



**Western Kentucky University
Technical Assistance Center for Water Quality
Center for Water Resource Studies**

**“Supporting Small Water Systems in
Meeting the Goal of Public Health Protection”**

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**Grant Number X82665901-5
Fifth Year ('04), Fifth Quarter Report
1 October 31 - December 2003**

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Executive Summary

Introduction. Western Kentucky University has established a Technical Assistance Center for Water Quality for small water systems. The underlying goal of the Center is to assist small water systems in the protection of public health and the provision of safe drinking water. Assistance is provided to small water systems through the Utility Management Institute, a small systems circuit rider, a source water protection program, and information technology. All aspects of the Center are focused on capacity development of small water systems through the enhancement of managerial, technical and financial capabilities. Information presented in this report represents efforts during the first quarter of year **six** of this grant.

Summary of Expenditures.

Administration. Expenditures for this task from October 1 through December 31, 2003 were \$1,156.50.

Task 1 – Utility Management Institute. Expenditures for this task from October 1 through December 31, 2003 were \$15,660.18

Task 2 – Small Systems Circuit Rider. Expenditures for this task from October 1 through December 31, 2003 were \$11,317.84.

Task 3 – Source Water Protection. Expenditures for this task from October 1 through December 31, 2003 were \$27628.12.

Task 4 – Data Management. Expenditures for this task from October 1 through December 31, 2003 were \$5,929.98.

Total expenditures for this quarter are \$62,744.22.

See Appendix A.

Task 1: Utility Management Institute. The course “Public Relations in Utility Management” was presented on September 24, 2003 with thirty (30) students participating. A full description on this and other courses was presented in the Fifth Year, Fourth Quarter report because the work was done in that quarter. The invoice was paid in this quarter.

Task 2: Small Systems Circuit Rider. Almost 24% of the Circuit Riders time was spend directly assisting systems or their personnel on-site working with systems and providing formal training. The other 75% of the time was spent with last minute consumer confidence reports training and meetings with state and federal agencies. Compliance assistance included monitoring and reporting, and groundwater protection plans. Technical assistance included system mapping, source water protection, entry level monitoring, leak detection and cost of service. A full description on this was presented in the Fifth Year, Fourth Quarter report because the work was done in that quarter. The invoice was paid in this quarter.

Task 3. Source Water Protection. Work continued on the Source Water Protection Initiative’s remaining task for which an extension has been granted, the Source Water Education Program’s second educational module *Developing Stakeholder Networks in Source Water Protection Programs*, along with development of the Source Water Protection Information website.

Task 4: Database Management and Information Tools. This quarter we publicized the work and findings of the TACWQ and the CWRS at a number of meetings and workshops. We also learned new information at these meetings that will be helpful in our service to small water systems and in source water protection. We have made excellent progress toward additional progress toward completing a piece of interactive software for water systems to use in completing their Emergency Response Plans. Our goal is to include this software in a nationally-appropriate Tools CD that will be distributed within the next quarter.

Task 1: Utility Management Institute.

1. Work Status

The goal of the UMI is to develop and deliver a series of courses to be included in a “Utility Management Professional” certification program. This program is available to system managers, operators, and office managers of water systems serving rural areas and small municipalities with populations under 10,000.

A. Work Progress. The course “Public Relations in Utility Management” was presented on September 24, 2003 with thirty (30) students participating. A full description on this and other courses was presented in the Fifth Year, Fourth Quarter report because the work was done in that quarter. The invoice was paid in this quarter.

B. Difficulties Encountered. No unanticipated difficulties were encountered.

Task 2: Small Systems Circuit Rider.

I. Work Status

The "Circuit Rider" approach to providing a combination of on-site technical assistance and training is nationally recognized as the most effective method of assisting small public water systems to comply with state and federal environmental regulations. The Circuit Rider program works in partnership with Kentucky Division of Water (DOW) to target the public water systems serving populations under 3,300, with particular emphasis on systems serving less than 500 people. Our “Circuit Rider” approach works to target those small systems experiencing profound difficulties in complying with SDWA provisions in order to enhance protection of public health.

