Texas Water Resources Institute

**Development of a Synergistic, Comprehensive
Statewide Lone Star Healthy Streams Program
FY 09 CWA 319(h)
TSSWCB Project No. 09-06**

Quarter no. 1 from 10/1/10 through 12/31/10

I. Abstract

This quarter, the Extension Program Specialist has been compiling information and educational materials for use in the LSHS program and formulating the layout for the standardized educational manuals. AgriLife Extension proposed the outline for the Manual and submitted the following sections to TSSWCB for review: (1) The Value of Clean Water to Agriculture, (2) Bacteria Fate and Transport, (3) Cost-Share and Technical Assistance Programs for Conservation Practice Implementation, and (4) BMP "info sheets". The manual will be completed next quarter. The Program Specialist has continued to work with TWRI staff to work on website material and transition to the new website.

II. Overall Progress and Results by Task

TASK 1: Project Administration

Subtask 1.1: *TWRI will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be posted to the project website and distributed to all project partners.*

The following actions have been completed during this reporting period:

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

45% Complete

Subtask 1.2: *TWRI will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.*

The following actions have been completed during this reporting period:

a. As of December 31, 2010, $60,975 or 16% of federal project funds had been expended.

16% Complete

Subtask 1.3: *TWRI will host coordination meetings, conference calls, or TTVN meetings with the TSSWCB Project Manager and SCSC at least quarterly to discuss project activities, project schedule, communication needs, deliverables, and other requirements. TWRI will develop lists of action items needed following each project meeting and distribute to project personnel.*

The following actions have been completed during this reporting period:

a. TWRI and SCSC met with members of the LSHS Project Steering Committee on October 19 in conjunction with the Ag Council Meeting.
b. A LSHS Program Steering Committee Meeting was held on October 25 in conjunction with the Annual Meeting of Texas Soil and Water Conservation District Directors.

40% Complete

Subtask 1.4: *TWRI will work with AgriLife Extension to develop a Final Report.*

The following actions have been completed during this reporting period:

a. No activity to report this quarter.

0% Complete

TASK 2: LSHS Program Coordination

Subtask 2.1: *AgriLife Extension SCSC will hire an Extension Program Specialist responsible for carrying out all Subtasks for Tasks 2 and 3.*

The following actions have been completed during this reporting period:

a. Complete.

100% Complete

Subtask 2.2: *TWRI and AgriLife Extension will utilize the framework of the TSSWCB project 06-05 LSHS Project Steering Committee to establish a LSHS Program Steering Committee to direct this synergistic project, serve as the review panel for the educational materials developed through the project, and provide endorsement of the final LSHS Program. This LSHS Program Steering Committee will meet as frequently as needed, likely semi-annually.*

The following actions have been completed during this reporting period:

a. TWRI and SCSC met with members of the LSHS Project Steering Committee on October 19 in conjunction with the Ag Council Meeting. A presentation about the project was given and draft templates of the 5 resource manuals were handed out for review and comment.
b. A LSHS Program Steering Committee Meeting was held on October 25 at 1:30 pm in Lubbock in conjunction with the Annual Meeting of Texas Soil and Water Conservation District Directors. The agenda, presentations, and sign-in sheet are available on-line at http://lshs.tamu.edu/projects/steering-committee.

25% Complete

Subtask 2.3: *The Extension Program Specialist will work with the Principal Investigators of the amassed body of work to compile the information and educational materials developed. This LSHS Program Development Committee shall meet as often as needed and serve to ensure that the Extension Program Specialist accurately captures and represents the species-specific information from the amassed body of work.*

The following actions have been completed during this reporting period:

a. Following the LSHS Program Development Committee meeting on September 28, at

the TWRI headquarters in College Station, the Extension Program Specialist incorporated all comments and suggestions and summarized the list of priority BMPs into a table (Appendix A). The table was sent to the Program Development Committee for final review and comment on November 4, 2010. The selected BMPs will serve as the foundation for each individual resource manual and each BMP will include detailed information on design, benefits, bacteria removal efficiencies (where data exists), cost, and economic impact of implementing the practice.

