



# Buck Creek Watershed Protection Plan Outline

---

Lucas Gregory  
Texas Water Resources Institute  
[lfgregory@ag.tamu.edu](mailto:lfgregory@ag.tamu.edu)  
979-845-7869



Agriculture is Life.

# Typical Introduction Sections

---



Buck Creek, March 2008

- Table of contents
- Lists of Figures and Tables
- Executive Summary
- Overview of the Buck Creek Watershed

# Watershed Overview

---

- Watershed boundaries and history
- Soils, geography and topography
- Land use, Land Cover and Ecoregions
- Climate and Water Resources
- Agriculture and Economy
- Historic and current water quality
  - Bacteria
  - Nitrates
  - Flow
  - Other
- Potential Sources of Pollution
  - Non Point Sources
  - Point Sources

# Watershed Management

---

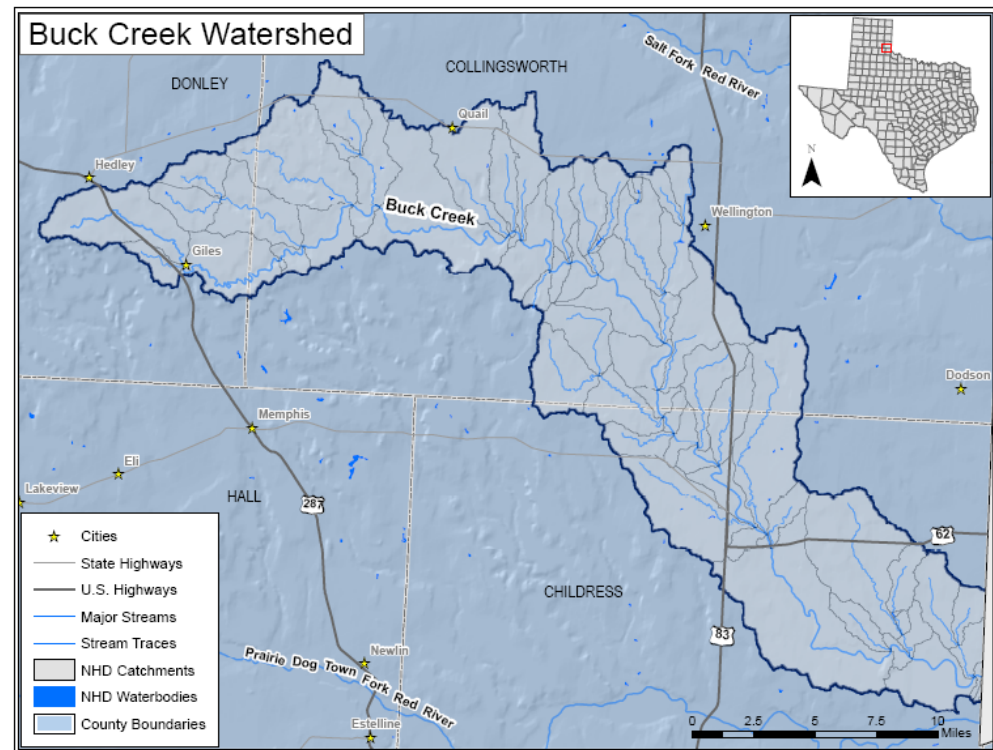
- Definition of a watershed
- Watershed's impacts on water quality
- Watershed management approach
- WPP development process
- Water Quality Management Plans
- Private Property Rights



Buck Creek, March 2008

# Watershed Analysis Results

- Water Quality Monitoring
- Bacterial Source Tracking
- SELECT Analysis
- Load Duration Curve Analysis





# Concerns and Management

---



Buck Creek, March 2008

- Bacteria and Nitrates
  - Causes and sources
  - Critical management areas
  - Estimated load reductions
  - Needed management measures
  - Technical Assistance

# Education and Outreach

---



Buck Creek Stakeholder Meeting, January 2008

- Past Activities
  - Meetings
  - Field days
  - Seminars
- Future Activities
  - Meetings
  - Educational Programs

# Measures of Success

---

- Management practices implemented in the watershed
- Continued water quality monitoring
- Removal from the 303(d) List



Buck Creek Water Quality Monitoring



# Implementation and Goals

---

- Practice implementation schedule
- Costs and Sources of Financial Assistance
- Milestones



Solar Water Pump near Buck Creek

# What Else?

---

- Almost anything can be included in the plan
- Including ideas or desired practices as a part of the WPP increases the chance of financial assistance
- Is there anything else we need to add?



