

## **Texas Water Resources Institute**

### **Lone Star Healthy Streams FY 06 CWA 319(h) TSSWCB Agreement No. 06-05-07-02**

Quarter no. 14 From 4/1/10 Through 6/30/10

#### **I. Abstract**

Significant progress was made this quarter in completing many of the remaining project deliverables for the project. The 4<sup>th</sup> LSHS Steering Committee Meeting was tentatively for September or October 2010 in conjunction with an Ag Council Meeting in Austin. The LSHS program was approved for 4 hours of credit for the Texas Certified Crop Adviser Program. AgriLife Extension developed and submitted a survey instrument and a certificate of completion for participation in the education program to the TSSWCB for review. Additionally, the LSHS Program was introduced by AgriLife Extension to 169 program attendees at 4 locations around the state. Finally, runoff sampling at the Welder Wildlife Refuge was completed. Runoff sampling will conclude at Riesel in July as well. However, no progress was made on *Bacteroidales* PCR (library-independent BST). As such, a 6 month no cost extension was requested to allow completion of the BST analysis.

#### **II. Overall Progress and Results by Task**

##### **TASK 1: Project Coordination and Administration**

*Subtask 1.1: TWRI, in coordination with Extension, will organize a Project Steering Committee to coordinate project efforts with all project participants. This Committee will be composed of TSSWCB, SWCDs, Extension, AgriLife Research, TWRI, NRCS, TDA, FSA, GLCI, and producer groups such as TFB and TSCRA. This Committee will meet at least semi-annually to provide input on the evaluation of BMPs and the education program; provide input into curriculum development, program delivery and CEU processes; discuss project status, provide input on demonstration/BMP evaluation efforts, and coordinate project activities.*

The following actions have been completed during this reporting period:

- a. Work began this quarter on scheduling and preparing for the 4<sup>th</sup> LSHS Steering Committee Meeting. It has tentatively been discussed to hold it in September or October in conjunction with an Ag Council Meeting in Austin. TSSWCB is checking into the feasibility of this. Tentative topics include national water quality legislation, update on bacteria issues in Texas, results of BMP evaluations to date, and discussion of the education program. Work will continue next quarter to set the date and finalize the agenda.

**94% Complete**

*Subtask 1.2: TWRI will prepare electronic quarterly reports for submission to the TSSWCB. All progress reports will be provided to the Steering Committee.*

The following actions have been completed during this reporting period:

- a. TWRI submitted Year 4, Quarter 1 Progress Report on March 13, 2010.

**94% Complete**

*Subtask 1.3: TWRI will conduct quarterly TTVN meetings as appropriate with project participants to discuss project activities, project schedule, lines of responsibility, communication needs, and other requirements.*

The following actions have been completed during this reporting period:

- a. On June 24, AgriLife Extension, TSSWCB, and TWRI met to discuss the project contract, budget, and deliverables (LSHS Guide and Presentation).
- b. Additionally, AgriLife Extension and TWRI met on April 19 and 29, and June 10 and 22, to discuss project activities, deliverables, and upcoming deadlines.

**94% Complete**

*Subtask 1.4: TWRI will attend meetings with the TSSWCB project manager and other meetings, as needed, to review project status, deliverables, etc.*

The following actions have been completed during this reporting period:

- a. TWRI routinely communicates with the TSSWCB project manager on project status and issues.

**94% Complete**

*Subtask 1.5: TWRI will submit appropriate Reimbursement Forms.*

The following actions have been completed during this reporting period:

- a. As of February 28, 2010, \$379,743 or 94% of federal project funds had been expended.
- b. Progress of Allocations to each Department is as follows:
  - TWRI has expended 96% of their funds
  - SCSC has expended 92% of their funds
  - ESSM has expended 100% of their funds

**94% Complete**

*Subtask 1.6: TWRI will develop (Months 1-3), host and maintain (Months 3-36) an internet website for the dissemination of information.*

The following actions have been completed during this reporting period:

- a. In September 2007, TWRI developed the website titled “Improving Water Quality of Grazing Lands” to disseminate information on *Lone Star Healthy Streams* and related projects. The website (<http://grazinglands-wq.tamu.edu/>) was viewed by:
  - 19 unique visitors in April 2010
  - 9 unique visitors in May 2010
  - 10 unique visitors in June 2010
  - A grand total of 1,019 unique visitors since September 2007

**94% Complete**

## **TASK 2: Compile Existing Information**

*Subtask 2.1: Extension will hire a LONE STAR HEALTHY STREAMS Extension Assistant to assist with and coordinate a review of the literature of the state of current knowledge regarding the effects of grazing animals on bacterial levels of riparian areas and associated water bodies and BMPs designed to minimize these impacts. Further, the Extension Assistant will lead all future LONE STAR HEALTHY STREAMS Program efforts.*

The following actions have been completed during this reporting period:

- a. AgriLife Extension is compiling the information gathered by the TWRI PM, Extension Assistant, and others into a Technical Report for submission to TSSWCB next quarter.