30% Complete

Subtask 2.4: *The Professor/State Forage Specialist, with assistance as needed from TWRI, will work closely with Texas AgriLife Extension Service Regional Program Directors, County Extension Agents, Extension Specialists, and other Extension Leadership, as appropriate, to ensure that the LSHS Program is supported around the state to ensure delivery of this program upon completion.*

The following actions have been completed during this reporting period:

a. The TWRI Associate Director continues to communicate with Extension Leadership and other pertinent project partners.

25% Complete

TASK 3: LSHS Program Development

Subtask 3.1: *The Extension Program Specialist will compile the amassed body of work including, but not limited to, information and educational materials developed through TSSWCB projects 06-05, 06-08, 06-07, 05-06, and 08-07.*

The following actions have been completed during this reporting period:

a. The Extension Program Specialist continued to compile the amassed body of information and educational materials developed through relevant TSSWCB projects and others throughout the country. The database was converted into an online searchable database accessible from http://lshs.tamu.edu. The database continues to be updated with journal articles and other publications pertinent to the LSHS project (Appendix B).

30% Complete

Subtask 3.2: *The Extension Program Specialist will work with the materials (subtask 3.1) and the Development Committee (subtask 2.3) to develop standardized educational manuals on bacteria issues and BMPs for addressing bacteria runoff from grazing cattle, dairy cattle, poultry, horses, and feral hogs.*

The following actions have been completed during this reporting period:

a. Draft layouts for 5 resource manuals and a draft list of priority BMPs were completed and presented at the, Ag Council meeting in Austin on October 19, and the Program Steering Committee meeting in Lubbock on October 25. Input was sought on design, layout, and usability.
b. AgriLife Extension proposed the following outline for the manual:
    - Program Introduction

- Background on Water Quality in Texas
- Sources of Bacteria
- Bacteria Fate and Transport
- Value of Clean Water to Agriculture
- Detailed "information sheets" on top BMPs
- Cost-Share and Technical Assistance Programs
- Conclusion
- References
- Appendices

c. On November 29, AgriLife Extension submitted the following sections to TSSWCB for review: (1) The Value of Clean Water to Agriculture, (2) Bacteria Fate and Transport, and (3) Cost-Share and Technical Assistance Programs for Conservation Practice Implementation.
d. On December 3, AgriLife Extension submitted draft BMP "info sheets" for the Fencing and Watering Facility practices. Info sheets continue to be developed for the additional conservation practices identified by the Program Development Committee and other project partners.

30% Complete

Subtask 3.3: *The Extension Program Specialist will work with the materials (subtask 3.1) and the Development Committee (subtask 2.3) to develop standardized educational presentations on bacteria issues and BMPs for addressing bacteria runoff from grazing and dairy cattle, poultry, horses, and feral hogs to be used for in-person LSHS Program delivery. These presentations should be based on and flow from the Resource Manuals (subtask 3.2)*

The following actions have been completed during this reporting period:

a. No activity to report this quarter. This will be completed as the resource manuals are completed.

0% Complete

Subtask 3.4: *The Extension Program Specialist will develop promotional materials to be used for LSHS Program delivery and to inform the public of the availability of the LSHS Program.*

The following actions have been completed during this reporting period:

a. An LSHS brochure was developed and sent to SCS and TWRI for review. The brochure will be sent to TSSWCB for review next quarter (Appendix C).

10% Complete

Subtask 3.5: *The Extension Program Specialist will work with TDA and Texas Certified Crop Advisors Program to establish CEU credits for the educational program to encourage participation by landowners and crop advisors in the program.*

The following actions have been completed during this reporting period:

a. Complete. 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 3.6: *The Extension Program Specialist will develop pre- and post- participant surveys to evaluate (1) changes in producer knowledge and awareness, (2) expected adoption of BMPs, and (3) any barriers to producer participation and successful implementation of the program to be used at in-person LSHS Program delivery events.*

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 survey has been provided to the TSSWCB for comment (Appendix D).

