

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

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

Quarter no. 7 From 7/1/08 Through 9/30/08

**I. Abstract**

Texas AgriLife Extension Service (Extension) continued work on a PowerPoint presentation and white paper for dissemination to the public. Extension introduced the LSHS concept in county extension meetings in Austin County, Brazoria County, Falls County, Travis County, Bastrop County, McLennan County, Hunt County, and Jackson County. In addition, Extension also introduced the LSHS concept at day-long grazing schools conducted jointly by Extension, NRCS, and GLCI in Kerr County, Bee County, and other areas throughout the state. The project website was visited by an average of 41 unique visitors per month this quarter, down from 53/mo. last quarter. In July, the water troughs were turned on at the 2S Ranch. GPS collars were installed on cattle September 18 at the 2S Ranch to evaluate the percent time they spend in the riparian area now that alternative water is present. Water samples were also collected at the 2S Ranch bi-monthly throughout the quarter. During this quarter, *E. coli* levels averaged 458 cfu/100 ml above the ranch and 507 cfu/100 ml below the ranch. At the Welder Wildlife Refuge, dry conditions continued. Only 14.9 inches of rain have been received at the Welder since October 30, 2007. No runoff has occurred at Riesel since May 15. Thus, year one of monitoring at Riesel ended on a dry note. During year one, *E. coli* loading from the ungrazed native prairie site totaled 6.95E+10 cfu/ha, while the annual *E. coli* loading from the moderately grazed bermudagrass site totaled 7.85E+10 cfu/ha. Stream cross-sections surveyed in July indicated that little change in bank morphology had occurred since the previous survey in March. The education program and results of the first year of BMP evaluation were originally scheduled to be presented to the Steering Committee on September 29; however, due to Hurricane Ike, the meeting was postponed until October 27.

**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. The 2<sup>nd</sup> Steering Committee Meeting was initially scheduled for September 29 from 1:00-3:00 pm at the Galveston Island Convention Center in conjunction with the Annual State Meeting of Texas of Soil and Water Conservation District Directors. However, due to Hurricane Ike. That meeting was postponed.
- b. The 2<sup>nd</sup> Steering Committee Meeting has been rescheduled for October 27 from 1:00-3:00 pm at the Hyatt Regency Lost Pines Resort And Spa near Bastrop in conjunction with the Annual State Meeting of Texas of Soil and Water Conservation District Directors. See the agenda (Attachment 1) for more information.

**60% 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 2, Quarter 2 Progress Report on July 15, 2008.

**50% 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 September 4, TWRI, Extension, and TSSWCB met in College Station to discuss the status of the project, findings, and the upcoming Lone Star Healthy Streams Steering Committee Meeting.
- b. The next meeting with project participants will be held on October 27<sup>th</sup> in conjunction with the Steering Committee Meeting.

**60% 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.

**60% Complete**

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

The following actions have been completed during this reporting period:

- a. As of the last billing period which ended on August 31, 2008, \$166,624 or 41% of federal project funds had been expended.

- b. Progress of Allocations to each Department is as follows:
- TWRI has expended 53% of their funds
  - SCSC has expended 44% of their funds
  - ESSM has expended 32% of their funds

**41% 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 the Lone Star Healthy Streams project and related projects. It can be found at <http://grazinglands-wq.tamu.edu/index.php>
- b. The website was viewed by:
- 50 unique visitors in July 2008
  - 41 unique visitors in August 2008
  - 31 unique visitors in September 2008
  - a grand total of 547 unique visitors since September 2007
- c. The website will be continually updated as new data and information are obtained.

**60% 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. Garrett Norman was hired as the Lone Star Healthy Streams Extension Assistant.

**100% 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. Extension continues to review existing literature regarding information on BMPs that help reduce livestock bacteria levels in water bodies.

**80% 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. Extension is in the final stages of the Power Point presentation development which will cover a wide range of grazing management issues, including the issue of bacteria in waterbodies and the potential for reducing the level of bacteria through animal behavior modifying BMPs.
- b. Extension continues work on the LSHS BMPs “white paper” publication based on the Power Point presentation. Once completed, it will be distributed via hard copy and the Forages and TWRI web sites.

