



NONPOINT SOURCE SUCCESS STORY

South Carolina

Urban Retrofit Leads to Reopening of Shellfish Harvesting Waters in Battery Creek

Waterbody Improved

The Battery Creek watershed in Beaufort County contains considerable shellfish growing habitat, much of which has been restricted for harvesting for over a decade due to fecal coliform contamination from stormwater runoff. The City of Beaufort completed the Battery Creek Watershed Management Plan in 2013 and began a subsequent recreational pond rehabilitation and retrofit project in 2014. The project was completed in 2017 and has contributed to water quality improvements that prompted the reopening of these waters for the upcoming shellfish harvesting season beginning October 1, 2020.

Problem

The 9,874-acre Battery Creek watershed (hydrologic unit code 030502080501) includes portions of the city of Beaufort, Beaufort County, and town of Port Royal. The creek is a tidal estuary that ultimately connects with the Beaufort River and Port Royal Sound along the southeastern South Carolina coast (Figure 1). Battery Creek's classified use is shellfish harvesting (SFH), which has been restricted for over a decade due to elevated fecal coliform levels. The project area contains substantial urban and impervious surface area (including a major highway intersection) that receives no freshwater inputs other than those from stormwater runoff from the developed watershed surrounding it. Land uses include commercial, residential, transportation and forest, which have the potential to produce significant amounts of fecal coliform-laden stormwater inputs to the waterway.

The South Carolina Department of Health and Environmental Control (SCDHEC) Shellfish Program conducts monthly water quality monitoring at shellfish stations 15-28, 15-27, 15-26, 15-25, 15-21 and 15-10 in Battery Creek. South Carolina's fecal coliform standard for shellfish harvesting water states that the 90th percentile of available samples must be below 43 most probable number (MPN) per 100 milliliters (mL). These six shellfish stations, located downstream of the project site, have not reliably met standards for shellfish harvesting based on annual shellfish sanitary surveys. This has resulted in long-term closures for much of Battery Creek.

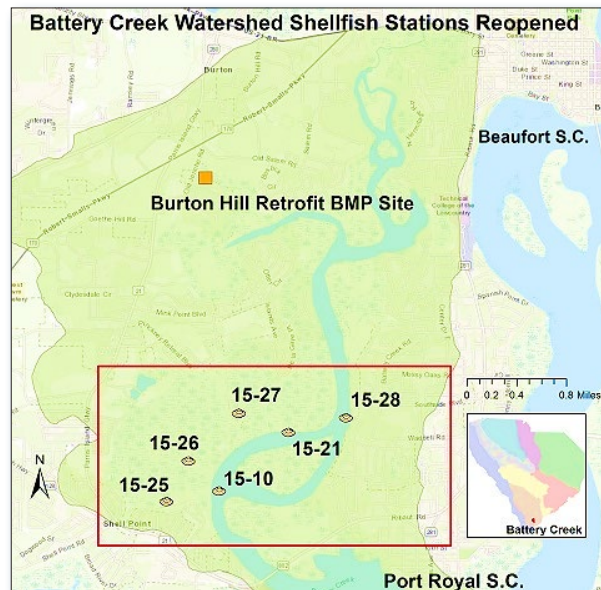


Figure 1. Battery Creek supports shellfish habitat in southeastern South Carolina.

Story Highlights

In 2014, Beaufort County and the City of Beaufort partnered on the Burton Hill M2 Regional Water Quality Retrofit project, which included the repair and improvement of an existing private recreational pond that was recognized as a good catch basin for stormwater runoff. The project involved collecting runoff from a 470-acre sub-basin of Battery Creek and diverting the flow toward the pond. Here, attenuation

of the stormwater now allows ultraviolet light to kill off bacteria and for sediment-delivered bacteria to settle out of the water column (Figure 2).

The preliminary estimate of fecal coliform load reductions for this project, in combination with other proposed best management practice (BMP) retrofits in the Battery Creek Watershed Management Plan, was 12 percent. Additionally, there was an expected freshwater reduction of approximately 4 percent. Shortly after construction, the area experienced a significant and intense rainfall event with more than 4 inches of rainfall within the watershed over a 36-hour period during an extremely high tide cycle. The pond was evaluated during and after the storm event, and was found to perform as designed, with no water overtopping the banks. The project was promoted to the public and stormwater personnel through subsequent professional workshops and media covered events.



Figure 2. The stormwater pond includes an outlet drain and an emergency overflow structure.

Results

All shellfish monitoring sites in Battery Creek continued to be monitored monthly after project completion, and data showed that fecal coliform concentrations have improved in most areas of the creek. At the six formerly restricted stations, fecal coliform standards have been achieved, resulting in the reclassification from restricted to approved for shellfish harvesting (Table 1). This will allow shellfish harvesting to occur in these 948 acres of estuarine waters beginning October 1, 2020.

Partners and Funding

The successful reduction and treatment of stormwater runoff was achieved by collaboration between U.S. Environmental Protection Agency (EPA), SCDHEC, The City of Beaufort, Beaufort County, and a local property

Table 1. Data (90th percentiles) show that fecal coliform levels have declined over time and are now meeting¹ the water quality standard.

Monitoring Station #	2019	2018	2017	2016
15-21	17	24	26	35
15-25	39	76	105	111
15-26	24	46	55	67
15-27	25	60	60	63
15-28	21	37	41	45
15-10	33	30	36	17

¹Green values are meeting the standard of 43 MPN/100 mL

owner. The City and County agreed to partner on the design, permitting and construction of the Burton Hill M2 Regional Water Quality Retrofit project. EPA and SCDHEC approved funding of \$350,000 from an EPA Clean Water Act section 319 grant. The City of Beaufort and Beaufort County provided an additional \$285,686 funded through a stormwater utility fee.



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