98% Complete

Subtask 3.7: *The Extension Program Specialist, Professor & State Forage Specialist, Assistant Professor & District Agronomist at Overton, and the Assistant Professor & District Agronomist at Corpus Christi will pilot each of the five components of the LSHS Program at selected sites in East, Central, and South Texas. Watersheds selected for piloting of the LSHS Program shall be TSSWCB priority TMDL or WPP watersheds.*

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:
    - October 12-15 – Ranch Management University
    - October 21 – Burnet County
    - October 26 – Comanche County
    - December 14 – Guadalupe County (98)

10% Complete

TASK 4: Develop Interactive Website to Increase Access to LSHS Program

Subtask 4.1: *Using the latest appropriate technology, the Extension Program Specialist and TWRI IT Associate will work together to develop an interactive website to make the educational materials developed under Task 3 easily accessible by the public, landowners, county agents, soil and water conservation districts, decision makers, and others. The Extension Program Specialist will also evaluate the feasibility of providing CEUs for participation in online modules and if found to be feasible, will work to make those available online as well.*

The following actions have been completed during this reporting period:

a. The searchable database of journal articles and other educational materials relating to BMPs, bacterial removal efficiencies, and other information pertinent to the LSHS project was transferred to the LSHS website and can be found at http://lshs.tamu.edu/research/bibliography. This database will continue to be updated as additional materials are found and the website will continue to be updated as Task

3 materials are developed.

10% Complete

Subtask 4.2: *The Extension Program Specialist will develop and provide information for the website to the TWRI IT Specialist and update this information quarterly. The number of unique visitors to the website will be tracked to assess its impact and reported in each QPR.*

The following actions have been completed during this reporting period:

a. Since September 2007, the website titled "Improving Water Quality of Grazing Lands" (http://grazinglands-wq.tamu.edu/) has been used to disseminate information on *Lone Star Healthy Streams* and related projects. A grand total of 1,091 unique visitors since September 2007.
b. This quarter, the website was viewed by 35 unique visitors:
    - 16 unique visitors in October 2010
    - 9 unique visitors in November 2010
    - 14 unique visitors in December 2010
c. Transition to a new website titled "Lone Star Healthy Streams" with the url of http://lshs.tamu.edu has been completed. TWRI and SCSC met on August 27 to discuss and plan this transition from a project website to a resource website for agricultural producers, watershed stakeholder groups, and agency personnel.
d. Since implemented (http://lshs.tamu.edu)has seen a grand total of 22 unique visitors.
e. This quarter, the website was viewed by 19 unique visitors:
    - 5 unique visitors in October 2010
    - 3 unique visitors in November 2010
    - 14 unique visitors in December 2010

20% Complete

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

- N/A

IV. Projected Work for Next Quarter

- Develop a voice-over presentation for the LSHS website
- Continue delivery of LSHS programs statewide
- Continue development of standardized educational manuals, presentations, and promotional materials on bacteria issues and BMPs for addressing bacteria runoff from grazing cattle, dairy cattle, poultry, horses, and feral hogs.
- Continue development of new LSHS website at http://lshs.tamu.edu.
- Continue compiling information and educational materials.

