NONPOINT SOURCE SUCCESS STORY

Texas

Implementing Conservation Practices and Conducting Outreach Improves Water Quality in the Navasota River Watershed

Waterbodies Improved

The Navasota River is one of many rural water bodies listed as impaired on the Clean Water Act (CWA) section 303(d) list due to elevated levels of *Escherichia coli* bacteria. The Navasota River was first listed in 2002; Cedar Creek, a tributary of the Navasota River, was listed in 2004. The Texas State Soil and Water Conservation Board (TSSWCB) used CWA section 319(h) funding and worked with many local partners to conduct watershed education events and to develop a watershed protection plan (WPP) to address the impairments and other water quality concerns. Water quality has improved through these efforts, allowing assessment units (AUs) in the Navasota River (1209_02 and 1209_03) and Cedar Creek (AU 1209G) to be removed from the state's list of impaired waters.

Problem

The Navasota River is a subwatershed within the Brazos River watershed in east central Texas; it empties into the Brazos River in Grimes County (Figure 1). The majority of the watershed land use is rural and is used for cattle and poultry operations or recreational/wildlife uses. The Bryan-College Station area in Brazos County and small towns in neighboring counties are the primary non-rural land uses.

Water quality data collected in the Navasota River from 1995 to 2000 and in Cedar Creek from 1995 to 2002 showed that fecal coliform bacteria and *E. Coli* levels exceeded the bacteria water quality standard for contact recreation. As a result, TCEQ added the river and creek to the 2002 and 2004 CWA section 303(d) lists of impaired waters for not supporting the primary contact recreation use.

Story Highlights

Since 2007, the TSSWCB has been partnering with local soil and water conservation districts (SWCDs), Texas A&M AgriLife Extension, Texas Water Resources Institute (TWRI) and Texas A&M AgriLife Research to host numerous educational and outreach events in the Navasota River watershed for stakeholders to learn about their local water quality issues. These programs focused on water quality, feral hog management, riparian area protection, livestock management, septic systems management and protecting water wells. Field days to demonstrate best management practices to landowners were also held with some of the events.

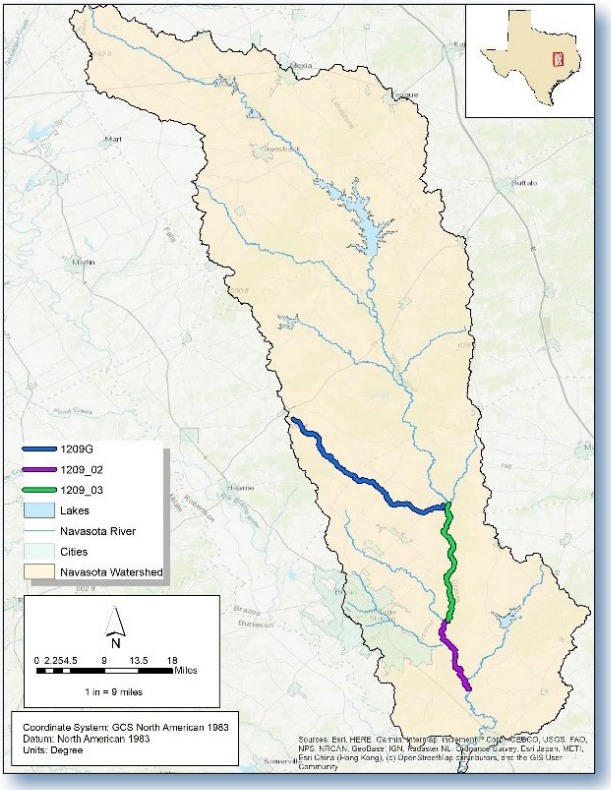

Figure 1. The Navasota River watershed flows through east central Texas.

In 2013, the TSSWCB and TWRI began working with stakeholders to develop a WPP. The stakeholder group that led the WPP development consisted of concerned citizens and representatives from agricultural producers, wildlife interests, SWCDs, and city and county governments. Stakeholders worked together to identify management measures that would address the potential sources of pollution in the watershed.