Buck Creek, June 2008



# Best Management Practices for the Buck Creek Watershed

---



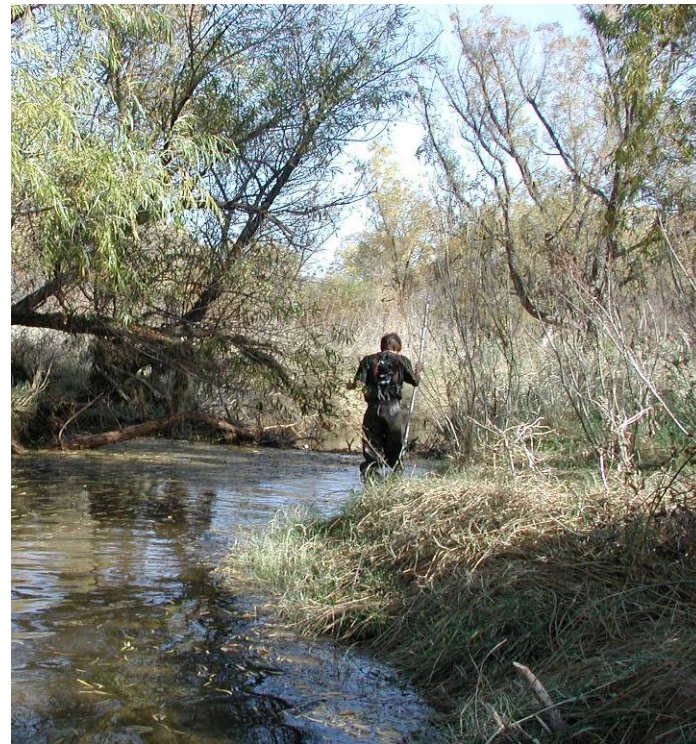
Agriculture is Life.

# Best Management Practice Overview

- Mostly NRCS approved practices from the NRCS Field Office Technical Guide
- Farming, Livestock, Water Quality and Quantity, Wildlife
- Think about these and if you think they can be applied in the Buck Creek watershed
- Please fill out the BMP sheet with a



or



Buck Creek Water Quality Sampling

# Brush Management

---

NRCS Code (314)

- Selective removal of brush
- Mechanical, Chemical, Biological, Prescribed Burning
- Increased vegetation growth
- Better water quality



TSSWCB Photo



# Conservation Cover / CRP Land

---

NRCS Code (327)

- Permanent vegetative cover
- Reduces soil erosion
- Improves water quality



Fort Hood Rangeland Re-vegetation Project

# Contour Farming

---

NRCS Code (330)

- Farming on the contour of the land
- Reduces soil erosion
- Increase infiltration and soil moisture
- Improves water quality



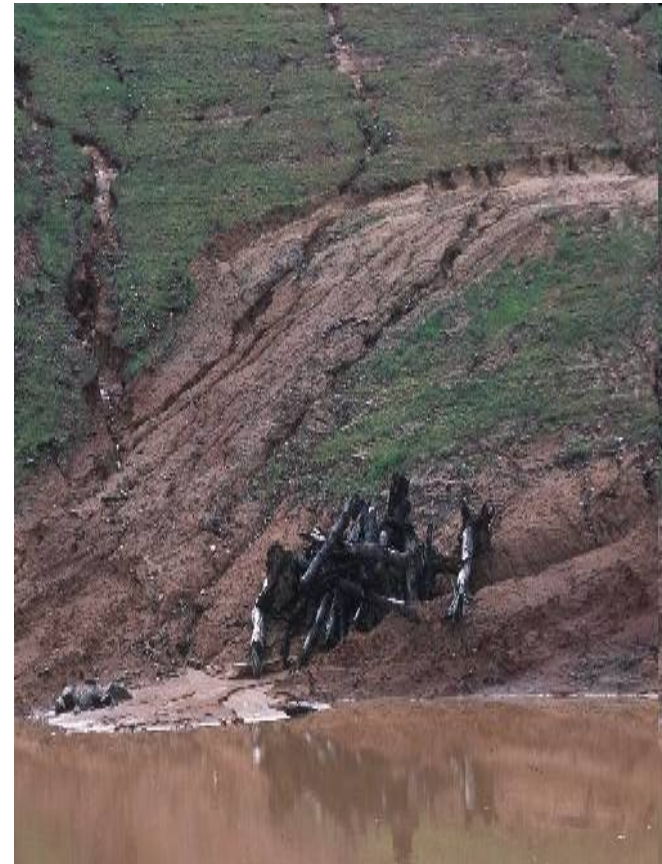
NRCS Photo

# Critical Area Planting

---

NRCS Code (342)

- Establishes permanent vegetation on erosion prone sites
- Improves water quality
- Provides additional forage and habitat



NRCS Photo

# Early Succession Habitat Development

---

NRCS Code (647)

- Manage early colonizing plants to benefit wildlife
- Increases native plant diversity
- Improves habitat
- Improves water quality
- Good native grazing



Fort Hood Rangeland Re-vegetation Project

# Fencing

---

NRCS Code (382)