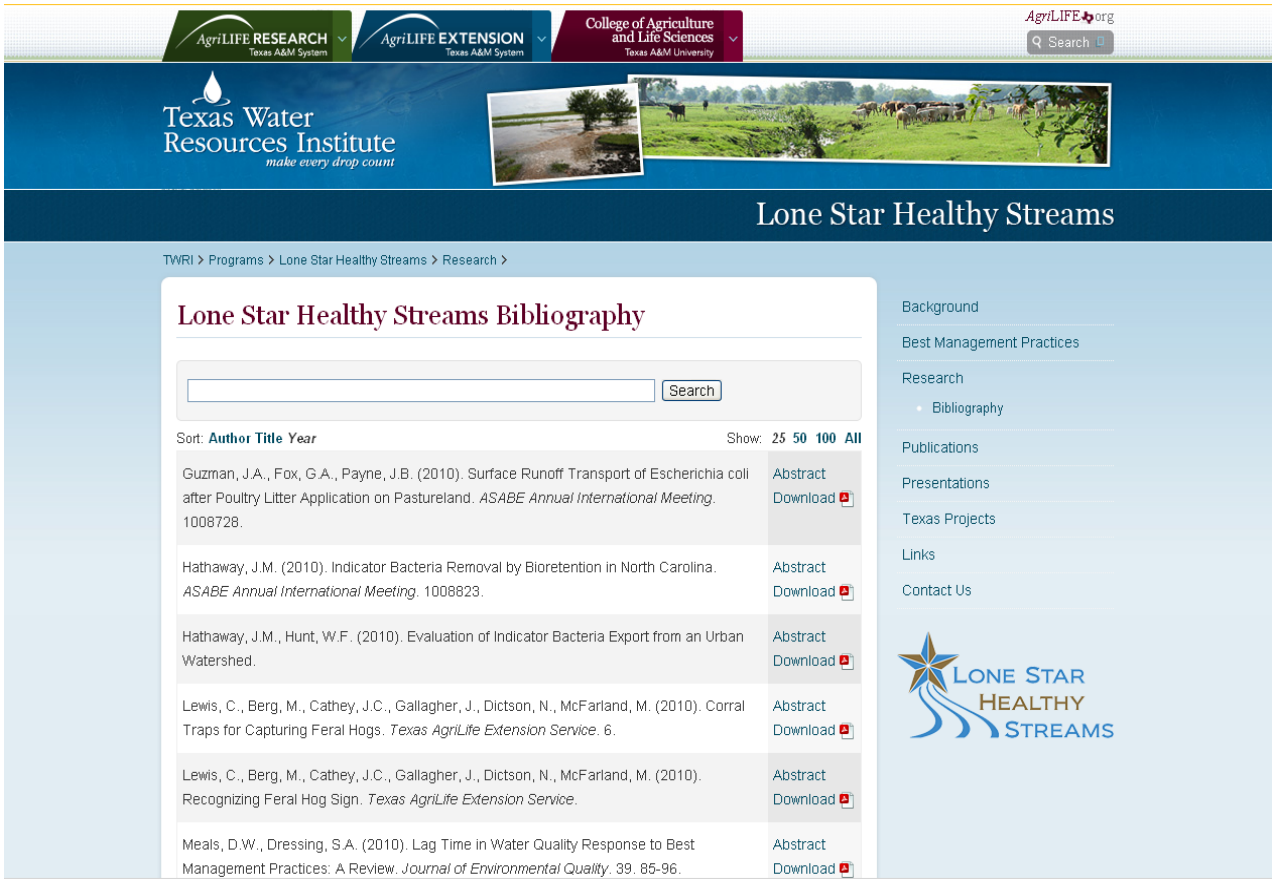
Appendix A

Summary of top BMPs as identified by the LSHS Program Development Committee

BMP CATEGORY	BEEF CATTLE GRAZING	DAIRY CATTLE CONFINED	DAIRY CATTLE GRAZING	HORSES	POULTRY	FERAL HOGS
GRAZING MANAGEMENT	Prescribed grazing (528A)	x	Prescribed grazing (528A)	Prescribed grazing (528A) – will include sacrifice area	x	x
RUNOFF MANAGEMENT	Filter strips (NRCS Code 393)	Filter strips (NRCS Code 393)	Filter strips (NRCS Code 393)	Filter strips (NRCS Code 393)	Filter strips (NRCS Code 393)	x
	x	Field borders (NRCS Code 386)	x	Building location	Field borders (NRCS Code 386)	x
	x	Grassed waterways (NRCS Code 412)	x	Roof runoff structure (NRCS Code 558)	Grassed waterways (NRCS Code 412)	x
	x	Roof runoff structure (NRCS Code 558)	x	Water harvesting catchment (NRCS Code 636)	Roof runoff structure (NRCS Code 558)	x
	x	Diversion (NRCS Code 362)	x	x	x	x
RIPARIAN AREA PROTECTION & MANAGEMENT	Shade structures (NRCS Code 717)	x	Shade structures (NRCS Code 717)	Shade structures (NRCS Code 717)	x	x
	Stream crossing (NRCS Code 578)	x	Stream crossing (NRCS Code 578)	Watering facility (NRCS Code 614)	x	x
	Watering facility (NRCS Code 614)	x	Watering facility (NRCS Code 614)	Fencing (NRCS Code 382)	x	x
	Feed, salt, and/or mineral locations	x	Feed, salt, and/or mineral locations	Access control (NRCS Code 472)	x	x
	Heavy use area protection (NRCS Code 561)	x	Heavy use area protection (NRCS Code 561)	x	x	x
	In-stream watering points	x	In-stream watering points	x	x	x
	Fencing (NRCS Code 382)	x	Fencing (NRCS Code 382)	x	x	x
	Access control (NRCS Code 472)	x	Access control (NRCS Code 472)	x	x	x
MORTALITY MANAGEMENT	Proper carcass disposal	Proper carcass disposal	Proper carcass disposal	Proper carcass disposal	Proper carcass disposal	Proper carcass disposal
MANURE MANAGEMENT	x	Waste treatment lagoon (NRCS Code 359)	x	Waste storage structure (NRCS Code 313)	Waste storage structure (NRCS Code 313)	x
	x	Waste utilization (NRCS Code 633)	x	Waste utilization (NRCS Code 633)	Waste utilization (NRCS Code 633)	x
	x	Soil testing & nutrient management (NRCS Code 590)	x	Soil testing & nutrient management (NRCS Code 590)	In-house pasteurization of litter (NRCS Code 629)	x
	x	Waste treatment (NRCS Code 629)	x	Composting (NRCS Code 317)	Soil testing & nutrient management (NRCS Code 590)	x
	x	Composting (NRCS Code 317)	x	x	Composting (NRCS Code 317)	x
LETHAL TECHNIQUES (feral hogs only)	x	x	x	x	x	Trapping Snares Hunting and Shooting
NONLETHAL TECHNIQUES (feral hogs)	x	x	x	x	x	Fencing
TOTAL BMP#	11	11	11	14	10	5

Appendix B

Screen capture of the online searchable database accessible on the LSHS website



