



# CITIZENS REPORT: OPERATING AND EMERGENCY PLANS FOR THE BURNETTE AND BEE TREE DAMS

JUNE 2007

## Summary



Following the tropical storm season of 2004 and the devastating effects in the North Carolina Mountains, the City of Asheville initiated an operational study of its water supply reservoirs. This project provided the engineering expertise to update the city's Dam Operation and Maintenance Plans, Emergency Action Plans and associated notification procedures. The project also examined how to balance the

opportunity to provide flood control storage while maintaining the reservoirs' primary purpose of providing a safe and reliable water supply system.

The Emergency Action Plan (EAP) addresses a wide range of potential natural and man-made emergency conditions and establishes the resources, operational procedures, and emergency warning procedures to be followed during future events. The new EAP has been accepted by the North Carolina Office of Dam Safety and the appropriate city staff have been trained in its procedures. Regional emergency management personnel have been briefed and provided copies of the EAP.

The Flood Operations Plan (FOP) and the computer-based tools developed to support it are designed to help the city balance the risk of flood damages against its obligation to maintain a safe and reliable water supply system. The plan addresses the year-round operation of the North Fork reservoir and is designed to provide a degree of flood protection while minimizing the increase in drought risks. The new plan provides flood control benefits downstream of the North Fork reservoir, improves dam safety, and maintains an acceptable level of drought risk as defined by the city's 2004 drought management study.

During this study new tools were developed and have been delivered to the city's Water Resources and Engineering staff. These tools include computer models and capital improvements in the North Carolina Automated Flood Warning System within the Swannanoa watershed. New flood mapping has been produced for the Swannanoa River from the North Fork Reservoir to its confluence with the French Broad River.

The city's reservoirs cannot prevent flooding in the Swannanoa River. However, this operational study helps ensure that city staff have the necessary information and procedures to operate responsibly during severe storms, to promptly notify the appropriate emergency management personnel, and to preserve the safety and reliability of the city's water supply.

## ACCOMPLISHMENTS:

- ◆ Operations and Maintenance Procedures updated to meet State requirements.
- ◆ Emergency Action Plans, Notification Procedures, and Flood Inundation Mapping updated. Emergency management procedures improved.
- ◆ Flood Operations Plan implemented. Understanding of tradeoff between drought and flood risks improved. Overall safety of reservoir operations improved.
- ◆ New tools developed. City now has an improved drought management model and a two-part flood model.
- ◆ Flood Warning System installed. Assists in reservoir operations and provides web-based public information.
- ◆ City staff trained and Emergency Management Personnel briefed.
- ◆ Public better informed.

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## *What's Next?*

The North Fork Water Treatment Plant improvement project currently underway will provide several additional dam operations components that will help city staff better manage the reservoir and further improve both dam safety and water supply reliability. One of these components is the installation of new, electric-driven spillway gate controls, providing the ability to adjust the gates from inside the water treatment plant. That improvement will reduce or eliminate the potentially dangerous task of manually adjusting the gates from the top of the dam during severe storm conditions. It will also allow a significantly faster response when gate adjustments are needed. A second component is the addition of a set of spillway stoplogs that will provide the ability to conduct gate repairs and maintenance without losing water supply. Of further assistance is the planned installation of an automated reservoir water surface elevation gage. Again, these investments will improve both staff safety and the ability to quickly understand and adjust to rapidly changing conditions during a flood.

The development of the watershed runoff and flood inundation models will aid the city's efforts to improve floodplain management and flood preparedness in the Swannanoa watershed. The flood inundation mapping produced during this project is already assisting the newly formed Flood Damage Reduction Task Force in their preparation of local Flood Action Plans.

Finally, the city's investment in and cooperation with the North Carolina Automated Flood Warning System is already helping improve reservoir operations. It also presents the opportunity for the city and its neighboring communities to develop a comprehensive flood warning system for the Swannanoa watershed. Doing so will require city leadership and intergovernmental cooperation. That additional effort would provide significant benefits to the residents of the watershed and could serve as an example of how to extend those benefits to the remainder of the city and the region.

We do not know when the next flood or the next drought will occur. We do know that both will happen. The city has made significant progress, developing updated O&M and Emergency Action Plans and a new Flood Operations Plan. In addition the city has a new set of analytical tools that will allow those plans to be extended, modified and updated as needs change and grow. To obtain the highest return on its investment the city must provide continuing opportunities for staff training and should seek opportunities to cooperate with surrounding communities to improve the area's drought preparedness, flood preparedness and flood warning capabilities.

