

RWSA BOARD OF DIRECTORS
Minutes of Regular Meeting
January 23, 2006

A regular meeting of the Rivanna Water and Sewer Authority (RWSA) Board of Directors was held on Monday, January 23, 2006 at 2:00 p.m., in the Conference Room, Administration Building, 695 Moores Creek Lane, Charlottesville, Virginia.

Board Members Present: Mr. William Brent, Mr. Michael Gaffney – Presiding, Ms. Judith Mueller, Mr. Gary O’Connell (arrived at 2:30 p.m.), and Mr. Robert Tucker.

Authority Staff Present: Ms. Anne Bedarf, Mr. Bruce Edmonds, Mr. Tom Frederick, Mr. Chuck Kent, Ms. Mary Knowles, Ms. Andrea Terry, Mr. Norman Wescoat, Ms. Jennifer Whitaker, Dr. Robert Wichser, and Mr. Lonnie Wood.

Also Present: Mr. Robert Huffman – Principal with Robinson, Farmer, Cox Associates, Mr. Kurt Krueger – RWSA Attorney, members of the public and media representatives.

1.0 Call To Order

The regular meeting of the RWSA Board of Directors was called to order by Mr. Michael Gaffney on Monday, January 23, 2006 at 2:00 p.m., and he noted that a quorum was present.

2.0 Minutes Of Previous Board Meeting

Mr. Brent noted one correction to the minutes of the November 28, 2005 regular Board of Directors meeting. On page 10, paragraph 3, in the sixth line “not 100 percent full proof” should be corrected to read “not 100 percent foolproof.” Upon a motion by Mr. Tucker, and seconded by Ms. Mueller, the Board of Directors by a 4 – 0 vote approved the minutes of the regular Board meeting held on Monday, November 28, 2005 as corrected by Mr. Brent.

3.0 Executive Director’s Report

There was no Executive Director’s Report this month.

4.0 Items From The Public

Mr. Phil Marx, resident of Ivy, Virginia, thanked Mr. Frederick and his staff for their diligent work in preparing today’s Board report concerning the Crozet Interceptor Pump Stations and Odor Complaints. He stated that the Public Comment period would provide him the opportunity to ask a couple questions and provide some comments in advance of the report’s presentation later in the agenda.

Mr. Marx then stated that RWSA seemed to have based a lot of its proposals on a cost-benefit analysis. Having gone through the system of attempting to notify RWSA, the County, and everyone else, he felt the process of reporting odor problems needed to be

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more transparent if that were the basis for whether any money would be spent to address this issue or even whether it was perceived as a problem. Odor was a problem and communication was also a problem since it was very difficult to find out where odor complaints should be reported. He also felt there had been more citizen complaints than what had been enumerated during the time frames specified in the report because citizens did not know whether RWSA or the County should be contacted. He then referenced his attempts at first contacting the County and talking to Mr. Tucker and being told on several occasions that there was nothing really that the County could do or that he could do. Mr. Marx was advised that he could attend a RWSA Board meeting or could talk to the Board of Supervisors, but that there was no direct line of communication. Although he has not had a conversation with Mr. Norman Wescoat concerning this issue for about six years, Mr. Marx was able to find a way to communicate with the Authority where as most people were not successful in their attempts. He felt the fact that he comprised the majority of the complaints was not indicative of the problem and should not be used as the basis for how the money was spent to address the problem.

Mr. Marx further commented that after reviewing the technology being proposed as solutions to the problem, he went back over his notes from conversations with Mr. Wescoat in about 1999. On every occasion that he complained about that odor, Mr. Wescoat told him that there were no odor-reducing measures being introduced by RWSA that would cause an odor. From what Mr. Marx had read, the major component of sewer gas was hydrogen sulfide, which smelled like rotten eggs as well as catalytic converters on cars. There had been complaints on several occasions, and even a newspaper article, concerning a sulfur odor from the site. He was not sure if RWSA's system that "sniffed" for the presence of hydrogen sulfide was actually "sniffing" for the same sewer odor that citizens detected. Mr. Marx added that he was not a chemical engineer, but if RWSA's system was measuring parts per million of hydrogen sulfide, it might not actually be measuring what was being smelled by the citizens. Apparently, whatever was being introduced into the system that produced the nitrogen was an odorless gas. If the system was working properly, there would be no odors detected. If sulfur was smelled, it was due to the high content of sewage in the system.

