

## **THE VIRGINIA WATER PROTECTION PERMIT**

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The Virginia Department of Environmental Quality (DEQ) issued a Virginia Water Protection (VWP) Individual Permit No. 06-1574, effective February 11, 2008, authorizing, among other activities, the construction of a new dam located downstream of the existing Lower Ragged Mountain Dam and with a higher crest elevation than that dam. The authorized expansion of the Ragged Mountain Reservoir involves the “coincident flooding or filling of 13,163 linear feet of streams and 2.61 acres of wetlands” and additional activities, including a pipeline between the South Fork Rivanna Reservoir and Ragged Mountain and the withdrawal of water from the two reservoirs.

The U.S. Army Corps of Engineers (COE), Norfolk District, authorized the same activities on June 3, 2008, by issuance of Permit #06-V1574, pursuant to Section 404 of the Clean Water Act.

The permittee is the Rivanna Water and Sewer Authority (RWSA). The City of Charlottesville is the owner of the existing Ragged Mountain Dam, reservoir, and the surrounding Ragged Mountain Natural Area, and the South Fork Rivanna Reservoir.

The RWSA’s proposal for a new dam at Ragged Mountain has changed. The activity authorized by the DEQ and COE permits was a concrete dam – the current proposal is an earthen dam at a slightly different downstream location and with a significantly larger footprint. In addition, the proposed final pool elevation is approximately 3 feet lower (due to proposed excavation within the reservoir footprint of soils for construction of the earthen dam). The differences in the impact on streams and wetlands have not been determined.

### **REOPENING THE VWP PERMIT FOR MODIFICATION: VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**

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Subsequent to the issuance of VWP No. 06-1574, new information and new studies<sup>1</sup> have become available which requires the DEQ, pursuant to General Condition J (Reopener), General Condition M (Permit Modification), and General Condition N (Permit Termination), to reopen the permit for the purpose of modifying the conditions or revoking the permit. The new information that has become available includes:

1. Material and substantial changes in the circumstances on which the permit was based (General Condition J, Reopener);
2. Special studies conducted by the permittee (and the owner) that show material and substantial change (General Condition J, Reopener);
3. Additions or alterations made to the proposed activity which require the application of VWP permit conditions that differ from those of the existing permit (General Condition M, Permit Modification);

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<sup>1</sup> Sources cited are listed on page 4 and available online at [www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html)

4. New information about the activity which was not available at permit issuance which would have justified application of different VWP permit conditions at the time of permit issuance (General Condition M, Permit Modification);
5. Changes which are subject to the “reopener clauses” (General Condition M, Permit Modification); and
6. Changes in conditions that require a permanent reduction of the activity (General Condition N, Permit Termination).

Part I Special Conditions, C. Conditions Applicable to All Project Construction and Compensatory Mitigation Activities (VWP No. 06-1574, page 6 of 35), requires the permittee to notify the DEQ of “any substantial or material modifications to the design or configuration” of the permitted activity. That condition also states that modifications shall be subject to individual permit review and/or modification of the permit.

### **REEVALUATION OF PERMIT DECISION: U.S. ARMY CORPS OF ENGINEERS**

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Subsequent to the issuance of Permit #06-V1574, new information has become available which warrant the COE’s reevaluation of its decision on this permit, pursuant to Further Information Paragraph 4, Reevaluation of Permit Decision (page 16 of 17), because certain information on which the decision was based has been proven to be incomplete or inaccurate, and significant new information has surfaced that the COE did not consider in reaching the original public interest decision. In addition, pursuant to General Condition #7, some new information and data have become available which demonstrates that several aspects of the original basis for selection of the permitted activity as the least environmentally damaging alternative were materially incomplete.

### **THE QUESTION**

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The RWSA has acknowledged that proposed changes in the project will prompt modification of the permits. In a recent letter to RWSA<sup>2</sup>, Mr. Paylor states that DEQ “will evaluate the [modified permit] application to advise the Community on the extent to which the application meets DEQ’s statutory and regulatory requirements.”

