

Restoration and Reforestation



Don Dorsey, Project Manager with the Frederick County Office of Sustainability and Environmental Resources (bottom right) opens the water tap to the new demonstration gardens during the ribbon cutting ceremony at the UMD Extension Service Building in Frederick. Pictured at back from left: Rick Walter and Stephanie Mathias from the University of Maryland, Frederick County Executive Jan Gardner and OSER Manager Shannon Moore.

In 2018, Frederick County Government was awarded \$1,109,845.00 in funding from the **Maryland Chesapeake and Atlantic Coastal Bays Trust Fund** grant to assist with implementing several cost-effective capital improvement projects which will help the County in meeting its National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirements. The Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) allows Maryland to accelerate Bay restoration by focusing limited financial resources on the most efficient, cost-effective non-point source pollution control projects. Projects completed under this grant included four small-scale BMPs on existing uncontrolled impervious surfaces within the Lower Monocacy watershed, two stormwater pond BMP conversions that outfall directly to the Lower Monocacy watershed, and a multi-year reforestation program on over 200 acres designed to increase the total amount of forested area within Frederick County, including privately owned lands and public properties.

University of Maryland Extension Service

The Frederick County Extension Service site is a county-owned property located at 330 Montevue Lane in Frederick, MD and is used heavily for educational and demonstration activities by the University of Maryland Extension office and the Frederick County Master Gardeners. Dewberry Engineers Inc. was selected as the design consultant for this task and Triangle Construction was selected as the construction contractor.



University of Maryland Extension Office

The County collaborated with the Master Gardener's to select the best management practice (BMP) types and location to accommodate multiple installation influences such as underground utilities and structures, the Master Gardener's show pieces and incorporate the planned BMPs into the site usage and educational activities. The project was completed on May 25, 2019. The BMP installations include a bioretention facility within the Master Gardener's demonstration garden, two proprietary filtration and treatment tree boxes (Filterra), two rain harvesting systems for use by the Master Gardeners, a demonstration dry stream bed, and a reforestation installation down-gradient of the facility. The County received \$85,835.70 through a grant from the **Maryland Chesapeake and Atlantic Coastal Bays Trust Fund** to assist with the project. The BMPs will capture and treat stormwater runoff where none existed previously and is believed to be the best implementation strategy for dramatically increasing the water quality leaving the site and ultimately entering Carroll Creek to the west.



Dry Stream Bed

A dry stream bed weaves through the garden and will aid in the diversion of stormwater/rain tank overflow and preventing erosion.



Rain Wall

A rain harvesting system, "rain wall", was installed along the western facility exterior wall to collect roof runoff that will be utilized by the Master Gardeners in the show garden.

Two Filterra systems were installed as part of the project. These systems are designed to have a high pollutant removal rate. Stormwater will enter into the system from a curb opening and then it will be filtered through mulch and organic layers before being filtered out through a pipe system.



Filterra System

*This project uses captured rainwater to feed beautiful gardens," said **Frederick County Executive Jan Gardner**. "Eight different techniques to harvest rainfall are showcased so visitors can learn about methods that might work for them. Frederick County is leading by example with the management of stormwater runoff."*



Micro-Bioretentation (Rain Garden)

The Micro-Bioretentation (Rain Garden) will help to remove sediments and pollution, reduce runoff rates and volume, provide wildlife habitat, and replenish groundwater supply. It is composed of three layers: sand, soil, and an organic layer. Water filters through the system and is then piped through a perforated pipe to a storm drain. After a large rain event this facility will drain within 2 days.



Micro-Bioretentation during construction

The demonstration gardens are considered the first stormwater management demo project in the Mid-Atlantic region. The project will also provide educational opportunities for those who want to replicate similar projects. The completed projects will capture and treat approximately 1 acre of runoff from the facility where currently no stormwater management exists.