Appendix C
Trifold LSHS brochure

Appendix D
LSHS Survey Instrument

Improving Lives. Improving Texas.

Lone Star Healthy Streams
Program Survey

We hope that you have enjoyed this program. Would you please take just a few moments to complete this survey? In doing so, you will help us make improvements to the program. THANK YOU!

1. For each item listed below, mark the ONE number in the left column that best describes your level of understanding BEFORE the program; and then mark the ONE number in the right column that best describes your level of understanding AFTER the program.

Poor 1 Fair 2 Good 3 Excellent 4

	BEFORE Program				AFTER Program			
	1	2	3	4	1	2	3	4
The Federal Clean Water Act requires specific water standards for each state, including Texas.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
A waterbody not meeting water quality standards (impaired waterbody) is placed on what is known as the 303(d) list.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
Once a waterbody is placed on the 303(d) list, a plan to improve the water quality is put in place known as a Total Maximum Daily Load (TMDL).	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
E. coli are bacteria that cause both food-borne and water-borne illnesses.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
E. coli is an indicator organism for additional organisms that can cause water-borne illnesses.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
Water quality regarding bacteria is determined by testing for *E. coli*.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
There are many sources of bacteria that can impair a waterbody, including livestock.								
Riparian areas are environmentally sensitive areas along streams and rivers.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
There are Best Management Practices (BMPs) I can implement on my property to protect riparian areas.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ
There are various sources of cost-share funds to assist my implementation of BMPs designed to protect riparian areas.	Θ	Θ	Θ	Θ	Θ	Θ	Θ	Θ

2. Overall, how satisfied are you with this educational program activity?
Θ Not at all Θ Slightly Θ Somewhat Θ Mostly Θ Completely

3. What did you like most about this educational program activity?
_____

4. What did you like least about this educational program activity?
_____

5. Would you recommend this particular educational program activity to others?
Θ Yes Θ No

6. How likely are you to adopt one or more of the BMPs presented in today's program designed to improve water quality?
Θ Likely Θ Not likely