



City of Brunswick's "Rethinking Runoff Plan"

GI/LID Planning to Implementation

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SESWA Annual Conference

Hilton Head, SC

October 5, 2023



Marine Extension and
Georgia Sea Grant
UNIVERSITY OF GEORGIA

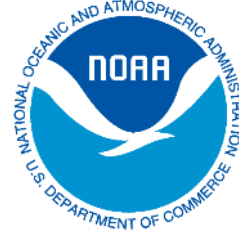


GMC

Acknowledgements



- *Financial assistance provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office for Coastal Management, National Oceanic and Atmospheric Administration and passed through the Coastal Management Program of the Department of Natural Resources.*



- *The preparation of this report, map, document, project, etc., was financed in part through a grant from the U.S. Environmental Protection Agency under the Provisions of Section 319(h) of the Federal Water Pollution Control Act, as amended.*



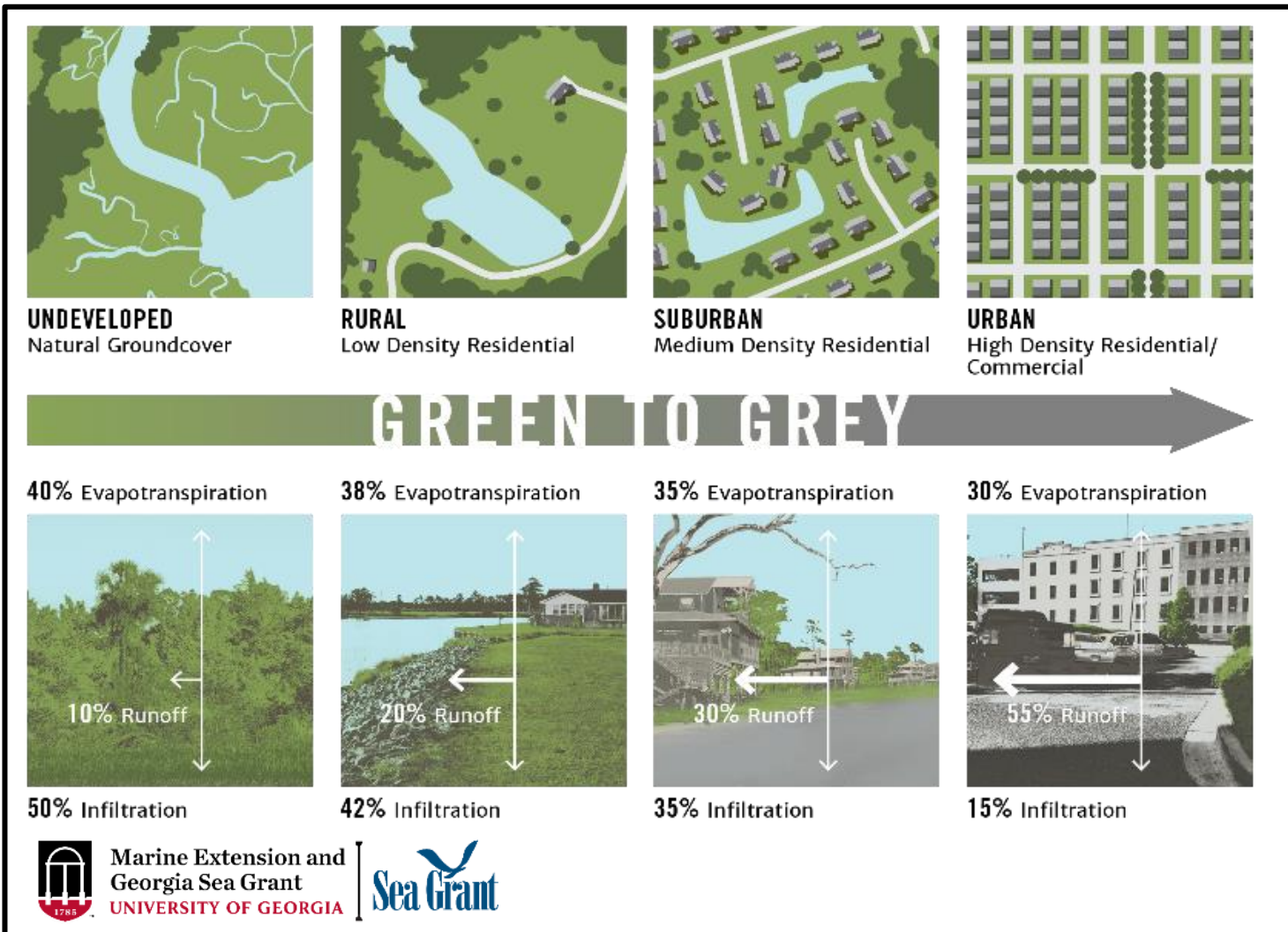
- Context for the Plan
- The Process
- How Do You Create One?
- Implementation
- Next Steps
- Q+A



The Need



Solution: Turn the Arrow Around with Green Infrastructure



Developing the Rethinking Runoff Plan



2020-2022: Coastal Incentive Grant, from GADNR-Coastal Resources Division & NOAA

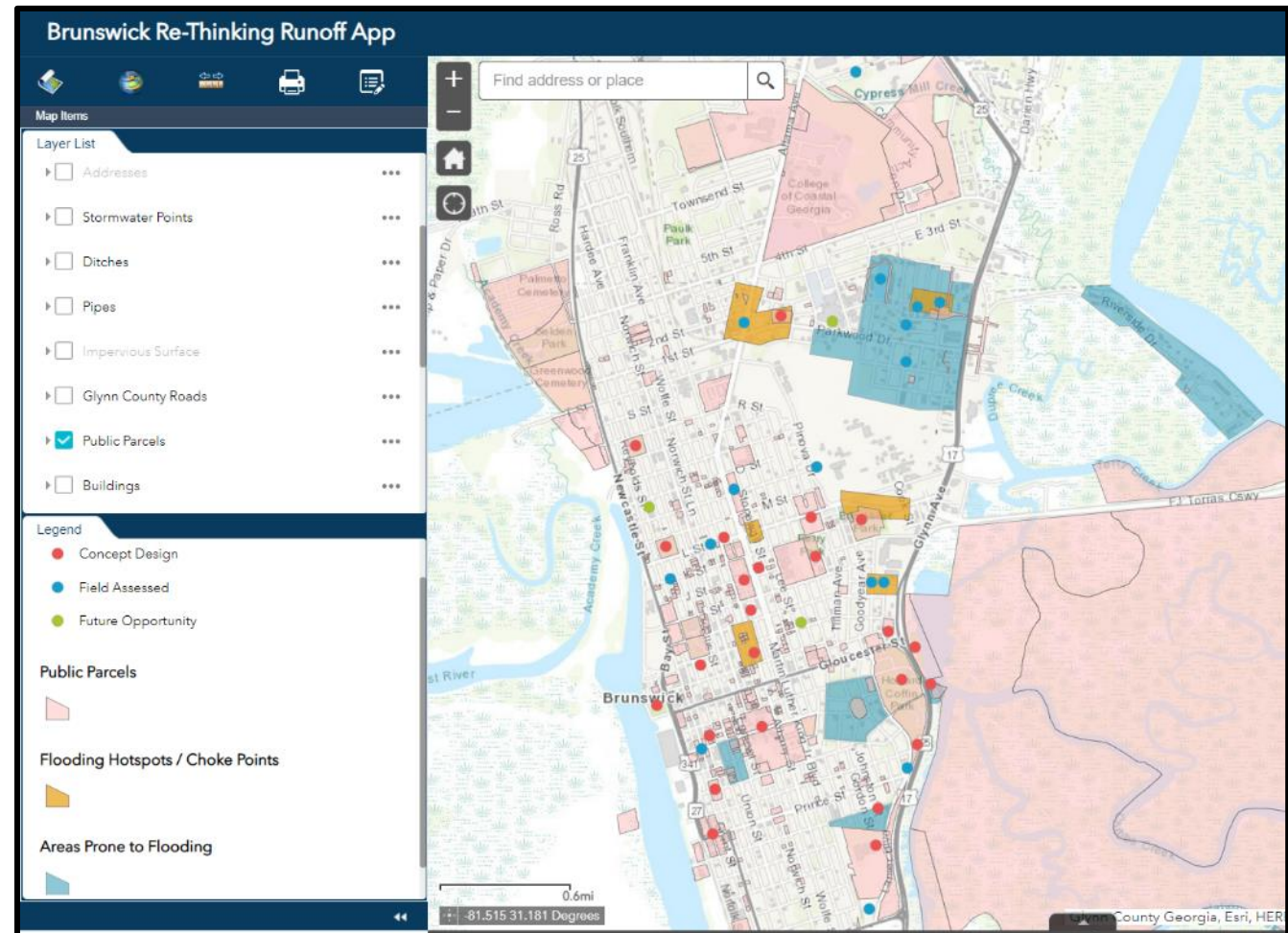
- Primary Objective – identify “shovel-ready” green infrastructure projects, develop a resource for decision-makers
 1. Address water quality or flooding issue
 2. Focus public properties
 3. Education



First Step: Desktop Analysis



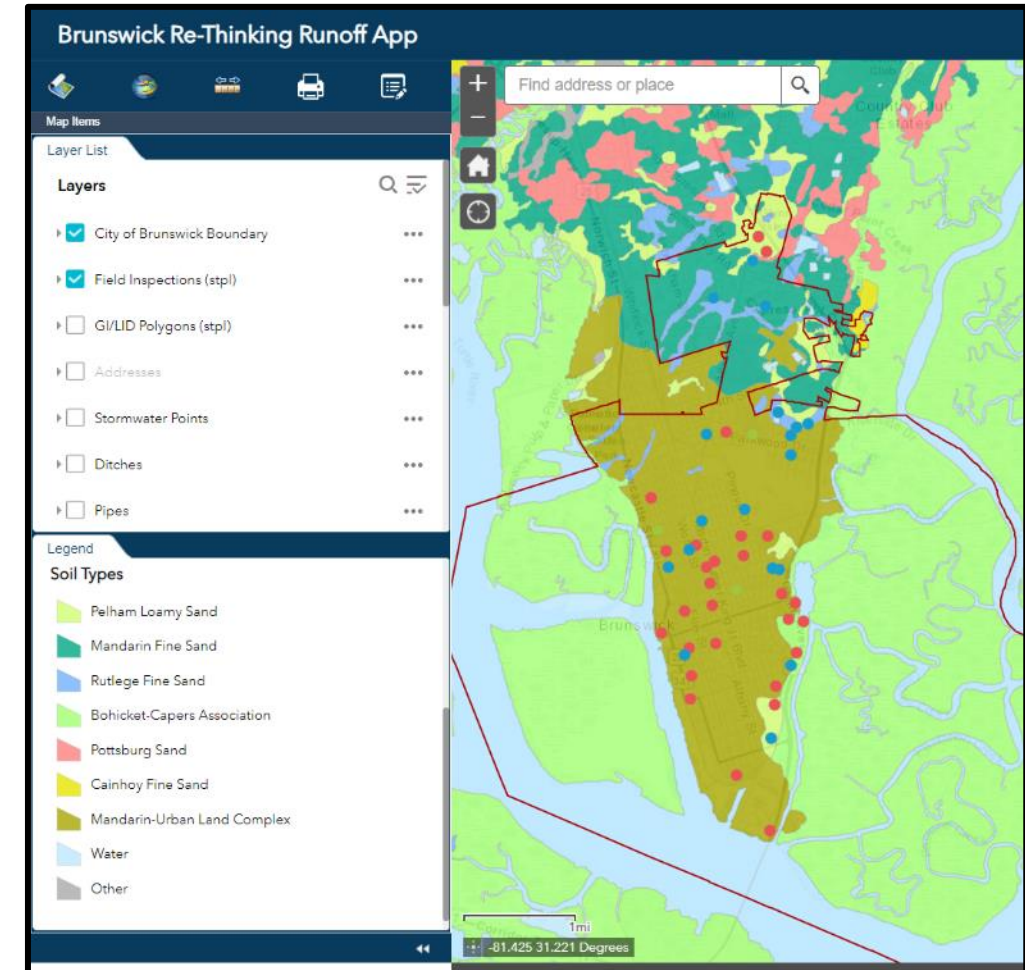
- GIS database created to explore available information
 - “Public” parcels
 - Drainage infrastructure
 - Impervious surfaces
 - Flooding hotspots
 - Areas prone to flooding



