

ENABLED IMPACT PROJECT UPDATE

PROJECT: WYOMING HIGH SCHOOL RAIN GARDEN

PROJECT PARTNER: WYOMING HIGH SCHOOL BOARD OF EDUCATION

PROJECT STATUS: Complete

CSO BASIN(S): No. 538 and No. 559

WATERSHED: West Branch Mill Creek



PROJECT LOCATION

Located in a suburb of Cincinnati, Ohio at the Wyoming High School. The rain garden site is in a detention basin on the south side of the northeast parking lot.

SITE DESCRIPTION

Project size/setting: High school facility in suburban community. The total site is approximately 24 acres, with a rain garden footprint of 1,500 square feet.

Drainage area to approved green infrastructure: 4.375 acres encompassing roof, pavement, and grass areas.

GREEN INFRASTRUCTURE FEATURES

Retrofitting the existing onsite detention basin allowed for the successful construction of the rain garden in 2011.

Rain Garden

The footprint of the 1,500 square foot rain garden sits at the lowest point of the pre-existing detention basin. Modifications to the outfall and overflow structure were made to allow for 10 inches of ponding in the proposed rain garden. There was no sand used in the soil mix for the feature. The underdrain ties back into the combined sewer system. The tributary area of the rain garden consists of two parking lots, an access road, the eastern rooftop area of the school, and adjacent lawn areas. The location of the rain garden utilized the site of an existing detention basin and outfall structure.

MSD FUNDING

MSD funds comprised 96% of the cost of this small retrofit project.

Design: \$2,000

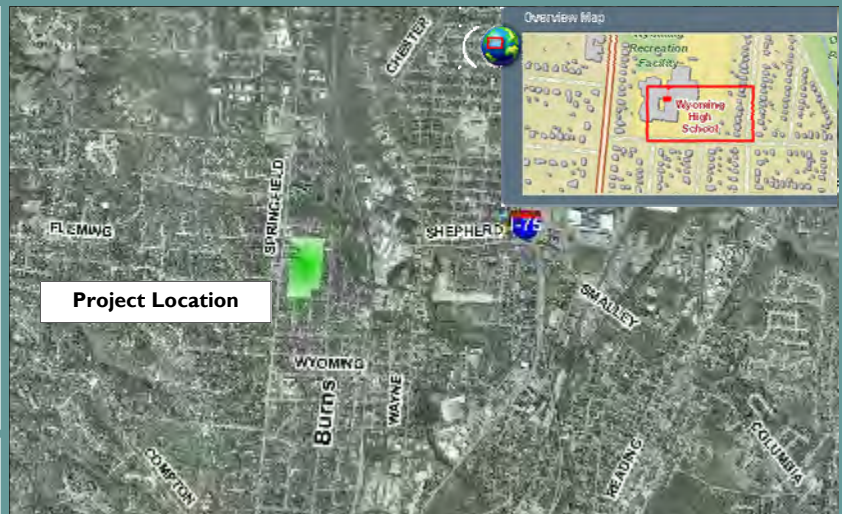
Construction: \$28,842

Education and Signage: \$1,286

Because the existing detention basin was utilized in the design, engineering fees for the project were minimized. Demolition and reconfiguration of the existing detention basin were included in the construction cost. Project partners are responsible for long-term maintenance.

PROJECT BENEFIT

Stormwater calculations indicate the typical annual runoff volume from the tributary area is approximately 2,600,000 gallons with an estimated total annual runoff volume removed from the combined sewer system of 100,000¹ gallons. Construction cost per funded gallon for the project is \$0.07. Since the project is in a combined sewer area,



runoff volume reduction is one of the largest benefits. Education is another large benefit for the rain garden. The feature is located on a school site. Signage and the curriculum incorporate the benefits the feature brings to the combined sewer system for the entire community of Wyoming.

MONITORING

Seasonal site inspections will be conducted quarterly to assess long-term viability of the green controls and to identify potential operation and maintenance issues. Site visits will also be conducted after high intensity wet weather events to assess performance of the controls and, where appropriate, overflow structures.