The TSSWCB partnered with the Brazos County, Bedias Creek, Navasota, and Robertson County SWCDs to develop and implement six water quality management plans (WQMP) in the watershed. Most of the WQMPs were on poultry animal feeding operations that included grazing (covering over 3,666 acres). These plans included alternative water sources, prescribed grazing, cross-fencing, animal mortality facilities, composting facilities, nutrient management and waste utilization. In addition, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) worked with landowners in both subwatersheds to implement conservation practices on over 4,200 acres using Environmental Quality Incentives Program funding. The conservation practices implemented included prescribed grazing, grass and range planting, nutrient management, animal mortality facilities, composting facilities, conservation cover, cover crops, cross fence, livestock pipeline, water troughs and ponds.

Results

Data show that the long-term *E. coli* geometric means meet the state water quality standard for contact recreation in portions of the Navasota River in 2012 (AU 1209_02; 101.51 colony-forming units [cfu]/100 milliliters [mL] for data collected in 2003–2010) and 2018 (AU 1209_03; 54.48 cfu/100 mL for data collected in 2009–2016) as well as in Cedar Creek in 2014 (AU 1209G; 117.05 cfu/100 mL for data collected in 2005–2012). Consequently, portions of the Navasota River and Cedar Creek were removed from the 303(d) list in the 2012, 2014 and 2018 in the *Texas Integrated Report of Surface Water Quality*.

The success of this effort can be attributed to increased stakeholder awareness due to educational programs focused on improving water quality, the watershed planning process, and conservation practices being implemented in the watershed.

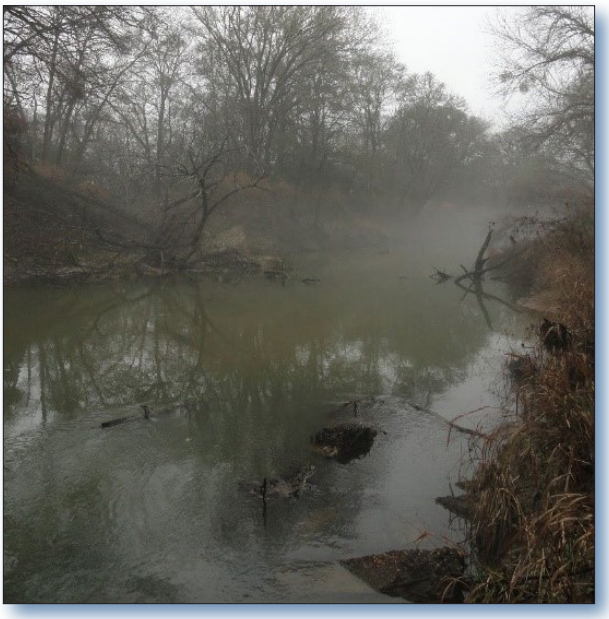

Figure 2. Monitoring will continue to be conducted to track water quality in the Navasota River.

Conservation practices continue to be implemented in the watershed since the delisting of the Navasota River and Cedar Creek. Water quality monitoring continues to track and measure interim progress to implement the WPP and ensure this restoration effort remains a success (Figure 2).

Partners and Funding

Over $28,000 in U.S. Environmental Protection Agency CWA section 319 funds (provided by the TSSWCB), combined with more than $250,000 in nonfederal funds from TSSWCB, TWRI, Texas A&M AgriLife Extension and Texas A&M AgriLife Research supported the delivery of the educational programs and development of the WPP.

The Brazos County, Bedias Creek, Navasota, and Robertson County SWCDs worked with landowners to voluntarily implement conservation practices to reduce the impact of livestock and poultry operations in the watershed. The TSSWCB and the NRCS worked through the SWCDs to provide approximately $34,250 in state funding and over $327,000 in federal Farm Bill funding to landowners as financial incentives to implement conservation practices and provide technical assistance in the Navasota River watershed.

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