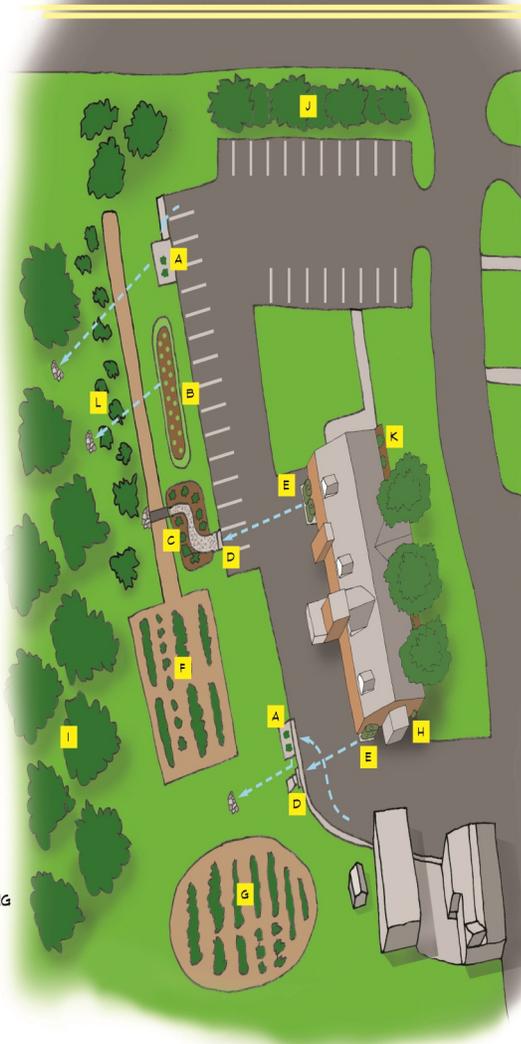


A reforestation was installed west of the Master Gardener's area between the facility and a wetland area that borders Carroll Creek.

“With the completion of the storm water management project at the UMD Extension Office, significant operational and educational enhancements have been realized for the Frederick County Master Gardener’s Demonstration Garden located there.”— Jeff Matt, Master Gardener’s Demonstration Garden Chair

OVERVIEW

- A FILTERRA
- B MICROBIORETENTION AREA
- C DRY STREAM BED
- D WATER SOURCE
- E RAIN TANK
- F GROW IT, EAT IT GARDEN
- G CHILDREN'S GARDEN
- H RAIN BARREL
- I REFORESTATION
- J NATIVE HEDGEROW
- K BUILDING FOUNDATION LANDSCAPING
- L WOODLAND EDGE



OSER Project Manager Don Dorsey talks about the rain wall system for a County Spotlight video feature.



The Frederick County Master Gardener's attend a project demonstration seminar led by Don Dorsey.

The total cost of the project was \$332,239.76. For more details on the project, visit our [story map](#)

Stormwater Pond Retrofits



Dudrow Stormwater Pond Retrofit Complete

Dudrow Business Park Pond

The Dudrow Business Park Pond is a County-owned stormwater facility located in Frederick, MD. It was built in 1998 as an extended detention dry pond for flood control and outfalls directly to the Lower Monocacy River within the Middle Potomac Watershed. The previous facility did not provide water quality to the current State standards. The Dudrow retrofit opportunity was identified through an assessment of the County-owned stormwater management facilities in 2014 by Dewberry Engineers, Inc.. After the assessment of factors such as stream use designation for the Monocacy River, terrain factors, stormwater treatment suitability and implementation feasibility the current design concept of a low and highland marsh wet pond was selected as the best practice to attain the required water quality treatment and provide habitat. Frederick County received \$133,448.70 in funding from the **Maryland Chesapeake and Atlantic Coastal Bays Trust Fund** to assist with the project.

Upland treatment controls within the immediate drainage area include grass swales for infiltration and treatment for minimal flows, though larger flows were simply directed to the pond facility. The current concept incorporating high and low land marsh areas facilitates nutrient and pollutant removal while creating the wildlife habitat to maximize restoration potential at the site. The total cost of the project was \$2,101,551.30.

BayLand Consultants & Designers, Inc. served as the design professionals for this project and utilized a variety of resources to analyze the data to determine the best design.



Dudrow Stormwater Pond Pre-Construction



Dudrow Stormwater Pond Pre-Construction

Stormwater Pond Retrofits



TransIT B Stormwater Pond Retrofit Complete

TransIT B Stormwater Pond

The **TransIT B Stormwater Pond** is a County-owned stormwater facility located at 331 Montevue Lane in Frederick, MD. The pond was originally designed and constructed in the mid-late 1990s as an extended detention dry pond, with capacity for flood control for up to a 100-year storm event. The pond was not providing water quality to the current State standards. Frederick County received \$71,950.20 in funding from the **Maryland Chesapeake and Atlantic Coastal Bays Trust Fund** to assist with the project.

