



**Rivanna Water and Sewer Authority  
Report to the RWSA Board  
Community Water Supply Capital Program  
January 20, 2004**

**1. Completed Work and Community Water Supply Capital Program Impact**

- a. South Fork Rivanna Reservoir Dredging.
  - i. Gannett Fleming completed and submitted the *South Fork Rivanna Reservoir Dredging Review* on December 31, 2003. A summary of findings and recommendations are presented. The Pilot Dredging project identified in the Capital Program is estimated to cost between \$1.8 million and \$2.8 million. The amount of material removed is equivalent to approximately 2 years of sedimentation and is of minimal benefit without continued commitment to dredging. The long term program is estimated to cost approximately \$42 million (2003 dollars). Alternate methods of gaining safe yield and maintaining the integrity of the SFRR should be evaluated prior to embarking on this costly project.
  - ii. The report also recommends developing short term and long term options for satisfying projected water supply deficits following completion of the GF safe Yield Analysis scheduled for January 2004. Options should provide "apples-to-apples" comparisons of improvements.
  - iii. Continue with other Community Water Supply Capital Program projects based on a logical critical path.
  - iv. Conduct investigative and monitoring tasks associated with the accumulated sediment.
- b. Safe Yield Investigations and Raw Water Model.
  - i. Gannett Fleming completed and submitted the *Safe Yield Study* on January 5, 2004. An Executive Report is included. Study limitations and recommendations are included.
  - ii. The daily flow computer model of the existing RWSA system was developed to determine the safe yield of the system and to evaluate the impacts of various release requirements and changes in reservoir storage due to sedimentation and raising reservoir level(s) at South Fork Rivanna Reservoir. The safe yield analysis considers the entire period of record since the 1930s drought through 2002. Although RWSA has commissioned numerous safe yield investigations previously, many natural conditions change over time and work techniques vary. GF results differ primarily due to estimation of useable storage available in reservoirs, source system operational variations, release assumptions, and the inclusion of data from the most recent 2002 drought. An explanation of these differences is being prepared for RWSA staff. Release rate for

instream flows is a critical element in the determination of safe yield. Resulting permitting requirements will largely influence the net safe yield and associated project(s) to satisfy future water supply deficits.

- iii. The attached chart summarizes the results of the Safe Yield Analyses performed by GF. For the sake of clarity, the results will be used throughout this report. The Safe yield progression previously assumed/recommended by others shows that the addition of a 4' crest gate with a likely inflow stream release requirement of 8 MGD or the equivalent to the natural inflow at all times, results in a Year 2002 Safe Yield of **16.2 MGD**. Due to the assumed water storage lost due to sedimentation, the Year 2050 Safe Yield is reduced to an estimated **12.3 MGD**. The potential safe yield progression with no action shows that without the addition of a crest gate and with no release requirement the Year 2002 Safe Yield remains **16 MGD** and due to sedimentation loss is reduced to **12.1 MGD** in 2050.
- iv. **This summary chart suggests that the addition of a 4' crest gate would only increase the Year 2050 Safe Yield by 0.2 MGD.** As such, RWSA Staff requested GF to prepare a scope of work and budget for additional raw water modeling activities to establish the adequacy of existing facilities based on 2004 GF Safe Yield Analysis and to reformulate and evaluate alternative water supply projects based on this new information.

## **2. Action Plan**

- a. Reformulate and Update Alternatives evaluation based on current findings
- b. A Scope of Services and fee has been presented to RWSA for associated actions. A two phased approach is identified to include reformulation and evaluation of alternatives based on current findings. Phase III activities will be identified upon completion of the Phases I and II. Clear implementation steps will be identified.
- c. Phase III will include activities necessary to finalize permit conditions and prepare permit applications. Design and construction services for associated improvements will also be identified at that time.