**95% Complete**

*Subtask 2.2: Extension will organize internal Extension Planning Team consisting of Extension personnel specializing in animal production systems and associated environmental issues.*

The following actions have been completed during this reporting period:

- a. Complete. No activity to report this quarter.

**100% Complete**

*Subtask 2.3: Extension will assess and inventory education/training materials within Extension and related materials developed through similar efforts in other states addressing bacteria from grazing cattle. In order to make the program more thorough, educational materials addressing nutrient and sediment runoff from grazing lands and proper grazingland management will also be assessed and inventoried.*

The following actions have been completed during this reporting period:

- a. Complete. However, AgriLife Extension will continually review existing literature regarding information on BMPs that help reduce livestock bacteria levels in water bodies. Any new relevant material will be incorporated into the LSHS program.

**100% Complete**

### **TASK 3: Develop Bacterial Education Programs for Beef Cattle Producers**

*Subtask 3.1: Extension will facilitate the modification necessary to integrate existing materials from subtask 2.3 into the LONE STAR HEALTHY STREAMS Program.*

The following actions have been completed during this reporting period:

- a. The LSHS manual and presentation are currently being finalized for submission to TSSWCB next quarter.

**95% Complete**

*Subtask 3.2: Extension will develop a core land/grazing management educational component that provides growers with state-of-the-art production technology training on fundamental BMPs and strategies which can be employed to protect and conserve water resources from bacterial and other NPS contamination originating from grazing lands.*

The following actions have been completed during this reporting period:

- a. AgriLife Extension has completed development of the educational program for *Lone Star Healthy Streams* as outlined in subtask 3.1.

**95% Complete**

*Subtask 3.3: Extension will integrate and coordinate the Lone Star Healthy Streams Program with the Texas Master Watershed Steward program to provide producers with a more comprehensive environmental education curriculum incorporating basic training in watershed form and function, watershed management, sources of nonpoint source (NPS) pollution and BMPs and strategies which can be employed to protect and conserve water resources.*

The following actions have been completed during this reporting period:

- a. AgriLife Extension meets regularly with members of the Texas Watershed Steward team to discuss integration of the two programs.

**94% Complete**

*Subtask 3.4: Extension will establish a continuing education component that enables acquisition of CEUs in both environmental and production management.*

The following actions have been completed during this reporting period:

- a. The LSHS program has been approved for 4 hours of credit for the Texas Certified Crop Adviser Program and has submitted an application for 1 CEU through TDA for Certified Pesticide Applicators.

**100% Complete**

*Subtask 3.5: Extension will develop and provide a certificate of completion, or other mechanism enabling individuals to take credit for participation in education program.*

The following actions have been completed during this reporting period:

- a. Extension has developed and submitted to the TSSWCB a certificate of completion for participation in the education program.

**100% Complete**

#### **TASK 4: Education Program Testing and Delivery**

*Subtask 4.1: Extension will test the educational program in a pilot watershed selected with input from the Project Steering Committee. Extension will coordinate with local SWCDs and others, such as the NRCS, to deliver and evaluate the educational program.*

The following actions have been completed during this reporting period:

- a. The LSHS concept was introduced through presentations at the following dates and locals this quarter:
  - April 13 – Victoria County (23 attended)
  - April 30 – Fayette County (90 attended)
  - May 19 – San Angelo - Texas Beef Workers (14 attended)
  - June 7 – Liberty and Limestone Counties (42 attended)
- b. Also this quarter, AgriLife Extension succeeded in getting LSHS on the TAMU Beef Cattle Short Course program agenda for 2010 under "Hot Topics".

**94% Complete**

*Subtask 4.2: To increase Program availability, Web-based and related local "on-demand" program delivery tools (i.e., CD, videos, worksheets) will be developed for both core and CEU components.*

The following actions have been completed during this reporting period:

- a. With the finalization of the LSHS presentation next quarter, AgriLife Extension will begin work on developing a voice-over presentation for the website.

**0% Complete**

*Subtask 4.3: Evaluate changes in producer knowledge and awareness of important production and environmental issues.*

The following actions have been completed during this reporting period:

- a. A survey instrument has been developed to evaluate changes in producer knowledge and awareness of important production and environmental issues as well as identify any barriers to producer participation and successful implementation of the program. The DRAFT survey has been provided to the TSSWCB for comment. It will be utilized at an upcoming program in Luling.

**70% Complete**

*Subtask 4.4: Utilizing participants surveys, identify and address any barriers to producer participation and successful implementation of the program.*

The following actions have been completed during this reporting period:

- a. As stated above (Subtask 4.3), a survey instrument has been developed and will be distributed at an upcoming program in Luling .

