

**Texas A&M AgriLife
Texas Water Resources Institute**

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

Quarter no. 21 From 10/01/08 Through 12/31/08

I. Abstract

Work conducted during this quarter has focused on the completion of the final reports for the Turfgrass demonstration and the demonstration conducted by Ozona Environmental LLC. Both reports are now completed and will be posted on the web next quarter. All demonstrations are now complete. A final report will be prepared to complete the project. A refereed journal article was published regarding the performance of the technology demonstrated by EnviroLink LLC.

II. Overall Progress and Results by Task

TASK 1: Demonstration and Evaluation of New Technologies

Subtask 1.1: Identification of potential technology providers. Texas AgriLife Extension Service, TWRI, TFB, dairy industry representatives, EPA Region 6, TSSWCB, TCEQ, TDA, BRA, NRCS, and Texas AgriLife Research 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. This task is now complete.

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). Extension, 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. This task is now complete.

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. This task is now complete.

100% Complete

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

- a. This task is now complete.

100% Complete

Extension 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. This task is now complete.

100% Complete

Subtask 1.5: Develop reports and outreach education materials. Extension 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 6, quarter 1 report to TSSWCB on January 15, 2009. This will be the last quarterly report for the project. The final report submitted next quarter will be the last deliverable.
- b. A publication was finalized this quarter in the journal of *Applied Engineering in Agriculture*. The citation is:

Rahman, S. and S. Mukhtar. 2008. Efficacy of microbial treatment to reduce phosphorus and other substances from dairy lagoon effluent. *Applied Engineering in Agriculture*. **24 (6)**: 809-819.

- c. This task is now complete.

100% Complete

Subtask 2.1: Texas AgriLife Research will establish demonstration plots and procure materials to set up the demonstration plots.

The following actions have been completed during this reporting period:

- a. This task is now complete.

100% Complete

Subtask 2.2: Texas AgriLife Research will conduct analysis of physical and chemical properties of Geotube residuals.

The following actions have been completed during this reporting period:

- a. This task is now complete.

100% Complete

Subtask 2.3: Texas AgriLife Research will assess the effects of Geotube residues on turfgrass and soil physical, chemical, and biological properties.

The following actions have been completed during this reporting period:

- a. This task is now complete.

100% Complete

Subtask 2.4: Texas AgriLife Research will evaluate leaching losses of nutrients and dissolved organic C.

The following actions have been completed during this reporting period:

- a. This task is now complete.

100% Complete

Subtask 2.5: Texas AgriLife Research will conduct statistical analysis on samples collected and will draft a final report that summarizes the results of the demonstration.

The following actions have been completed during this reporting period:

- a. This task is now complete.

100% Complete

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

- a. All demonstration reports have been completed and will be posted on the website early next quarter.

IV. Projected Work for Next Quarter

The following will be accomplished during the coming quarter:

- a. The project final report will be completed this next quarter and submitted to TSSWCB for review and approval. It will be the last deliverable for this project.