Mr. Marx then referred to the discussion in the Board report concerning an analysis of the system's telemetries in response to a citizen complaint which found no listing of hydrogen sulfide except for two brief minimal detections of less than 4 parts per million. He checked and the odor threshold for hydrogen sulfide in relation to sewer gases was 0.01. A reading of 4 was 400 times the threshold of odor. When you reached 20, you were at the limits for what should be smelled by citizens. The 4 parts per million reading was one-fifth of the exposure limits for hydrogen sulfide, which he felt was a pretty significant amount. If the system measurements were detecting those amounts at certain times, he wondered what was really being emitted at the site. Mr. Marx also noted that in the Board report RWSA expressed concerns with the proposal to cover the facility due to the presence of gases in the confined area and worker safety issues. The level at which it would be unsafe for workers was 20 parts per million or 50 parts per million for only about 10 minutes.

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Mr. Marx also stated that if in fact it was the hydrogen sulfide that the citizens were smelling, even though a newspaper article quoted RWSA as stating that the odor must be the result of car exhausts, he wondered if it were different from the septic odor being detected or if the odors were related and smelled differently at different times.

In conclusion, Mr. Marx stated that he appreciated the work being put into this project, and he hoped that he would not have to meet again on this issue.

Mr. Gaffney thanked Mr. Marx for his comments.

5.0 Consent Agenda

Mr. Gaffney asked if there were any items that the Board members would like to pull for questions or further discussion from the Consent Agenda.

- 5a) Staff Report on Finance
- 5b) Staff Report on Operations
- 5c) Staff Report on On-going Projects
- 5d) Staff Report on Community Water Supply Plan
- 5e) Report on WTP Filter Upgrade and Improvement Project (RFB #249 and 250)
- 5f) State Non-Arbitrage Program

Mr. Tucker moved, which was seconded by Mr. Brent, that the Board of Directors vote to approve Items 5a), b), c), d), e), and f) of the Consent Agenda. The motion was approved by a 4 – 0 vote.

6.0 Other Business

In regards to **Item 6a), Resolution of Support for Legislative Action during the 2006 Legislative Session for Increased Funding for Wastewater Plant Upgrades**, Mr. Frederick reported that this was a follow-up item from the November Board meeting concerning the State Water Control Board's (SWCB) adoption of new nutrient wasteload allocations at its November 21, 2005 meeting. During the discussion on this item at the November RWSA Board meeting, the community was encouraged to initiate a call for legislative action during the 2006 session for additional state funding for the required plant upgrades to meet the new regulations. The motion adopted by the Board in November to accept RWSA's plan of action on this item had also specified that a Resolution be adopted by the Board requesting that the General Assembly provide the necessary funding for the wastewater treatment plant upgrades as a high priority for the 2006 Legislative session and that the Resolution be forwarded to the community's legislators. In response to this directive, a Resolution endorsing and supporting the need for further action by the 2006 Virginia General Assembly was prepared and attached to this report for the Board's consideration. RWSA was requesting that the Board accept and adopt this Resolution, which would be forwarded to all the local Delegates and Senators. Mr. Frederick noted that the 2006 Legislature was now in session and therefore the opportune time to initiate lobbying efforts with local legislators.

Mr. Gaffney commended Mr. Frederick on the well-crafted Resolution and for his comments at the Virginia State Water Control Board meeting on November 21, 2005.

Upon a motion by Mr. Tucker, and seconded by Mr. Brent, the Board of Directors voted to approve the following Resolution:

RIVANNA WATER & SEWER AUTHORITY
BOARD OF DIRECTORS
RESOLUTION

WHEREAS, clean water is an issue of critical concern to the economies of our community and local jurisdictions, as well as the health and welfare of the people of Virginia; and

WHEREAS, our commitment is to improving local water quality and the water quality and living resources of both the Rivanna River and James River; and

WHEREAS, the Chesapeake Bay and portions of the James River are included on the Environmental Protection Agency list of impaired waters; and

WHEREAS, an unbalanced presence of nitrogen and phosphorus nutrients in these waters has been determined to be a contributing cause to impairments and the reduction of these nutrients from the waters will benefit every citizen of the Commonwealth; and

WHEREAS, federal and state studies have determined that the largest source of these nutrients is from widespread and diverse land use practices (non-point sources), but approximately one-third of the source is effluent from wastewater treatment plants; and

WHEREAS, recent regulatory actions in Virginia, consistent with legislative direction, has focused ambitiously on reductions in wastewater treatment plant nutrient discharges as a more cost-effective approach when compared to non-point source reductions; and

WHEREAS, RWSA's Moores Creek Wastewater Facility will be required to significantly meet strict nitrogen and phosphorus discharge limitations, and