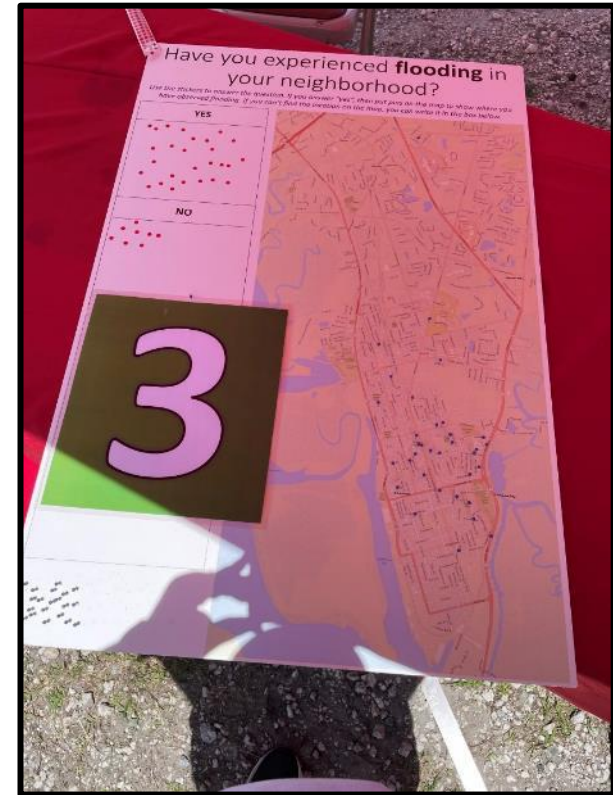
General Soil Suitability Analysis



- Explored hydrologic soil group and depth to water table.
- Majority of City and sites in Mandarin-Urban Land Complex, which was “moderate” rating.
- Hand auger testing at two sites found deeper water table depths and more favorable infiltration rates.



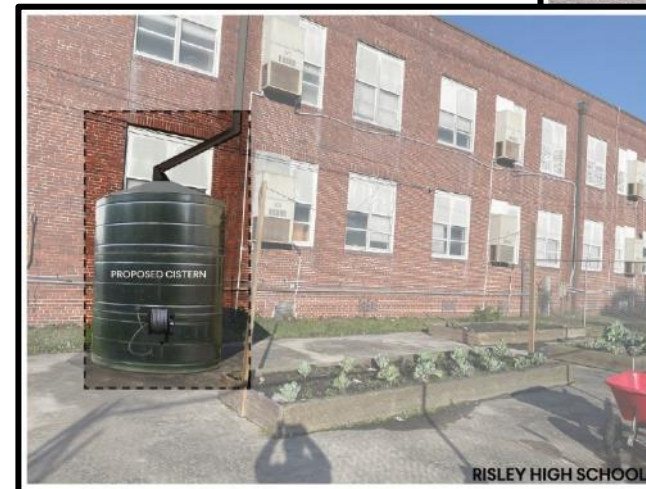
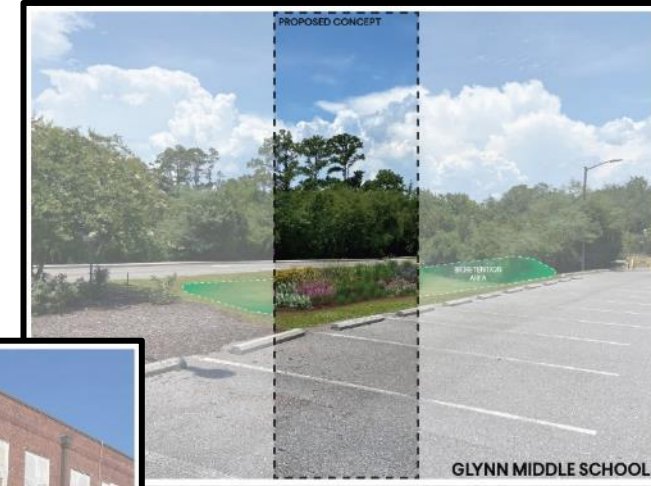
Field Assessment & Public Engagement



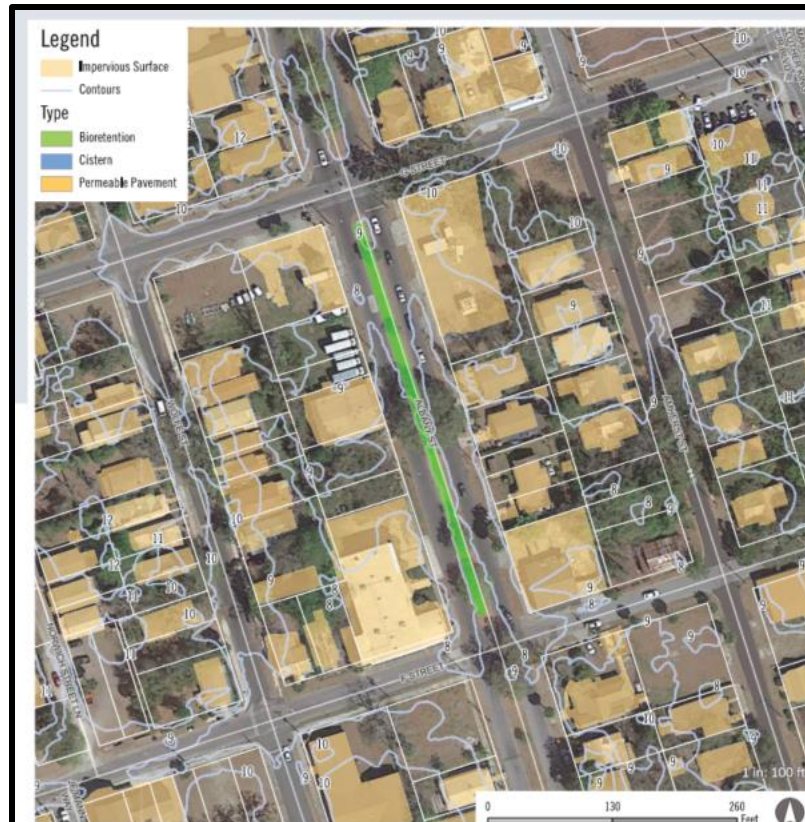
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Project Visualizations



Project Summary Sheets



Albany Street (F Street to G Street)

1600 Block of Albany Street



DISCONNECTION AREA		TREATMENT AREA		RUNOFF VOLUME			RUNOFF REDUCTION / RECHARGE		ESTIMATED COST
IMPERVIOUS	COMPACTED	GI / LID TYPE	GI / LID AREA	WATER QUALITY EVENT DEPTH (1.2")	ANNUAL RAINFALL (50")	CREDIT	ESTIMATED VOLUME	CONSTRUCTION	
60,500 sq.ft	0 sq.ft	BIORETENTION	5,000 sq.ft.	6,220 cu. ft.	247,700 cu. ft. 1.85 MGAL	100%	1.85 MGAL / YR	\$143,000	

OVERVIEW

Stormwater runoff from Albany Street and adjacent properties can be directed to a proposed bioretention system located in the median of the roadway between F and G Streets. The linear bioretention system will capture, treat, and infiltrate stormwater. At the time of this plan, this work is currently in design.

Site Overview & Layout Map

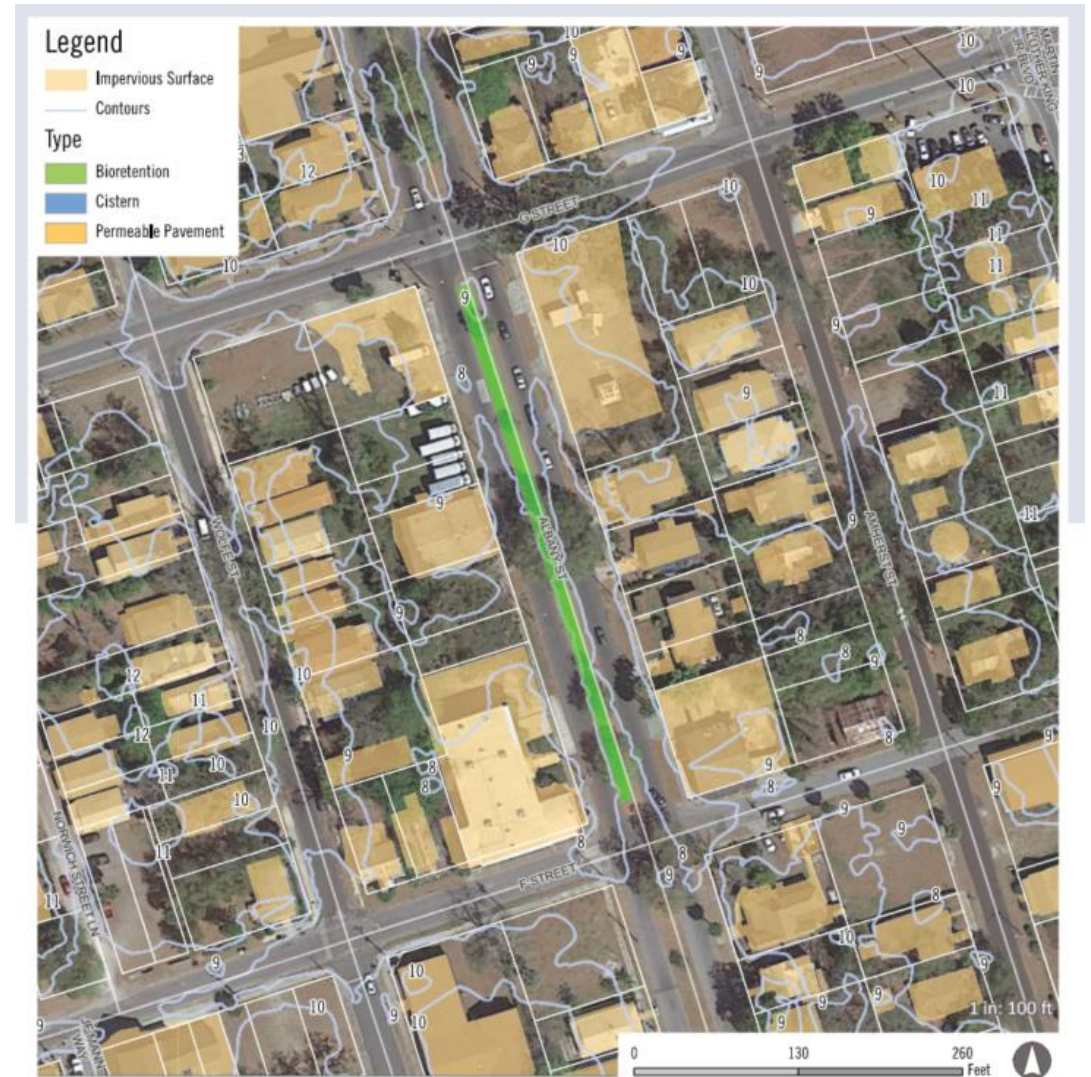


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GI/LID Design & Practice Information



