Project Description

Project Title: Green Stormwater Infrastructure Underground Storage and Filtration Chambers for Flood Mitigation, Water Quality Improvement, and Climate Resilience at Bert Bostrom Park

Host Jurisdiction and Population
The Town of Lake Park, Florida, encompasses approximately 2.3 square miles and serves a population of roughly 9,000 residents. The Town is located along 0.8 miles of the North Lake Worth Lagoon in Palm Beach County, an estuarine system that is environmentally sensitive and impaired by historic stormwater discharges.

Personnel and Project Team
The project was led by the Town of Lake Park Public Works Department under the direction of the Public Works Director, with direct support from the Capital Projects Manager and the Stormwater Infrastructure Foreman. Technical planning, modeling, and design services were provided by the Town's water resources consultant, Water Resources Management Associates, Inc.

Budget and Funding Sources
Project delivery was achieved through a phased, multi-year funding strategy. Design activities included Town stormwater utility seed funding for the Basis of Design Report, University of Florida Sea Grant Coastal Resiliency funding for intermediate design phases, and Community Development Block Grant Mitigation General Infrastructure funding for final design. Construction was funded through the Florida Community Development Block Grant Mitigation General Infrastructure Program as part of a statewide resiliency award totaling $11.1 million, with $5.29 million allocated to construction of the Bostrom Park facility.

Project Goals and Objectives
Lake Park's stormwater system serves approximately 928 acres through gravity-fed infrastructure that historically discharges untreated runoff directly into the North Lake Worth Lagoon. Nearly half of this drainage area flows through the Southern Outfall interceptor, which has long faced capacity constraints, recurring neighborhood flooding, and increasing vulnerability to climate-driven rainfall intensification and sea-level rise.

Consistent with the Town's adopted Stormwater Master Plan and long-range climate resilience strategy, the primary objective of this project was to significantly reduce upstream flooding within the Southern Outfall basin while measurably improving stormwater quality before discharge into the Lagoon. A secondary objective was to accomplish these goals without compromising recreational amenities or park functionality.

Project Description and Results
The Town implemented a three-acre underground green stormwater infrastructure detention and filtration system beneath the central athletic field at Bert Bostrom Park. The system captures runoff from the most flood-prone portions of the watershed, temporarily stores peak flows, and

treats stormwater using engineered filtration media before controlled release back into the Southern Outfall system.

Hydrologic and hydraulic modeling demonstrates that the facility detains peak flows for approximately one to two hours during critical storm events, eliminating upstream surcharge and reducing flood risk throughout the basin. Water quality modeling indicates annual reductions of roughly 364 pounds of nitrogen and 45 pounds of phosphorus from reaching the Lagoon.

Construction was completed in December 2025, and park amenities were thoroughly restored. The project represents a highly effective integration of flood mitigation, water quality enhancement, and climate resilience within an active community park setting.

Project Executive Summary

Innovation and Excellence
The Bostrom Park project exemplifies an innovative application of large-scale underground green stormwater infrastructure in a fully built-out urban environment. By locating a high-capacity detention and filtration system beneath an active recreational facility, the Town maximized land efficiency while preserving community use and aesthetic value, delivering watershed-scale stormwater management within a constrained urban footprint.

Demonstrated Environmental Benefits
The project directly addresses impaired waters by substantially reducing nutrient and pollutant loading to the North Lake Worth Lagoon. Quantified nutrient reductions are supported by accepted best-management-practice performance data and watershed modeling, demonstrating measurable annual reductions in nitrogen and phosphorus loading and providing defensible environmental outcomes.

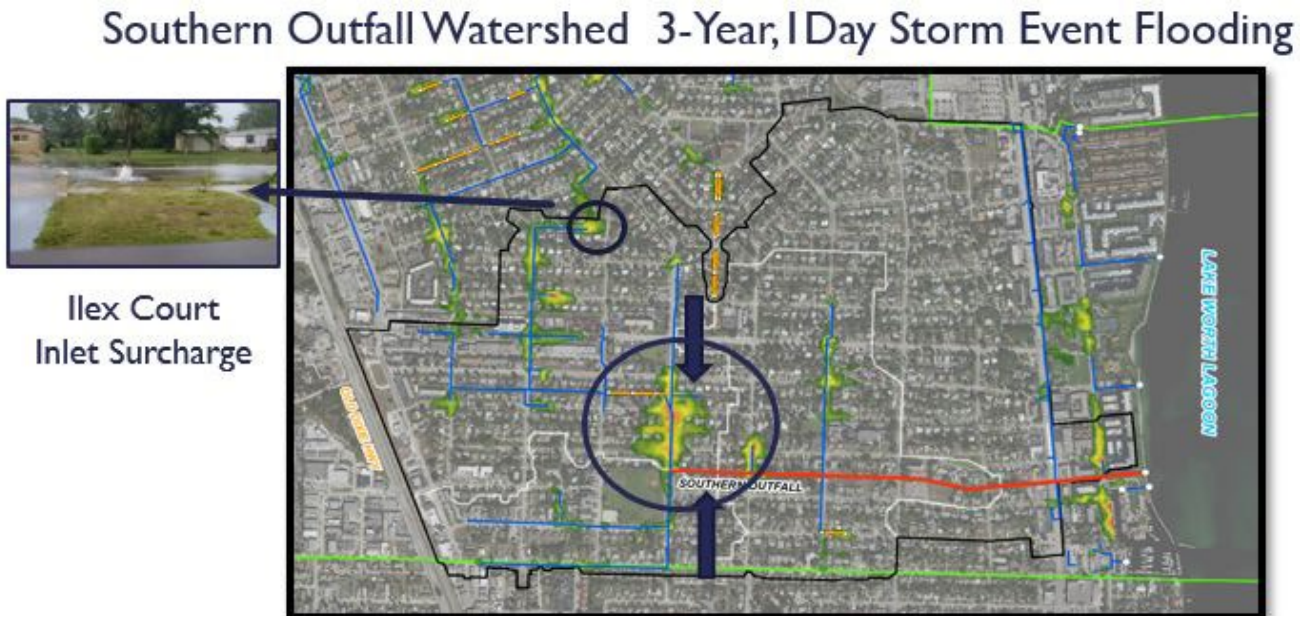
Resilience and Long-Term Value
This project is a cornerstone implementation of the Town's Stormwater Master Plan and establishes a scalable template for future green infrastructure investments. The facility enhances system resiliency against climate-driven stressors while extending the service life of downstream infrastructure.