A. Work Progress. Almost 24% of the Circuit Riders time was spend directly assisting systems or their personnel on-site working with systems and providing formal training. The other 75% of the time was spent with last minute consumer confidence reports training and meetings with state and federal agencies. Compliance assistance included monitoring and reporting, and groundwater protection plans. Technical assistance included system mapping, source water protection, entry level monitoring, leak detection and cost of service. A full description on this was presented in the Fifth Year, Fourth Quarter report because the work was done in that quarter. The invoice was paid in this quarter.

B. Difficulties Encountered. No unanticipated difficulties were encountered.

Task 3: Source Water Protection Initiative

Task 3: Source Water Protection Initiative

I. Work Status

A. Work Progress

Work on the Source Water Protection Initiative's Source Water Education Program continued as discussed in the report below.

Source Water Protection Education Project:

In conjunction with the continuing development of the education module *Developing Stakeholder Networks in Source Water Protection Programs*, we delivered a presentation during the quarter at Rough River State Park to assist with development the Rough River Source Water Protection Council. The presentation was based on a template *Generic Watershed: Source Water Protection Through Partnerships* (attached as a Powerpoint presentation) and was focused on a framework developed to assist the small water systems in the basins with reducing atrazine levels in their source water, Rough River Lake. Attendees included representatives from Western Kentucky University, University of Kentucky, Kentucky Cooperative Extension Service, U.S. Army Corps of Engineers, Grayson County Water District, USDA, Kentucky Department of Agriculture – Pesticides Division, Kentucky Rural Water Association, and Kentucky Division of Water. Atrazine has been detected above the MCL in the finished water of a small system in the basin.

Also serving as a case study for development of the module is ongoing work with KRWA and their counterpart in Tennessee to form a utility based and interstate source water protection advisory council for the Big South Fork of the Cumberland River. This effort will assess the utility-based model for source water protection that has already been successful in McCreary County, KY. By working with small water systems throughout the basin, we anticipate that we can develop a model for source water partnerships and protection at the interstate level. The success of this ongoing project will be dependant upon the input of the small water systems and the communities that are served. The goal is to develop an advisory council that can integrate local concerns, local threats, and local input to reduce the threat of potential sources of contamination by proactive assessment and planning. As we found in McCreary County, having small water utilities as the central focus will be the key. We continue to work in two important areas of source water protection, as well. Our technical assistance continues in the assessment of herbicides/pesticides and the development of partnerships and best management practices to alleviate these problems. Focus has been on the herbicide atrazine and its wide distribution and occurrence in source waters throughout Kentucky. In particular, we have continued to work with the City of Marion and the assessment of Spa Lake. We are working to increase this effort by assisting the Rough River Source Water Protection Council, which includes the City of Leitchfield (a small water system included in the MOA between Syngenta and EPA). These

small systems and Marion were listed as priority water supplies in Kentucky in the recent atrazine reregistration document.

B. Difficulties Encountered. During the quarter there were no difficulties in performing the tasks of the project.

C. Preliminary Data Results. Material that we continue to develop for the module was given as a presentation to the Rough River Source Water Protection Council. This presentation has been developed into a generic format that can be used by technical service providers, small water systems, and other stakeholders to guide formation of partnerships and source water protection councils. This information is attached as the powerpoint presentation *Generic Watershed: Source Water Protection Through Partnerships*.

II. Changes in Key Personnel

There were no changes to key personnel on the program.

Task 4: Database Management and Information Tools (Fifth Quarter 03)

I. Work Status

The remaining goal of this task with regard to the no-cost extension is to publicize more broadly the availability of the Center's information resources and expertise, and to distribute more broadly the software and information tools developed in-house, including a national Tools CD. We have made significant progress in both of these goals this quarter.

A. Work progress.

This quarter we publicized the work and findings of the TACWQ and the CWRS at a number of meetings and workshops. We have made excellent progress toward additional progress toward completing a piece of interactive software for water systems to use in completing their Emergency Response Plans. Our goal is to include this software in a nationally-appropriate Tools CD that will be distributed within the next quarter. The distribution of this Tools CD will complete the goals of our no-cost extension for Task 4.