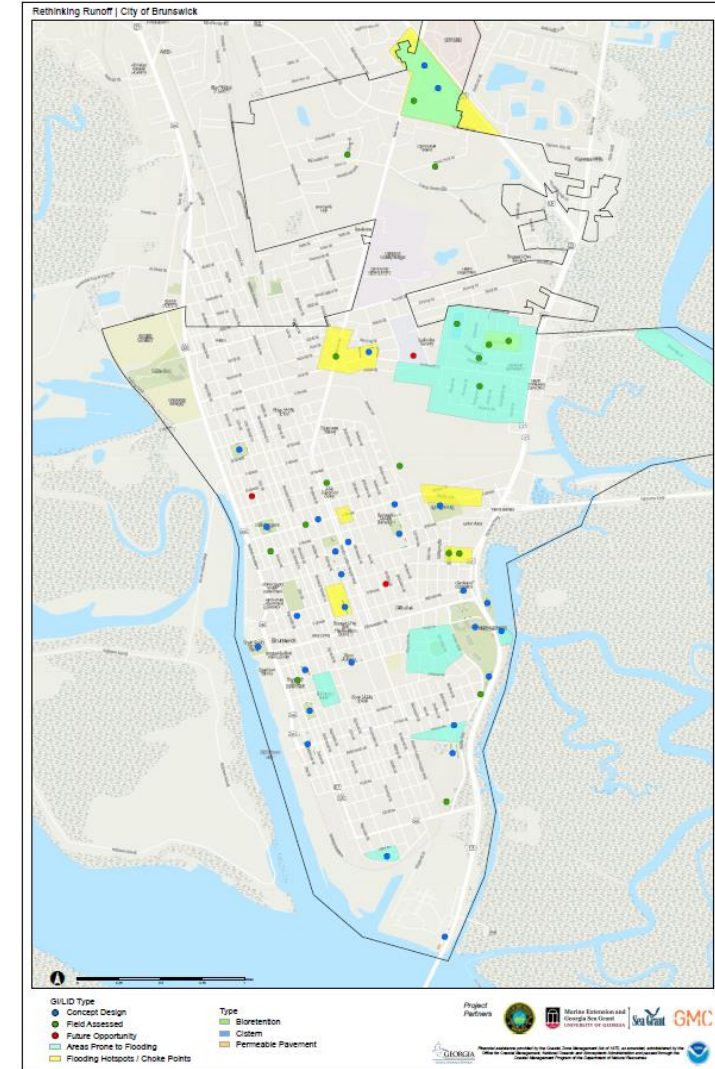
- Disconnection Area
- Treatment Area – *sized per local design requirements*
- Runoff Volume
- Recharge
- Estimate Cost

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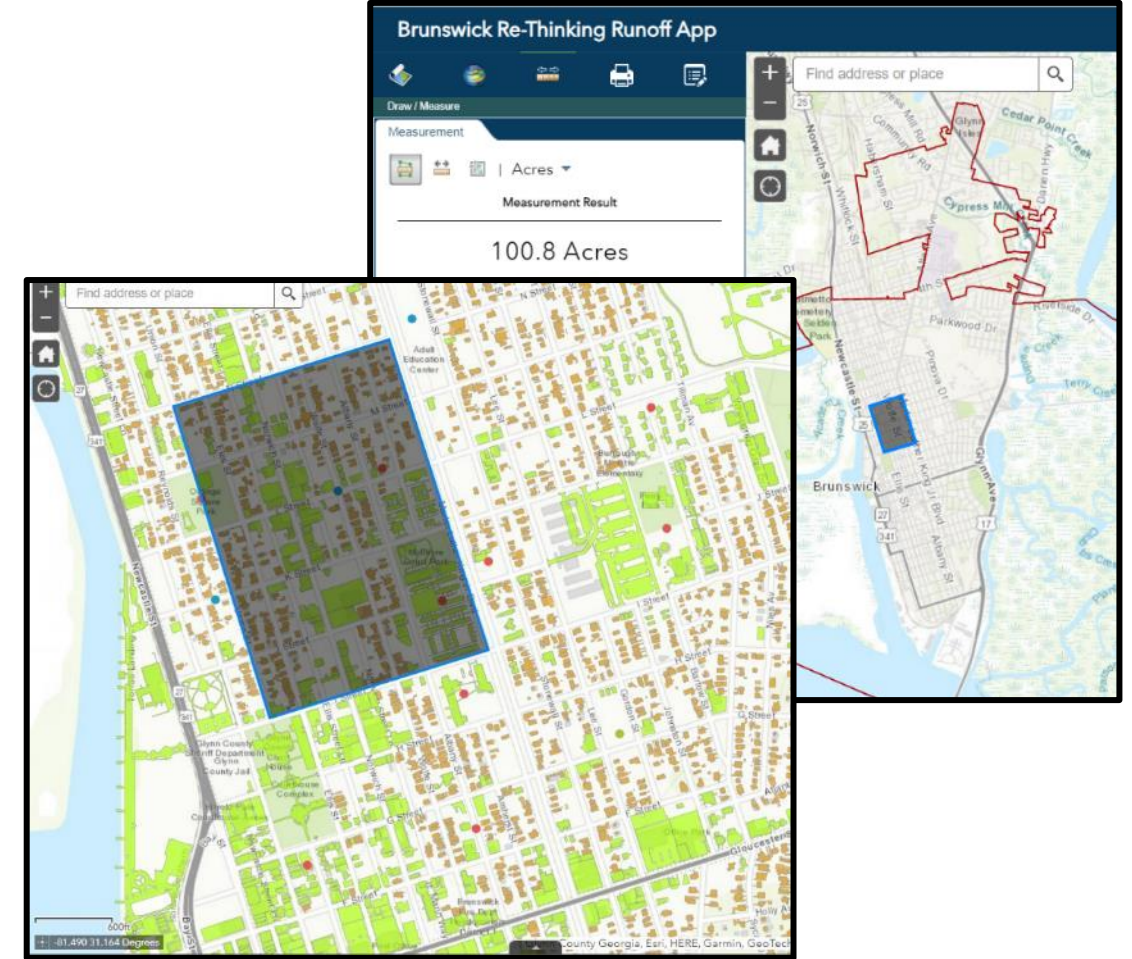
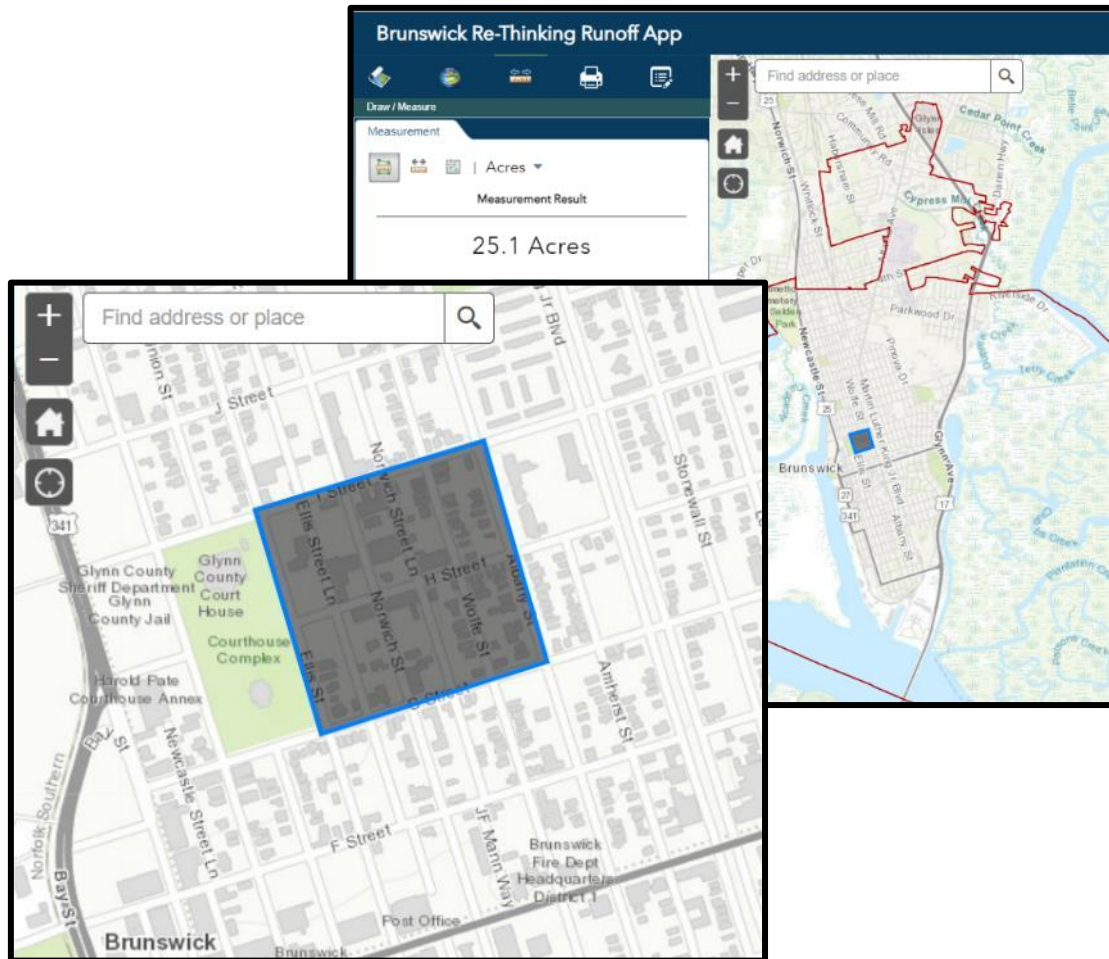
“Sense of Place”



- **28 sites featured**
- 52 identified, 49 field assessed (Appendix A)
- 10 parks, 7 City parcels/ROW, 3 schools, 4 churches/non-profits, 4 neighborhood properties
- Implementation Potential
 - **25 acres IC; \$3.7M, 29 MG/year**



Magnitude of Impact – “Greened Acre”



Greened acre - acre of impervious cover that is retrofitted to utilize green stormwater infrastructure and manages stormwater using source controls such as infiltration, evaporation, transpiration, decentralized storage and reuse.

