF) suggests that legislation will be forthcoming during 2009, but it appears that the prospects for legislation in 2010 is better. It has been suggested that “Cap and Trade” legislation will cause dramatic increases in purchased electricity. Industries that heavily require electricity for their operations, such as wastewater treatment, are being advised to begin planning for a 15% per year increases in electricity for multiple years. The way to offset that increased cost is to promote “beneficial use technologies to the greatest extent” possible and promote energy efficiency. Rivanna’s operating staff has been working internally on energy efficiency projects for a number of months. The “biogas project” and the blowers that are being replaced with high efficiency units as part of the ENR project are part of the Authority’s efforts toward greater energy efficiency. The Hydro Plant located at the South Fork Rivanna Reservoir will continue to be operated to the maximum extent possible, which is currently only inhibited by low stream flows during dry periods.

Mr. Frederick then reported on the State Revolving Fund, which for many years had experienced cuts at the congressional level. There appears to be interest by the new Congress in increasing those appropriations, but it might attach “strings.” There is increasing discussion in Congress

about the “deficit” which could perhaps “offset” some of the discussions about increases in that funding.

Mr. Frederick next commented on Virginia Water Quality Improvement Fund (WQIF) issues. He acknowledged the support of the City and the County that enabled the Commonwealth to receive the \$250 million for the WQIF. DEQ is now projecting that WQIF funding will only carry the upgrades through Spring 2011. If additional money is not provided by the General Assembly in the 2010 session, the funding will be depleted before any 2011 legislative appropriations are enacted. DEQ has already announced that if no appropriation is approved next year that beginning July 1, when reimbursement requests are received for ongoing construction - such as from RWSA - the amount of reimbursement will be cut from 100% to 65% in order to “stretch the money.” The uncertainty about grant funding complicates financial planning for the Authority.

Mr. Frederick then discussed the “economic” portion of his presentation. The current construction market is now very favorable and is forecast to continue for the next few months. Further forecasts are less certain at this time as there is talk about the possibility of inflation and higher interest rates. RWSA plans to monitor this situation very closely. He and Mr. Wood are considering longer-term financial planning, such as a 10- or even a 15-year CIP.

Mr. Frederick next addressed the “human resources” trends. The Authority’s most difficult positions to hire at this time are water plant operators due to Virginia certification requirements. The Authority is utilizing a temporary labor pool to address this issue. The Authority is signing agreements with retired plant operators that provide assistance with maintaining their certification in return for their working on an on-call basis for the Authority. This saves overtime expenses and provides for coverage on all shifts. The other items on this slide related to challenges about health care, retirement costs, and future economic uncertainty.

#### **5.0 Other Items from Board/Staff not on the Agenda**

Mr. Frederick distributed copies of a report to the Board and the members of the public in attendance concerning the issue of the design for the Ragged Mountain Dam project. He stated that for the past several weeks, staff has been reviewing the recommendations of the ITRT from the March 2009 workshop related to the Ragged Mountain Dam design. Since that time, the Authority has been “extensively engaged” in discussions with Gannett Fleming, particularly regarding where the ITRT’s recommendations are significantly different from the design discussions provided by Gannett Fleming in their August 2008 cost estimates. Some of the discussions have been constructive, and Gannett Fleming has communicated that they believe costs can also be lowered and have agreed with the number of the ITRT recommendations.

The “overarching” decision for RWSA that has been carefully considered and is a major judgment issue relates to how the Authority can deliver what it believes to be the objectives of this community in terms of the future design of this dam. The staff has recently reached the position that is being recommended today that the Board authorize the Executive Director to initiate request for proposals leading to the selection of a new design firm for the proposed new

Ragged Mountain Dam and to initiate steps necessary to transfer the design responsibilities from Gannett Fleming to the new firm that will be selected.

**Ms. Mueller moved that the Board of Directors vote to authorize the Executive Director to initiate a request for proposals leading to the selection of a new design firm for the proposed new Ragged Mountain Dam and to initiate steps necessary to transfer the design responsibilities from Gannett Fleming to the new firm that will be selected, seconded by Mr. Fern.**

Prior to the vote, Ms. Edwards inquired about the time frame for this process. Mr. Frederick stated that if Board approval is given, the process would begin immediately on preparing and issuing the request for proposals. RWSA should be able to select the new firm by September 2009 and then begin to work immediately on the early issues and decisions that will need to be made in the review of all the geotechnical information, some of which Ms. Whitaker summarized today, determining what additional work needs to be done in terms of understanding the geology, refining the foundation abutment decisions, and developing a new cost estimate. All this work would probably be carried over into early 2010, but it is the Authority's intent to move as quickly as possible but also in a deliberate and proper manner.