**When DEQ reopens the permit for modification, and when the COE reevaluates its permit decision to address the modifications, do the agencies have a duty to take into consideration the new information, new studies, and the material and substantial changes in the circumstances on which the permit was based?**

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<sup>2</sup> David Paylor to Tom Frederick, November 23, 2010 ([www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html))

The new information based on new studies is summarized in the following sections under three themes:

1. The proposed expansion of the Ragged Mountain Reservoir is predicated on a flawed projected water demand analysis and flawed assumptions of the safe yield of the South Fork Rivanna Reservoir.
2. Dredging the South Fork Rivanna Reservoir is a practicable alternative that was summarily dismissed because of flawed cost estimates and flawed estimates of sedimentation rate.
3. Less damaging and more practicable alternatives were dismissed due to inaccurate and contradictory information in the permit support document

## **CONCLUSIONS AND REQUESTED ACTION**

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Given the requirement that the Charlottesville-Albemarle region shall develop and submit a regional water supply plan by November 2011 pursuant to the Virginia Local and Regional Water Supply Planning regulations (9 VAC 25-780), and given the requirement that the plan shall estimate water demand for a minimum of 30 years (to a maximum of 50 years), and given that the plan shall be reviewed and revised every 10 years, and given the requirement that the plan shall include “an estimated future water use projected at the beginning of each decade (2010, 2020, 2030, etc.) within the planning period,” the nearly 10-year old demand analysis used in the Permit Support Document should not be the basis for determining the water supply deficit.

Given the RWSA’s documentation that average daily water use in the past eight years in the Urban Service Area has fallen an average of 22% below the demand projection in the 2004 Demand Analysis (Swartz, page A-7), a 5% reduction, as cited in the Permit Support Document, should not be accepted as a proxy for use efficiencies as part of the basis for determining the water supply deficit for the region served by the RWSA.

Given the Swartz report, commissioned by the RWSA, which lowers the projected demand for 2055 demand estimate to 16.7 MGD, the demand projection of 18.7 MGD used in the Permit Support Document should not be the basis for designing the volume of a new reservoir because it results in an oversized reservoir with larger environmental impacts than necessary.

Given the HDR dredging feasibility report which demonstrates that dredging the South Fork Rivanna Reservoir is practicable, feasible, and significantly lower cost than estimated in the Permit Support Document, and the sedimentation rate is significantly lower than estimated in the Permit Support document, dredging as a practicable and less environmentally damaging alternative should not have been summarily dismissed.

Given the City of Charlottesville and Albemarle County have agreed to issue a request for proposals for dredging the South Fork Rivanna Reservoir, and given the evidence in the HDR study that the sedimentation rate is significantly lower than previously estimated by the RWSA,

the increase in useable storage volume created by dredging should not be excluded from the analysis of the safe yield of the South Fork Rivanna Reservoir.

Given that DEQ recently determined that dredging alone would provide a safe yield of 15.5 MGD under current permitted stream flow conditions (Kudlas<sup>3</sup>), and given the Swartz report indicates a safe yield of 15.5 MGD will satisfy the region's water needs through at least 2040<sup>4</sup>, dredging as a practicable alternative should not be excluded from consideration.

Given the region's water needs projected to the year 2040 (even as characterized by the flawed demand analysis on which the project is based), the proposal described in the Permit Support Document for phasing construction of a larger reservoir at Ragged Mountain should not be ignored.

Given that the impacts to streams, wetlands, wildlife habitat and cultural resources associated with dredging the South Fork Rivanna Reservoir are significantly less damaging than the permitted project, and new cost information indicates dredging is practicable, dredging should not be summarily dismissed.

Therefore, based on the new information and new studies (summarized below) that show material and substantive changes, and in order to determine whether the proposed project is the least environmentally damaging, practicable alternative, or can be reasonably modified to be less environmentally damaging and more practicable, while appropriately addressing the projected 30-year water supply deficit, the DEQ and the COE is requested to require the following:

1. Preparation of a new demand analysis, using data through 2010 and using current American Water Works Association (AWWA) methods cited in the State's water supply planning regulations;
2. Revision of the safe yield analysis based on new information on sedimentation rates and taking into consideration the useable storage volume that will be added by the proposed dredging of the South Fork Rivanna Reservoir; and
3. Reevaluation of alternatives to meet the lower water supply deficit resulting from the new demand analysis and revised safe yield analysis.