Replicating the Plan: *How Do You Create One?*

1. Determine funding
<https://coastalgadnr.org/CoastalIncentiveGrant>
2. Organize partners
3. Compile data, GIS tools
4. Get in the field
5. Outreach
6. Calculations/design
7. Write the plan
8. Discuss ways to implement



“...From Planning to Implementation”



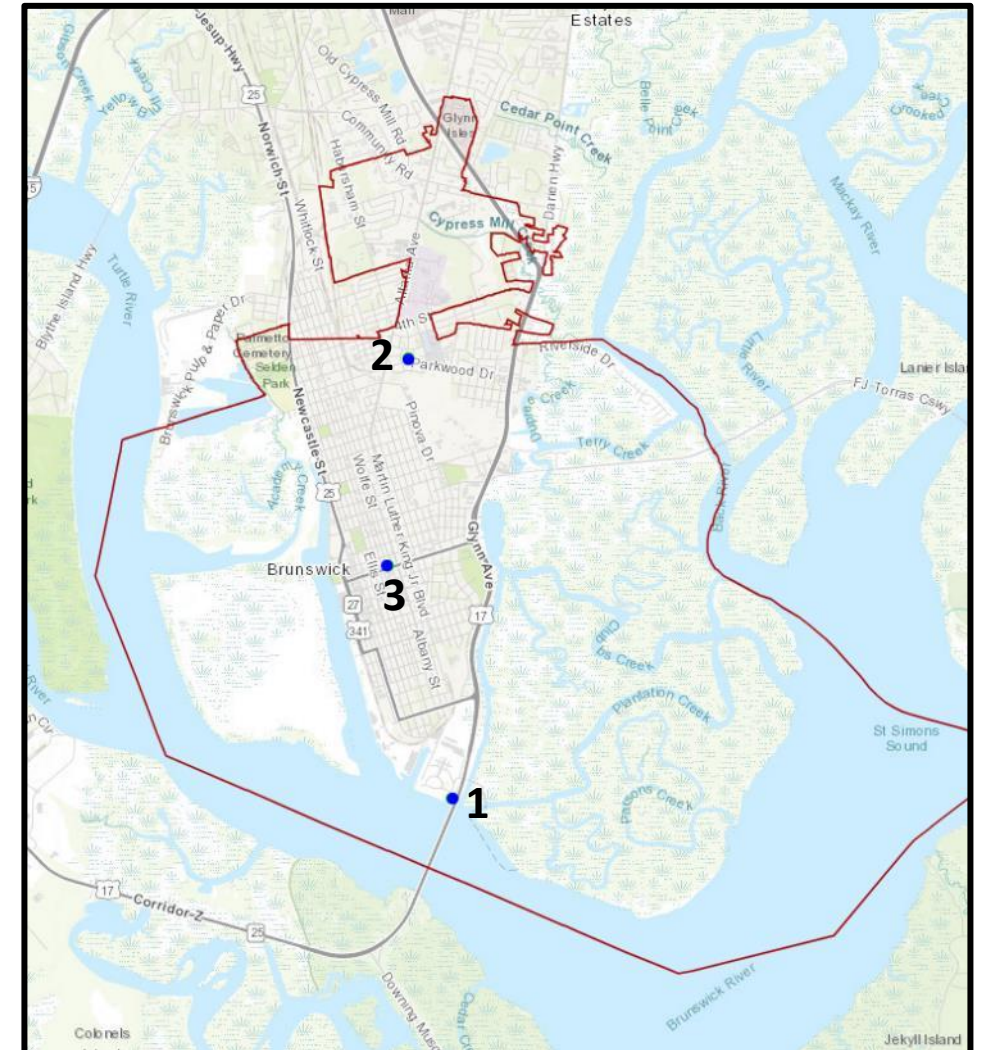
- FY2020 Section 319(h) Grant through Georgia EPD
 - “GI/LID Retrofits in Brunswick – From Planning to Implementation”
- Goal 1: Implement priority GI/LID practices at three locations
 - Priority – environmental, social, economic
- Goal 2: Provide training, education, and outreach activities
- Goal 3: Monitor hydrologic performance



Project Sites



1. Liberty Ship Park
 2. Goodyear Park
 3. Fire Station (Gloucester Street)
- Reasoning
 - Areas with frequent flooding
 - Sites with other proposed improvements
 - Improved park amenities & new fire station bay
 - Publicly-accessible
 - Spatially distributed across the City
 - Fire Station is downtown near City Hall



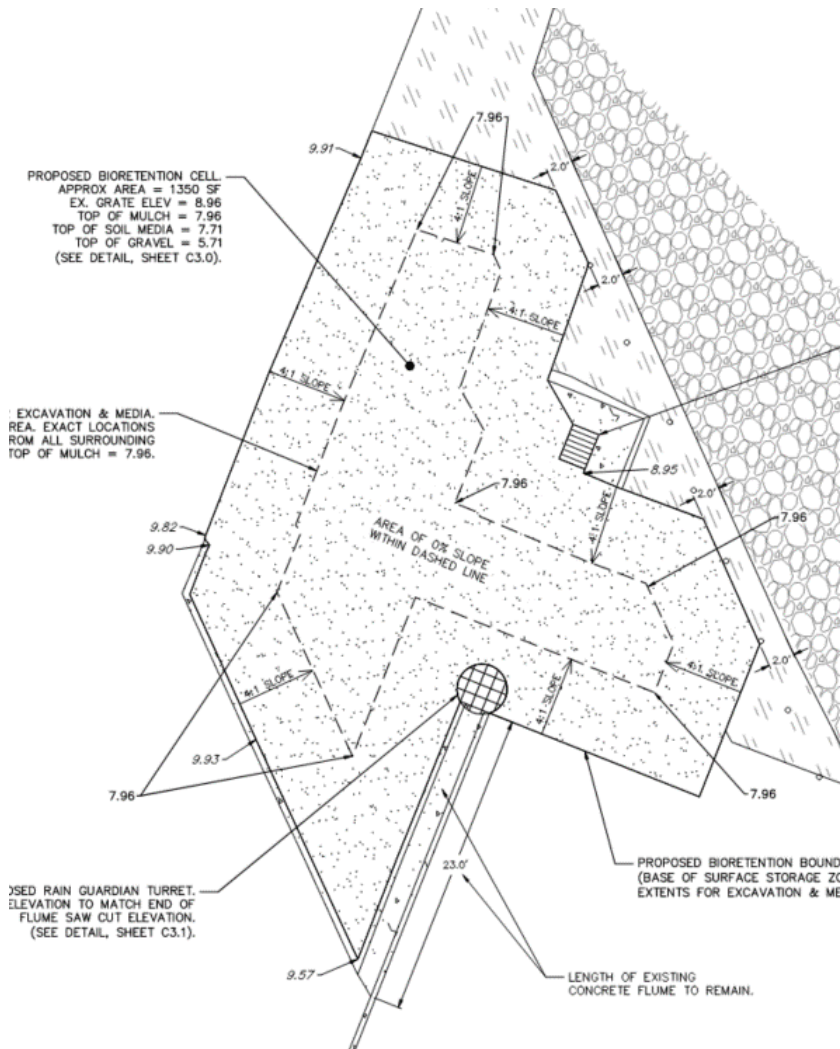
Site #1: Liberty Ship Park (Bioretention Retrofit)



