Summary of Community Water Supply Plan
Rivanna Water & Sewer Authority
November 2007

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Overview

In 2004, facing the reality that the urban water demand (serving the City of Charlottesville, Virginia and the urban areas of Albemarle County surrounding the City, including the University of Virginia) was approaching the available safe yield supply under drought conditions, the Rivanna Water & Sewer Authority developed a new strategy for identifying a new water supply to safely provide for the future needs of the community. This new strategy led to ten public meetings (between September 2004 and September 2007), three joint board meetings that were also public, numerous updates to public bodies at every major step of the process, numerous meetings and conferences with state and federal regulatory agencies, and several engineering and environmental studies. All of this work culminated in the selection of a new supply with unusually widespread community consensus as well as significant support from the state and federal permitting agencies.

History

Prior to 2004, efforts in this community to develop a new water supply were more focused on finding an alternative that had local community support, then attempting to obtain necessary permitting from state and federal agencies built around that alternative. The first preferred alternative was to build a new reservoir on Buck Mountain Creek, near Free Union, Virginia. After purchasing significant land for the reservoir, the Authority learned through an environmental study in 1999 that this reservoir could not be permitted under federal law because of its environmental impacts and impacts to a threatened and endangered species (James Spinymussel). The second preferred alternative, centered on raising the existing South Fork Reservoir through the installation of a pneumatic "bladder" on top of the South Fork Dam (called the "four-foot

crest"), became a victim of similar environmental and endangered species concerns.

Alternatives Process

The new strategy was built around developing an alternative screening process that was conducted openly through public meetings, while the meetings also served as public education on the federal and state laws that established the criteria for issuing a permit to build a new water supply. The concept was to build a bridge between the federal/state selection criteria and what was important to the local community. An engineering study in 2004 identified 32 possible alternatives for a new water supply, then narrowed those alternatives using federal/state environmental impact criteria to the final four called a "short list". The "short list" was made public in a September 2004 public meeting, and included a short bladder on the South Fork Dam (called the "four foot crest"), dredging of the South Fork Reservoir, a new intake and pipeline from the James River, and a new dam at Ragged Mountain. In the fall of 2004, each "short list" alternative was described in detail through a series of public meetings. The selection criteria, based on the phrase "least environmentally damaging, practicable alternative" was quoted directly from federal law and also amplified.

In early 2005 the estimated environmental impacts of each of the "short list" alternatives were compared side-by-side in a public meeting. In early March the Authority's legal counsel announced publicly that the "four foot crest" was unlikely to be permitted by the federal government due to its environmental impacts (the highest of the four alternatives) and concern for impact to an endangered species called the James Spinymussel. Counsel also announced that based on proven case law, dredging could be considered "impracticable" due to its logistical uncertainties and very high potential costs when compared to the other alternatives. Local public discussion centered on a very strong desire to keep the growing water supply within a watershed area locally controlled by Albemarle County, and in support of that objective there was considerable local opposition to a James River supply. As the Authority staff and engineers weighed local concerns against federal case law, serious attention began to focus around the only remaining alternative that had a chance to win both local support and regulatory support: a new dam at Ragged Mountain.

Ragged Mountain Focus

The Ragged Mountain Reservoir sits in a rugged upland forest immediately west of Charlottesville where water supply expansion could be accomplished with far less stream and wetland impacts than in the broader piedmont valleys of the South Fork Rivanna River or Buck

Mountain Creek. The Ragged Mountain area was also outside of the area known to be habitat for the James Spinymussel. However, Ragged Mountain's upland characteristic also meant the watershed drainage area to its reservoir was much smaller than the other local water supply reservoirs, meaning that a pipeline would be necessary to help refill the reservoir after a drought. When the Ragged Mountain alternative was initially defined in 2004, it included a new larger dam along with the replacement of an existing old pipeline from an existing Sugar Hollow Reservoir with a new larger pipeline to refill the larger reservoir. Spoken opposition to Ragged Mountain from local citizens centered on one issue: concern that withdrawing more water from the Sugar Hollow Reservoir would contradict a local objective to improve natural water flow in the scenic Moormans River below the Sugar Hollow Dam.