## NEW STUDIES AND NEW INFORMATION

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References available online at [http://www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html)

### *1. Dredging Feasibility Study: February 2010 (HDR)*

#### **Phase I – Reservoir Characterization**

Wetlands Assessment, Bathymetric Survey & Volume Analysis, Pre-Dredge Survey, Sediment Characterization, Reservoir Characterization, & Public Meeting

#### **Phase II – Dredging Alternatives Analysis**

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<sup>3</sup> Scott Kudlas to David Norris and Ann Mallek, August 2, 2010

<sup>4</sup> [www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html) see Swartz Report

Dredging Alternatives Evaluation, Dewatering/Processing Alternatives Evaluation, Dredging Analysis, & Public Meeting

**2. *A Review of the 2004 Demand Analysis: August 2010 (Swartz)***

Full report

**3. *Study of the Existing Ragged Mountain Dam: September 2010 (Black and Veatch)***

Summary and twelve part report

**4. *Historic Resource Analysis: 2006 (Gray and Pape)***

Virginia Department of Historic Resources, report, supplement, graphic (documents four historic sites at the Ragged Mountain Natural Area and mitigation required).

**4. *Albemarle County Biodiversity: A Report on its History, Current Conditions, and Threats; October 2004***

## **THE PROPOSED EXPANSION OF THE RAGGED MOUNTAIN RESERVOIR IS PREDICATED ON A FLAWED CALCULATION OF WATER SUPPLY DEFICIT**

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The 2004 demand analysis, combined with projected estimates of future safe yield of the South Fork Rivanna Reservoir, was the basis for calculation of the water supply deficit on which the Community Water Supply Plan was based. The centerpiece of the Community Water Supply Plan is the construction of a large new dam to expand the Ragged Mountain Reservoir and a pipeline from the South Fork Rivanna Reservoir to fill that reservoir.

The predicted water deficit has two essential components, and both components are now known to be inaccurate:

1. Daily water demand projected for 2055 is now estimated at 16.7 MGD (and will likely be even lower when a new demand analysis is prepared to include the last nine years of water use data).
2. The HDR dredging feasibility study of the South Fork Rivanna Reservoir provides detailed evidence of a greater water volume and a significantly lower sedimentation rate, indicating there will be three times the usable storage available in 2055 than was assumed in the Permit Support Document.

The 2004 demand analysis was based on water use data through 2001. The RWSA's consumption data since that time show that the Urban Service Area uses an average of 22% less water on an annual basis than what was projected in the 2004 Demand Analysis. The fact that nearly nine years of additional water use data, combined with the State Water Supply Planning regulations that require demand analyses be conducted every ten years, indicate that a revised demand analysis should be prepared according to the recently revised methods of the American Water Works Association.

The entire permitted project is predicated on a calculated water supply deficit that is nearly twice what is indicated by new information and new studies.

**Permit Support Document, page 5:**

*By 2055, the projected demand will total 18.7 MGD and the available safe yield will decline to 8.8 MGD, resulting in a projected deficit of 9.9 MGD.*

**Permit Support Document, page 71:** *To minimize impacts to the environment, the Ragged Mountain Reservoir expansion alternative has been sized to just meet the 2055 water deficit, and no larger.*

The following table identifies statements contained in the Permit Support Document and new information and new studies that show material and substantial changes.