Bioretention Retrofit – South Cell



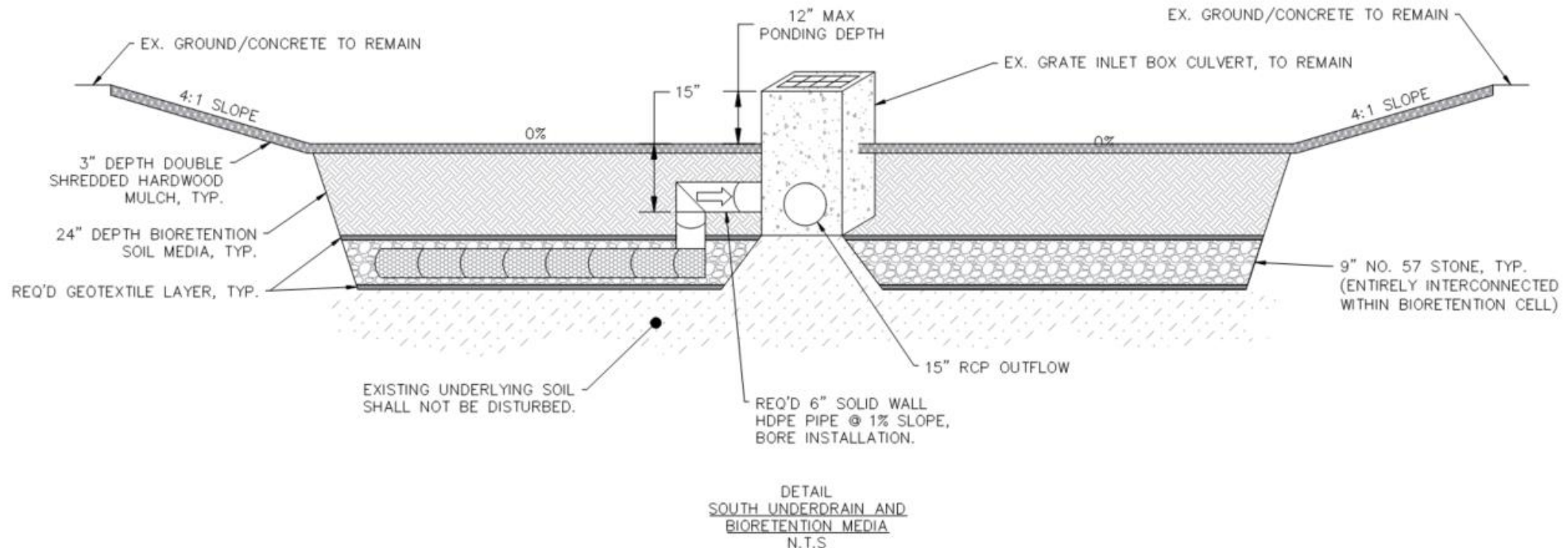
Bioretention Retrofit – North Cell



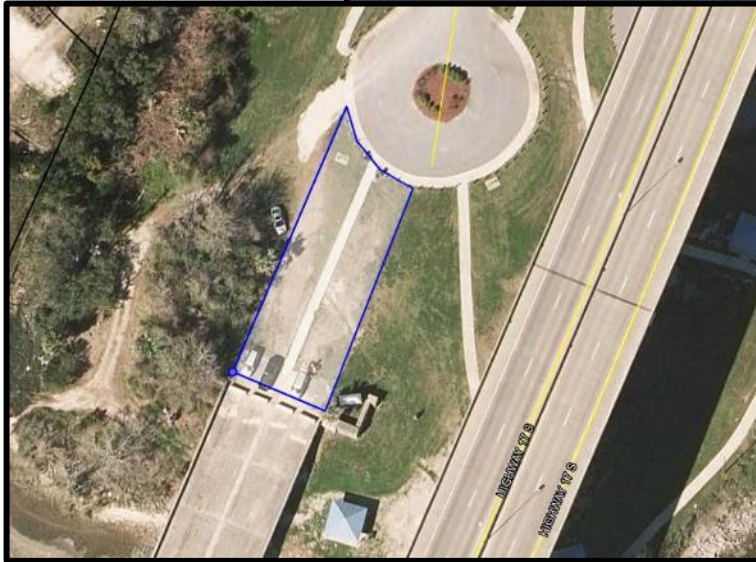
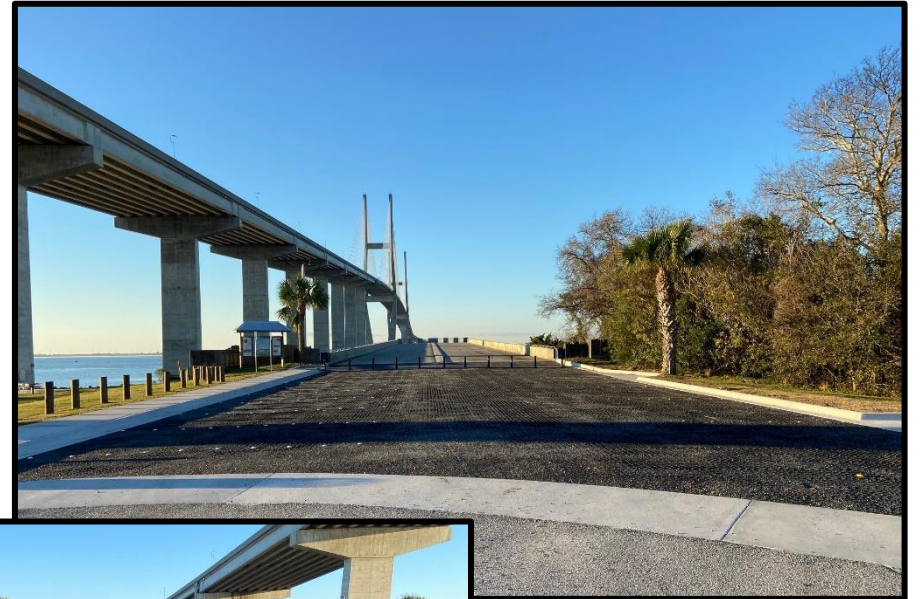
Bioretention Retrofit – Design Features



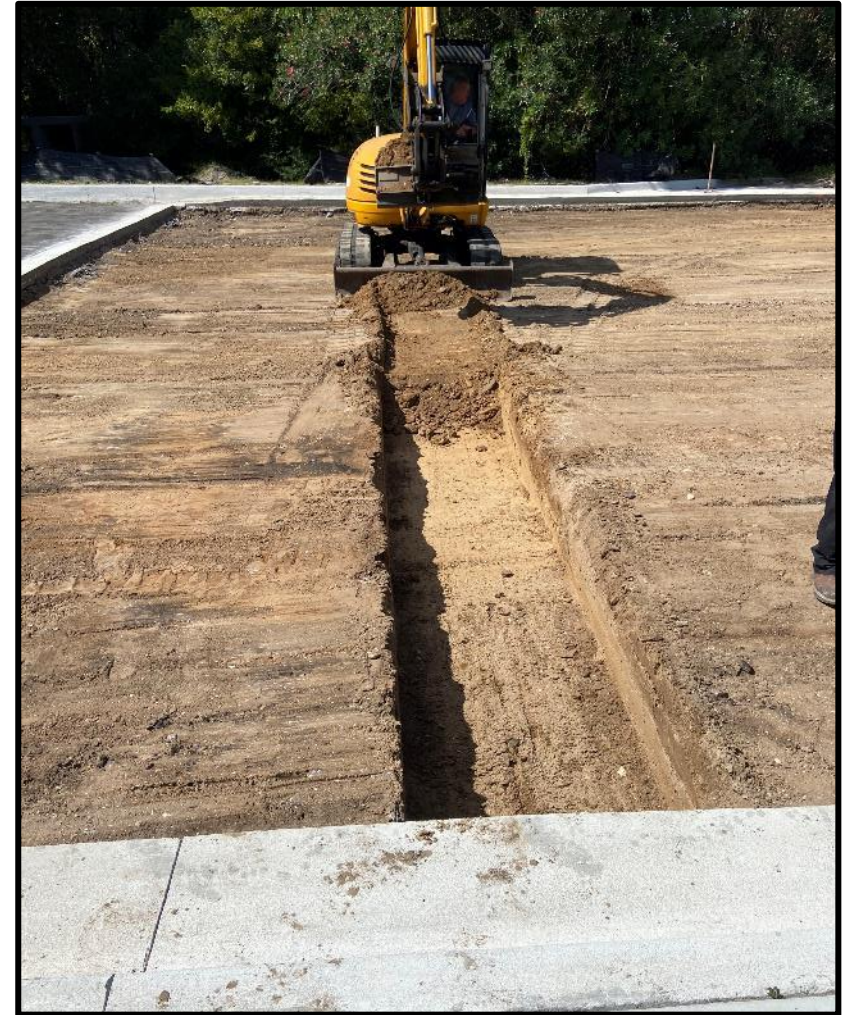
- Internal Water Storage (IWS)
 - Enhance infiltration
 - Easier to tie-in into shallow infrastructure
- Soil Investigation (both sites):
 - 12" & 24": brown sand w/ clay
 - 36"+: light tan/yellow sand



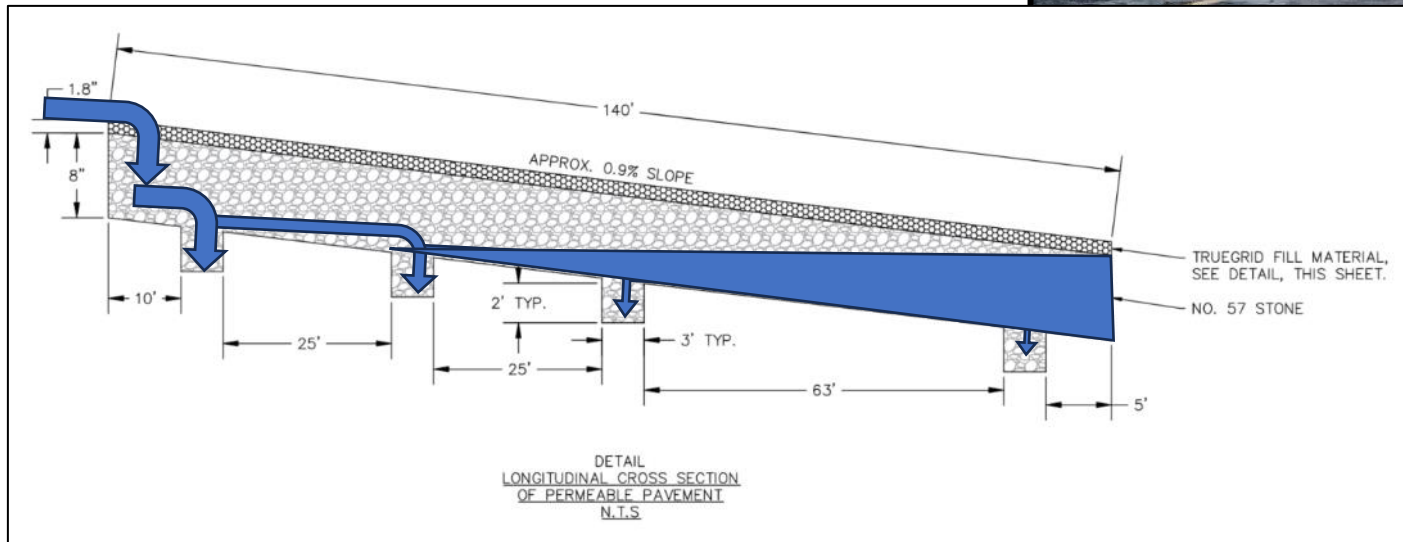
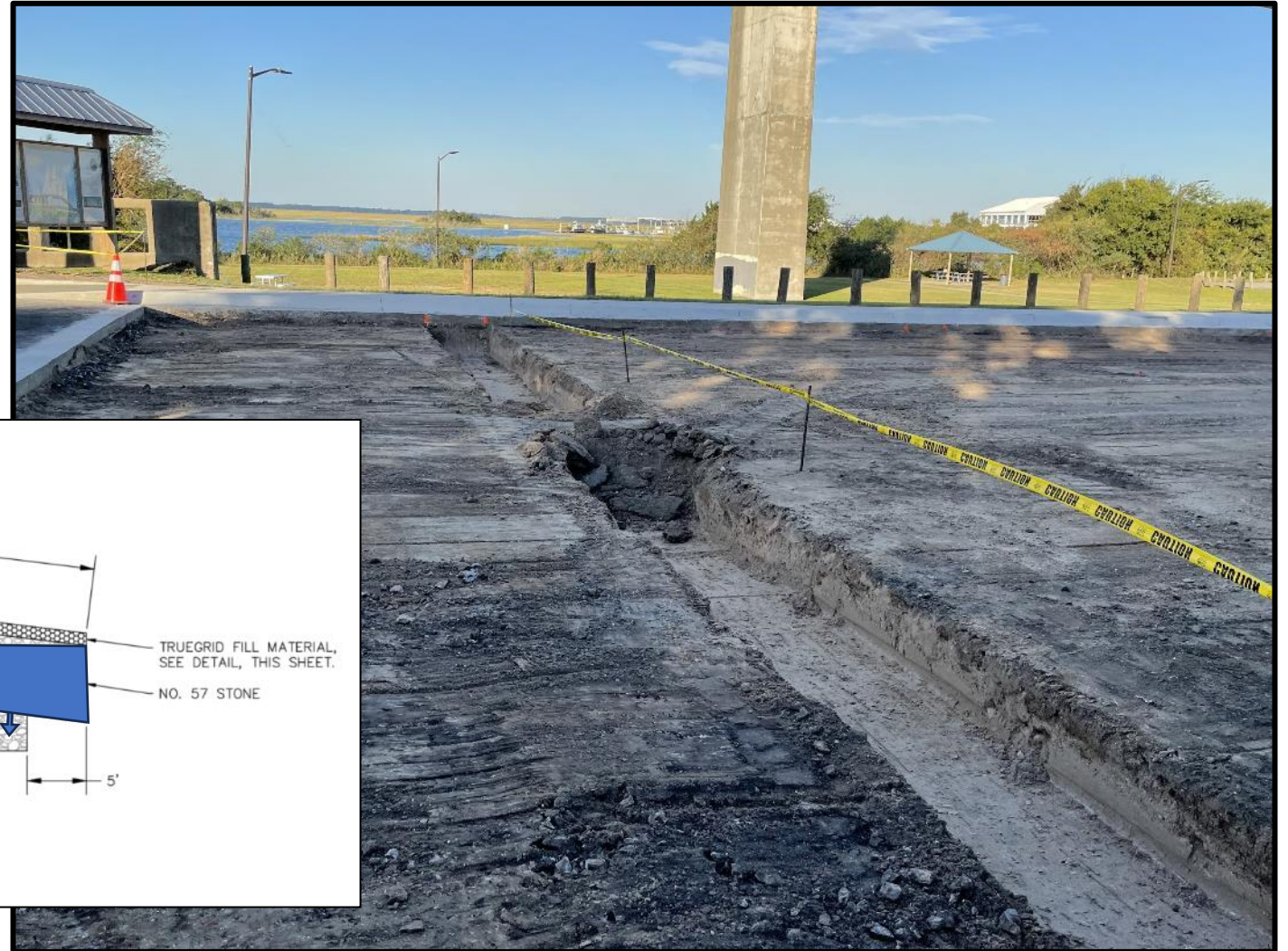
Site #1: Liberty Ship Park (Permeable Pavement)