¹The typical year used in this estimate assumes a total annual rainfall of 41 inches.

ENABLED IMPACT PROJECT UPDATE

PROJECT: WYOMING HIGH SCHOOL RAIN GARDEN

PROJECT PARTNER: WYOMING HIGH SCHOOL BOARD OF EDUCATION



Rain Garden Photographs

Excavated rain garden at subgrade

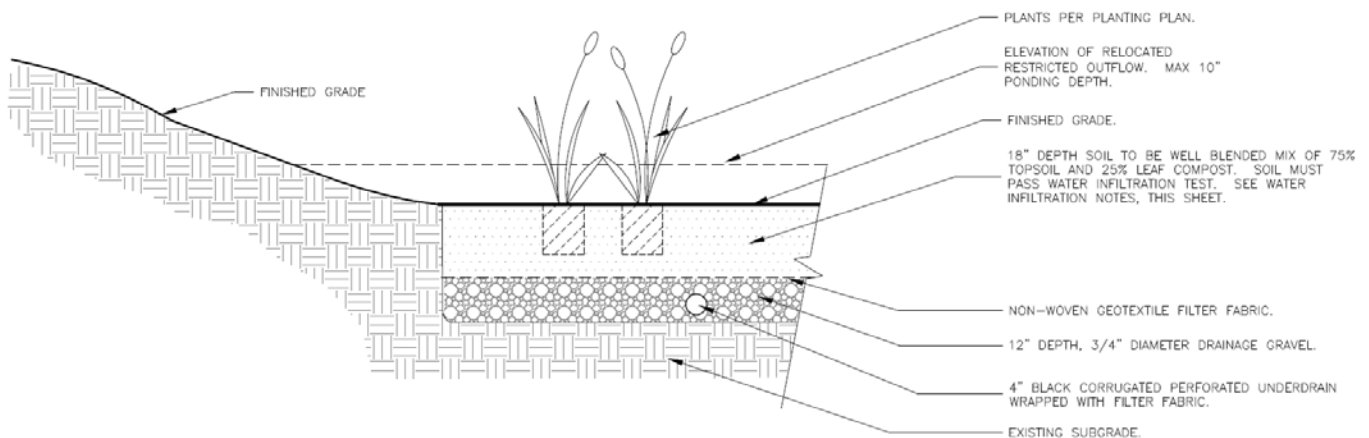
Ponding water during 0.5-inch rain event

Outfall forebay and overflow structure

Successful bioinfiltration after 0.5 inch rain event.

RAIN GARDEN ELEVATION 601.40
 4" PERFORATED AT 0.5%
 INV 602.08
 INV 602.04
 599.13 AT STRUCTURE

Typical Cross Section



For more information about Project Groundwork, the Enabled Impact Program, or this project please email MaryLynn Lodor, Environmental Programs Manager at: MaryLynn.Lodor@cincinnati-oh.gov.

ENABLED IMPACT PROJECT UPDATE

PROJECT: WYOMING HIGH SCHOOL RAIN GARDEN

PROJECT PARTNER: WYOMING HIGH SCHOOL BOARD OF EDUCATION



Lesson Learned: Bioinfiltration soil mix case studies provide useful information.

The soil mix proposed for the Wyoming High School rain garden included a combination of 75 percent topsoil and 25% leaf compost, which is different than typical soil mixes that include high percentages of sand. Despite the different soil mix, initial percolation tests after placement of the soil indicated an infiltration rate of 0.5 inches per hour, which was the minimum design infiltration rate. Based on observations during and after rain events, the rain garden appears to be draining as designed. The different soil mix presents a good case study that should be monitored over a longer period of time.



Stormwater ponded in the bioinfiltration basin during a rain event.



The stormwater has infiltrated through the system 24 hours after the rain event.

For more information about Project Groundwork, the Enabled Impact Program, or this project please email MaryLynn Lodor, Environmental Programs Manager at: MaryLynn.Lodor@cincinnati-oh.gov .