**60% 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. Extension has begun development of an educational program for Lone Star Healthy Streams as outlined in subtask 3.1.

**60% 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. No activity to report this quarter; however, LSHS will be integrated into future printings of the Texas Watershed Steward program.

**50% 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. No activity to report this quarter.

**0% 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. No activity to report this quarter.

**0% 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. No activity to report this quarter. Activity will be initiated upon completion of Task 3.

**0% 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. No activity to report this quarter. Activity will be initiated upon completion of Task 3.

**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. No activity to report this quarter. Activity will be initiated upon completion of Task 3.

**0% 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. No activity to report this quarter. Activity will be initiated upon completion of Task 3.

**0% 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. No activity to report this quarter. Activity will be initiated upon completion of Subtask 4.3 and 4.4.

**0% 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.

**50% 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. GPS collars were placed on cattle at the 2S Ranch on September 18<sup>th</sup> and will be removed October 10<sup>th</sup>.
- b. The first year of water sampling was completed at the 2S ranch on July 2<sup>nd</sup> and the water troughs were been turned back on.
- c. GPS data from September 18 – October 10 will give us a good indication of the effects of alternative water supplies and shade.
- d. GPS collars are tentatively scheduled to be placed on cattle at the 2S Ranch on November 6<sup>th</sup> and removed on December 2<sup>nd</sup>.

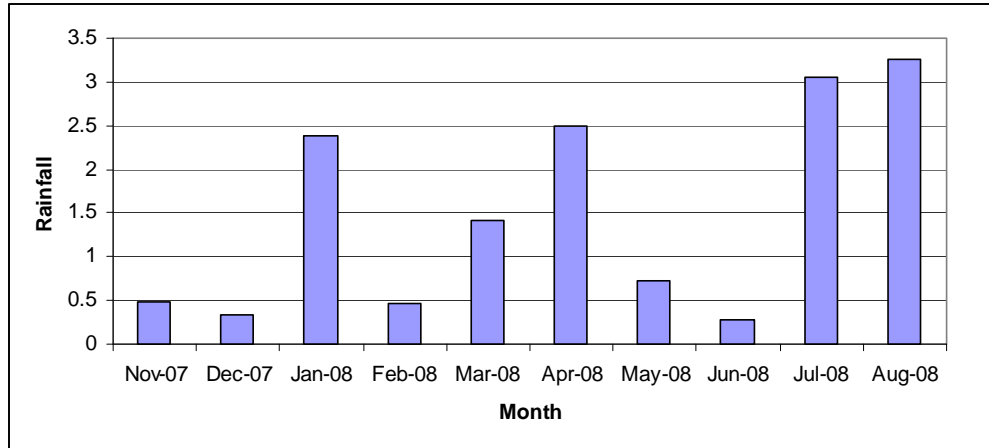
**60% Complete**

*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
  - The final water samples were collected above and below the 2S Ranch on July 2<sup>nd</sup> to evaluate bacteria levels prior to implementation of alternative water supplies
  - Water samples were collected above and below the 2S Ranch on July 17<sup>th</sup>, August 7<sup>th</sup> and 21<sup>st</sup>, and September 4<sup>th</sup> to evaluate bacteria levels following implementation of alternative water supplies and shade. No flow was present in the creek on September 18<sup>th</sup>, thus no water samples were taken.
  - During this quarter, *E. coli* levels averaged 458 cfu/100 ml above the ranch and 507 cfu/100 ml below the ranch.
  - Water samples are scheduled to be collected at the 2S Ranch on October 2<sup>nd</sup> and 16<sup>th</sup>, November 6<sup>th</sup> and 20<sup>th</sup>, and December 4<sup>th</sup> and 18<sup>th</sup>.
- b. Welder Wildlife Refuge
  - Equipment maintenance was performed on the sites on July 23, August 15<sup>th</sup> and 25<sup>th</sup>, and September 12<sup>th</sup>.
  - Despite the busy hurricane season on the Texas Coast this quarter, no runoff was received. Only 14.9 inches of rain were received at site WWR-2 between October 30, 2007 (when the ISCOs were activated) and August 31, 2008 (see figure on next page). This is well below normal rainfall for this area (25.6 – 31.5 inches).
- c. Riesel
  - No runoff has occurred at Riesel since May 15<sup>th</sup>.
  - The first year of runoff data has been analyzed. Between July 2007 and July 2008, annual *E. coli* loading from site SW12 was 6.95E+10 cfu/ha and annual *E. coli* loading from site SW17 was 7.85E+10 cfu/ha.