PERMIT SUPPORT DOCUMENT	NEW INFORMATION																					
<p><b>Page 4-5: Figure 3</b></p> <p>By 2055, the projected demand will total <u>18.7 MGD</u> and the available safe yield will decline to <u>8.8 MGD</u>, resulting in a projected deficit of <u>9.9 MGD</u>.</p> <div data-bbox="235 514 755 1018"> <p>Figure 3 Projected Daily Demand vs. Safe Yield</p> <table border="1"> <caption>Data for Figure 3</caption> <thead> <tr> <th>Year</th> <th>Average Daily Demand (Approx.) (MGD)</th> <th>Safe Yield with Existing Facilities (MGD)</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>11.5</td> <td>13.0</td> </tr> <tr> <td>2055</td> <td>18.7</td> <td>8.8</td> </tr> </tbody> </table> </div>	Year	Average Daily Demand (Approx.) (MGD)	Safe Yield with Existing Facilities (MGD)	2000	11.5	13.0	2055	18.7	8.8	<p><b>New Information:</b></p> <p>The Swartz report suggests a “one-time step-down,” resulting in a projected demand of <u>16.7 MGD</u> in 2055. The HDR report indicates the sedimentation rate is significantly less than assumed. Combined, the revised water supply deficit is significant lower, as suggested by the green lines on the modified figure below.</p> <div data-bbox="860 514 1372 1018"> <p>Projected Daily Demand vs. Safe Yield</p> <table border="1"> <caption>Data for Modified Figure 3</caption> <thead> <tr> <th>Year</th> <th>Average Daily Demand (Approx.) (MGD)</th> <th>Safe Yield with Existing Facilities (MGD)</th> <th>Revised Demand (MGD)</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>11.5</td> <td>13.0</td> <td>-</td> </tr> <tr> <td>2055</td> <td>18.7</td> <td>8.8</td> <td>16.7</td> </tr> </tbody> </table> </div>	Year	Average Daily Demand (Approx.) (MGD)	Safe Yield with Existing Facilities (MGD)	Revised Demand (MGD)	2000	11.5	13.0	-	2055	18.7	8.8	16.7
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PERMIT SUPPORT DOCUMENT	NEW INFORMATION
<b>Demand Analysis</b>	
<p><b>Page 2</b></p> <p>The future raw water needs of RWSA were projected on the basis of historical demand and population projections. The resulting net projected demands are 14.5 MGD in 2025 and <u>18.7 MGD in 2055</u>.</p>	<p><b>New information:</b></p> <p>The Swartz report identified a “one-time step-down” in water use, resulting in a projected demand of <u>16.7 MGD in 2055</u>.</p>
<p><b>Page 3</b></p> <p>The 5% water conservation factor is considered appropriate given the current and projected water conservation measures in place by the City of Charlottesville, the ACSA, and after consideration of other municipal programs around the country.</p>	<p><b>New Information:</b></p> <p>The Urban Service Area has already realized a 22% drop in average daily water use with current conservation measures. In the last eight years, the Urban Service Area used an average of 1.4 MGD less the previous eight years despite a significant increase in population.</p>

PERMIT SUPPORT DOCUMENT	NEW INFORMATION
<b>Water Supply Deficit</b>	
<p><b>Page 3</b>  <i>Due primarily to [siltation of the SFRR], the combined safe yield of the existing sources supplying the Urban Service Area are expected to fall from approximately 12.8 MGD (2004) to 8.8 MGD by 2055.</i></p>	<p><b>New Information:</b>  The HDR study determined that the rate of siltation is half of that reported in the Permit Support Document. Therefore, combined safe yield will be significantly greater in 2055 than stated in the Permit Support Document.</p>
<p><b>Page 3</b>  <i>Each year after 2008, increasing demand and shrinking supplies will increase the probability that a drought may cause service reductions unless steps are taken to alter the situation.</i></p> <p><b>Page 5</b>  <i>A thorough analysis of water supply and demand in the RWSA Service Area suggests that system demand will exceed safe yield by 2008. See Figure 3 on page 1</i></p>	<p><b>New Information:</b>  This did not happen – the safe yield was not exceeded in 2008. In fact, because average daily use has fallen significantly, the ratio of demand to storage has improved since the Permit Support Document was prepared. In 2010, supply (12.8 MGD) exceeded average daily demand (9.3 MGD) by 2.5 MGD (Swartz).</p>
<p><b>Page 5</b>  <i>By 2055, the projected demand will total <u>18.7 MGD</u> and the available safe yield will decline to <u>8.8 MGD</u>, resulting in a projected deficit of <u>9.9 MGD</u>.</i></p> <p><b>Page 13</b>  <i>... components were considered in combination to produce “alternatives” that could provide the required 9.9 MGD safe yield.</i></p>	<p><b>New information:</b>  The Swartz data indicates a projected demand of <u>16.7 MGD</u> in 2055, and the HDR study determined that the rate of siltation is half that reported in the Permit Support document, indicating the decline in safe yield could be less than half that used in the calculation of projected deficit used to size the proposed reservoir expansion.</p>
<b>Dredging the SFRR</b>	
<p><b>Page 6</b>  <i>The most recent bathymetric survey conducted in March 2002 determined [an] ... annual loss of total reservoir storage of 15.1 million gallons per year. This storage loss will continue significantly to reduce the safe yield of the SFRR over time.</i></p>	<p><b>New Information:</b>  The HDR study includes a bathymetric survey and concludes that the annual loss of reservoir storage is less than half of the loss estimated in the Permit Support Document (based on Gannett Fleming report).</p>
<p><b>Page 26</b>  <i>Assuming a sedimentation rate of 15.14 MG/yr, by the year 2055. ... it is estimated that <u>200 MG</u> of useable storage will be remaining in the year 2055.</i></p>	<p><b>New information:</b>  The HDR study found greater water volume and a lower sedimentation rate than previously reported, indicating that by 2055 the SFRR will have approximately <u>600 MG</u> of useable storage – more than three times the estimate in the Permit Support Document.</p>