Community Benefit and Stewardship
Beyond technical performance, the project delivers tangible quality-of-life benefits by reducing neighborhood flooding, protecting public assets, and maintaining uninterrupted access to a key community park both during construction and after project completion. The restored surface amenities reinforce public confidence that infrastructure investment and environmental stewardship can coexist.

Transferability
The planning, modeling, funding strategy, and construction approach used at Bostrom Park are readily transferable to other coastal and urban communities facing similar challenges. The project demonstrates how strategic partnerships and phased funding can successfully deliver complex green infrastructure projects.

Existing Conditions and Watershed Context

The Town of Lake Park's stormwater system serves approximately 928 acres through gravity-fed infrastructure discharging to the North Lake Worth Lagoon. Nearly half of this drainage area flows through the Southern Outfall interceptor, a 48- to 72-inch-diameter system that has historically experienced capacity limitations and documented recurring flooding. Hydrologic and hydraulic modeling confirms widespread surcharge conditions during even moderate storm events, particularly within the Northwest and Southwest catchments.

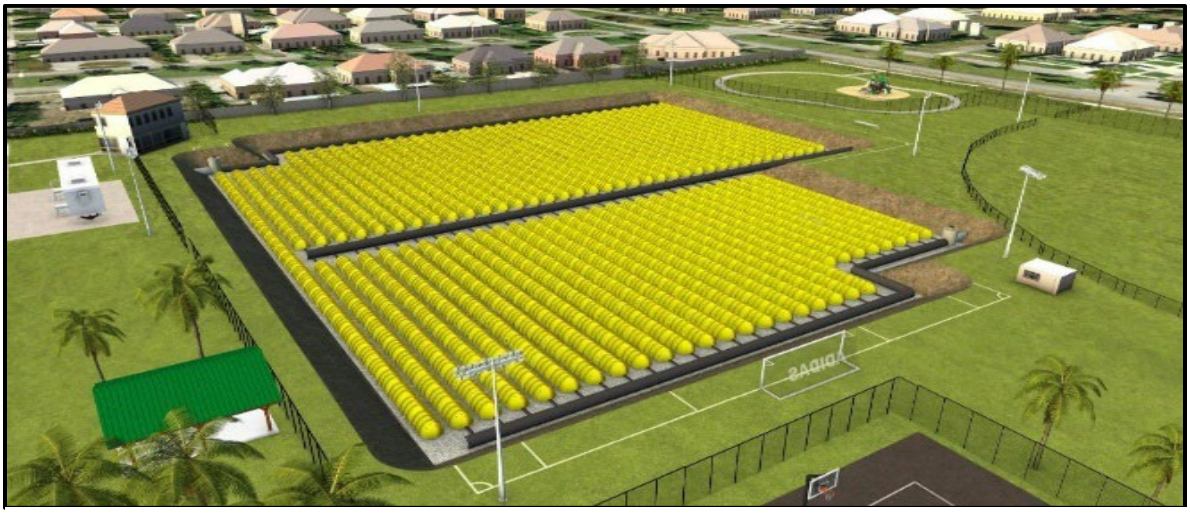


Hydrologic and hydraulic modeling illustrates widespread surcharge and flooding within the Southern Outfall basin under existing conditions, confirming long-standing capacity limitations and flood risk during moderate storm events.

Proposed Green Stormwater Infrastructure Solution

To address documented system deficiencies, the Town implemented a three-acre underground storage and filtration facility beneath the central athletic field at Bert Bostrom Park. The system captures peak flows from the most flood-prone portions of the Southern Outfall basin, providing temporary detention and engineered filtration before controlled discharge back into the interceptor system.

The facility utilizes subsurface chamber technology designed to provide large-volume storage while preserving surface land use. Park features were fully restored following construction, maintaining uninterrupted recreational function.



