

Grand Lake

Watershed Demonstration and Education Project

The Grand Lake Watershed Implementation Project focused on educating citizens on ways to reduce nonpoint source (NPS) runoff through demonstration, training, and volunteer monitoring. The Grand Lake watershed is located in four states and spans a 10,298 square mile area. The lake and streams in the watershed are impaired by nutrients, sediment, and fecal bacteria.

Background:

1995: Clean Lakes Study determines that **algae blooms and low dissolved oxygen** in Grand Lake (water supply for several communities) are being caused by **excess phosphorus**. The likely nonpoint sources (NPS) of this phosphorus are agricultural practices and residential development.

2000: USGS study discovers **fecal bacteria in both surface and groundwater** in the Honey Creek watershed. Much of the bacteria was found to be from horses and cattle, but human and pet wastes were also sources.

2002: Grand Lake and several streams in the Honey Creek watershed are **placed on the state's list of impaired waters due to pathogens, low dissolved oxygen, sulfate, TDS, chloride, and unknown causes** (based on poor fish collection).

2004: OCC begins an education and demonstration project in the Grand Lake watershed. Project concluded in 2008.



Bio-filter rain garden near Grove



Cleora School
Outdoor Classroom Pavilion



Project Planning:

Objectives: To demonstrate practices and educate local citizens about NPS pollution reduction in developed areas; to delineate areas of high pollution potential; to promote collaboration with the three other states toward improving the water quality of the entire watershed; and to expand current volunteer-based monitoring efforts.

Funded through an EPA Clean Water Act, Section 319 grant. A total of **\$2,115,705** was spent in the Grand Lake Project. Funding by source: \$846,282 State Funds
\$1,269,423 Federal Funds

Project Implementation:

- ◆ The Oklahoma portion of the **watershed** was **analyzed using computer models** to find the “hotspot” areas or zones likely to contribute most significantly to NPS pollution. These areas will be targeted for implementation of Best Management Practices in the future.
- ◆ Constructed 8 **bio-retention cells (rain gardens)** that capture and filter polluted runoff in prominent locations around Grove, OK.
- ◆ Improved the **Cleora School Outdoor Classroom** with construction of:
 - ◇ Outdoor pavilion (overlooking Grand Lake)
 - ◇ Deck overlooking a pond
 - ◇ Gravel trails and educational signage
 - ◇ Rain garden
- ◆ Educated citizens at the **Nutrient Management Conference** in 2008.
- ◆ Educated locals and trained professionals in the **whole soil profile** method of septic system location and sizing through **5-Day Soil Profile Courses**.
- ◆ Developed and maintained a **nutrient management garden** at the Grand Lake Visitor Center highlighting a variety of environmentally friendly lawn practices and native plants.
- ◆ Held 2 **Earth Day Celebrations** and **many other educational events** about water quality.
- ◆ Expanded **stream and lake monitoring efforts** with Blue Thumb and Water Watch Program volunteers.
- ◆ Created and updated **project website** <http://cleargrand.glaok.com>
- ◆ Completed the **Grand Lake Watershed Plan** in cooperation with the Grand Lake Watershed Alliance Foundation, which includes citizens from all four states. This plan will be used as an opportunity for input and coordination of future watershed management efforts.

Bio-retention rain garden



Nutrient management conference



Whole soil profile course



Additional Work in the Watershed:

Honey Creek Watershed Implementation Project

Honey Creek is a subwatershed in the Grand Lake watershed.

The Honey Creek Implementation Project began in 2006 in the Oklahoma portion of the Grand Lake Watershed. The project is currently working with landowners on a cost-share basis to install BMPs that reduce NPS pollution. As of September 2008, a total of 13,814 acres in Oklahoma are under contract to participate in BMP implementation. The Honey Creek Watershed Implementation Project will continue through September 2010 and may serve as a model for implementation in the larger Grand Lake watershed.

Cleora School Outdoor Classroom Improvements



Bio-retention Rain Garden at Grand Lake Visitor Center



Blue Thumb Volunteers



For additional Information, contact:
Shanon Phillips, Acting Director
Water Quality Division
 (405) 522-4500

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