## **3. Current Schedule**

- a. Please see the attached updated schedule. Approximately 4 ½ months are scheduled for completion of the two phased approach discussed above. Current project schedules have been modified accordingly and remain on the schedule. Future edits are expected as the scheduled work elements are completed. Gannett Fleming will continue to update the schedule monthly and advise RWSA staff.

## **4. Impact on current Program elements**

- a. Commentary is presented below for each of the tasks in the current scope of services. Further work is on hold for some elements until the completion of the above described activities. Certain aspects of these tasks will progress to logical suspension points.

**TASK 1.  
WATER SUPPLY PERMITTING**

**A. Cultural Resources Survey (Phase II)**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and **evaluate favorable water supply alternatives.**

**B. James Spiny mussel Survey**

Gannett Fleming is working with Dr. Neves from Virginia Tech to complete this task. Dr. Neves has currently scheduled this work for the spring of 2004. We anticipate sufficient progress on the alternatives evaluation will be achieved to proceed with this work in a timely fashion, provided it remains appropriate.

**C. Wetlands Survey and Mitigation Plan (Phase II)**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and **evaluate favorable water supply alternatives.**

**D. Raw Water Model**

Additional modeling activities and safe yield investigation are identified in the Program Management scope of services.

**E. South Fork Rivanna Reservoir Dam Stability Analysis**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and **evaluate favorable water supply alternatives.**

**F. South Fork Rivanna Reservoir Clearing and Grubbing Plan**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and **evaluate favorable water supply alternatives.**

**G. Property Acquisition Assistance**

Continued review of contour data to obtain updated parcel mapping including Parcel ID, Address, Owner, Total Acreage of Lot, Property Sales Price(\$), and Zoning from Albemarle County to incorporate into GIS to identify adjacent parcels impacted by reservoir expansion (4 foot pool increase). This information is deemed useful regardless of project selection.

## **H. Permitting Agency Coordination/Negotiations and Additional Investigations**

Initiate meetings with regulators pending the results of the Program Management work to evaluate favorable water supply alternatives.

## **I. Preparation of Permit Application and Supporting Documentation**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and **evaluate favorable water supply alternatives**. It is anticipated this work could enable permit application to occur in the Fall of 2004.

## **J. Meetings**

Continue meetings with the Project team to reformulate and evaluate favorable water supply alternatives.

### **TASK 2.**

#### **MECHUMS RIVER PUMPING STATION REHABILITATION**

##### **A. Design Services – Mechums Pump Station**

Further work is **on hold** pending the results of Program Management work necessary to reformulate and evaluate favorable water supply alternatives. It is perceived that there is little or no safe yield benefit from this project as proposed.

##### **B. Design Services-Flow Control Valve at Sugar Hollow Reservoir**

Further work will resume pending the results of the Program Management work necessary to reformulate favorable water supply alternatives.

### **TASK 3.**

#### **SOUTH FORK RIVANNA RESERVOIR PILOT DREDGING PROJECT**

##### **Design Services**

**Further work is not recommended at this time pending the results of Program Management work necessary to reformulate and evaluate favorable water supply alternatives.**

**TASK 4.**  
**FACILITY PLANNING FOR OBSERVATORY WTP AND PUMPING STATION**

**A. Plant Evaluation and Process Evaluations**

Work will continue as scoped. Future work at Observatory will be closely coordinated with the results of Program Management work necessary to reformulate and evaluate favorable water supply alternatives.

**TASK 5.**  
**SOUTH FORK RIVANNA RESERVOIR DAM MODIFICATIONS**

**A. Design**

Further work is on hold pending the results of Program Management work necessary to reformulate and evaluate favorable water supply alternatives.

**TASK 6.**  
**NORTH FORK PUMPING STATION/INTAKE IMPROVEMENTS**

**A. Conduct Study and provide letter report**

Work is substantially completed. Future work at North Fork will be closely coordinated with the results of Program Management work necessary to reformulate and evaluate favorable water supply alternatives.