WHEREAS, the statewide cost to modernize publicly owned wastewater treatment plants to achieve the required nitrogen and phosphorus waste load allocations is currently estimated to exceed \$1.4 billion and may rise further as a result of inflation trends in the construction industry; and

WHEREAS, approximately \$737 million is needed to fulfill the Commonwealth's commitment under the terms of the Water Quality Improvement Act to partially reimburse localities for modernizing their wastewater treatment plants; and

WHEREAS, the Virginia Water Quality Improvement Fund received only a \$67 million appropriation during the 2006 fiscal year budget representing less than 10 percent of the commitment stated above; and

WHEREAS, a sizable increase in additional funds will be needed to fulfill the Commonwealth's commitment under the terms of the Water Quality Improvement Act to partially reimburse localities;

NOW THEREFORE BE IT RESOLVED by the Rivanna Water & Sewer Board that:

(1) The Rivanna Water & Sewer Authority Board of Directors endorses and supports the need for further action by the General Assembly to establish dedicated funding that is efficiently administered and sufficient to significantly reimburse those localities who are required to proceed with wastewater facility upgrades for nutrient removal; and

(2) Restoring the water quality of the Chesapeake Bay and its tributaries is vital to the natural resources, culture and economy of our community, and every effort should be to fund this program at the state level to ensure this goal can be met.

The Board of Directors approved the Resolution by a 4 – 0 vote.

In regards to **Item 6b), Comprehensive Annual Financial Report for Fiscal Year Ending June 30 2005**, Mr. Wood stated that a copy of the report was included in the Board packet. He further reported that a large part of preparing the financial statements involved submitting the Authority's records and transactions to an independent auditor to obtain an opinion on the accuracy of the information and compliance with relevant laws and regulations. Mr. Robert Huff, a principal with Robinson, Farmer, Cox Associates, was in attendance and would provide a brief review of their audit, discuss any audit findings, and answer any questions on the audit process. Mr. Wood also thanked Authority Accountant Ms. Kathy Ware, who was not at the meeting, for her tremendous assistance with the preparation of this report.

Mr. Robert Huff also expressed his appreciation for the compilation of the exhibits and financial reports. He then explained that the financial statements are the responsibility of the Authority and that the auditor's responsibility was to express an opinion on the financial statements based on the audit. Statutory opinions were offered on the financial activity, internal audit controls, and compliance with the federal program.

Mr. Huff was pleased to report that all opinions were unqualified, which was the best opinion that could be obtained. He felt that FY 2005 was a very well managed year, as the Authority's net assets increased by approximately \$3.8 million, for a total of

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\$48 million in net assets and \$79 million in total assets. Cash flow and financial position also improved during FY 2005. Mr. Huff added that it was an excellent report, and there were no external matters that the auditors felt compelled to put into a Management letter. Mr. Huff thanked Mr. Wood for his excellent leadership in managing the Authority's finances and in conclusion stated that he would entertain any questions that the Board had concerning the audit findings at this time.

Mr. Brent acknowledged the tremendous amount of work that went into preparation of the financial reports, and he appreciated RWSA staff efforts in compiling an excellent report. He then referenced the graph on page 18 of the report under "Long-Term Trends" and stated that he thought it was an excellent piece of information. As illustrated in the graph, the Authority will experience massive funding requirements but will also have a declining debt service during FY 2006-2031. Mr. Wood commented that the Authority would have the capacity to finance future needs by taking advantage of the declining debt structure.

Upon a motion by Mr. Tucker, which was seconded by Mr. Brent, the Board of Directors voted to accept the Comprehensive Annual Financial Report for Fiscal Year ending June 30, 2005. The motion was approved by a 4 – 0 vote.

In regards to **Item 6c, Five-Year Capital Improvement Plan**, Mr. Frederick reported that the document included in the Board packet took a considerable amount of time to develop and expressed his appreciation to the following RWSA staff for their considerable efforts on this project: Mr. Lonnie Wood, Ms. Jennifer Whitaker, Mr. Chuck Kent, Ms. Michelle Simpson, Dr. Bob Wichser, Mr. Richard Defibaugh, Mr. Norman Wescoat, and Ms. Joyce Jackameit.

Mr. Frederick then commented that last year RWSA put forward a five-year plan for capital improvements, which was called at that time the most comprehensive planning document that had ever been developed by the Authority. RWSA made a commitment to the Board last year that the plan would be renewed on an annual basis. This document reflected the first year of that renewal effort.