Ms. Thomas then commented that she felt the Authority's decision was being responsive to the ITRT's recommendations and that there would not be that much of a delay to move forward as presented by Mr. Frederick. Mr. Frederick stated that there might be an early delay of a few weeks in the selection process, but he felt this time could be "picked up, especially if there were a firm in place that is very much aligned with the objectives that have now been set."

Mr. Fern next stated that RWSA would still need "to continue to pay Gannett Fleming for some time through that coordination process." Mr. Frederick replied that the amount would be very limited, but there still needed to be coordination of useful information during this transition process.

**As there were no further questions or discussion, the Board of Directors voted to approve the motion by a 7 - 0 vote.**

#### **6.0 Closed Meeting**

There was no need for another closed meeting.

#### **7.0 Adjournment**

**There being no further business, Mr. Fern moved that the meeting be adjourned, seconded by Ms. Edwards. All members voted aye, and the meeting was adjourned at 4:08 p.m.**

Respectfully submitted,

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Mr. Robert W. Tucker, Jr.  
Secretary-Treasurer

1. **Four-party agreement**

**Section 4.3 Additional facilities**

In the event that the City or the Service Authority determines the need for additional water impoundment, production, transmission and distribution facilities or wastewater interception and treatment facilities, Rivanna shall provide the requested facilities at the sole cost of the City or the Service Authority, as the case may be.

2. *from* **Demand Analysis for the Urban Service Area**

Prepared For RWSA by Gannett Fleming; May 2004

“The AWWA Manual M50 - *Water Resources Planning* is widely recognized as an industry standard in future water supply planning. This manual discusses the typical water use reductions associated with natural water conservation as well as with active conservation programs. According to the manual, “natural water conservation occurs as commercial and industrial facilities and residential homes age and less water-efficient processes and fixtures are replaced with more water-saving practices and devices” and can result in a cumulative water reduction of 4-8% over a 20 to 40 year period (AWWA, 2001). “

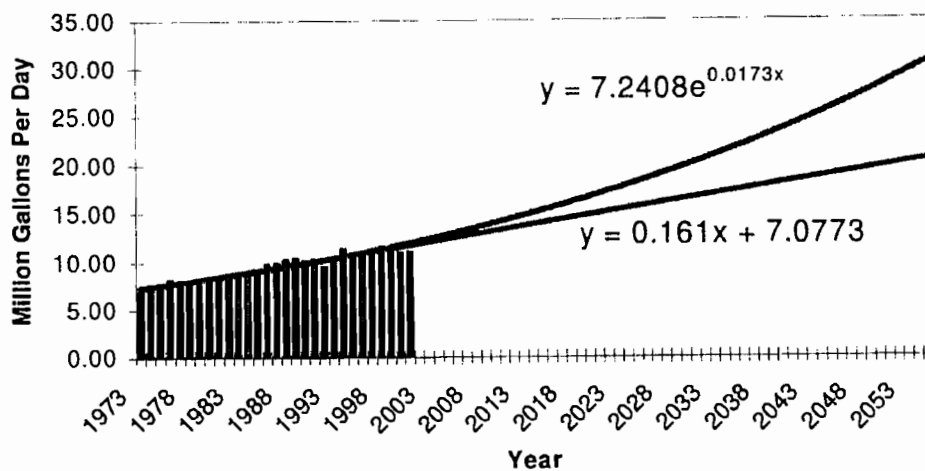
“Given the current and projected water conservation measures in place by Charlottesville, ACSA, and UVA, water conservation is expected to reduce future demands by 5%.”

Today water use is **25% below** projections on which the Community Water Plan is based (see graphs below)

3. **Historic Raw Water Production (thru 2001) and Predictions through 2055**

Predicts raw water use in 2008 of ~ 12.5 mgd

Average raw water use in 2008 was 9.5 mgd (see graph on back)



x = target year – 1973; y = mgd in that year

### Urban Monthly Production

