

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

Lampasas Watershed Assessment and Protection Project

Quarterly Report Number 5

Covering work accomplishments during January through March, 2009

prepared by

Texas AgriLife Research

The quarter saw progress in three main areas: watershed characterization and technical analysis, stakeholder outreach, and administrative/planning/logistical.

The team moved forward in the technical analysis of the streamflow and contaminant loadings in the Lampasas River. Dr. Rajani Srinivasan developed a water quality database for analyzing streamflow and water quality constituents. Organizing the data was a significant task. Recorded daily flow for the Lampasas River dates from 1925, however, due to dam construction in the mid-1960s, the USGS gauging site was moved approximately 25 miles upstream. USGS recorded data from both sites for approximately 15 years, thus allowing a good approximation of an 84-year continuous record. Water quality data from USGS, TCEQ, BRA, Texas Stream Team, and the Friends of Sulphur Creek volunteer monitoring were collected. Substantial work to develop common data formats, units, etc. is ongoing and should be completed early next quarter.

In an ongoing effort, the geodatabase structure (model) has been developed. Geodatabase development and data standardization and conversion will follow. Also, a Review of Existing Information or annotated bibliography has been undertaken.

In a recent development, the Lampasas team is cooperating with Professor Bradford Wilcox, Ecosystem Science and Management at Texas A&M University, in developing a grant proposal to USDA-CSREES focusing on enhancing the scientific understanding of eco-hydrologic processes and rangeland sustainability in watersheds such as the Lampasas. Dr. Wilcox's letter of intent to develop a full proposal entitled *Managing Rangeland Watersheds for Enhanced Ecosystem Services: Learning from the Past and Planning for the Future* has been accepted. The Lampasas WPP team anticipates further cooperation with Dr. Wilcox's research in the watershed.

Lisa Prcin, the project's Outreach Coordinator has begun full-time work on the project. With this development, Lisa has undertaken a major effort to develop a coordinated outreach and communication strategy. As part of this outreach effort, Lisa is planning stakeholder meetings to be held in Killeen and Lampasas on the 7th and 12th of May, respectively. These meetings will be followed up with development of stakeholder working groups and a watershed steering committee. As a prelude to the meetings, the project team and partners are developing press releases and stakeholder mail outs. A key component of the outreach included development of the Lampasas Stakeholder Database. In addition, staff has met with key stakeholders and initiated contact with local media outlets. Several pre-meeting presentations were planned and an update of the project was presented at the Brazos River Authority Presentation for Texas Clean Rivers Program.

In other activities, project staff met with members from the TSSWCB for planning. Through these consultations, a schedule with milestones was developed which takes the project through final approval of the WPP. In developing the schedule it became apparent that for successful completion, the project would require a one-year, no-cost extension. Although, the extension will not be requested until the appropriate time, the project schedule incorporates the extension with an August 2011 completion date. As noted in previous quarterly reports, the scheduling extension was expected.

Other administrative developments include the addition of part-time staff. Jason McAlister, a previous staffer, will return to the project to help in development of the geodatabase and support of the SELECT modeling. Jason brings significant technical skills to the project as well as a keen understanding of the Lampasas watershed.

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)

30% 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)

- Refined outreach plan and communications strategy.
- Staff continued identifying and contacting likely members of the stakeholder committee and workgroups.

- Staff met with key stakeholders including commissioners from Bell and Hamilton counties, several City of Killeen officials, BRA, and board members of the Cleanwater Underground Water Conservation District.
- Created Lampasas Stakeholder Database.
- 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.
 - Staff attended Drought Planning and Management workshop.
- 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)

- Set meeting dates and developed agenda and materials
- 20% 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.

20% 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)

- Received data from Texas Stream Team.
- Gathered river flow and water quality monitoring data; classified and arranged in relational database.

25% 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)

- No activity this quarter.

100% 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)

- Documented data sources and began gathering raster and vector data.

25% 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)

- Made progressed on land use classification methodology

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)

- Documented data sources and began gathering 10 m DEM raster data.
Obtained NHD+ geodatabase from USGS
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)

- Developed geodatabase information model for representing and managing geographic information.
- Began obtaining watershed geo-data.
35% 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)

- Reviewed literature on *E. coli*
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 Attributes) 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)

Cooperated with Professor Wilcox at Texas A&M University on a research and outreach proposal to be conducted in the Lampasas watershed.

12% 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

- Revise working paper outlining outreach plan and communications strategy.
- Continue website development and creation of outreach materials.
- Establish and maintain media contacts. Send press release for outreach meetings.
- Conduct stakeholder meetings in Lampasas and Killeen.
- Organize stakeholder workgroups.
- Coordinate and host stakeholder steering committee meeting.
- Coordinate and host Technical Liaison outreach.
- Conduct other outreach activities including education and information workshop planning.
- Obtain or create outreach materials about bacteria impairments and other issues as needed.
- Complete annotated bibliography about the Lampasas Watershed
- Complete WQ database.
- Complete geodatabase.
- Complete flow and load duration analysis. Document methods, assumptions, source data, and results. Thoroughly vet findings through project's internal technical peer review process prior to public release.
- Complete methodology for GIS land use classification.
- Develop land use GIS layer.
- Complete and submit Quarterly Report Number 6 for work accomplished April – June 2009.