

THE UPPER ETOWAH MONITORING EFFORT: AN INTRODUCTION TO A MULTIJURISDICTIONAL WATERSHED ASSESSMENT EFFORT

Robert L. Bourne¹ and Steve Shelton²

AUTHORS: ¹TMDL Environmental Compliance Supervisor, Cobb County Water System, Central Laboratory, 622 South Cobb Drive, Marietta, GA 30060; ²Laboratory Superintendent Steve Shelton, 662 South Cobb Drive, Marietta, GA 30060. Also Mike Morrissey, Lori Forrester and Jeff Riley Cherokee Water and Sewer Authority and Patrick Pherson and Jim Parsons Cobb Marietta Water Authority Labor Georgia.
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INTRODUCTION AND BACKGROUND

Most watershed monitoring efforts in Georgia are focused on permit compliance for an individual jurisdiction; they do not normally focus on regional or watershed management. The Upper Etowah watershed monitoring effort, however, covers the entire watershed of the Etowah River upstream of the Allatoona Dam. This watershed includes portions of ten counties: Bartow, Cherokee, Cobb, Dawson, Fannin, Forsyth, Fulton, Lumpkin, Paulding and Pickens spanning an area of approximately 725,940 acres. The monitoring effort is comprised of a unique coalition of 7 county governments and 3 water and sewer authorities. The list of participants includes: Bartow County, Cherokee County, Cherokee County Water & Sewerage Authority, Cobb County-Marietta Water Authority; Cobb County/Cobb Water System, Dawson County, Etowah Water and Sewer Authority; Forsyth County, Lumpkin County, and Pickens County. The federal sponsor was the U.S., Army Corps of Engineers (USACE), Mobile District in order to more effectively manage the Lake Allatoona reservoir watershed. The USACE had access to federal matching funds that were used initially to partially fund the project. On September 30, 2003 a Federal Cost Sharing Agreement was signed that stipulated the cash contributions or in-kind services to be provided by the partners participating in the watershed effort. The scope and purpose and level of commitment to the project were clearly delineated in the agreement which has since served as a charter to help bind the partners together. By combining their strengths and funding resources, the partners have produced a comprehensive plan that is far greater than the sum of its parts. By managing the watershed on a watershed level instead of by jurisdiction, data can be collected and management decisions made that are much more beneficial to the watershed and the governing bodies comprising the watershed.

The implementation of the watershed monitoring effort was originally managed by the USACE. The sponsors and the USACE delineated the scope of the effort and chose the chemical monitoring sites. In the fall of 2003 the sponsors voted to bring Tetra Tech Inc. on-board as technical advisors. In early 2004 the

Sponsors Committee formed the technical sub-committee (TSC) from personnel primarily from: the Cherokee Water and Sewerage Authority, the Cobb Marietta Water Authority, the Cobb County Water System and Tetra Tech Environmental Engineering and Consulting Services. The Comprehensive Monitoring Plan arose from the efforts of this committee. The Cherokee County Water and Sewerage Authority, the Cobb County Water System, and the Cobb County-Marietta Water Authority agreed to distribute and analyze the chemical samples. Each of them agreed to analyze a specific subset of the parameters. The monitoring plan was implemented by holding a series of workshops for participating sponsors in order to train their personnel on the sampling protocols necessary to produce reliable data. Tetra Tech directed the biological sampling effort and assisted in managing and modeling all data generated by the study. In 2005 sampling began. In 2006, Malcolm Pirnie Inc. was brought in to help manage the overall project and coordinate between Tetra Tech Inc. and the sponsors. Today the effort continues and the data is being logged, modeled, and evaluated.

THE MONITORING PLAN

The primary goal of the technical sub-committee was to create a monitoring plan for the entire upper Etowah Watershed and to produce consistent scientifically defensible data which could be used to characterize the entire watershed or a specific area within a jurisdiction. The TSC members agreed that their respective jurisdictions had the in-house resources to manage and execute the chemical monitoring effort. The utilization of existing in-house resources would also provide extensive opportunity for in-kind service credits, significantly reducing their cash contributions for the monitoring plan. The TSC members were careful to create a plan which satisfied the requirements of as many of their existing permits as possible to eliminate redundancy in monitoring efforts. This included stormwater, NPDES and sourcewater requirements. In order to assure that this important element of the plan was sound, the sponsors held a series of meetings which

included representatives from the Metropolitan North Georgia Water Planning District, EPA, EPD, USGS, and the Etowah HCP, which included U. S. Fish and Wildlife, the University of Georgia, and the Upper Etowah River Alliance.