PERMIT SUPPORT DOCUMENT	NEW INFORMATION
<p><b>Page 27</b>  <i>..an estimated <u>5 million cubic yards (CY)</u> of material that must be removed to accomplish the volume restoration.</i></p>	<p><b>New Information:</b>  The HDR study found that today, <u>less than 1 million CY</u> of material is in the usable storage area of the SFRR, and without dredging, only <u>3.5 million cubic yards (CY)</u> of sediment would be anticipated by 2055.</p>
<p><b>Page 27</b>  <i>If the sedimentation rate of 15.14MG/year continues beyond the 50-year planning period, the same amount of sediment will need to be removed annually to maintain the useable storage of the reservoir. This is a dredging volume of approximately <u>75,000 CY of sediment, which would need to be removed in each and every year after the 50 year planning period to sustain the described project.</u></i></p>	<p><b>New Information:</b>  The HDR study includes a bathymetric survey that determined that a total of 1.7 million CY of sediment has been deposited since 1966, for an average of only <u>39,000 CY per year</u>, which is nearly half the volume estimated in the Permit Support Document.</p>

**DREDGING THE SOUTH FORK RIVANNA RESERVOIR IS A PRACTICABLE ALTERNATIVE THAT WAS SUMMARILY DISMISSED BECAUSE OF FLAWED COST ESTIMATES AND FLAWED ESTIMATES OF SEDIMENTATION RATE**

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Dredging the SFRR was summarily eliminated from the short list of alternatives due to what were characterized as “disproportionate costs,” despite the fact that dredging has minimal environmental impacts. New information and studies now demonstrate that the Permit Support Document over-estimated the costs of dredging and related logistical complications. According to a recent DEQ letter<sup>5</sup>, dredging will provide a safe yield of 15.5 MGD under current permit conditions. According to recent adjustments to the projected demand (Swartz) and the evaluation of dredging (HDR), it is now estimated that dredging alone will provide adequate safe yield through at least 2041.

**Permit Support Document: Page 68:** *October 27, 2005 meeting with regulators...  
 Commentary acknowledged that maintaining and expanding an existing element of the existing water supply system at equal cost and with minimal environmental impact, was preferable to constructing a new element of the water supply system, with unclear long term consequences.*

*Similarly, while permitting and advisory agencies did not object to the dredging alternative, as it has minimal environmental impact, they confirmed that they would not require RWSA to pursue dredging as a viable water supply alternative [due to disproportionate costs]*

The following table identifies statements contained in the Permit Support Document and new information and new studies that show material and substantial changes.

PERMIT SUPPORT DOCUMENT	NEW INFORMATION
<p><b>Page 29</b>  <i>Estimate to dredge the SFRR: \$145 million.            (ed note: in 2007, RWSA increased this estimate to \$223 million)</i></p>	<p><b>New Information:</b>            The HDR cost estimate to dredge is \$27-40 million, less than one-third of the estimate reported in the Permit Support Document (and less than 20% of the subsequent increased estimate reported by RWSA).</p>
<p><b>Page 27</b>  <i>Since the topography surrounding the SFRR is rugged, it is not feasible to dewater and dispose of the material on adjacent land. ...and the dried material would have to be transported by truck to remote disposal sites. A significant portion of the overall cost of this concept is associated with the material handling, treatment and disposal.</i></p>	<p><b>New Information:</b>            The HDR study identified three adjacent and willing landowners with enough appropriate land to handle the sediment recommended for removal. HDR was constrained to considering only land owners who were willing to be publicly identified. HDR was not asked to consider dredging over a longer period of time which is expected to allow for different methods of handling that can be accomplished on a smaller site.</p>

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<sup>5</sup> Scott Kudlas to David Norris and Ann Mallek, August 2, 2010 (Table 1)

