NONPOINT SOURCE SUCCESS STORY

Georgia

Septic System Replacements Leading to Water Quality Improvements in Horsepen Creek

Waterbody Improved

Because of elevated fecal coliform levels, Horsepen Creek was added to the Clean Water Act (CWA) section 303(d) list of impaired waters in 1998. In 2011, partners began collaborating to identify and remediate the key source of impairment: failing septic systems. Phase 1 of the remediation project (2011–2013) included installing an advanced treatment system in a public park as a demonstration site and educating homeowners about septic systems and their maintenance. In Phase 2 (2017), failing septic systems were replaced, supplemented by continued education and outreach efforts and water quality monitoring. As a result of the outreach and repair/replacement campaign, water quality has been improving in Horsepen Creek.

Problem

Horsepen Creek is within the St. Marys River Basin in southeastern Georgia (Figure 1). Georgia added a 4-mile-long segment of Horsepen Creek to the CWA section 303(d) list of impaired waters in 1998 because of elevated fecal coliform levels. In its *2006 Total Maximum Daily Load (TMDL) Evaluation for Three Stream Segments in the St. Marys River Basin for Fecal Coliform*, Georgia lists Horsepen Creek and two other streams (Corn House and Spanish creeks) as water quality limited due to fecal coliform. The TMDL notes that fecal coliform loads in Horsepen Creek would need to be reduced by 67 percent to achieve water quality standards. The TMDL lists failing septic systems as a major source of the impairment. There is limited urban development, no commercial agricultural operations and no application of agricultural manure in the Horsepen Creek watershed.

Camden County originally identified 90 properties as having a septic tank; however, an analysis conducted in 2011 (as part of Phase 1 of the remediation effort) indicated the number is approximately 240, many of which are located immediately adjacent to drainage ditches that discharge directly to Horsepen Creek. Camden County assumed that homes nearest the creek and river are older and more at risk for septic failures. In addition, those systems closest to the surface water bodies were likely contributing the highest loads.

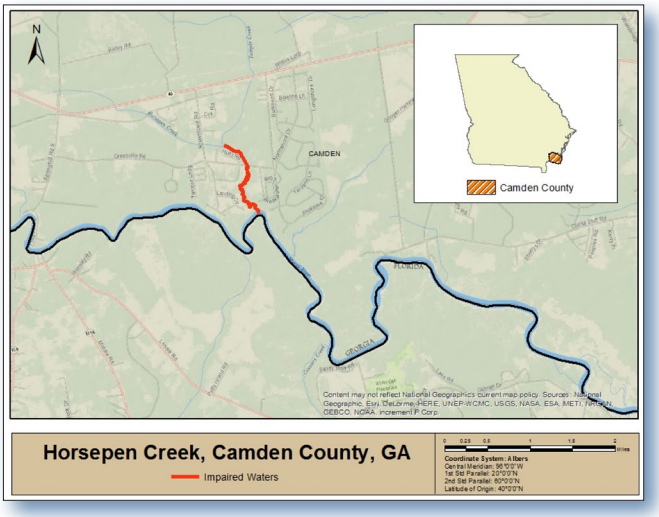

Figure 1. Horsepen Creek is in southeastern Georgia.

Story Highlights

A coalition of community partners worked together to reduce the impacts of failing septic systems on the water quality in Horsepen Creek and the St. Marys River. In Fiscal Year 2011, the University of Georgia (UGA) and the St. Marys River Management Committee were awarded a Nonpoint Source Implementation Grant to target the septic contributions by assessing the relative impacts these sources have on bacterial levels in Horsepen Creek and by beginning to develop a strategy to reduce this load.

Phase 1 (2011–2013) included educating homeowners about the impacts of failing septic systems and the proper procedure for maintaining septic systems on their property. Materials were distributed to 90 households originally identified in the Horsepen Creek watershed as having septic tanks. Phase 1 included a septic system investigation that consisted of reviewing county septic records, conducting interviews with local residents, and inspecting 16 septic systems in the Horsepen Creek Watershed. UGA also installed a demonstration project (an advanced treatment system) at Temple Landing Park.

During Phase 2 of the effort, starting in December 2017, Camden County replaced 18 failing residential septic systems with technologies that meet or exceed current minimum standards such as sand filter systems, mounded drainfields and dosing pumps. The Camden County Department of Environmental Health evaluated all the systems identified for replacement and then issued permits where replacements were needed. Camden County also implemented a local ordinance requiring scheduled inspections and pump-outs of septic systems, which allowed the county's Department of Public Health to create a data log for all the county's septic systems. The inspection process is triggered by a change in property ownership or occupancy. The ordinance states that any real estate transaction of developed property requires the septic system be inspected. Phase 2 continued the education and outreach efforts, and it expanded water quality monitoring to determine the impact of these efforts.

Results

Once Phase 2 project activities began, water quality monitoring sampling started showing improvement when compared to the established baseline of bacteria believed to be associated with septic failures. Pollutant levels dropped after system pump-outs and system replacements occurred. Over time, the 2018 monthly mean bacterial counts dropped 92 percent (Figure 2). This result proved the effectiveness of the program and justified further maintenance and operations measures. Additionally, the water testing conducted by the

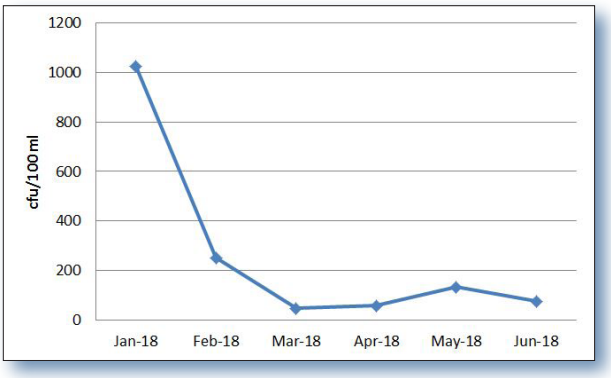

Figure 2. Horsepen Creek 2018 monthly mean bacterial counts (cfu = colony forming units).

St. Marys Riverkeeper in Phase 2 found that 30 percent of the inspected systems were in good working order.

Replacing failing septic systems is only part of the success; in addition, an educational campaign informing homeowners of the importance of and procedure for maintaining septic systems on their property was developed. Materials were distributed to the originally identified 90 households in the Horsepen Creek watershed and were made available for the Camden County Health Department to distribute in other parts of the county.

Partners and Funding

The CWA section 319 program provided $304,118 and project partners provided $254,186 in match over both project phases. The St. Marys Riverkeeper provided in-kind services worth $6,900 for outreach and water quality testing. The Camden County Board of Commissioners invested $150,000 in personnel and material costs. The UGA Carl Vinson Institute designed and conducted public education and outreach activities and provided technical support for the design and implementation of Phase 1 of this project. Other groups involved with the project included Camden County Environmental Health, Camden County Public Service Authority, Georgia Department of Community Affairs, and the St. Marys River Management Committee.

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