Mr. Frederick next reported that utilities similar to RWSA tended to go through capital cycles of paying down debt and then periods when the needs for additional debt were significant. RWSA was facing a period of increasing capital needs from multiple directions. Factors identified in his report as influencing this upward trend included additional state and federal unfunded mandates (the largest of which was the nutrient upgrades being required at the Moores Creek Wastewater Treatment Plant), the need for additional water supply to meet the growth needs of the City and the County, and significant infrastructure rehabilitation. It was his assessment that in the past, RWSA had not expended the necessary funds to upgrade or replace infrastructure in a timely manner that would enable the structures to continue to serve out their useful life without experiencing problems or breakdowns. The purpose of this plan was to document and prioritize all those particular issues and to address finances in a responsible and

comprehensive manner.
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Mr. Frederick then stated that he felt the Resolution just adopted by the Board concerning the new regulations adopted by the State Water Control Board made clear the effect that unfunded mandates would have on the Capital Improvement Plan (CIP). He encouraged citizens who were concerned about the impacts to future sewer wholesale rates to lobby their delegates and senators during the 2006 legislative session for increased state funding to address this issue.

Mr. Frederick also discussed the improvements to last year's plan that would be ongoing in future documents. He noted that this year's document projected five years in the future whereas last year's five-year plan included the current fiscal year. Inflation forecasts were also incorporated into the project estimates based on the well-established Engineering New Record Construction Cost Index. Those enhancements would be continually refined as new information became available.

Mr. Frederick further stated that the most significant project on the Urban Water side was the Community Water Supply Plan. He pointed out that the current 5-year plan for this project is lower than was forecasted last year due to the tighter scheduling of improvements given the narrowing of the "short list" of four alternatives down to the two currently under consideration. He also stated that the decisions made last spring concerning the future direction of the project lengthened the planning period. He felt it was fair to state that there would be significant expenditures beyond year five during the implementation phase of the project. RWSA recognized that those costs translated into rate increases for the City and County customers and felt the projections should be as realistic as possible and based on the most current information.

Mr. Frederick next addressed Urban Wastewater projects and stated that the nutrient treatment upgrades to the Moores Creek Wastewater Treatment Plant were discussed previously. Another significant concern related to the collection system infrastructure. Most of RWSA's transmission lines were built prior to the creation of the Authority during the 1950's time frame and were due for some major rehabilitation. This project was being viewed as another emerging area that would involve significant future expenses.

Concerning the rural costs centers, Mr. Frederick noted that additional expenses were included for relining lagoons located at the Crozet, North Rivanna, and Scottsville Wastewater Treatment Plants as a result of a DEQ mandate. System assessments conducted at the Camelot Wastewater Treatment Plant indicated that significant plant rehabilitation would be needed by FY 10. Further study would determine whether the Camelot facility should be abandoned and replaced with a pump station or gravity collection line.

Mr. Frederick then referenced the financial analysis sheet that followed the CIP in the Board packets. He explained that the rate analysis was prepared by viewing the five-year plan as if each year would be an equal incremental step and determined what additional revenue would be required for capital improvements. It was suggested that

the proposed increases would probably be included as a component of the recommended financial

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requirements in the total FY 07 budget. He cautioned that the increases shown on this sheet were not the recommended changes in the water and wastewater rates themselves. Operating budget impacts would also need to be considered before a recommendation could be made on rate increases.

As this concluded Mr. Frederick's report on the CIP, he opened up the floor for questions from the Board.

Ms. Mueller commented that the sub-committee had met with RWSA staff to review the CIP in more detail. During the meeting, there was considerable discussion concerning contingencies to cover unexpected expenses. The sub-committee was comfortable given the discussions with Mr. Wood that the Authority would be able to cover unplanned costs with the reserve funds being set aside each year.

Mr. Gaffney asked how much money was being budgeted for contingencies. Mr. Wood responded that it was his goal to maintain \$2 million for Urban Water and \$2 million for Urban Wastewater each year in what he referred to as a "rate stabilization" fund so that the Authority would not have to immediately raise rates to cover unexpected expenses as was done in previous years. Mr. Gaffney inquired if the funds would also be used to fund capital projects and to reduce the amount of money that would need to be borrowed. Mr. Wood stated that RWSA was using \$10 million in additional reserve funding to offset the need for debt while still maintaining the \$2 million in reserves.

Mr. Brent commented that it was important to note that none of the capital projects were optional.

Mr. Tucker inquired if it was correct that the \$160,000 designated for the Camelot Wastewater Treatment Plant rehabilitation project involved just structural improvements to the facility, but the work would not be performed if it were decided to connect to the Rivanna Interceptor. Mr. Frederick replied that if a pipeline were built to the Rivanna Interceptor, the Camelot plant could be taken out of service. A comprehensive sewer capacity study was currently underway that would also examine the North Rivanna area. The results of this study would assist in the decision as to whether the Camelot plant would be kept in service. Mr. Brent added that there would be the opportunity for some participation by developers during this process.

