

# Cordwood Landing Bioretention



Prior to construction the dirt landing frequently eroded, pushing sediment and bacteria into the bays contaminating nearby shellfishing areas. The existing space was also dominated by invasive plants.



Improvements were made to an existing stormwater system upgradient adding concrete inverted dips to direct more flow from the road into the system and permeable paver forebays for easier maintenance.



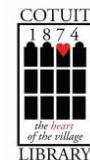
An inverted dip now directs flow to the new bioretention at the end of the landing, and porous pavers were installed down to the water to reduce erosion and improve water access.



Construction was completed in spring of 2019. Invasives were removed, the parking space shifted over, and the bioretention garden planted out with native vegetation.

## CORDWOOD LANDING BIORETENTION IMPACT REPORT

Receiving Water: Cotuit Bay  
Total Drainage Area: 1.4 Acres  
32% Impervious Surface  
Estimated Pollutant Removal:  
100% Nitrogen Removal  
99.8% Bacteria Removal



The Three Bays Stormwater project was funded by the U.S. Environmental Protection Agency (EPA) Southeast New England Program (SNEP) Watershed Grants through collaboration with Restore America's Estuaries (RAE) and the Commonwealth of Massachusetts Office of Coastal Zone Management (CZM) Coastal Pollutant Remediation Grants Program. The views expressed here have not been reviewed or endorsed by EPA, RAE, or CZM.



# Prince Cove Sand Filter



Located adjacent to the Prince Cove Marina, land owned by the Barnstable Land Trust offered an opportunity to address a problem of sediment buildup and treat polluted runoff from the marina parking and roadway.



A sand filter with underdrain was constructed in early 2019 as part of the first round of construction projects completed.



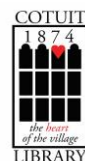
A large forebay lined with porous pavers was installed to capture sediment for easy removal with the sand filter constructed behind the fence for treatment of stormwater.



The final landscaping transformed the area from a bare fertilized lawn to a colorful meadow helping to treat stormwater and support our local pollinators.

## PRINCE COVE SAND FILTER IMPACT REPORT

Receiving Water: Prince Cove  
Total Drainage Area: 1.8 Acres  
39% Impervious Surface  
Estimated Pollutant Removal:  
70% Nitrogen Removal  
85.7% Bacteria Removal



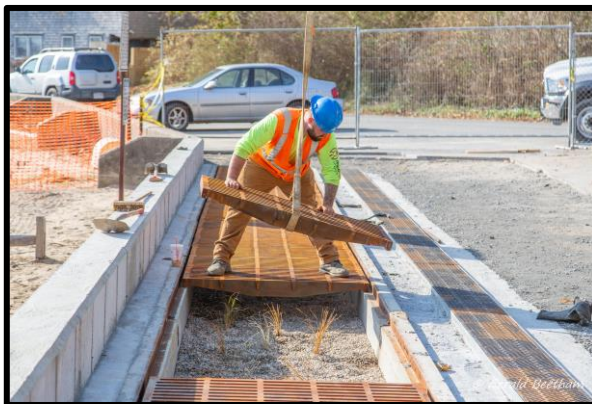
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# Ropes Beach Gravel Wetland



In 2019, a gravel wetland was constructed with a series of pre-cast concrete chambers installed below ground to minimize the space used for this system.



Salt marsh grasses were planted and protected with an overlaid grate to allow the public to walk directly over the system to the beach without damaging the plants.



Overflow from big storms flows to a series of infiltrating steps that also serve to improve pedestrian access down to the water.

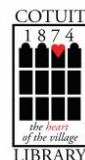


This beach is popular for swimming and boating. The system was designed to preserve parking spaces, direct access, and unobstructed ocean views.

