Green Infrastructure & Stormwater Management CASE STUDY

Waterford Oaks County Park Stormwater Improvements

Location: Waterford, MI
Client: Oakland County Parks and Recreation Commission
Design Firm(s): OCPRC/Giffles-Webster Engineers, Inc., ECT, Inc.
Landscape architect/Project contact: Michael J. Donnellon, Jr. LLA, ASLA
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ASLA Chapter: Michigan

Project Specifications

Project Description: The 30+ year old administrative parking complex required pavement repair and improvements for parking. As a recreational provider, steward of over 6,500 acres of parkland in Oakland County and located within an urban area, the Oakland County Parks & Recreation Commission approved this project that included nearly 100% storm water capture and filtration on a 10 year storm with the use of open storm water detention/retention, open bottom storm water conveyance systems, water control structure, underground detentions systems, bio-swales, and pourous asphalt.

Waterford Oaks is a 155-acre County Park located within the northwestern limits of the 70 sq/mi Clinton-Main subwatershed. The purpose of the project was to correct past design flaws in the park's built environment that were harmful to water quality, while adding needed parking capacity. The project created a 61% increase in parking spaces and three water quality BMP systems, incorporating rain gardens, wet ponds, wetlands, porous pavement, underground detention, and vegetated swales. The entire system of three BMP systems exceeds 1 and 10-year stormwater storage requirements and over 60% of 100-year storage requirements.

Project Type:
Open space - park
A retrofit of an existing property

Design features: Rain garden, bioswale, porous pavers, and underground detention was also incorporated.

This project was designed to meet the following specific requirements or mandates: To meet funding criteria, meet goals of the Clinton Main Subwatershed Plan and Oakland County's Storm Water Pollution Prevention Initiative (SWPPI) plan

Impervious area managed: greater than 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres

The regulatory environment and regulator was supportive of the project.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $500,000-$1,000,000 (Public funding: Federal, state - $190,000 grant from the Clean Michigan Initiative Grant from Michigan Department of Environmental Quality)

Related Information:

- Contractual Services - $800,314.54
- Supplies and Materials - $1,000
- Equipment - $0
- Salary and Fringe - $8,794.98
- TOTAL = $810,109.52
- NOTE: These are the amounts reported in the final grant report to MDEQ.

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly increased.

Number of jobs created: Not available

Job hours devoted to project: Not available

Planning and Design: Not available
Construction: Not available
Annual Maintenance: Not available

Project Recognition

Clean Michigan Initiative Grant

Performance Measures

Stormwater reduction performance analysis:

The project has resulted in the creation of three water quality BMP systems. The entire system of three BMP systems exceeds 1 and 10-year stormwater storage requirements and over 60% of 100-year storage requirements. Pollutant load reductions were calculated using pollutant unit loads and BMP efficiencies provided by DNRE. Calculations for the total pollutant load reductions for the combined BMP systems are as follows:

- Calculated Total Sediment Load Reduction: 16.35 tons/year (87.43% Reduction)
- Calculated Total Phosphorous Load Reduction: 151.11 lbs/year (70.23% Reduction)
- Calculated Total Nitrogen Load Reduction: 19.11 lbs/year (64.15% Reduction)

Additional Information

Links to images: Not curently, will alert you when it is added to our Destination Oakland website.