Soil Investigation Influenced Design



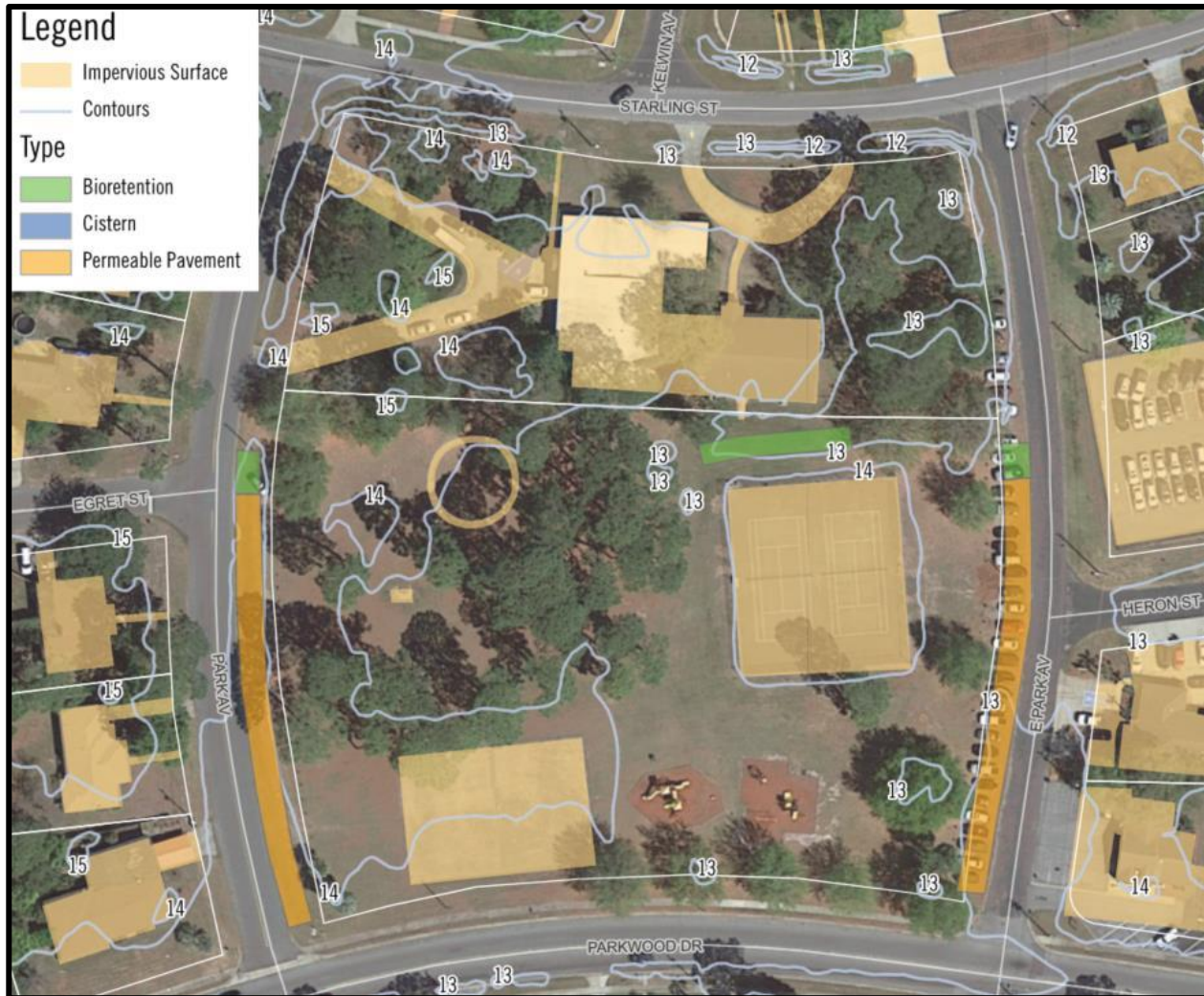
Lateral Trench for Enhanced Infiltration



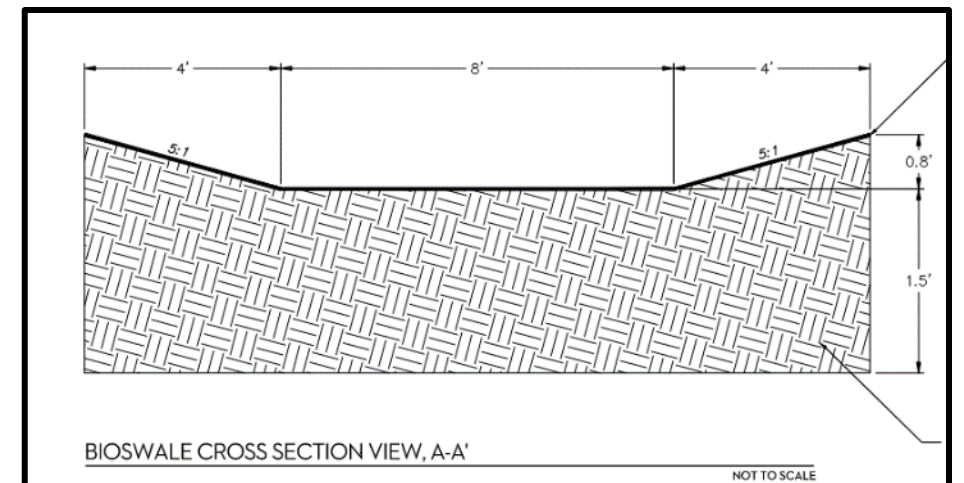
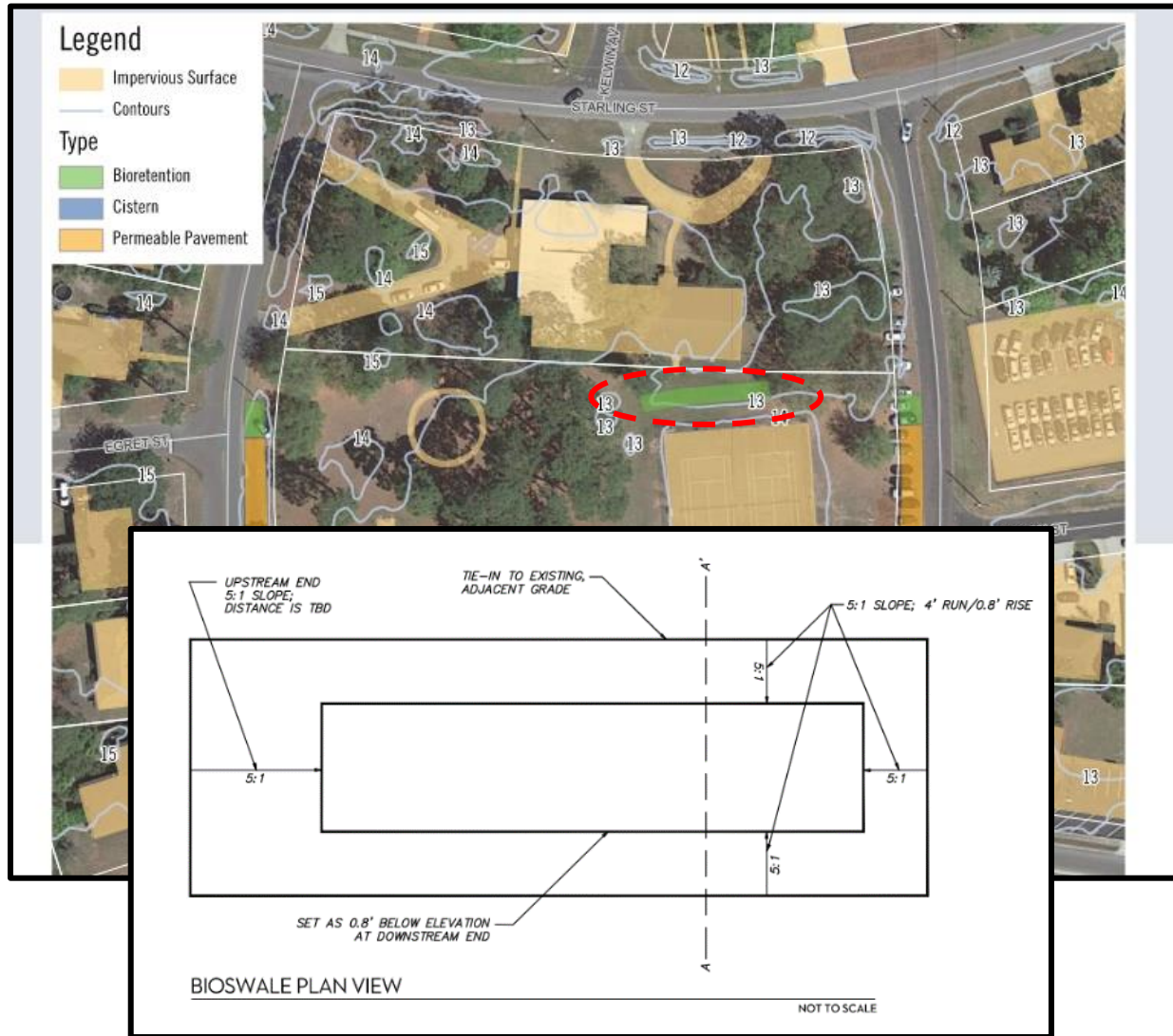
Installed In-House by Public Works



