

MEMORANDUM

**TO: RIVANNA WATER & SEWER AUTHORITY
BOARD OF DIRECTORS**

FROM: THOMAS L. FREDERICK, EXECUTIVE DIRECTOR

SUBJECT: PHASING OF COMMUNITY WATER SUPPLY PLAN

DATE: MAY 21, 2007

The purpose of this report is to introduce to the Board of Directors and the public the status of staff's planning for the phasing of the improvements recommended in the Community Water Supply Plan. The phasing of improvements needs to take into consideration the following issues: (1) adequacy of current and future water supply to meet forecasted seasonal water demands under drought conditions; (2) adequacy of current and future water treatment capacity to meet forecasted maximum day water demands; (3) regulatory mandates, including public health and safety issues; (4) impacts on future water rates and acceptability of bond rating and other agencies imposing financial test requirements; and (5) effects on natural resources and environmental stewardship.

As outlined in the minimum in-stream flow report (Agenda Item 6d), **staff is recommending that the new Ragged Mountain Dam be built in one phase**, and that the new dam be the first project implemented under the Community Water Supply Plan. Several reasons have been identified, summarized as follows:

- It has been estimated to cost at least \$5 million to bring the existing Ragged Mountain dams up to current Commonwealth safety standards, and would be an expense to dams that are scheduled to be "breached" in the Community Water Supply Plan. These major repair expenses can be avoided by constructing the new dam by 2011.
- **Building the new dam in multiple phases will result in significant additional sum total expenses (\$3 million or more) to the overall project that can be avoided by one phase.** The most significant additional expense is the construction of a "temporary" spillway structure placed at the "spill" height of an interim phase but sized to pass the "maximum probable flood". Other duplicate or added expenses include the design and installation of a special construction joint at the interface of the phases, designed to withstand significant future water pressure, and the expenses associated with establishing complex logistics (contract administration, concrete production and transportation, and access issues).
- The structure of the new dam to raise the Ragged Mountain Reservoir by 45 feet will be a total height of approximately 112 feet (the existing dam is 67 feet tall). The base of the new structure will need to be sized to withstand the future stresses of an

ultimate 112-foot structure even if built in phases. It is estimated to cost \$20 million (54% of the cost of a full height dam) to construct the new base up to 67 feet (the existing reservoir pool height), therefore, costs that can actually be “deferred” in a phased approach are limited.

- In order to provide significant improvements to the flows in the Moormans River before constructing the new South Fork pipeline, the Ragged Mountain Dam needs to be built to its full height.

Beyond the Ragged Mountain Dam, we have determined that additional treatment plant capacity will be needed within the next ten years in order to assure that the water demand for the highest single day can be satisfied as growth occurs. Our urban system water plants are collectively rated to treat 21.7 million gallons per day (mgd), but in the experienced judgment of our Water Manager, effective capacity to meet our treatment objectives is limited to 19 mgd. The Observatory Plant has the oldest equipment, the greatest rehabilitation needs, and is the closest facility to our largest future reservoir. We propose to expand and rehabilitate this facility to 8 mgd by 2015, and also plan to replace the very old piping and pumping station supplying the Observatory Plant from Ragged Mountain for important reliability.

We recommend the next project be the South Fork pipeline. It is recommended that final alignment and acquisition of right-of-way for this pipeline be completed within the next five years as outlined in the current CIP. A preliminary target date for the completion of the pipeline is 2021, based on a “straw” position that the overall financial impact of the entire Community Water Supply Plan on the wholesale Urban Water Rate be approximately 5% per year. The biggest obstacle in building the pipeline is financing its large cost (\$52 million), and it is reasonable that the “straw” position be an opening for public discussion. Aside from the financing issues, we also believe it is important to schedule the construction of the pipeline within the 15-year time period of the DEQ Water Protection Permit that we expect to be issued this summer. Were the pipeline to be proposed for construction after the expiration of this permit, there are questions regarding whether the pipeline could be constructed under a new permit, or permit extension, without going back through a new “least environmentally damaging analysis” similar to the process we have completed over the past three years.

With the exception of some minor rehabilitation or improvements at the South Fork and North Fork Water Plants, we anticipate the remaining elements of the Community Water Supply Plan can occur beyond 2025. These projects include an expansion of the South Fork Water Plant to 16 mgd (targeted for ca. 2027) and an expansion of the Observatory Water Plant to 10 mgd (targeted for ca. 2045).

Board Action Requested:

Staff has scheduled the start of preliminary design for the Ragged Mountain Dam for August 2007 and would like a decision from the Board of Directors by that time on the staff recommendation to build the full height dam in one phase. Staff anticipates further public discussion regarding the overall phasing plan and is open to the Board’s feedback on how to structure future public discussions.