Ms. Mueller stated that Mr. O'Connell had requested that the Board defer acting on the proposed CIP until next month to afford him the opportunity to review the document. After further discussion, the Board members were in agreement with Mr. O'Connell's request that any action on this item be postponed until the February Board meeting.

Mr. Frederick commented that RWSA was moving in the direction of presenting the operating budget at the February meeting that would include the Authority's recommendation for wholesale rates for FY 07. Preliminary wastewater rates were

required by law to be advertised well in advance of any rate change. Based on feedback received today, even with the Board's decision to defer formal adoption of the CIP,

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RWSA would proceed with the direction being taken at this time and incorporate the capital rate component into the preliminary rate schedule in order to meet statutory requirements governing advertisement of those rates. The Board was in agreement with RWSA proceeding in this manner.

In regards to **Item 6d), Crozet Interceptor Pump Station and Odor Complaints**, Mr. Frederick recognized Dr. Robert Wichser who would be reporting on this item. Dr. Wichser commented that he would present a brief summary of the information included in the Board report.

Dr. Wichser first provided background information and a historical review of the Crozet Interceptor system. He stated that the interceptor was a fairly unique system consisting of gravity sewer lines that were essentially force mains. RWSA began logging odor complaints related to this system in 1993. During the 1996 to 2000 time period, only one citizen complaint related to odor was received in four years. The flow volume was significantly impacted when the Con-Agra plant in Crozet closed in 2000. Flow dropped approximately 300,000 gallons per day, which significantly increased wastewater travel time in the interceptor. Generally wastewater in an open channel flow was fairly highly oxygenated. Once the oxygen left, the wastewater went anoxic and the anaerobic bacteria metabolism would then take over, which could result in malodorous compounds being formed.

Dr. Wichser continued by stating that during the 2000 to 2001 time period, RWSA received ten citizen complaints that were related to odor. Five of those complaints came from one citizen. The Authority began evaluating citizen concerns during this time period based on the increasing number of complaints. After considerable research, on June 6, 2002 the Authority implemented an odor control abatement system that was installed at the Crozet Interceptor Pump Station #4.

Dr. Wichser then discussed the biochemical odor abatement system in further detail. He stated that at that time it was a very novel and "cutting edge" procedure that was used by industries around the world. The Authority contracted with USFilter to supply their registered Bioxide® product. Bioxide® allowed the decomposing bacteria to use nitrate compounds instead of sulfate compounds as an oxygen source, which inhibited the bacteria from producing hydrogen sulfide. One concern with using a nitrogen product was that if you overfed Bioxide®, the product would pass through the interceptor collection system. The Moores Creek Wastewater Treatment Plant was not designed and operated to remove nitrates, so there would be a good likelihood that the material could pass through the effluent. RWSA does not favor overfeeding Bioxide® for this reason, so it was very important to trim the process and keep the flow of Bioxide® at a certain level.

Dr. Wichser further commented that USFilter conducted monthly site visits and logged

and analyzed the data on a monthly basis. The system was set up so that the chemical would be fed at Pump Station #4. The flow would then go through Crozet Pump Station #3 and travel throughout the rest of the system. Manhole #31, which was located

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across Route 250 in a farm field, was chosen as the control monitoring system. Manhole #31 contained a vapor hydrogen sulfide sensor and data logger that continually monitored hydrogen sulfide at that point. On a monthly basis, USFilter uploaded the data from the data logger to a laptop computer and submitted the information for RWSA's review. This data was also used to adjust the amount of Bioxide® being fed into the system to prevent overfeeding of the chemical.

Dr. Wichser pointed out that the cost of operating and maintaining this odor control system was expected to be \$65,000 in 2006.

Dr. Wichser added that from November 2004 through November 2005, four citizen complaints were received. All of the complaints appeared to be related to Pump Station #1. Three of the four complaints were from one citizen. One of the four complaints was found related to a mechanical failure of a Bioxide® feed pump in November 2005 at Pump Station #4. Within five days, the Bioxide® feed pump was repaired and returned to service. In response to the frequency of citizen complaints in November 2005, RWSA requested that USFilter install a second hydrogen sulfide sensor and datalogger at Pump Station #1. On November 30, 2005, the second system was installed for five days to compare the presence of hydrogen sulfide coming off the wetwell at Pump Station #1 to what was found at Manhole #31. USFilter reported to the Authority that no hydrogen sulfide was detected at Pump Station #1 at any time during that five-day period.

