

## lake granbury water quality

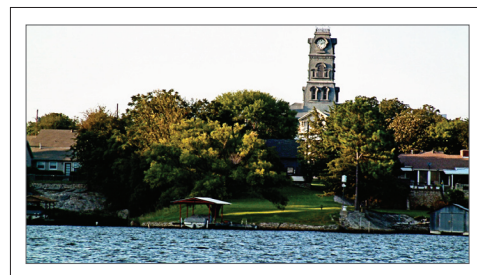
[lakegranbury.tamu.edu](http://lakegranbury.tamu.edu)

**Lake Granbury is a popular tourist attraction and critical water supply for North Texas. In recent years, toxic blooms of golden algae have caused fish kills, and Escherichia coli bacteria have invaded some of the lake's coves, threatening the lake's water quality.**

Lake Granbury provides water for more than 250,000 people in more than 15 cities. It is also the source of cooling water for a natural gas-fired steam electric power plant and the Comanche Peak nuclear power plant. In addition to municipal and industrial uses, the lake is a recreation haven for local water enthusiasts.

In recent years, golden algae and fecal coliform bacteria have threatened the lake's water quality. Golden algae blooms have caused a number of fish kills in Lake Granbury, resulting in substantial economic and biological losses. In addition, recent studies by the Brazos River Authority (BRA) have detected contamination of fecal coliform bacteria in several areas of the lake, primarily in coves with poor water circulation.

The Texas Water Resources Institute currently administers two projects that aim to improve the water quality of Lake Granbury. Through the **Improve Water Quality in Hood County** project, funded by the U.S. Department of Agriculture's Natural Resources Conservation Service, Texas AgriLife Extension Service staff members have developed education programs to help landowners, homeowners, businesses and the city of Granbury reduce nonpoint source pollution. In the **Testing Approaches to Golden Algae Control: In-Lake Mesocosm Experiments** project, funded by the U.S. Army Corps of Engineers and in previous projects funded by the U.S. Department of Energy and Texas Parks and Wildlife Department (TPWD), scientists from three universities are investigating golden algae (*P. parvum*), its explosive growth and its deadly toxins. In a third project, BRA is working with the Texas Commission on Environmental Quality (TCEQ) and a consortium of local entities and federal and state agencies to develop and implement an integrated watershed protection plan designed to reduce bacterial contamination.



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## Improve Water Quality in Hood County

### Objectives

- Work with BRA, TCEQ and local stakeholders as they develop a watershed protection plan for Lake Granbury
- Hold public meetings to educate stakeholders and clients within the watershed about water quality and its protection
- Provide public educational programs to help achieve improved water quality
- Conduct training events on proper operation and maintenance of on-site wastewater treatment systems (septic systems) and collective facilities

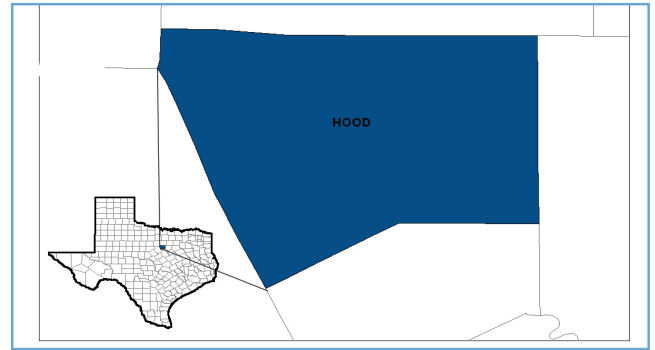
## Testing Approaches to Golden Algae Control

### Objectives

- Work with TPWD, Baylor University and the University of Texas at Arlington to investigate linkages between water conditions, nutrients, pH and ammonia levels, cyanobacteria and golden algal blooms
- Continue model development that will produce a 1-D spatially explicit, time-dependent numerical model focused on *P. parvum* demographics in Texas reservoirs
- Test effectiveness of various approaches to control toxic *P. parvum* algal blooms
- Provide an understanding of how *P. parvum* populations respond to direct intervention

### Accomplishments

- Cooperated with BRA and TCEQ in developing a watershed protection plan for the Lake Granbury Watershed
- Produced a series of water quality fact sheets about specific water quality issues in the region, namely, nutrient and sediment loadings, bacteria, urban and agricultural nonpoint sources and landscape chemicals



- Implemented rainwater harvesting demonstrations to increase public understanding of the connection between rainfall runoff and contaminant transport to the lake
- Increased knowledge of practitioners in the on-site wastewater treatment industry through delivery of wastewater treatment courses
- Conducted experiments to investigate the linkages between water quality and algal blooms, and determine the effectiveness of management options, which may help prevent or disrupt blooms of toxic golden algae

### Collaborators

- Texas Water Resources Institute
- Texas AgriLife Research
- Texas AgriLife Extension Service
- Texas Commission on Environmental Quality
- Brazos River Authority
- Texas Parks and Wildlife Department
- Baylor University
- University of Texas at Arlington
- Hood County, Texas

### Funding Agencies

- U.S. Army Corps of Engineers
- USDA Natural Resources Conservation Service



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