In March 2005 the Authority initiated a feasibility study of moving the origin of a proposed new pipeline to re-supply the Ragged Mountain Reservoir to the South Fork Reservoir instead of the Sugar Hollow Reservoir, to overcome local objections centered on the Moormans River. To overcome concerns that the South Fork water quality is not as high as Sugar Hollow water, the Authority proposed to pre-treat water from the South Fork Reservoir to remove nutrients and sediment before transferring through a new pipeline to the Ragged Mountain Reservoir. This "retooled" alternative was found to be both feasible and competitive with the costs of other water supply alternatives even with the pre-treatment facilities. In a meeting between the Authority and The Nature Conservancy (TNC) in April 2005 to discuss improvements to local in-stream flow policy, the Authority learned that TNC was independently considering a South Fork to Ragged Mountain pipeline, and after each organization shared its related findings with the other, TNC agreed to contact several local organizations who had previously stated concerns about the Ragged Mountain alternative as a way of determining if by proposing the source of the new pipeline as South Fork, those earlier concerns would be remedied. The feedback was highly positive.

During this same time period, the Authority actively discussed the Ragged Mountain alternative with federal and state regulatory agencies. The concern of these agencies was different: could the Ragged Mountain alternative be considered "least environmentally damaging" in comparison to the James River alternative under application of federal law. The Authority's environmental consultant identified that while the length of streams impacted would be greater at Ragged Mountain, the impacted streams at Ragged Mountain are smaller order streams than for the James River alternative, and further, unlike with the James River option, the impacted streams at Ragged Mountain have already been cut off from the downstream ecology for over 100 years as a result of the existing

reservoir, thereby new impacts to the environment would be minimal if any at all.

During the second half of 2005, support for the new Ragged Mountain alternative grew both in the local community and among the regulatory agencies. In a public meeting in October 2005, local citizen support for the Ragged Mountain alternative was overwhelming. In June 2006 a permit application was submitted to the regulatory agencies with extensive engineering and environmental support documents based on the new Ragged Mountain Reservoir and South Fork pipeline as the preferred alternative. In November 2006 the Authority announced publicly a plan to mitigate the environmental impacts of the new Ragged Mountain Reservoir through stream preservation and enhancements on Authority land along Buck Mountain Creek, and the creation of new wetlands in the floodplain along Moores Creek near its confluence with the Rivanna River. The mitigation plan was applauded by both the U S Army Corps of Engineers and the Virginia Department of Environmental Quality, the two lead agencies in the permitting process.

The Authority has received many compliments from both local citizens and regulatory officials regarding how the process leading to the selection of the new Ragged Mountain Dam and Reservoir was conducted. The process has been held up as an example across Virginia on how legal requirements and local community interests can be "married" through a public process. This process has also been upheld as a model case study at various technical conferences, including the Virginia Section of the American Water Works Association.

Quick Facts

The following are some quick facts regarding the proposed Ragged Mountain water supply alternative. Additional information can be obtained by going to the Community Water Supply Plan page of the Authority's website (http://www.rivanna.org/community.htm) and clicking on "Maps of Preferred Alternative", "May 2006 Community Water Supply Project Permit Support Document", or the "Presentation" slides for the April 18, 2006 Public Outreach Meeting.

Ragged Mountain Water Supply Alternative

Existing Reservoir: Upper Dam Built 1885; Lower Dam Built 1908
Total Water Storage to Bottom: 516 million gallons
Storage Useable for Water Supply: 464 million gallons
Dam Height: 67 Feet

Proposed Reservoir: Total Water Storage to Bottom: 2.584 billion gallons

Storage Useable for Water Supply: 2.19 billion gallons
Increase in Water Pool Height: Approximately 45 Feet
Dam Construction: Roller Compacted Concrete

New South Fork Pipeline: 9.5 miles of 36-inch diameter buried pipe

Environmental Impacts: Streams Inundated – 14,435 linear feet, small first and second order Wetlands Inundated – 2.6 acres

Mitigation Plan: Wetlands Created – Approximately 4 acres
Stream Buffer Preservation – 44,700 linear feet
Stream Buffer Enhancement – 30,300 linear feet
Stream Bank Enhancement – 500 linear feet
New Forest Created – 197 Acres

Estimated Cost: New R M Dam and Reservoir - $37 million
New South Fork Pipeline - $ 56 million