PERMIT SUPPORT DOCUMENT	NEW INFORMATION
<p><b>Page 45</b>  <i>Similarly, any alternative that might employ the concept of Dredging South Fork Rivanna River Reservoir is disproportionately expensive and impracticable when compared with other practicable and environmentally-acceptable alternatives</i></p> <p><b>Page 46</b>  <i>Similarly, alternatives incorporating dredging SFRR for purposes of increasing water supply will not be “practicable” owing to logistical issues that cause disproportionate costs, and uncertainties.</i></p> <p><b>Page 47</b>  <i>Although impacts to wetlands and streams associated with this concept by itself would be low, dredging of the South Fork Rivanna Reservoir is not practicable due to many uncertainties that cannot be resolved.</i></p> <p><b>Page 48</b>  <i>Dredging is estimated to be the most expensive of all concepts, costing as much as approximately four (4) times more than other concepts on a unit safe yield basis.</i></p> <p><b>Page 48</b>  <i>Dredging of the South Fork Rivanna Reservoir is not a preferred water supply option, as it is not practicable and cannot be made both practicable and least environmentally damaging through combination with another water supply concept.</i></p>	<p><b>New Information:</b>  Based on the HDR study and subsequent considerations, it is now known that the Permit Support Document grossly overestimated the dredging costs and logistical complications.</p>
<p><b>Page 68:</b> <i>October 27, 2005 meeting with regulators...</i>  <i>Commentary acknowledged that maintaining and expanding an existing element of the existing water supply system at equal cost and with minimal environmental impact, was preferable to constructing a new element of the water supply system, with unclear long term consequences.</i></p>	<p><b>New Information:</b>  Based on the HDR study and subsequent considerations, it is now known that the Permit Support Document overestimated the dredging costs and logistical complications, leading regulators to allow RWSA to drop dredging as an alternative, while acknowledging that maintaining an existing element of the existing water supply system is preferable.</p>

**LESS DAMAGING AND MORE PRACTICABLE ALTERNATIVES WERE  
DISMISSED DUE TO INACCURATE AND CONTRADICTORY  
INFORMATION IN THE PERMIT SUPPORT DOCUMENT**

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Dredging of the South Fork Rivanna Reservoir requires little to no mitigation for loss of stream, wetlands, and cultural resources.

Dredging of the South Fork Rivanna Reservoir would allow larger releases below the dam during low flow conditions. The permitted project will adversely impact the South Fork Rivanna River during low flow conditions.

The spillway of the Lower Ragged Mountain Dam is undersized based on current state requirements, although the structural integrity of the dam is now known to be sound.

Phasing the permitted project is called for in the Permit Support Document to minimize the impact on current rate payers, yet the RWSA now proposes to build the dam to full height despite the evidence that full capacity will not be needed for more than 30 years.

Dredging of the SFRR maximizes the use of existing assets, while the permitted project requires the construction of a new intake, new high lift pumps, new pump stations, a new pre-treatment facility, and a new pipeline from the South Fork Rivanna Reservoir to the proposed expanded Ragged Mountain Reservoir.

The following table identifies statements contained in the Permit Support Document and new information and new studies that show material and substantial changes.

PERMIT SUPPORT DOCUMENT	NEW INFORMATION AND CONTRADICTIONS
<b>Impact on Habitat, Wildlife, and Cultural Resources</b>	
<p><b>Page 62:</b> <i>As a result, the Ragged Mountain Reservoir expansion alternative is not expected to substantially impact aquatic wildlife or habitat.</i></p>	<p><b>Contradiction:</b> The proposed project will flood 150 acres of mature forest that has been cited for its exceptional wildlife habitat by a Smithsonian study and Albemarle County Biodiversity Committee.</p>
<p><b>Page 67:</b> <i>DGIF noted that, ..., if impacts were to occur, this was the place for them and not in a new, currently undisturbed location. These observations were echoed by FWS and DEQ.</i></p>	<p><b>New Information:</b> Dredging the SFRR has minimal and manageable environmental impacts without altering more than 2 miles of stream and destroying 150 acres of a pristine, undisturbed natural area noted for its wildlife value.</p>
<p><b>Page 45:</b> <i>An endangered species (James spinymussel) has also been documented very near, if not in, this affected aquatic habitat.</i></p>	<p><b>Contradiction: Page 25:</b> <i>“No studies have ever definitively found the James spinymussel in Albemarle County.”</i></p>