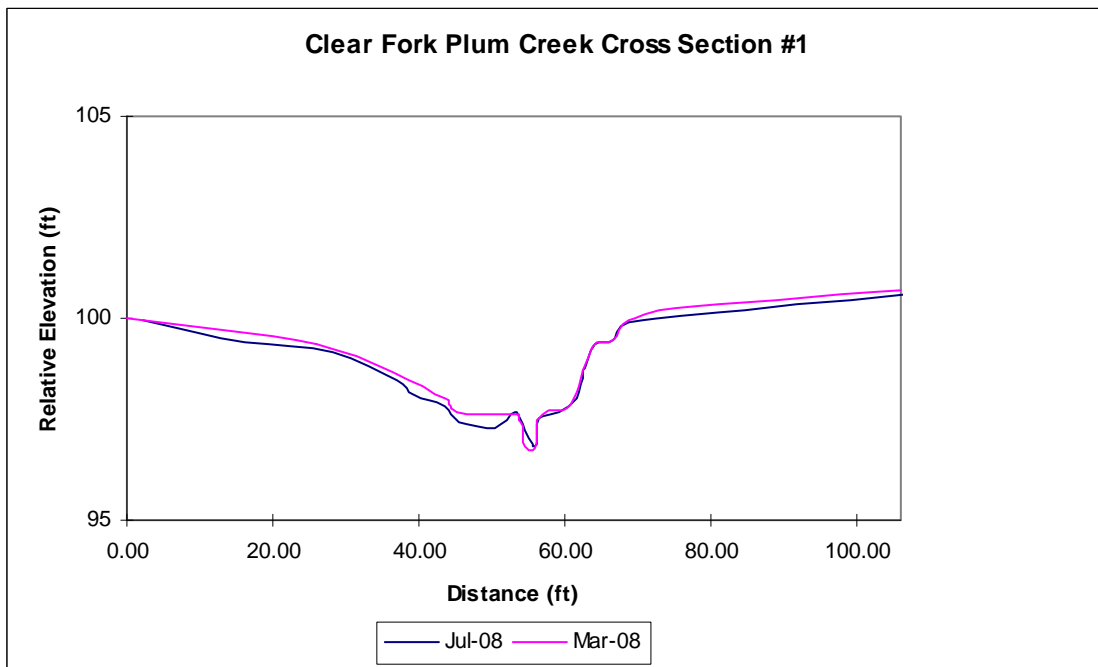
**60% Complete**



*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. Runoff samples collected from Riesel have been preserved for *Bacteroidales* analysis. However, no runoff samples have been collected from the Welder Wildlife Refuge as a result of below average rainfall.
- b. Stream cross-sections were surveyed on July 2<sup>nd</sup> (see below). No significant changes occurred between March and July 2008. Cross-sections will be resurveyed in January 2009.



**25% 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. Four portable shade facilities were installed on the 2S Ranch in June 2008.
- b. In addition, funding has been provided to the 2S Ranch for grazing management on their creek pasture for year 1 of the project.

**60% Complete**

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

- During the February 26<sup>th</sup> Project Meeting, it was discovered that Start and End Dates for the subtasks of Tasks 3-4 were out of sync with Task 2 and needed correction.
- Due to the lack of runoff, it may be necessary to extend the project and/or conduct rainfall simulation studies.
- Extension introduced the LSHS concept in county extension meetings in:
  - a. Austin County
  - b. Brazoria County
  - c. Falls County
  - d. Travis County
  - e. Bastrop County
  - f. McLennan County
  - g. Hunt County
  - h. Jackson County
- Extension also introduced the LSHS concept at day-long grazing schools conducted jointly by Extension, NRCS, and GLCI (Attachment 2) in Kerr and Bee County.

