

Clean Water Act Section 319(h) Nonpoint Source Pollution Control Program Project

***Lampasas Watershed Assessment and Protection Project***

**Quarterly Report Number 7**

Covering work accomplishments during July through September, 2009

prepared by

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At the end of August the LWPP staff simplified its organizational structure. Lisa Prcin, recently promoted to Research Associate, has assumed responsibilities as Watershed Coordinator. The duties as Watershed Coordinator significantly overlap with her previous duties as Outreach Coordinator, duties which she will continue to perform in her new role. Rearrangement of duties allows Steve Potter to focus on the technical analyses in the watershed. This streamlining of staff roles concludes the reorganization envisioned in June 2008 (see Quarterly Report 2).

The team continued progressing on the outreach and technical tasks necessary to fulfill the EPA's nine elements. The watershed geodatabase is nearing completion. Development of the updated, higher resolution land cover dataset is one task that has not yet been completed. Much of the data needed to create the dataset has been gathered, including newly available 2008 multispectral imagery. Furthermore, recent developments in object oriented imagery analysis are likely to have significant positive effects on the overall accuracy of the land cover classification; exceeding the 80% accuracy rate specified for current pixel-based classification methods. LWPP staff are consulting with Dr. Soren Popescu, Texas A&M University, concerning recent advances in image analysis for classifying land cover including data fusion methods, for which we would like to acquire LIDAR data. When combined with data fusion, object-based classifications allow more specific land cover assignments, such as riparian forest, feral hog habitat, and sparsely developed suburban areas without public wastewater facilities. Including these and similarly critical land classes in the water quality analyses is key to correctly identifying impairment sources and developing effective management strategies.

Finding and recruiting potential partners from outside the watershed to conduct water quality projects, educational activities, or otherwise bring resources into the watershed continues to be an important activity necessary to create a lasting focus on water quality among watershed stakeholders. One partner, Dr. Bradford Wilcox (Professor, Ecosystem Science and Management at Texas A&M University) and his team will receive a \$100,000 prove of concept grant for the proposal *Managing Rangeland Watersheds for Enhanced Ecosystem Services: Learning from the Past and Planning for the Future*. Their plan includes unique methods to enhance scientific understanding of eco-hydrologic processes and rangeland sustainability issues in Lampasas watershed. Part of the plan included funding to

further the collaborative efforts the LWPP staff is establishing with and among the Lampasas Watershed Partnership.

Perhaps the most important outreach conducted this quarter was our work with the county extension agents. Getting project buy-in and commitment from permanently-assigned trained personnel can help ensure “water quality” becomes an enduring message in the watershed. Elsewhere, we continued public outreach efforts to inform citizens about the WPP. Other outreach activities this quarter, included planning a stakeholder meeting to be held 10 November.

### **Task 1: Lampasas River WPP Development and Project Administration**

Subtask 1.1: Conduct quarterly meetings, or as appropriate, with project participants, and other interested parties to discuss project schedule, lines of responsibility, communication needs, and other requirements. (Start Date: Month 1; Completion Date: Month 36)

**40% Complete – On-going**

Subtask 1.2: Identify and recruit key stakeholders through public education and outreach. Organize stakeholder group. Prepare and distribute semi-annual newsletter to stakeholders. Develop and host watershed website. (Start Date: Month 1; Completion Date: Month 36)

- Attended public meetings to promote the WPP.
- Selected likely members of the stakeholder committee and workgroups.
- Staff met with key stakeholders.
- Maintained and updated project website
- **30% Complete – On-going**

Subtask 1.3: Organize workgroups based on stakeholder recommendations. (Start Date: Month 1; Completion Date: Month 36)

- Staff worked on formation of the technical committee.
- Initiated development of workgroup structures.

**20% Complete – On-going**

Subtask 1.4: Conduct stakeholder meetings as appropriate (stakeholder/community driven), and conduct workgroup meetings according to project demands. (Start Date: Month 1; Completion Date: Month 36)

- Planned public meeting to be held 10 November
- **30% Complete – On-going**

Subtask 1.5: Prepare stakeholder and workgroup educational programs as requested. (Start Date: Month 1; Completion Date: Month 36)

- Gathered technical outreach materials from Extension, university and government agencies for public dissemination.

**25% Complete – On-going**

Subtask 1.6: Develop Lampasas River WPP. (Start Date: Month 12; Completion Date: Month 36)

- No activity this quarter.

**0% Complete – On-going**

## **Task 2: Development of load duration curves for the Lampasas River Watershed**

Subtask 2.1: Develop flow duration curves using historical stream-flow data. (Start Date: Month 10; Completion Date: Month 14)

- Updated Lampasas Water Database with flow and water quality data.

**30% Complete – On-going**

Subtask 2.2: Develop LDCs to characterize pollutant loadings in the Lampasas River Watershed for all parameters of concern. Determine if and under what conditions bacteria levels exceed water quality standards. (Start Date: Month 10; Completion Date: Month 14)

- No activity this quarter.

**25% Complete – On-going**

Subtask 2.3: Calculate the load reductions necessary to meet water quality standards. (Start Date: Month 10; Completion Date: Month 14)

- No activity this quarter.

