

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

Quarter no. 14 From 1/01/07 Through 3/31/07

## **I. Abstract**

The demonstration by Envirolink continued sampling at the Sherywn Wood dairy near Stephenville and has now completed 7 sampling events. The demonstration by Natural Biotechnology has been delayed until early summer 2007. This demonstration will take place at Wild West Dairies near Stephenville. The final demonstration that is slated to begin will be conducted by Ozona Environmental, LLC. Their approach will use oxygenation and microbial stimulation to treat a lagoon at the ComTex Dairy near Comanche. A QAPP amendment is in the works to include the demonstration of turfgrass grown on Geotube<sup>®</sup> residual material. This will be a 90 day demonstration that evaluates the impacts of growing turfgrass on soil amended Geotube<sup>®</sup> 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 and 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. This technology is up and running with 7 sampling events already completed. Approximately 2 more sampling events will occur on a bi-monthly basis.
- c. Year three technologies have been selected:
  - 1) A demonstration by Natural Biotechnology entitled “Demonstrate and Evaluate the Use of Technologies in Reducing Animal Waste Pollution” was chosen as the first year 3 demo. The demonstration of this technology has been delayed until early summer 2007 due to financial re-structuring of the demonstrator’s company. He has assured us that the demonstration will continue.

- 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<sup>®</sup>. 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<sup>®</sup> residual material, evaluate turfgrass responses when grown on soil and soil with added Geotube<sup>®</sup> 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 technologies are in the process of choosing dairies.
  - 1) “Natural Biotechnology” – Wild West Dairies (proprietor – Geoff Vandeniuewegiessen) Bosque River watershed.
  - 2) “Ozona Environmental” – ComTex Dairy (proprietor – Randi Willis) Leon 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. Ozona Environmental, LLC participated in a preliminary meeting January 22<sup>nd</sup> with TWRI and TCE; during this meeting their treatment approach was discussed. A site visit was held March 22<sup>n</sup> at the ComTex Dairy near Comanche. Sampling protocol was discussed and initial sampling will begin as soon as the protocol has been agreed upon by all parties; this should take place within the next month.

**75% 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. A QAPP revision is currently underway to incorporate the demonstration of turfgrass grown on residual material from Geotubes<sup>®</sup>.

**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. Sampling is underway for the EnviroLink technology. Seven sampling events have been completed to date. Sampling that occurred in this quarter was conducted on February 22<sup>nd</sup>.
- b. Sampling for Natural Biotechnology and Ozona Environmental, LLC will begin after the technologies have been implemented.
- c. The turfgrass demonstration will also involve sampling of the Geotube<sup>®</sup> material and leachate that is collected from the small plots after 45 and 90 days of growth. This will be conducted at the TCE Soil, Water and Forages Testing Laboratory at Texas A&M University.

**55% 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. An Extension publication combining the fact sheets for the Ecoloclean electrocoagulation technology and the Geotube technology has been developed was published in January 2007. The publication is available online at the TCE Bookstore.
- b. TWRI submitted the year 4, quarter 2 report to TSSWCB on April 13, 2007.

**75% Complete**

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

- a. The demonstration of Natural Biotechnology's approach to treating dairy lagoons has been postponed until early summer 2007. Their contact person cited financial restructuring of the company as the cause of the delay.

### **IV. Projected Work for Next Quarter**

The following will be accomplished during the coming quarter:

- a. Approval of the sampling protocol submitted by Ozona Environmental, LLC. Once this is done, background sampling will take place and then treatment of the lagoon will follow.
- b. Sampling will continue at the Sherywn Wood dairy for the EnviroLink demonstration.
- c. Sample analysis for data collected at the Sherwyn Wood dairy will continue. A report for this demonstration is now being drafted; it will be complete after the demonstration has concluded.
- c. The turfgrass demonstration will be initiated during this quarter.