Dr. Wichser further reported that the hydrogen sulfide sensor and the dataloggers provided RWSA with important data tools for analysis of the citizen complaints. RWSA was attempting to establish a correlation between the complaints and system performance. The detection of odor was a transitory event that could occur literally every 10 or 15 minutes, and the ambient odor could be gone by the time the complaint was investigated. The dataloggers were used to sense what was actually occurring during a specific time period. To date, RWSA had not been able to formulate any conclusive "cause and effect" relationship between any of the citizen complaints and actual system performance at the Bioxide® feed system. He used as an example the citizen complaint of a "strong septic odor" coming from Pump Station #1 at 7:50 pm on January 10, 2006. USFilter was requested by RWSA to review and provide a copy of the hydrogen sulfide data from Manhole #31 with their recommendations. USFilter reported that on January 10, 2006 the hydrogen sulfide meter read 0.0 parts per million for 98% of the day, with the only exceptions being a brief minimal detection of less than 4 parts per million for less than 15 minutes total at approximately 2:15 pm and then again at approximately 3:30 pm. The USFilter report suggested that the odor control system was functioning very well on this date, and they were unable to explain from the data how a strong septic odor was detected at the highway near Pump Station #1 in the evening.

Dr. Wichser then provided a brief summary of the following options that were investigated and listed in the Board report, along with estimated costs and general comments:

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Option 1: This option would increase real-time interconnections between USFilter equipment and the hydrogen sulfide meter and RWSA's Supervisory Control and Data Acquisition (SCADA) system. This would provide the Authority with enhanced real-time data capability and possibly real-time adjustment on the Bioxide® feed pumps located at Pump Station #4. The estimated Capital cost for this system was \$25,000 to \$30,000.

Option 2: This option was very similar to Option 1 and involved adding a new real-time chemical oxidation system for sulfur odor compounds at Pump Station #1 or Pump Station #2 that would possibly use potassium permanganate or hydrogen peroxide. Those chemicals were very effective in oxidizing odorous sulfur compounds. There would be an initial Capital cost of \$25,000 to \$35,000 and an increase in O&M costs between \$30,000 to \$60,000. In addition, it was recommended that Option 1 be implemented along with this option, which would add an additional \$25,000 to \$30,000, for a total cost of approximately \$50,000 to \$65,000, realizing that the odor control system would still be in operation at the projected \$65,000 cost.

Option 3: A fabric membrane cover would be installed over the wetwell at Pump Station #1 with a small air vent through a passive carbon scrubber. Carbon scrubbers were extremely effective and were essentially vessels that contained granular activated carbon. With a passive system, there would not be induced draft to pull the air from the wetwell underneath the membrane through the scrubber system. The estimated Capital cost was \$30,000 to \$50,000; the estimated additional annual O&M costs were \$5,000 to \$10,000. There was a real concern with covering the wetwell, as the space beneath the fabric membrane would require weekly maintenance and a large ventilator fan would also be needed to vent out that area. When the membrane was opened and the ventilator fan turned on, there was a very good chance for any sewage vapors to be released into the environment. The second issue concerned whether the appearance of the membrane cover would be acceptable to Albemarle County's architectural review.

Option 4: A permanent enclosure would be installed over the wetwell with an access door and interior lighting with a ventilation system and an active carbon scrubber for all exhaust gases. An active scrubber blower system would pull the vapors underneath the enclosure up through the system. Maintenance staff would need to ensure that that the area was safe for entry. Estimated Capital cost was \$250,000 to \$350,000; estimated additional annual O&M costs were \$15,000 to \$20,000.

Option 5: This option would be similar to Option 3 except that an active scrubber would be installed instead of a passive scrubber. The active scrubber would allow maintenance work to be performed without the potential release of any odors into the environment. Costs are likely to be somewhere between the costs above for Option 3

and 4 and could be explored further if there is interest.

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Dr. Wichser cautioned that there were limitations to all odor control programs. There was never a 100 percent guarantee that all complaints related to odor could be resolved because of the following reasons:

- The program's reliance on electrical /mechanical/data communication equipment, which were reliable but not perfect.
- The sense of human smell is very complex and varied between individuals. The type and source of odor would not be perceived similarly between individuals;
- RWSA takes all odor complaints seriously and investigated complaints thoroughly within the context of the details provided; however, a complaint did not always indicate that there was a sewer odor problem. It was extremely difficult to investigate the cause of an odor complaint if not done at the time of detection. Citizens were encouraged to contact the Authority immediately to ensure the best chance for an accurate investigation.