**15% Complete – On-going**

## **Task 3: Watershed inventory and geographic analysis of land use influencing *E. coli* migration and other NPS pollution within the Lampasas River Watershed.**

Subtask 3.1: In order to develop and implement DQOs and QA/QC activities necessary to ensure environmental data of known and acceptable quality is generated through this project, a

QAPP for Tasks 2-4 will be developed that is consistent with *EPA Requirements for Quality Assurance Project Plans (QA/R-5)* and the *Environmental Data Quality Management Plan for the TSSWCB*. (Start Date: Month 1; Completion Date: Month 8)

- Updated and submitted QAPP annual revision  
**90% Complete –**

Subtask 3.2: Classify current land use for the watershed using existing land use/land cover data utilizing most current imagery available. (Start Date: Month 11; Completion Date: Month 18)

- Gathered spatial and tabular data
- Created XML metadata template  
**30% Complete – On-going**

Subtask 3.3: Verify classification of land use through ground-truthing of sub-sampled land units, and collection of available data. (Start Date: Month 11; Completion Date: Month 18)

- No activity this quarter  
**15% Complete – On-going**

Subtask 3.4: Delineate the Lampasas River Watershed into catchments using highest resolution digital elevation model available. (Start Date: Month 11; Completion Date: Month 18)

- No activity this quarter  
**20% Complete – On-going**

Subtask 3.5: Compile all of feature class, raster, and tabular data into a comprehensive geo-database reflecting existing watershed conditions. (Start Date: Month 11; Completion Date: Month 18)

- Revised Geodatabase model to make compatible with Consortium of Universities for the Advancement of Hydrologic Science (CUSHI) standards.  
**50% Complete – On-going**

**Task 4: Utilize Spatially Explicit Load Enrichment Calculation Tool (SELECT) for analysis of the Lampasas River Watershed.**

Subtask 4.1: Compile and estimate the contribution of potential sources of *E. coli* and other parameters within the watershed. (Start Date: Month 19; Completion Date: Month 26)

- Gather local data on feral hogs and livestock populations.  
**10% Complete – On-going**

Subtask 4.2: Allocate numbers of each potential source category, in a spatial context according to land use classification using GIS. (Start Date: Month 19; Completion Date: Month 26)

- No activity this quarter.  
**0% Complete – On-going**

Subtask 4.3: Identify potential pollutant sources across the landscape based on proximity to hydrology, land use, and other factors using SELECT analysis. (Start Date: Month 19; Completion Date: Month 26)

- No activity this quarter.  
**0% Complete – On-going**

Subtask 4.4: Utilize the hybrid statistical and process-based approach of SPARROW (SPAtially Referenced Regressions on Watershed Atttributes) to quantify uncertainty in SELECT parameters. (Start Date: Month 19; Completion Date: Month 26)

- No activity this quarter.  
**0% Complete – On-going**

#### **Task 5: Facilitate implementation of the Lampasas River WPP.**

Subtask 5.1: Work with stakeholders and workgroups to prioritize implementation activities based on consensus and continual watershed assessment and awareness. (Start Date: Month 18; Completion Date: Month 36)

- No activity this quarter.  
**0% Complete – On-going**

Subtask 5.2: Assist stakeholders in identification and acquisition of resources necessary to proceed with watershed implementation and protection strategies, and in anticipation of future watershed needs. (Start Date: Month 18; Completion Date: Month 36)

Worked with Dr. Popescu, Dr. Wilcox, and Dr. Hockett in the acquisition of additional resources.

**20% Complete – On-going**

Subtask 5.3: Identify metrics or other indicators which will be used to evaluate successful implementation or improvement of watershed health over time. (Start Date: Month 18; Completion Date: Month 36)

- No activity this quarter.  
**8% Complete – On-going**

### **Activities Planned for Next Quarter**

We need to make significant progress on several important activities this coming quarter. We are facing However,

- Develop a “syllabus”; a fairly detailed schedule of events and milestones through the final completion of the WPP. Milestones should identify completion dates for analytical tasks and deliverables, and allow sufficient time for draft WPP reviews and revisions. Syllabus will schedule future steering committee and workgroup meetings and specify goal/purpose and activities for each meeting. Review syllabus with TSSWCB.
- Complete initial evaluation of Lampasas River water quality and submit to TSSWCB and project partners for internal technical review. Improve methods of communicating technical information to laymen.
- Complete flow and load duration analysis and calculate load reductions needed. Submit findings to technical partners and colleagues for internal review. Develop ways of communicating results to non-expert stakeholders. Document methods, assumptions, source data, and results.
- Continue website development and creation of outreach materials.
- Conduct November stakeholder meeting in Lampasas.
- Organize stakeholder workgroups.
- Coordinate and host stakeholder steering committee meeting.
- Coordinate and host Technical Liaison outreach.
- Complete geodatabase (not including land cover classification).

## Revised Roles

### Lisa Prcin, Watershed Coordinator

Responsible for coordinating and organizing a stakeholder group that serves an advisory role in Watershed Protection Plan (WPP) development, developing a WPP with assistance from stakeholders and submitting it to TSSWCB and EPA.

### Steven Potter; Technical Coordinator

Responsible for the Lampasas Watershed load duration curve development and SELECT modeling. Responsible for water quality modeling support via statistical models. Responsible for verifying that the data used for modeling efforts are of known and acceptable quality.