PERMIT SUPPORT DOCUMENT	NEW INFORMATION AND CONTRADICTIONS
<p><b>Page 44: Cultural Resources.</b>  <i>.. none of the identified sites [at Ragged Mountain Reservoir] are eligible for the National Register of Historic Places and no further work is warranted.</i></p>	<p><b>New information:</b>            Grey and Pape<sup>6</sup> identified four sites eligible for listing on the National Register of Historic Places that will be impacted by the permitted project.</p>
<p><b>Impact on Stream Flows</b></p>	
<p><b>Page 62: Stream Flows</b>  <i>Both the Ragged Mountain Reservoir expansion alternative and the James River intake and pipeline alternative were developed assuming the current voluntary release policy would be maintained.</i></p>	<p><b>Contradiction:</b>            The permit ( VWP 06-1574) <u>reduces</u> the minimum flow from the SFRR dam from the current voluntary release of 8 MGD to 1.3 MGD. <sup>7</sup></p>
<p><b>Page 65: Impact on the Rivanna River</b>  <i>From the historical record, SFRR is spilling and providing a downstream flow in excess of 8 MGD over 97% of the time.</i></p>	<p><b>Contradiction, Page 65:</b>  <i>“The operating guidelines used to develop the RMR alternative require roughly <b>one-half</b> of all flows exceeding 8 MGD to also be released rather than used to fill the RMR.”</i></p>
<p><b>Page 65:</b>  <i>Between SFRR and Moores Creek, about 8 miles of river length is currently impacted by water withdrawals. Since the SHR and SFRR facilities and watersheds are maximized in either the JRIP or RMR alternatives, the impact on the South Fork Rivanna River is similar.</i></p>	<p><b>Contradiction:</b>            Withdrawing up to 48 MGD from the SFRR (authorized by VWP 06-1574) to fill the expanded RMR is not “similar” to either the James alternative or to a dredging/dam alternative. Dredging the SFRR would allow more water to be released into the Rivanna River below the SFRR dam.</p>
<p><b>Existing Lower Ragged Mountain Dam</b></p>	

<sup>6</sup> [www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html)

<sup>7</sup> [www.cvillewater.info/studies\\_new.html](http://www.cvillewater.info/studies_new.html) See DEQ and/or USOCE permits

PERMIT SUPPORT DOCUMENT	NEW INFORMATION AND CONTRADICTIONS
<p><b>Page 40:</b>  <i>Due to the design and construction methods of the nearly 100-year-old existing Lower Dam, any proposed spillway raising greater than approximately 10-15 feet would best be accomplished by construction of a new dam immediately downstream.</i></p> <p><b>Page 56: Dam safety:</b>  <i>The condition of the Ragged Mountain dams has been well documented in this report. It is imperative that RWSA implement a plan to improve, replace or eliminate these structures as soon as possible</i></p>	<p><b>New Information:</b>  The Black and Veatch study shows the existing LRM dam to be sound. The spillway can be upgraded to meet dam safety standards or the dam can be raised (addressing the spillway capacity at the same time) at a lower cost than constructing the permitted dam.</p>
<p><b>Phasing Potential</b></p>	
<p><b>Page 58-9:</b> <i>Phasing Potential pp 58-59</i>  ... the first element of the project could be to construct a replacement dam to an initial height that would significantly increase existing yield, but that would be short of the ultimate 45-foot increase. The dam would be raised to its full height in the future when more users create additional demand and those additional ratepayers can share the cost.</p> <p><b>Page 58-9:</b> <i>Phasing Potential pp 58-59</i>  “Construction of the dam’s first phase would produce adequate yield to cover an interim period while avoiding the greater capital costs associated with future needs.”</p>	<p><b>New Information:</b>  The permitted project does not include phasing; it is now proposed to be built to full height immediately, with construction of the new SFRR-RMR pipeline after 2020.</p>
<p><b>Additional Infrastructure</b></p>	
<p><b>Page 60: Use of Existing Assets</b>  <i>The James River Alternative requires construction of a new intake, pump station and pre-treatment facilities and a... pipeline with booster pump leading to (WTP)</i></p>	<p><b>Contradiction:</b>  The permitted dam at Ragged Mountain also includes a new intake, new high lift pumps, new pump stations, a new pre-treatment facility, and a new pipeline. Dredging the SFRR to increase safe yield does not require new infrastructure.</p>