Improving Water Quality by Developing, Implementing and Field Testing Innovative Methods
FY 03 CWA 319(h)
TSSWCB Agreement No. 03-10

Quarter no. 16 From 7/01/07 Through 9/30/07

I. Abstract

The demonstration by Envirolink at the Sherywn Wood dairy near Stephenville and has been completed. Data analysis and writing of the final report is now underway and will be completed during the next quarter. The demonstration by Natural Biotechnology has been officially cancelled. The final demonstration will be conducted by Ozona Environmental, LLC and was slated to be conducted at the ComTex Dairy near Comanche. On June 20th, the dairy's owner informed us that the dairy would be sold and closed down. As a result, the demonstration by Ozona Environmental will be move to the Wild West Dairy. A QAPP amendment has been sent to EPA for the inclusion of the demonstration of turfgrass grown on Geotube® residual material. This will be a 90 day demonstration that evaluates the impacts of growing turfgrass on soil amended Geotube® residual material.

II. Overall Progress and Results by Task

TASK 1: Demonstration and Evaluation of New Technologies

Subtask 1.1: Identification of potential technology providers. TCE, TWRI, TFB, dairy industry representatives, EPA Region 6, TSSWCB, TCEQ, TDA, BRA, NRCS, and TAES will identify and select promising technologies represented by willing technology providers. (month 1 thru 3)

The following actions have been completed during this reporting period:

a. Year one projects have been completed. Fact sheets and reports have been completed are currently posted on the TWRI website for everyone to access at: http://twri.tamu.edu/project-info/NewTechnologies/

b. Year two technologies have been initiated:
   1) "Demonstrate and Evaluate the Use of Technologies to Reduce Animal Waste Pollution" proposed by EnviroLink (Greeley, KS) has been implemented at the Sherwyn Wood Dairy. Sampling for this demonstration concluded in June.

c. Year three technologies have been selected:
   1) Natural Biotechnology has backed out of their agreement to demonstrate their technology during year 3 of the project. A letter has been sent out to the advisory committee to seek input on how to proceed from here.

   2) The final demonstration chose will be conducted by Ozona Environmental LLC. Their demonstration will use a proprietary bacterial enhancement to treat the lagoons.

d. Supplemental Demonstration:
As a result in rising sample analysis costs and the lack of submitted proposals, the project workplan was amended to allow for the demonstration of planting turfgrass on soils supplemented with residual material from a Geotube®. This demonstration will be conducted in a laboratory setting at Texas A&M and will cost less than the demonstration of a sixth technology. This demonstration will evaluate the changes in physical and chemical changes between soil and soil with added Geotube® residual material, evaluate turfgrass responses when grown on soil and soil with added Geotube® material, and evaluate leaching losses of nutrients and dissolved organic carbon under the varying scenarios. Sampling funds not used for this demonstration will be used to cover the increased sampling costs for the remaining technology demonstrations.

100% Complete

Subtask 1.2: Identification of dairy cooperators in the North Bosque watershed area that use a flush system and lagoons to remove, store, treat, and land-apply effluent (manure and process-generated wastewater). TCE, TSSWCB and TFB will identify dairy operations willing to participate in these demonstrations. (month 1 thru 3)

The following actions have been completed during this reporting period:

a. The year one technologies were implemented at the following dairies:
   1) "Ecoloclean" – OSVE Dairy (proprietor – Mr. Bert Velson), Bosque Watershed.
   2) "Geotube" – Triple X Dairy (proprietor – Mr. Wayne Moermen), Leon Watershed.
b. The year two technologies have chosen the following dairies to apply their technology:
   1) "EnviroLink" - Sherwyn Wood Dairy (proprietor – Sherwyn Wood) Bosque watershed.
c. Year three technology has chosen the following dairies to apply their technology:
   1) "Ozona Environmental" – Wild West Dairies (proprietor – Geoff Vandenieuwegiessen) Bosque River watershed.

100% Complete

Subtask 1.3: On-site installation and start-up of the six pilot-scale technologies to be demonstrated. Technology providers will carry out the task of equipment transport, on-site installation, set-up, and start-up. With permission from the cooperating dairy owner/operator, the technology provider will prepare the site to install and operate the system for demonstration. (First installation by August 2003, last installation 6 months before the end of the 3-year project)

The following actions have been completed during this reporting period:

a. Background sampling of the lagoon at the Wild West Dairy was conducted on July 12th, August 14th and September 4th. This was done to establish a baseline of information about the quality of water in the lagoons prior to treatment by Ozona Environmental, LLC. Following the September 4th background sampling, Ozona Environmental, LLC

treated the lagoon with their proprietary microbial agents. Sampling will take place about every six weeks and is projected to be completed after the first of the year.

95% Complete

Subtask 1.4: QAPP preparation and field data collection and analysis. TCE will prepare the DQO and QAPP (August 2003 to August 2004)

a. No activity to report at this time.

100% Complete

TCE will collect samples from raw and treated effluent and resulting sludge. One of the evaluation tasks will be to analyze the sludge or by-product remaining after raw material treatment for P stability (August 2003 to May 2007)

The following actions have been completed during this reporting period:

a. Sample analysis for the turfgrass demonstration is currently underway. The QAPP to allow sampling on that task was completed early in the last quarter. The final set of samples collected are now being analyzed.
b. Sampling is also underway on the Ozona Environmental, LLC project. The last background sample was collected on September 4th to evaluate the quality of water in the lagoons before the treatment is applied.

80% Complete

Subtask 1.5: Develop reports and outreach education materials. TCE in cooperation with TWRI will produce educational brochures and publications on effectiveness of this innovative technology. Quarterly and final reports will be prepared and submitted in a timely manner.

The following actions have been completed during this reporting period:

a. TWRI submitted the year 4, quarter 4 report to TSSWCB on September 3, 2007.
b. A peer reviewed publication that discusses the first technology tested has been accepted by the *Applied Engineering in Agriculture* Journal.
c. The final report for the EnviroLink demonstration is currently in the review process and will be submitted to TSSWCB for their review during the next quarter.

85% Complete

III. Related Issues/Current Problems and Favorable or Unusual Developments

a. A poster was presented at the 15th NPS Monitoring Workshop by the River Systems Institute, Texas State University, Austin, Texas, August 26-30, 2007. The title of the poster was "Efficacy of a microbial treatment to reduce phosphorus and other substances from dairy lagoon effluent."

IV. Projected Work for Next Quarter

The following will be accomplished during the coming quarter:

a. Sampling will be conducted at Wild West Dairy for the demonstration of the Ozona Environmental technology.
b. Work will continue on the final report for the EnviroLink demonstration. The report will be submitted to TSSWCB early in the next quarter for their review.
c. Sample analysis for the turfgrass demonstration will continue and should be complete during the next quarter.