Underground detention and filtration chambers are installed beneath the athletic field, allowing full restoration of recreational use upon completion.

Quantified Performance and Outcomes

Hydrologic and hydraulic modeling demonstrates that the Bostrom Park facility detains peak flows for approximately one to two hours during critical storm events, eliminating upstream surcharge and significantly reducing flood risk throughout the basin.

Water quality modeling indicates modeled annual reductions of approximately 364 pounds of nitrogen and 45 pounds of phosphorus, preventing untreated runoff from reaching the impaired North Lake Worth Lagoon.

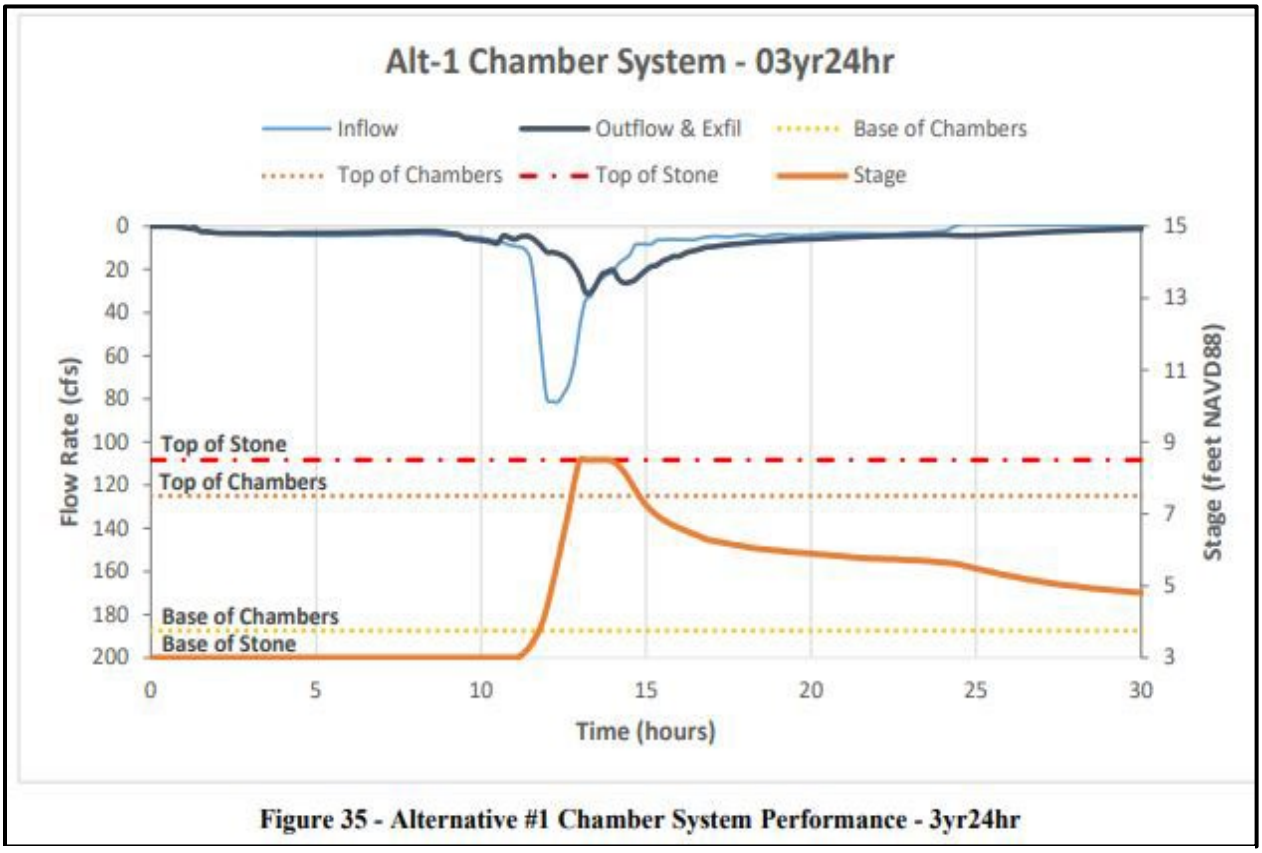


Figure 35 - Alternative #1 Chamber System Performance - 3yr24hr

Modeled performance demonstrates one to two hours of peak flow detention during critical storm events, reducing upstream surcharge, mitigating neighborhood flooding, and allowing controlled discharge through the Southern Outfall system.

Construction and Restoration

Construction of the underground facility was completed in December 2025. Installation activities were carefully phased to minimize disruption to surrounding neighborhoods and park users. Upon completion, the athletic field and park amenities were thoroughly restored.

The completed project demonstrates that large-scale stormwater infrastructure can be successfully integrated into active community spaces while delivering measurable environmental and flood-mitigation benefits.

Installation of underground detention and filtration chambers beneath the athletic field, demonstrating the scale of the infrastructure while maintaining careful phasing to minimize disruption to surrounding neighborhoods.

Fully restored athletic field following completion of underground construction, demonstrating successful integration of large-scale green stormwater infrastructure within an active community park.