## ROPES BEACH GRAVEL WETLAND IMPACT REPORT

Receiving Waters: Cotuit Bay  
Total Drainage Area: 0.23 Acres

50% Impervious Surface  
Estimated Pollutant Removal Swale:  
68% Nitrogen Removal  
76% Bacteria Removal



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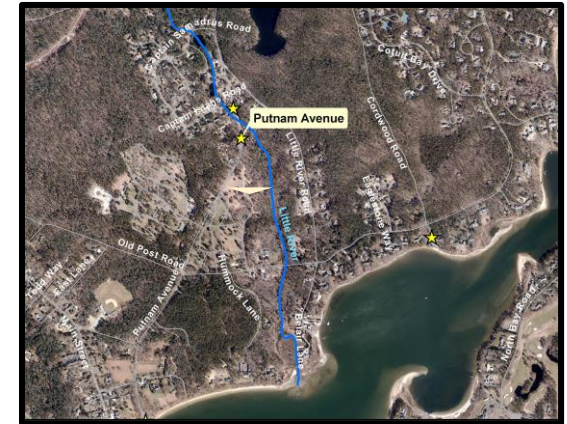
# Putnam Avenue Dry Swale and Bioretention



In 2020, a dry swale was installed along Putnam Avenue to address road runoff flowing into Little River and Cotuit Bay.



Designed for low maintenance mowing, this swale was planted primarily with grasses and was showing off its colorful blooms one year later.



## PUTNAM AVENUE BMP IMPACT REPORT

Receiving Waters: Little River to  
Cotuit Bay

Total Drainage Area: 4.1 Acres

21% Impervious Surface

Estimated Pollutant Removal Swale:

100% Nitrogen Removal

100% Bacteria Removal

Estimated Pollutant Removal

Bioretention:

32% Nitrogen Removal

55% Bacteria Removal



A smaller bioretention garden was installed along with the swale at the next intersection to treat additional runoff entering the river at this location.



The system was planted with grasses and other native plants. The rock monument was relocated to allow for access and maintenance by the neighborhood association.



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# Cotuit Library Bioretention



Constructed in 2020, this bioretention captures and removes pollution from stormwater runoff from the parking lot and portions of the library roof.



The design of this garden includes stepping stones and logs to allow people to interact with and explore the garden.



The diverse set of shade tolerant plants was paired with unique design features like decorative manhole covers to demonstrate how stormwater systems can be both functional and beautiful.



The final garden provides opportunities for ongoing outreach and education including tours for the public, rain garden workshops for homeowners, and story time with the library.

## COTUIT LIBRARY BIORETENTION IMPACT REPORT

Receiving Waters: Cotuit Bay

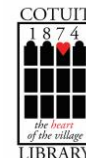
Total Drainage Area: 0.17 Acres

96% Impervious Surface

Estimated Pollutant Removal Swale:

100% Nitrogen Removal

100% Bacteria Removal



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# South County Road Water Quality Unit and Dry Swales



A water quality unit was installed in 2020 to remove sediment, trash, and other debris from road runoff before discharging to the stream.



Two dry swales with a series of check dams and basins designed for the slope of the land were constructed in 2021.



Additional stormwater runoff was directed into the swales through connection to existing catch basins across the road.



Final planting was completed in May of 2021 with grass and other native plantings for low maintenance.

## SOUTH COUNTY ROAD DRY SWALE IMPACT REPORT

Receiving Water: Stream to Warren's Cove

Total Drainage Area: 2.6 Acres

23% Impervious Surface

Estimated Pollutant Removal:

100% Nitrogen Removal

100% Bacteria Removal



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# River Road Dry Swales



A series of three small swales were constructed in the narrow right-of-way to capture and treat runoff before flowing into the Marstons Mills River.



An infiltration basin was installed along with the swales to provide additional treatment and a new manhole installed in the roadway to connect to existing stormwater infrastructure (see inset photo to the right).



Concrete curbing lines both sides of the swales, an innovative design component to fit within the limited space between the hill and underground utilities.



Final planting was completed in June of 2022 with native grasses and wildflowers for a low maintenance landscape.

**RIVER ROAD DRY  
SWALES IMPACT REPORT**  
Receiving Water: Marstons Mills  
River to North Bay  
Total Drainage Area: 1.1 Acres  
30% Impervious Surface  
Estimated Pollutant Removal:  
100% Nitrogen Removal  
100% Bacteria Removal



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