Events during this past quarter that had relevance to the work of the TACWQ included the following:

- September 30 – October 3, 2003: The **Kentucky-Tennessee section of the American Water Works Association** held its annual conference in Bowling Green, KY. Dr. Meier and students assisted with the mechanics of the meeting for several days, troubleshooting laptops, projectors, and software for speakers' presentations.
- November 6-8, 2003: We helped organize, host, and made several presentations at the annual Kentucky Academy of Sciences conference, held this year in Bowling Green, KY jointly with the annual Kentucky Biodiversity conference, Mammoth Cave National Park research conference, and the Cave Research Foundation conference. Dr. Meier presented a paper entitled, "**Relationships between Land Use and Water Quality in the Upper Green River Basin and CREP Region,**" authored by Ouida Meier, Scott Grubbs, Albert Meier, and Jaga Anmala. Jenna Harbaugh presented a paper entitled, "**GIS analysis of the Upper Green River Conservation Reserve Enhancement Program in South Central Kentucky,**" authored by Ouida Meier, Jenna Harbaugh, Anupama Oruganti, Scott Grubbs, and Albert Meier. Anupama Oruganti presented a paper entitled, "**Patterns of Challenges to Safe Drinking Water in the United States: Population Distribution of Drinking Water Sources and Maximum Contaminant Level Violations of Drinking Water Systems,**" authored by Ouida Meier, Anupama Oruganti, and Rupesh Mamidi. Dr. Kerrie McDaniel presented a paper entitled, "**Impacting Elementary Science Education Through Hands-on Science Labs,**" and was coauthored by Dr. Kerrie McDaniel and Dr. Ouida Meier.
- November 9-10, 2003: Drs. Albert and Ouida Meier brought a group of students to the University of Georgia Institute of Ecology to interview internationally reputable scientists about their methods and their research questions.
- November 14, 2003: Dr. Ouida Meier and the Center for Water Resource Studies hosted the annual Upper Green River Watershed Watch fall conference on the WKU campus. Citizen volunteers and regional scientists came together to review the year's data. Data mapping and presentation was handled by Dr. Meier's lab in a presentation entitled, "**Upper Green River**

Watershed Watch: Data 2003” authored by Dr. Meier and Anupama Oruganti.

- December 3, 2003: A presentation was made to the Barren River Area Development District regarding onsite sewage disposal alternatives. Dr. Meier prepared and presented a series of maps, using Warren County as an example, highlighting the interactions among karst geology, suitability of soils for use in septic treatment, and population density as a means of selecting appropriate onsite sewage treatment alternatives where there is a lack of sewage treatment plant service. The presentation was entitled, “**Physical Parameters Influencing Wastewater Treatment Choices: Maps for Warren County, Kentucky and the Barren River Area Development District**” and was authored by Ouida Meier, Anupama Oruganti, and Mark Graham.
- December 6, 2003: Dr. Ouida Meier was asked to make a presentation on endocrine disruptors as emerging pollutants to the annual science conference of the Upper Cumberland Watershed Watch group, who had measured estradiol-17b in their sampling protocol and was interested in potential effects on humans through drinking water supplies. The presentation was entitled, “**Endocrine Disruptors and Estrogen Sampling by Watershed Watch,**” authored by Dr. Meier.

B. Difficulties encountered. No insurmountable difficulties have been encountered.

C. Preliminary data results. Data results have been presented in previous quarters. We are currently focusing on moving our data and findings into publications.

D. Anticipated activities. In the coming quarter, we anticipate substantive additional work on the Emergency Response Plan template, which is a new commitment for FY04. We wish to include the initial version of this Emergency Response Plan in our nationally distributed Tools CD. Distribution of this CD, which will include other tools already developed and refined in-house, will be completed in the coming quarter.

II. Key Personnel Changes

There have been no changes in key personnel within Task 4 during this quarter. Dr. Ouida Meier continues to direct the efforts of Task 4. It is anticipated that her salary and efforts for next quarter will shift to wastewater and environmental work.

We are grateful to our team of bright and talented graduate and undergraduate students who assist with the work in Task 4. Ms. Anupama Oruganti and Mr. Naveen Midde have contributed significantly to this project this quarter through mapping and software programming, respectively. Ms. Madhavi Mamidipalli has also recently joined the Center to assist with its website work. The Center is very grateful for the dedicated and skillful efforts of each of these individuals. It is a goal of the Center to help educate students through applied research and to increase the pool of technically talented people that are aware of the issues facing drinking water systems and public health protection.

Appendix A

Expenditures

EPA Quarterly Report
6th Year, 1st Quarter Expenditures
Drinking Water Grant X82665901- 5
October 1 through December 31, 2003