**70% Complete**

*Subtask 4.5: Make appropriate modifications to the program to facilitate greater producer participation and adoption of recommended BMPs.*

The following actions have been completed during this reporting period:

- a. The program has been well received by all programs to date. Minor modifications will be made as new material becomes available; however, the program is essentially complete.

**95% Complete**

#### **TASK 5: Evaluate And Demonstrate Value-Added BMPs To Reduce Bacteria Contamination Of Streams And Water Bodies From Grazing Lands**

*Subtask 5.1: TWRI will develop a Quality Assurance Project Plan (QAPP) that will detail project goals and objectives, the data needs to fulfill those objectives, lists field and laboratory methods, procedures and schedules to be followed, and specify a data management structure and quality assurance protocols. The QAPP will be developed using guidelines in EPA QA/R-5, "EPA Requirements for Quality Assurance Project Plans".*

The following actions have been completed during this reporting period:

- a. The QAPP was approved on September 24, 2007.

**100% Complete**

*Subtask 5.2: TWRI will provide annual revisions to the QAPP and amendments, as necessary, to the TSSWCB and EPA.*

The following actions have been completed during this reporting period:

- a. The first annual revision was submitted on September 23, 2008 and approved on November 20, 2008.
- b. The second and final annual revision was submitted to TSSWCB on November 13, 2009 and approved on February 1, 2010.

**100% Complete**

*Subtask 5.3: TWRI and Extension will identify a cooperator to conduct the BMP demonstration/ evaluation with assistance of the Steering Committee, local SWCD, NRCS, TWRI, and Extension agents.*

The following actions have been completed during this reporting period:

- a. Complete. No activity to report this quarter.

**100% Complete**

*Subtask 5.4: TWRI and Extension will assess cattle and other animal behavior to determine the amount of time spent in the stream and riparian area before and after BMP implementation. GPS tracking will be utilized.*

The following actions have been completed during this reporting period:

- a. This task has been completed. The GPS collar data collected indicated a 48-53% reduction in the percent time that cattle spend near the stream as a result of the implementation of alternative water.

**100% Complete**

*Subtask 5.5: TWRI and Extension will assess water quality before and after BMP implementation. Bacteria (*E. coli*) will be the focus of this effort and will be monitored bi-monthly (enumeration only). Water quality will be assessed for 12 months prior to implementation and then 12 months following implementation.*

The following actions have been completed during this reporting period:

- a. 2S Ranch (100% complete)
  - Water sampling at the 2S Ranch was completed in July 2009.
- b. Welder Wildlife Refuge (100% complete; 32/32 mos.)
  - Equipment maintenance was performed on April 6, May 5, and June 4.
  - A grazing treatment was attempted on June 21 using Welder cattle; however, all cattle had gotten out by the morning of June 22.
  - No runoff occurred this quarter.
  - Water sampling at the Welder Wildlife Refuge was completed in June 2010.
- c. Riesel (98.6% complete; 35.5/36 mos.)
  - No runoff occurred this quarter. Water sampling at Riesel will be completed in July 2010.

**99% Complete**

*Subtask 5.6: In order to gain a more complete picture of the impacts of BMP implementation on stream bank stability and specific sources of bacteria, stream cross-sections will be performed at all stream sites before and after BMP implementation and Bacteroidales PCR (library-independent BST) will be assessed at runoff evaluation sites by TWRI, Extension, and AgriLife Research.*

The following actions have been completed during this reporting period:

- a. No activity to report this quarter. Work will continue next quarter to develop a standard curve for the *Bacteroidales* analysis using Realtime PCR. Once the *Bacteroidales* DNA standard curve is developed, analysis of all samples collected to date can proceed.

- b. Evaluation of changes in bank stability or stream morphology at the 2S Ranch has been completed. Most observed differences in the profiles resulted from the manual surveying technique employed rather than actual bank erosion or stream degradation. Thus, it is concluded that no significant changes occurred.

**50% Complete**

*Subtask 5.7: TWRI and Extension will provide funding to cooperating ranch to implement BMPs to reduce bacteria and other NPS runoff from grazing lands.*

The following actions have been completed during this reporting period:

- a. Task complete. Funding was provided to the 2S Ranch for grazing management on their creek pasture for 2 years. Four portable shade facilities were also installed on the 2S Ranch in June 2008 and removed in May 2009 following the final removal of the GPS collars. GPS collar data collected over this 2 year period indicated that the cattle at the 2S Ranch did not utilize the structures provided.

**100% Complete**

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

- A budget amendment and no cost extension have been submitted to extend the project to March 31, 2011. This is needed to allow completion of Subtask 5.6.

**IV. Projected Work for Next Quarter**

- Prepare and submit Year 4, Quarter 2 Progress Report on July 15.
- Continue delivery LSHS programs statewide
- Complete monitoring runoff at Riesel
- Continue work on *Bacteroidales*
- Begin work on final report