



NONPOINT SOURCE SUCCESS STORY

Massachusetts

Eliminating Stormwater Runoff Restores Shellfishing Area in Fisherman's Cove

Waterbody Improved

Fisherman's Cove, located within Butler Cove in Bourne, Massachusetts, had been closed to the harvesting of shellfish for decades due to polluted stormwater runoff. A single stormwater outfall pipe drained stormwater from 1.5 acres of impervious surface, including a large parking lot and building, directly into Fisherman's Cove, which resulted in closed shellfish areas. Project partners began work in 2013 to construct best management practices (BMPs), including infiltration biofilters and other low impact development techniques, to remediate stormwater inputs to the cove. As a result of this project, no water flow was observed from the outfall pipe, even after heavy rains. Based on these findings, the closed area was reclassified to "approved" and opened to shellfishing on December 3, 2014.

Problem

Butler Cove (MA95-77), in the Buzzards Bay watershed, is due south of Buttermilk Bay, about 1,000 feet west over land from the mouth of the Cape Cod Canal where it meets Buzzards Bay (Figure 1). The surrounding watershed is predominantly residential with local and state highways in the same watershed. State Route 6 roughly follows the northern border of the cove.

During a shoreline sanitary survey in 1990, water samples taken from the end of a storm drain pipe between numbers 11 and 19 Buttermilk Way revealed elevated fecal coliform levels. The town of Bourne declared the area prohibited to shellfishing. The closed area is populated with both soft-shell clams and quahogs (hard-shell clams). Butler Cove was also listed on the 2012 Clean Water Act (CWA) section 303(d) list of impaired waters for estuarine bioassessments due to the poor health of eelgrass beds.

Project Highlights

The focus of this project was to construct BMPs to remediate stormwater inputs and bacteria discharges associated with one stormwater outfall pipe to Fisherman's Cove (Figure 2). In 2011 the Buzzards Bay National Estuary Program committed funds to the town of Bourne for stormwater design services. Through a request for proposals, Green Seal Environmental, Inc., was selected to provide the services. In addition, the town of Bourne sought

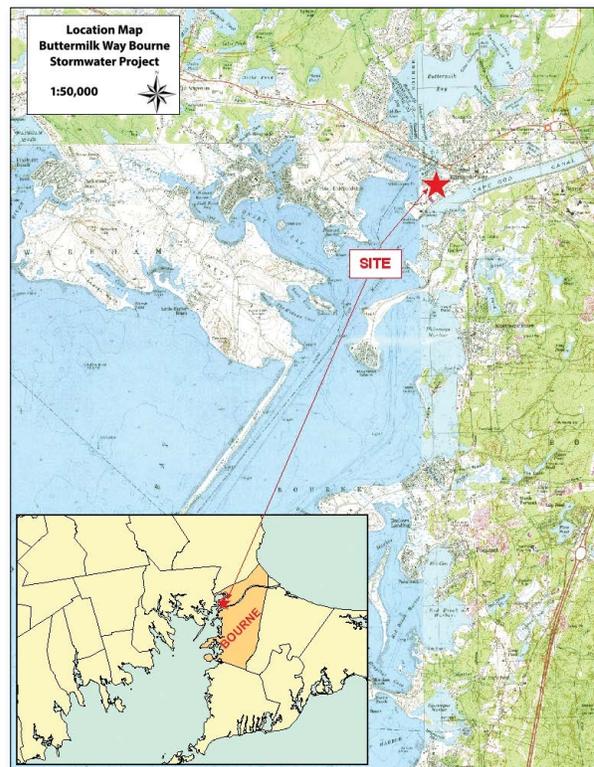


Figure 1. The Butler Cove Stormwater Remediation Project was implemented near Buzzards Bay.

construction funds from Massachusetts Coastal Zone Management's Coastal Pollutant Remediation (CZM-CPR) program. During 2013 and 2014, infiltration biofilters and various other low impact development



Figure 2. Location of stormwater outfall pipe to Fisherman's Cove in Bourne, Massachusetts.

techniques were constructed and the entire project was completed in June 2014. The BMPs capture flow from area roadways and direct it to settling chambers, which then drain into a set of subsurface infiltration chambers within a right-of-way between numbers 15 and 17 Buttermilk Way before discharging to the Cove. Runoff from a portion of the nearby parking lot (owned by the Massachusetts Maritime Academy, a state university) enters a catch basin and settling tank that provide pretreatment for nine subsurface infiltration chambers. System overflows from the parking lot BMPs are then directed to the drainage system and BMPs on Buttermilk Way.

Results

After completion in 2014, the Massachusetts Division of Marine Fisheries evaluated the effects of the remediation project on the coastal waters. On numerous occasions, and after heavy rains, no flow was observed from the stormwater drain pipe (Figure 3). The infiltration capacity of the system was so great that even after a 5.9-inch rainstorm in July 2014, no stormwater was discharged from the pipe on the beach. Sand was



Figure 3. This stormwater outfall pipe no longer discharges to Fisherman's Cove after construction of stormwater BMPs.

also observed in the pipe, which was obviously not moved due to the absence of flow. Based on these findings, in December 2014 the Massachusetts Division of Marine Fisheries re-opened the 1.2-acre shellfish area in front of the discharge. While the opening was modest in size, the project clearly illustrates the benefits of the installation of stormwater treatment systems.

Partners and Funding

Partners included the town of Bourne, the Massachusetts CZM-CPR program, Massachusetts Department of Environmental Protection, Massachusetts Maritime Academy, Buzzards Bay National Estuary Program, Massachusetts Division of Marine Fisheries, and Green Seal Environmental, Inc.

Project partners contributed over \$225,000 for the project. In 2011 a Buzzards Bay National Estuary Program grant of \$20,000 supported design work. In 2013 the Massachusetts CZM-CPR program committed \$24,013 to the town of Bourne to start the work on the town's portion of the project. In the subsequent year (Phase 2), work proceeded on the parking lot at Massachusetts Maritime Academy with support from the Academy, the town of Bourne (\$37,253), and Massachusetts CZM-CPR (\$149,013).



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