Dewberry Engineers, Inc. performed a study in August 2014, which included a proposed concept design for the conversion to a sand filter with native vegetation and pretreatment forebays at the two inlets to the facility.

BayLand Consultants & Designers, Inc. served as the design professionals for this project and utilized a variety of resources to analyze the data to determine the best design.

The retrofitted design achieves water quality volume and channel protection volume treatment to the maximum extent possible and complies with the Maryland Department of Environment Embankment Retrofit design guidelines. The total cost of the project was \$160,000.00.



TransIT B Stormwater Pond Pre-Construction



TransIT B Stormwater Pond Pre-Construction

Reforestation Frederick County



Creek ReLeaf Reforestation Site

Creek ReLeaf Program

The Creek ReLeaf Program is a multi-year reforestation program assisting with the County's MS4 permit requirements, and is designed to increase the total amount of forested area within Frederick County, including privately owned lands and public properties.

Forested lands provide stormwater control, reduce temperature impacts on County streams, and increase wildlife habitat. The program provides private landowners with native trees and shrubs planted on their property, 5 years of maintenance to establish the forest stand, and payment for a permanent reforestation easement that will be placed on the planted parcel. After the initial 5 years, the property maintenance reverts to the land owner with County inspections every three years.

Frederick County received \$810,268.91 in funding from the **Maryland Chesapeake and Atlantic Coastal Bays Trust Fund** to assist with the projects. Thirteen private and seven County-owned properties were planted during the grant period with a total of 298 reforested acres. Frederick Landscaping and Conservation Services, Inc. were the contractors for this project. The funded Creek ReLeaf projects were completed in May of 2020.

Individual planting plans for each location accounted for



Before Planting - Creagerstown Park



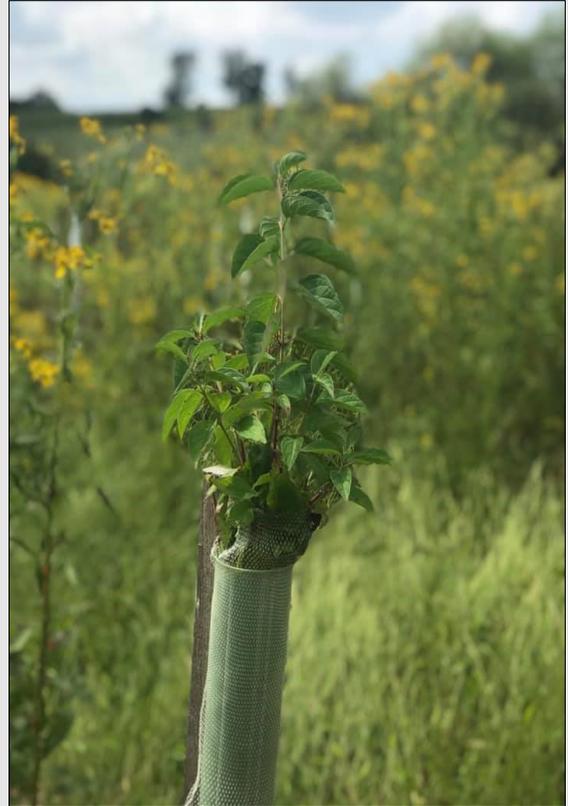
Post Planting—Creagerstown Park



Round Tree Stormwater Management Facility Reforestation

soil type, hydrology, slope conditions, upland contributing factors and climate conditions. Conversion of non-forested lands with multiple urban and agricultural uses to healthy forested lands is one of the most efficient restoration activities that can be implemented to achieve the program goals. The total cost of the project was \$4,448,293.21.

In 2019, the Creek ReLeaf Program won a second place **“Best Urban BMP in the Bay”** award from the Chesapeake Stormwater Network and earned Frederick County Executive Jan H. Gardner a **“Chesapeake Forest Champion Award”** from “Forests for the Bay”, a collaboration between Alliance for the Chesapeake Bay, the US Forest Service and the Chesapeake Bay Program.



A sapling grows at a Creek ReLeaf site



Monocacy River Park Reforestation



OSER Project Manager Jeremy Joiner places a stake to mark the planting area at Monocacy Park.



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