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

- Hold the second meeting of the LSHS Steering Committee on October 27
- Prepare and submit Year 2, Quarter 3 Progress Report on October 11
- Coordinate a meeting with project participants on October 27
- Update the website
- Continue compilation of information on current knowledge regarding the effects of grazing animals on bacterial runoff and BMPs designed to minimize impacts
- Continue development of land/grazing management education PowerPoint presentation addressing bacteria contamination of waterbodies
- Continue work on development of a white paper based on the PowerPoint educational program for distribution via hard copy and web
- Continue communication with landowners via educational programs
- Continue monitoring runoff at Riesel and the Welder Wildlife Refuge
- Conduct grazing treatments at the Welder on October 20-26
- Conduct GPS tracking of cattle on the 2S Ranch from November 6 – December 2
- Analyze GPS collar data
- Continue bi-monthly sampling on the 2S Ranch

ATTACHMENT 1

**Lone Star Healthy Streams Project  
Steering Committee**

*In conjunction with the*  
Annual Meeting of Texas Soil and Water Conservation District Directors  
Bastrop, Texas

October 27, 2008                      1:00 – 3:00 pm

**MEETING AGENDA**

- 1:00-1:10**      **Welcome**..... John Foster, TSSWCB
- 1:10-1:55**      **LSHS Education Program** ..... Dr. Larry Redmon, Extension
- Preview of education program
  - Roundtable discussion on educational program
  - Roundtable discussion on delivery of education program
- 1:55-2:20**      **Best Management Practice Evaluation** ..... Kevin Wagner, TWRI
- Review findings to date
  - Implications of findings to landowners and agencies
  - Roundtable discussion on ongoing studies & additional research needs
- 2:20-2:50**      **Water Quality Standards** ..... Kevin Wagner, TWRI
- Overview of Existing Water Quality Standards
  - Proposed Changes By TCEQ & Projected Impacts
  - Recommended Changes
  - Roundtable discussion on additional changes
- 2:50-3:00**      **Wrap Up** ..... Dr. Allan Jones, TWRI
- Summary
  - Next meeting date, topics of interest & location
- 3:00**              **Adjourn**

ATTACHMENT 2

# My Piece of Texas Grazing Workshops



**Lunch will be served  
Morning session will be classroom  
presentations. Afternoon session  
will be field examples.**



**Presented by  
Texas Grazing Lands Conservation Initiative (GLCI)  
USDA-Natural Resources Conservation Service (NRCS) & Texas AgriLife Extension Service**

**For more info on the workshops and times, call the offices listed below.  
Some locations do have limited seating, call now to reserve your spot!**

Town	Date	Location	Point of Contact
Clarendon (Donley Co.)	9-3-08 Registration Deadline: Aug. 29.	Clarendon College	Donley Co. SWCD (806) 874-3561 ext. 3 AgriLife Extension Service (806) 874-2141
Cresson (Parker/Hood Co.)	9-10-08 Registration Deadline: Sept. 5	Bear Creek Ranch 2701 Bear Creek Road, Aledo	Parker Co. SWCD (817) 594-4672, ext. 3 AgriLife Extension Service (817) 598-6168
Hunt (Kerr Co.)	9-17-08 Deadline: Sept. 12	Kerr Wildlife Management Area 2625 FM 1340, Hunt	AgriLife Extension Service (830) 257-6568
Crockett (Houston Co.)	9-24-08 Deadline: Sept. 19	Houston County Livestock Commis- sion, Hwy 21, W. of Crockett	AgriLife Extension Service (936) 544-3255, ext. 265
Beeville (Bee Co.)	10-1-08 Deadline: Sept. 26	Bee County Expo Center 214 South FM 351, Beeville	AgriLife Extension Service (361) 362-3280

A \$25 registration fee will include lunch and a newly published handbook titled, "Managing My Piece of Texas." The how-to guide was developed to assist landowners in managing grazing lands across Texas. Landowners will learn to estimate forage production, grazeable acres, and setting proper stocking rates, among other grazing management principles.



**Texas Section  
Society for  
Range Management**



NRCSTX0808