- Promotes better grazing distribution
- Can be used to protect critical areas
- Promotes improved water quality



NRCS Photo



# Filter Strips

---

NRCS Code (393)

- Permanent buffer between cropland or grazing land and a water way
- Reduces sediment, nutrient and pathogen pollution
- Promotes improved water quality



NRCS Photo

# Grade Stabilization Structure

---

NRCS Code (410)

- Helps control gully formation
- Reduces sediment loss, nutrient and pathogen pollution
- Promotes improved water quality



NRCS Photo

# Grassed Waterways

---

NRCS Code (412)

- Natural or formed channel with permanent vegetation
- Reduces erosion, nutrient loss and pathogen transport
- Promotes improved water quality



NRCS Photo

# Grazing Land Mechanical Treatment

NRCS Code (548)

- Promotes increased water infiltration and vegetation growth
- Reduces runoff, and nonpoint source pollutant transport
- Promotes improved water quality



Fort Hood Rangeland Re-vegetation Project



# Irrigation Efficiency Upgrade

NRCS Codes (441, 442, 443)

- Decreases water use
- Decreases nutrient leaching
- Promotes improved water quality



NRCS Photos



# Nutrient Management

---

NRCS Code (590)

- Manage the timing and rates of nutrient application
- Decreases nutrient pollution and input costs
- Promotes improved water quality without decreasing production



NRCS Photos

# Pipeline

---

NRCS Code (516)

- Redistribute the current water supply
- Provide more watering locations for livestock and wildlife
- Indirectly promotes improved water quality



NRCS Photo

# Pond

---

NRCS Code (378)

- Provides alternative water for livestock, wildlife and other uses
- Captures runoff and traps sediment
- Promotes improved water quality



NRCS Photo

# Prescribed Burning

---

NRCS Code (338)

- Controls unwanted vegetation and promotes forage production
- Promotes better grazing distribution
- Promotes improved water quality thru increased forage production



NRCS Photo



# Prescribed Grazing

---

NRCS Code (528)

- Controlled vegetation usage
- Improve forage quality through proper utilization
- Promotes improved water quality thru reduced erosion



NRCS Photo



# Pumping Plant

---

NRCS Code (533A, B, C)

- Provides additional water for livestock and wildlife
- Promotes better grazing distribution
- Promotes improved water quality by encouraging livestock and wildlife to use areas away from the creek



Solar Water Pump near Buck Creek

# Range / Pasture Planting

---

NRCS Code (550/512)

- Provides abundant native or introduced forages for livestock and wildlife use
- Promotes improved water quality



Fort Hood Rangeland Re-vegetation Project

# Residue Management

---

NRCS Code (345, 329, 344)

- Mulch till, No till, Ridge till
- Maintain plant residue in the field to reduce erosion
- Also provides food and habitat for wildlife
- Promotes improved water quality and increases soil moisture



NRCS Photo

# Restoration and Management of Declining Habitats

---

NRCS Code (643)

- Restore or conserve rare or declining vegetative communities
- Protects native plant communities
- Promotes improved wildlife habitat



NRCS Photo



# Riparian Forest Buffer

---

NRCS Code (391)

- Reduces nonpoint source pollution transport and prevents floodplain erosion
- Provides shade and plant material for improved creek habitat
- Provides wildlife habitat and corridors



NRCS Photo

# Riparian Herbaceous Cover

---

NRCS Code (390)

- Reduces nonpoint source pollutant transport and erosion
- Stabilizes stream banks
- Promotes improved water quality



NRCS Photo

# Roof Runoff Structure

---

NRCS Code (558)

- Collects and transports precipitation from a roof
- Reduces runoff and erosion
- Promotes improved water quality
- Provides additional source of water for livestock and wildlife

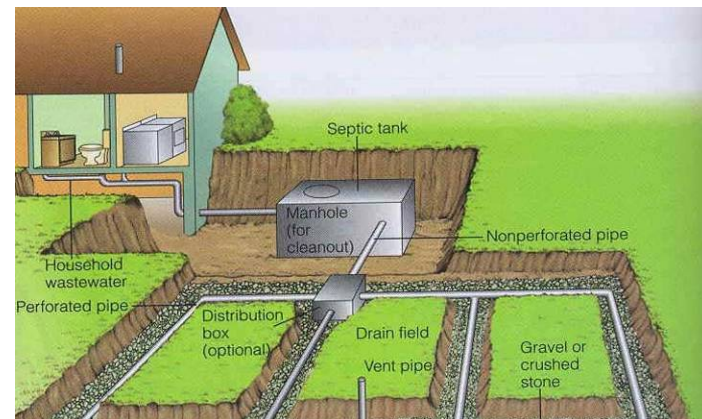


TWRI Photo

# Septic System Maintenance/Upgrade

- Evaluate current system for proper functioning
- Perform routine maintenance
- Replace system if needed
- Promotes improved water quality