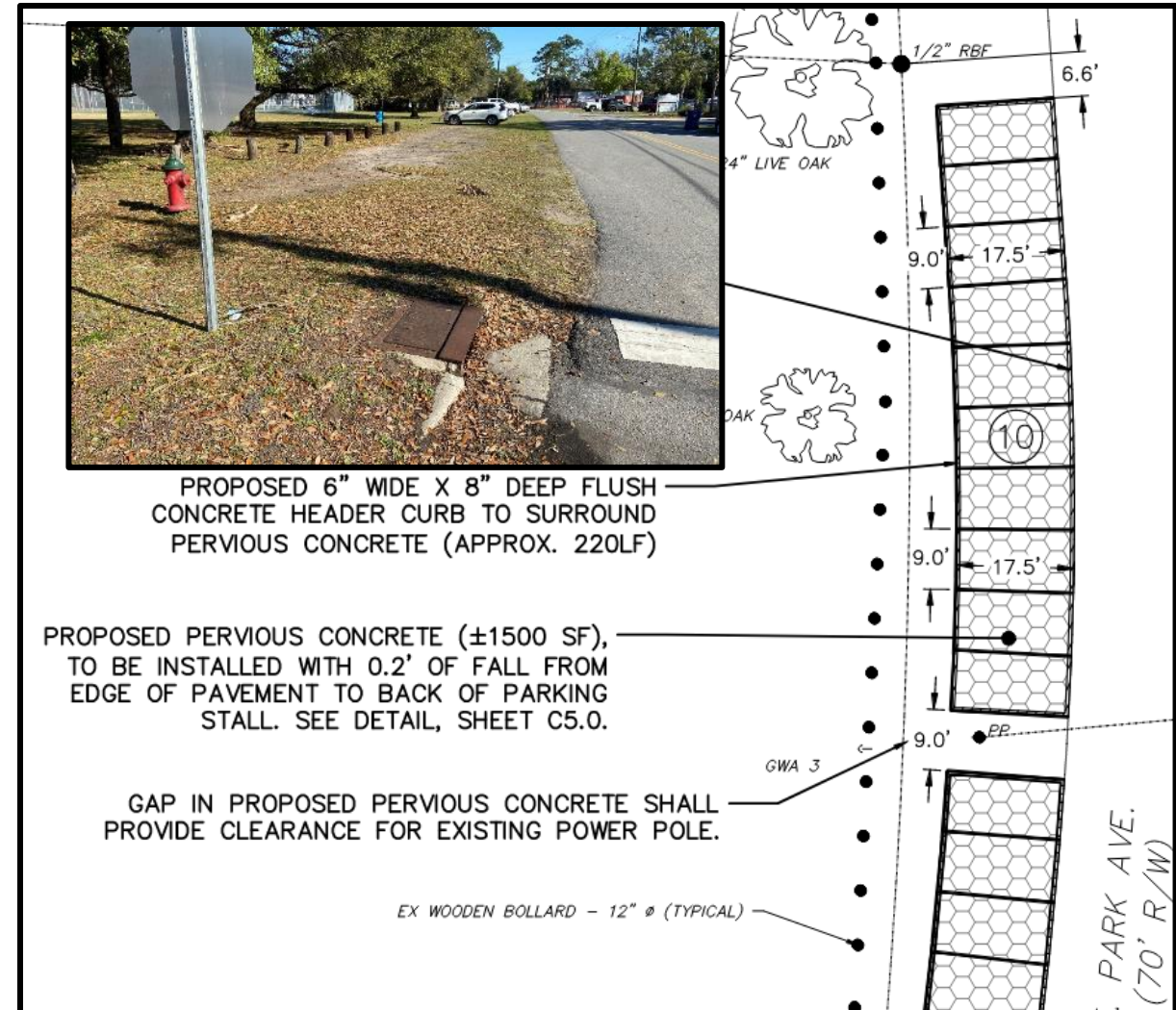
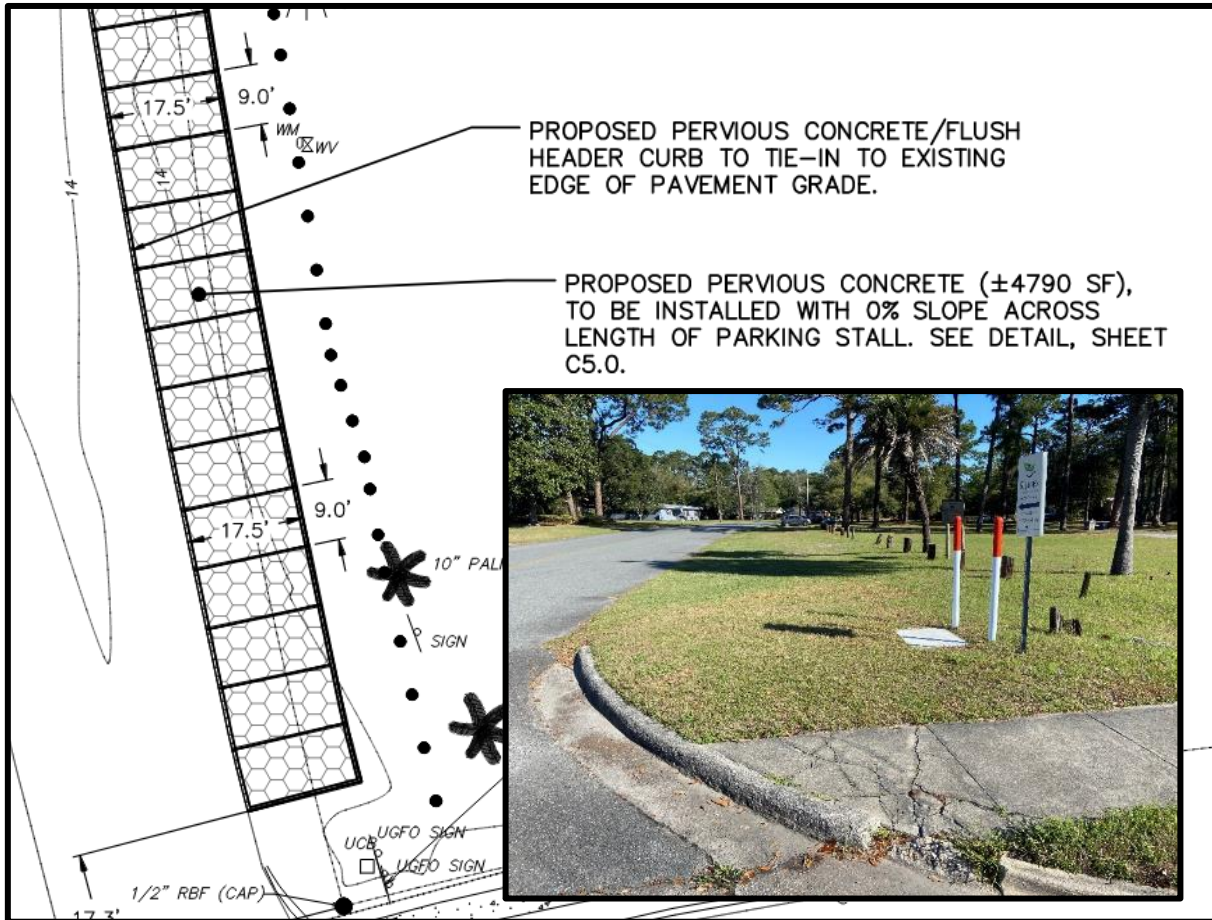
Site #2: Goodyear Park “RR Plan” Layout



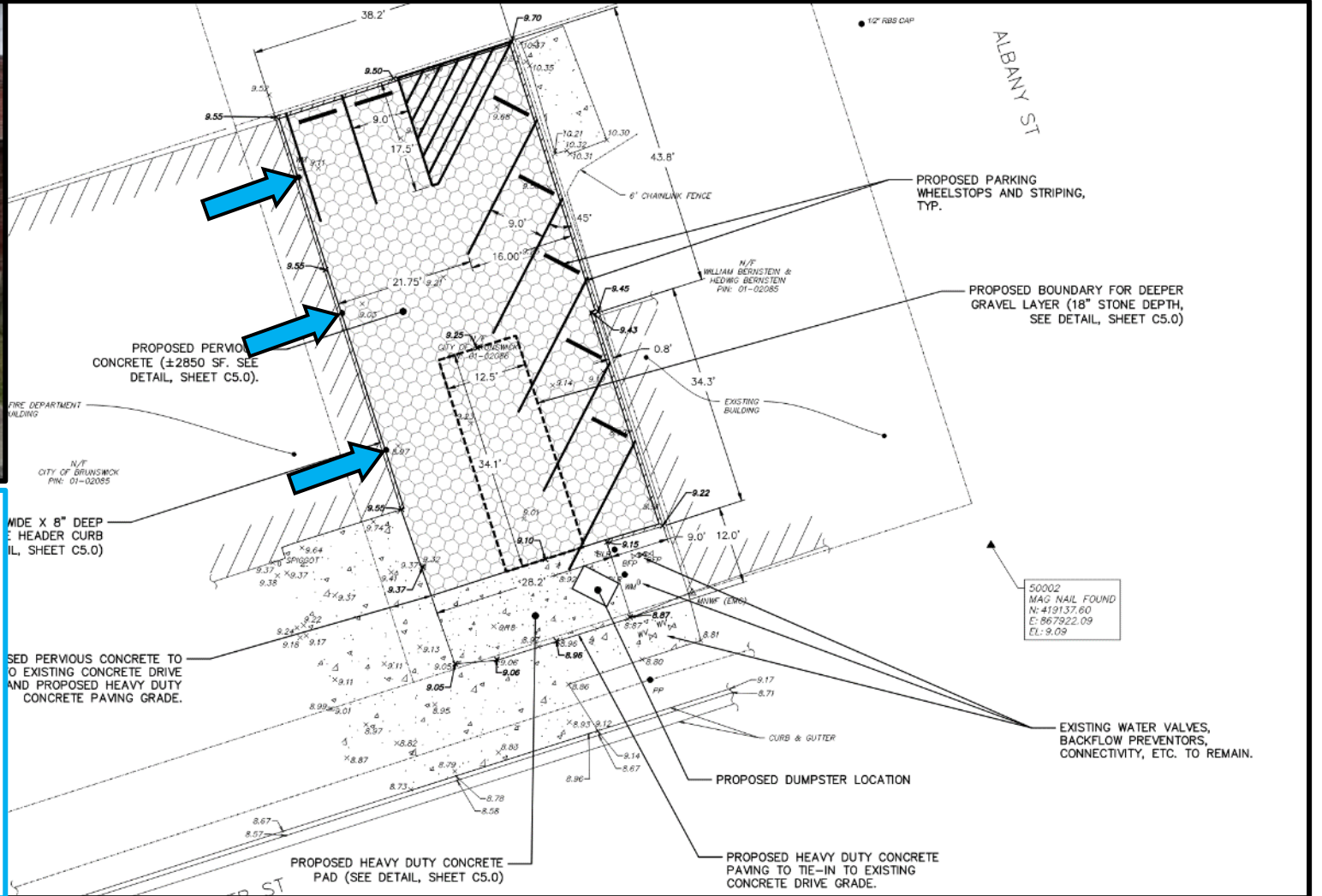
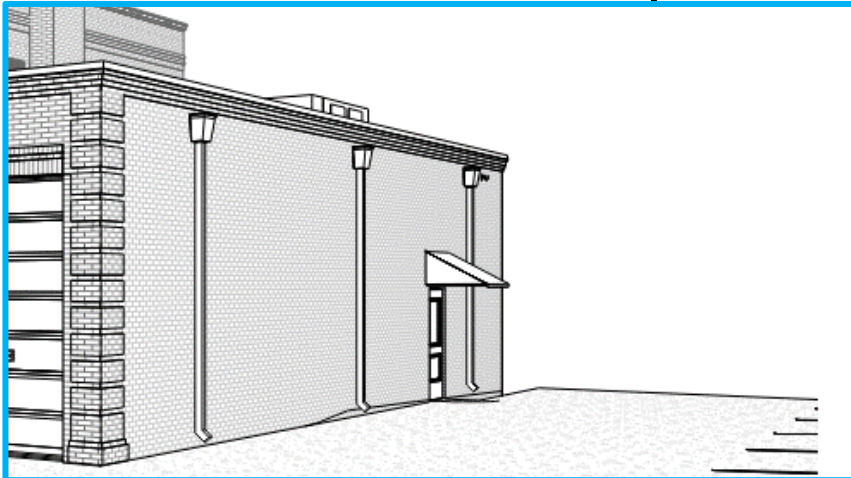
Bioswale Design