LABORATORY ANALYSIS

In the TSC meetings parameters were chosen to satisfy permit and monitoring requirements and provide useful data for watershed management. The three main sponsors in the TSC, Cherokee Water and Sewerage Authority, Cobb County-Marietta Water Authority, and Cobb County Water System, have laboratory facilities capable of performing analysis of the samples. As a result they decided to utilize these resources and run the chemical analyses in-house. The Cobb County-Marietta Water Authority is the only sponsor with equipment for TOC analysis and the Cobb County Water System is the only one that can do metals analysis. All samples are delivered to the Cherokee Water and Sewer Authority Rose Creek Laboratory for distribution. After they are prepared by the Rose Creek Laboratory, the samples are collected by the other two laboratories for analysis. Because they perform bacterial analyses, the Cobb Marietta Water Authority must collect their samples daily. The Cobb County Water System Laboratory selected analyses that can be performed on preserved samples to reduce the number of trips to the Rose Creek Laboratory. As a result of these considerations the Cherokee Water and Sewer Authority Laboratory agreed to run BOD, TSS, Total Phosphorus, Dissolved Reactive Orthophosphorus and Total Nitrogen, Cobb County agreed to run COD, NH₃, NO₂/NO₃, TKN, Cadmium, Copper, Lead, Zinc and hardness, and the Cobb County-Marietta Water Authority agreed to run fecal coliform, E. coli, and TOC. The analyses are incorporated into the daily routine of NPDES, stormwater, and drinking water permits testing. Since all of the analysts are certified wastewater or drinking water laboratory analysts, they already possess knowledge of approved analytical procedures and have extensive QA/QC programs designed to produce reliable data.

SAMPLING

Sampling required greater participation from all the sponsors. The members of the technical sub committee met with the sponsors and received guarantees from some of them that they would allocate in-house resources for sample collection. The TSC's discussion on sample collection began with a review of the sample sites originally proposed in 2003. Three additional sites were

requested by EPD and one site was moved for logistical reasons. The sites had been originally chosen to take advantage of existing monitoring sites and USGS flow gauges. In order to ensure that the samples were collected with proper QA/QC, the TSC contacted the USGS and reviewed their methods for sample collection. This included a general workshop held by the USGS attended by the TSC and sponsor field staff. The TSC then synthesized all pertinent information relating to EPA and USGS methodologies and developed a protocol for sample collection. This protocol stipulated the use a modified version of depth integrated sampling for in-stream grab sampling and automated samplers programmed to collect samples in response to the hydrograph for wet weather samples. All methods for sample collection were based on USGS methodologies. The sampling protocol was reviewed by the EPA, EPD and Metropolitan North Georgia Water Planning District.

Once the sampling S.O.P. was completed, the TSC created a workshop to train other sponsors on methods for proper sample collection and preservation. The workshop was held at the Cherokee County Water and Sewerage Authority's Rose Creek Laboratory. A supplemental video and SOP guide were also provided. A representative from YSI was present to discuss sonde maintenance. The TSC training covered the use of sonde data loggers, automated samplers, the proper protocol for depth integrated sampling, sample preservation, and chain of custody. The sponsors were also given hands-on instructions on programming automated samplers, sondes, and depth integrated sampling equipment. This training session represented a considerable effort by the TSC but it was necessary to ensure quality data. The Cherokee County Water and Sewerage Authority, by accepting the samples from other sponsors and distributing the samples to the other labs in the TSC, serves as a hub for the monitoring effort. This provides an opportunity to monitor the field staff's adherence to sampling the protocols and a forum for communication between the analytical labs.

IN CONCLUSION

The Upper Etowah monitoring effort is unique for its level of interjurisdictional cooperation, producing a watershed assessment with comprehensive and consistent methods for data collection and analysis. This provides an opportunity to better manage water resources throughout the watershed than has been accomplished by traditional models based solely on jurisdictional boundaries. Since biological and chemical monitoring began in 2005 and 2006 respectively, the full committee and TSC has continued to meet to assess progress in the monitoring effort and review reports submitted by Tetra

Tech Inc. on the biological data and the ongoing work on modeling and interpreting the chemical data. As the effort continues, this dialogue between the sponsors and consultants will be essential to the success of the Upper Etowah Monitoring effort.