

Mercer Meadows Environmental Education Center Bio-Basin

Hopewell Township, Mercer County, New Jersey,



Before



After

General:

Type of development (residential, mixed use, commercial, open space): County park

Project partners: E&LP Associates (engineer and landscape architect), Mercer County Park Commission (builder)

Types of green infrastructure used on site: Bioinfiltration basin, vegetated swales

Project status: Complete

Costs and Benefits:

Anticipated cost of green infrastructure features: Estimated \$150,000

Actual cost: \$72,000 including materials and design costs

Cost of green infrastructure installation vs. anticipated cost of gray: Estimated \$150,000 for green infrastructure versus estimated \$250,000 for grey infrastructure solution with pipes.

Competitive advantage (How did your project design beat out the competition?): It was a lower cost option that also provided a visible education tool that the Environmental Education Center could use in classes to discuss water management, habitat, and ecosystem establishment.

Financing strategy: The project was funded in house by Mercer County through a capital improvement account designated for Mercer Meadows.

Design Details:

What design storm was used to size the green infrastructure practice? The 25 year design storm was the basis for design, however benefits were obtained up to the 100 year storm.

What is the maximum number of gallons of stormwater and runoff captured per storm? 381,000 gal or 50,932 cubic feet



Annual gallons infiltrated by green infrastructure practice? Approx. 2,000,000 gal or 267,361 cubic feet

Number of gallons of stormwater and runoff captured for reuse per storm? 0

What are the 24-hour design storms used in the stormwater design of the project? The 2, 10, 25, and 100-year storm events were analyzed.

What are the pre-development runoff rates for those design storms for the project?

2-year: 12 cubic ft/sec

10-year: 29 cubic ft/sec

25-year: 43 cubic ft/sec

100-yr: 68 cubic ft/sec

What are post-development runoff rates for those design storms after green infrastructure measures were put in place?

2-year: 0 cubic ft/sec—100% reduction

10-year: 14 cubic ft/sec—52% reduction

25-year: 30 cubic ft/sec—30% reduction

100-year: 56 cubic ft/sec—18% reduction

Takeaways:

Benefits to/impacts on the end user and larger community: Establishment of the basin alleviated flooding pressure and erosive conditions on downstream roadways and controlled runoff from a significant portion of the public park. Additionally, the bio-infiltration basin and its native plant palette provide a learning space for the local Environmental Education Center which has turned it into a showpiece for the park on green stormwater infrastructure and native plant management.

Challenges: The Park Commission had a limited budget which did not support a typical underground stormwater storage solution with pipes and a gravel bed or the yearly maintenance such systems require. The designed green infrastructure approach of planting a bio-infiltration basin was easily implementable by park personnel and could be maintained with an annual mowing regime.

Lessons Learned: Partnering with the County Parks Commission from the start allowed for maintenance to be considered throughout the design process so that all parties understood the components of the GSI design and had staff in place to build and maintain it.

For more information about this case study, please contact:

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This case study is a product of **Mainstreaming Green Infrastructure**, a program of New Jersey Future.

Making green infrastructure the first choice for stormwater management in New Jersey.

Last updated: 03/29/2016