[www.pumper.com](http://www.pumper.com)



<http://oceanworld.tamu.edu>



# Shade Structures

---

- Provides shade in areas that typically do not have it
- Attracts animals away from riparian areas
- Can be used in conjunction with water and supplement feeding
- Promotes improved water quality

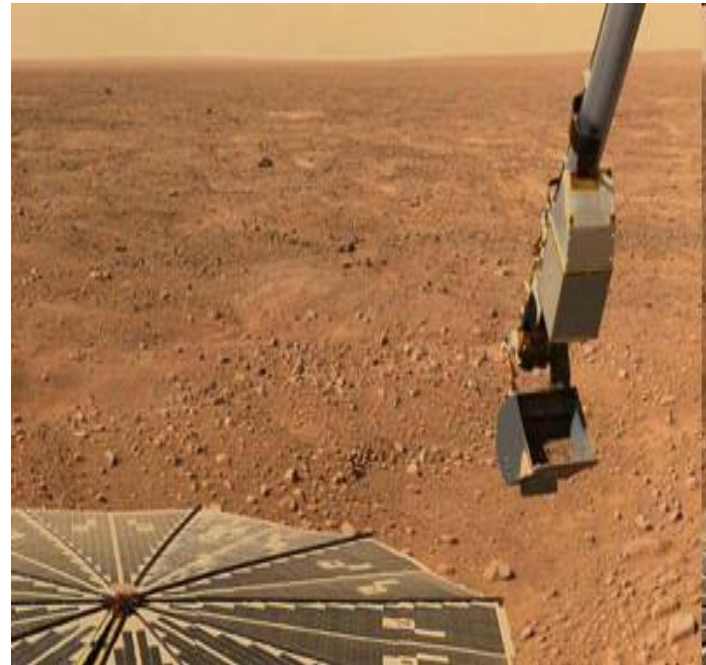


NRCS Photo

# Soil Testing

---

- Provides information on needed soil nutrients
- Aids in preventing over application of nutrients
- Promotes improved water quality
- Keeps your pocket book healthier too!



Credit: Phoenix Mission Team/[NASA](#)/JPL-Caltech/U. Arizona/Texas A&M University

# Stream Crossing

---

NRCS Code (578)

- Provides a stream crossing with a hard bottom
- Reduces streambed disturbance
- Promotes improved water quality



NRCS Photo

# Strip Cropping

---

NRCS Code (585)

- Reduces erosion and nonpoint pollution transport
- Conducted with the contour of the land
- Promotes improved water quality



NRCS Photo



# Supplemental Feeding Locations

- Moves livestock away from the creek
- Reduces time spent near creek
- Promotes improved water quality



NRCS Photo

# Terraces

---

NRCS Code (600A, B, or C)

- Reduces soil erosion and nonpoint source pollution runoff
- Retains water in the field increasing soil moisture
- Promotes improved water quality



NRCS Photo

# Upland Wildlife Habitat Management

NRCS Code (645)

- Manage upland habitat for wildlife uses
- Increases food and cover for wildlife
- Healthy ground cover promotes improved water quality



NRCS Photo

# Vegetative Barrier

---

NRCS Code (601)

- Permanent stand of stiff, dense vegetation
- Situated across flow paths to reduce erosion
- Promotes improved water quality



NRCS Photo



# Water Well

---

NRCS Code (642)

- Provides additional source of water
- Aids in relocating livestock and wildlife away from the creek
- Promotes improved water quality



NRCS Photo

# Watering Facility

---

NRCS Code (614)

- Provides water for livestock and wildlife away from the creek
- When paired with shade, this creates a natural loafing area
- Reduces creek pollution by decreasing the amount of time animals spend there
- Promotes improved water quality



NRCS Photo

# Wetland Wildlife Habitat Management

---

NRCS Code (644)

- Retain, develop or enhance wetland habitat for wildlife
- Provides critical habitat
- Promotes improved water quality thru the wetlands' natural filtering ability



Buck Creek Winter 2006

# Wildlife Watering Facility

---

NRCS Code (648)

- Non-structured water facility
- Expands suitable habitat for wildlife
- Promotes improved water quality by reducing their time near the creek



Wildlife Watering Facility near Buck Creek



# What do You Think?

---

- Please fill out the BMP sheet provided with a



or



= you think this practice could be used to benefit the watershed



= you think this practice would not be beneficial to the watershed

# Next Meeting

---



Buck Creek Spring 2006

- January or February
- Tuesday or Thursday Evening at 6:30?
- Wellington?



# Questions?

<http://twri.tamu.edu/buckcreek/>

**Lets Go Home!**



Lucas Gregory  
979-845-7869