Dr. Wichser continued by stating that RWSA recommended that any of the options presented be considered as an addition to the continued operation of the current odor abatement system. The continued control of the generation of hydrogen sulfide in the wastewater collection system was important even if some type of cover was installed at Pump Station #1.

Dr. Wichser then commented that in addition to any option the Board might direct staff to pursue, RWSA would also recommend that consideration be given to adding an appropriate type of evergreen vegetation and hardwood trees to screen the Pump Station #1 area and adjacent roadway.

Dr. Wichser noted that the current RWSA operating and capital budget for FY 06 did not include funding for any of the proposed options. If an option was selected for implementation, Board approval would need to include an amendment to the approved budget and designation of a budget revenue source for the additional funding.

Dr. Wichser added that staff was prepared to provide additional data, respond to questions, or provide additional guidance or research as directed by the Board.

Mr. Frederick stated that he felt it was valid at this point in the meeting to respond to questions posed by Mr. Marx during the Public Comment period. One of the questions he captured concerned a direct phone line to the Authority, which he felt was a valid issue and prompted further questions on his part related to the installation of a single 24/7 number to address the communication issue. Mr. Frederick noted that although the

Authority conducted 24-hour-a-day operations, he wanted the process to be as simple as possible. He felt it was fair that RWSA follow-up on this request and provide that information to Mr. Marx and any other customers who had a need for that service.

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Mr. Frederick then stated that the second issue that he captured during Mr. Marx's comments related to the threshold of hydrogen sulfide. He felt it was fair to state that hydrogen sulfide was not the only type of odor that would prompt complaints by citizens related to sewage. Literature would suggest that it was the most potent and obnoxious smell, which became the indicator used in these types of evaluations. The threshold did vary among individuals, but he did not dispute the figure of less than 1 part per million. RWSA's analysis was performed at each of the Crozet Interceptor Pump Stations and Manhole #31. The hydrogen sulfide sensor was located at Manhole #31, which was further downstream from Pump Station #1. Speaking only of hydrogen sulfide, a very minimal quantity was detected at only a very small percentage of the time at Manhole #31. Mr. Frederick emphasized the need to make a couple of important observations. First, it would be expected that conditions would be better all points upstream of Manhole #31. Second, the sensor was situated inside a manhole in a very small confined area, not representative of what would be detected in the ambient environment. There would be many orders of magnitude in difference between what is in a confined space and what is at the roadway. Although the sensor was used as an indicator, the correlation between 2 to 4 parts in a manhole and what might be present at the roadway were not directly comparable. The Authority did not have the data at this time to make a comparison.

Mr. Tucker asked Dr. Wichser if any of the complaints mentioned in his report were from the Flordon area. Dr. Wichser replied that all complaints received by the Authority were entered into the Complaint Log and the total number was presented today to the Board. Mr. Norman Wescoat added that he had not received any odor complaints from the Flordon area. Mr. Tucker further commented that he had not detected any odors on the two occasions when he had driven through the Flordon area to determine whether the neighbors were being affected by this issue. There had been other times when traveling on Route 250 that he had occasionally detected the odor. He was not questioning the existence of the odor but that it was not an everyday occurrence. The degree to which this was affecting communities would have some affect as to whether he felt additional funding would be needed to address this issue. Another area of concern for him was that there was no 100 percent guarantee that any additional monies spent would eliminate the odor completely. He felt that there would always be the possibility that some type of odor could occur at that site. Mr. Tucker also noted that he agreed with the comments made by Mr. Marx and Mr. Frederick concerning a direct 24/7 "hotline" as a means to enhance communication between citizens and the Authority.

Mr. Brent commented that Mr. Marx raised a good question, which Mr. Frederick addressed, related to the monitoring and treating of hydrogen sulfide. Mr. Brent then asked if there were any regime of tests that might be able to identify any other

malodorous compounds that might exist in the system that could lead us to the “root of the problem.”

Dr. Wichser responded that there were other very sophisticated and expensive air sampling tests, techniques, and analyses such as gas chromatography utilizing mass

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spectrometry to dissect specific types of compounds. He added that there were several hundred different organic compounds that occurred naturally in an urban environment.

Mr. Brent also inquired about the maximum duration of an odor event as recorded by the dataloggers. Dr. Wichser stated that the January 10, 2006 incident was 15 minutes in duration. Mr. Brent then asked if there had been any prior instances that were longer in duration. Dr. Wichser replied that the only other instance occurred in November 2005 and resulted from a mechanical failure. He felt that it was probably a transient event as there was a prompt response to correct the problem.

Mr. Gaffney asked if he understood correctly that none of the five options presented today could 100 percent guarantee that all odor problems would be resolved.

Mr. Frederick commented that he would never attribute a 100 percent guarantee to any of those options. Options 1 and 2 could address odor problems associated with one specific source, such as hydrogen sulfide, while Options 3, 4, and 5 would provide higher reliability in resolving diverse odor issues at a greater cost. Mr. Gaffney then inquired if at this point further data was needed to determine the cause of the odor before a solution could be developed. Mr. Frederick stated that the way to obtain better assurance of cause and effect would be to obtain more data. Generally what was recommended when dealing with the potential for diverse odors would be to establish an odor panel composed of individuals who would use their noses to sniff various samples of air at various points in time. The individuals who were selected for this panel would be required to go through a calibration process to ensure the reliability of their data. This approach has been used in the industry for sophisticated evaluations due to the extreme difficulty of capturing every possibility through lab analysis. Mr. Gaffney asked if that option was under consideration, and Mr. Frederick responded that it would be very expensive to implement and would require additional funding be approved.

Mr. Brent next asked if the mechanical breakdown in November 2005 was the cause of the incident that was reported by Mr. Marx in November. Dr. Wichser stated that it had not been definitely defined and matched with that incident because the hydrogen sulfide sensor was not in place at Pump Station #1 at that time, but felt that it was most likely the cause for the odor. Mr. Frederick added that when there was a mechanical failure and the chemical feed stopped, there would be hydrogen sulfide generated in the system and the potential for odor to be detected. Dr. Wichser further commented that before the odor abatement system was implemented, hydrogen sulfide levels in the system were measured at upwards to 165 parts per million but were now generally in the 0.0 parts per million level.

Mr. O’Connell inquired if the occurrences of odor were unique to a particular line in the

system due to the distance that the wastewater traveled.

Dr. Wichser reiterated for the benefit of Mr. O'Connell who was not present during that part of his presentation that the interceptor system consisted of force mains with a long travel time, which was anywhere from 25 to 30 hours between pump stations.

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6.0 Other Business (cont.)

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Mr. O'Connell also asked if this was the only place in the system where the chemical was being introduced. Dr. Wichser replied in the affirmative.

Mr. Brent then commented that most people would probably not believe that odors in a sanitary sewer system were fairly uncommon. As was previously discussed, what made this system unique was the long travel time. He hoped that with increased scrutiny, the resolution of the mechanical failure in November, with a direct means for the public to alert the Authority to odor problems, and closer attention to the problem, the frequency of odor events would be reduced. He was reluctant to recommend spending additional money at this time, hoping that increased monitoring of the system would result in better control over the odor abatement process.

After further discussion, Mr. Brent inquired whether the placement of a containment system over the wetwell would increase the intensity and duration of odors than what we might be experiencing now if a mechanical failure of the scrubber occurred.

Mr. Frederick stated that if the chemical feed were working effectively during that period of time and there was no odor being released from Pump Station #1, the atmosphere underneath the cover might not be adversely affected. Regardless of the chemical feed situation, if a cover were installed, occupational safety and health regulations would require a rapid ventilation system during maintenance or emergency response entry unless the space were being actively ventilated to prescribed standards. If there were odors being emitted from Pump Station #1, there would be the potential for the odors to become more intense during rapid ventilation with a cover over the system.

Mr. O'Connell suggested that if the approach were taken to closely monitor the situation, an update on the number of odor complaints and the latest test results be included in the Operations Report each month so the Board would be aware of any evolving odor issues and the need for further action.

Ms. Mueller commented that she felt Mr. Frederick made a good point when he proposed a 24/7 "hotline" to address the communication issue. She suggested that once the system was in operation that the President of the Flordon Homeowners Association be given access to that number. Mr. Gaffney added that he felt the "hotline" would facilitate a quicker response by staff in response to citizen complaints.

In summary, Mr. Frederick inquired if the Board was directing RWSA to develop a direct phone line, continue to monitor the number of odor complaints, and provide a status update on a monthly basis. He then asked if this would also allow the Authority to implement low-cost measures, such as negotiating with USFilter to install a hydrogen

sulfide sensor at Pump Station #1. The Board members expressed agreement with RWSA proceeding as outlined by Mr. Frederick.

7.0 Other Items From Board/Staff Not On Agenda

There were no other items from the Board or staff not on the Agenda.

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8.0 Closed Meeting

There was no need for a closed meeting.

9.0 Adjournment

There being no further business, Mr. Tucker moved that the meeting be adjourned, seconded by Ms. Mueller. All members voted aye, and the meeting was adjourned at 3:04 p.m.

Respectfully submitted,

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