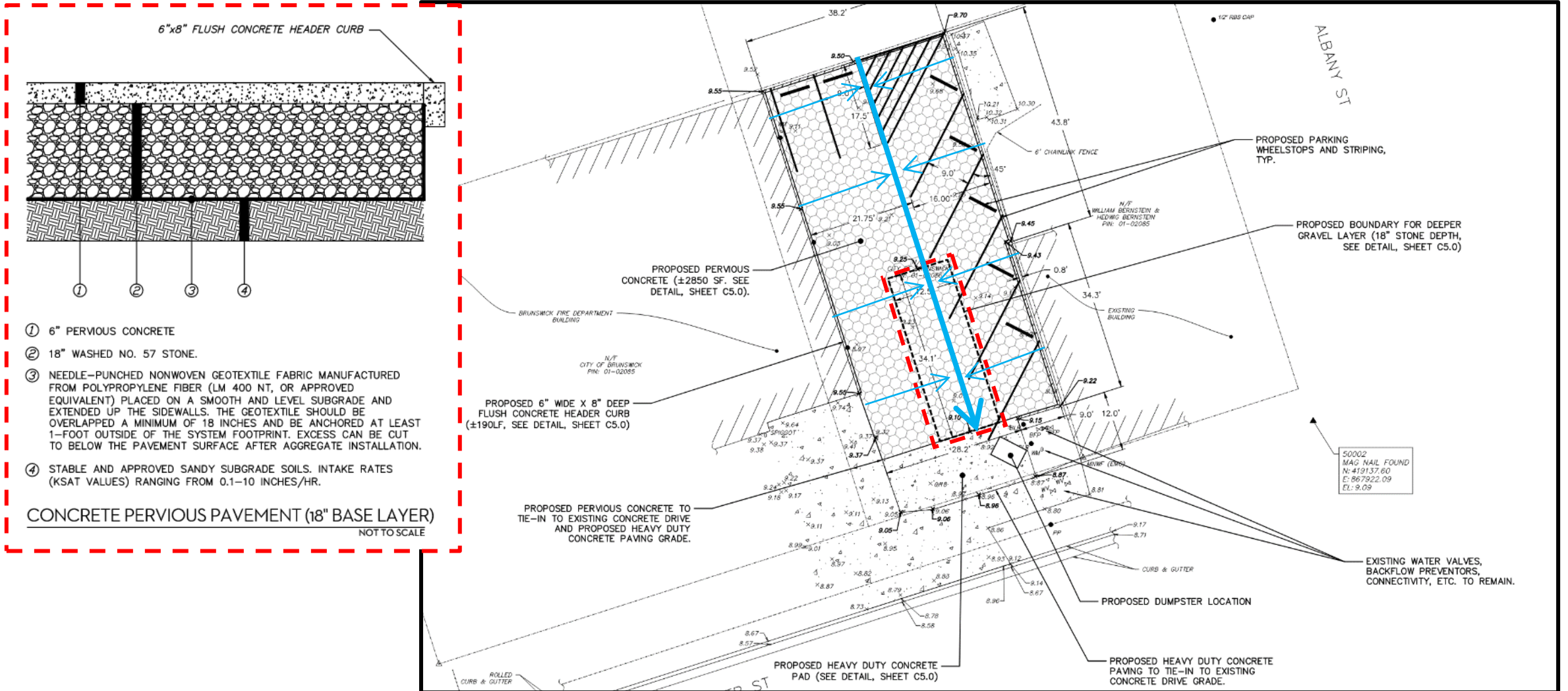
Permeable Pavement Layout (9,400 SF)



Site #3: Fire Station (Gloucester St.)



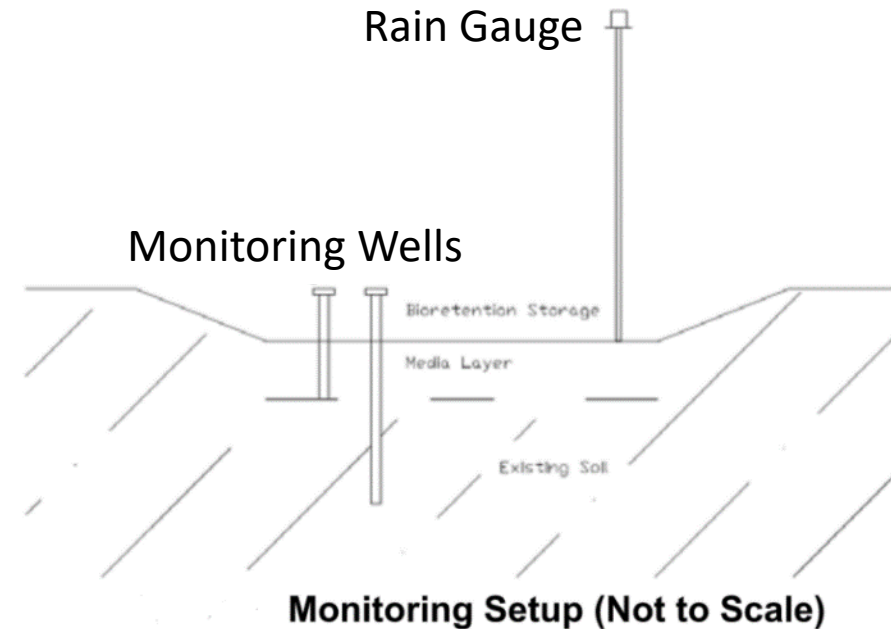
Fire Station Design Feature



Remaining Tasks – 319(h) Grant



- Finish GI/LID Construction
- Monitor Hydrologic Performance
 - Infiltration & Exfiltration Rates/Volumes



Remaining Tasks – 319(h) Grant



- Continued Stakeholder Engagement
- Demonstration Project Education
 - Construction & maintenance
 - Project planning & success
- Education and Outreach
 - Webinars/workshops
 - Community outreach



GI/LID Retrofits in Brunswick – From Planning to Implementation

Communication, Education and Outreach Plan

Jessica T. R. Brown

BACKGROUND

The City of Brunswick intends to implement priority Green Infrastructure/Low Impact Development (GI/LID) practices at a minimum of three locations – including two locations that leverage efforts from the 2020-2021 Rethinking Runoff Plan. Training, education and outreach activities, will be used to promote project progress and contribute to reducing nonpoint source pollution from stormwater runoff within the City of Brunswick. These activities build on the City of Brunswick's recent efforts to demonstrate the use of GI/LID in managing stormwater and be a leader for stormwater management in coastal Georgia.



Cover of Rethinking Runoff Plan



Rendering of Liberty Ship Park Project – proposed project site

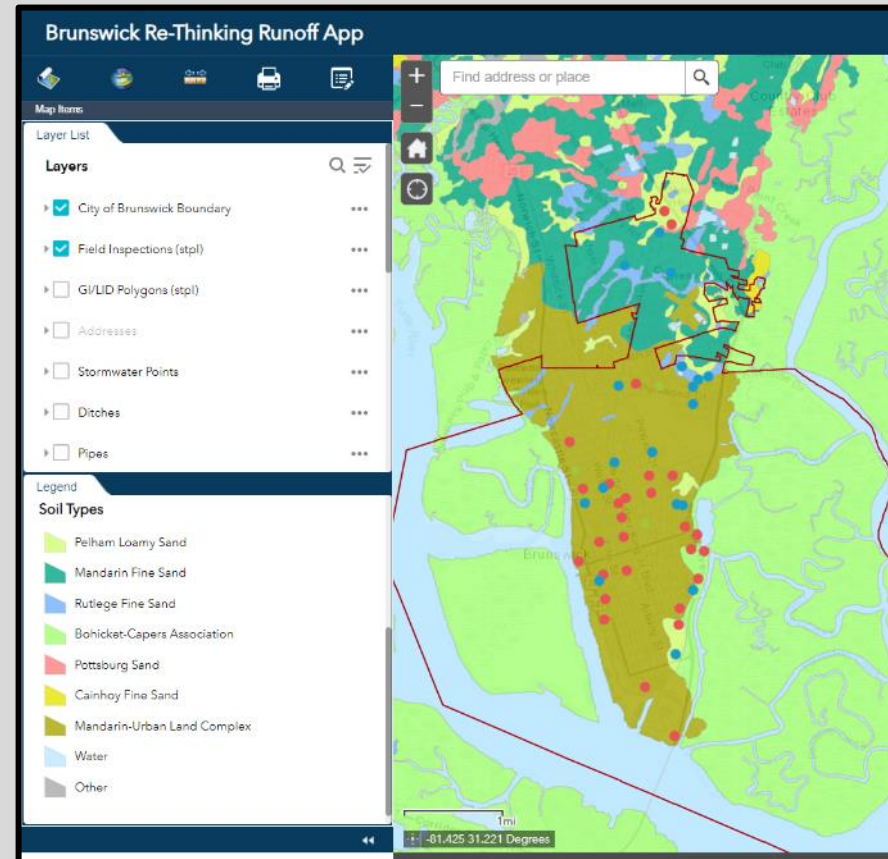


Goodyear Park Layout – proposed project site

Next Steps (Fall 2023): “Rethinking Runoff Plan – Phase II”



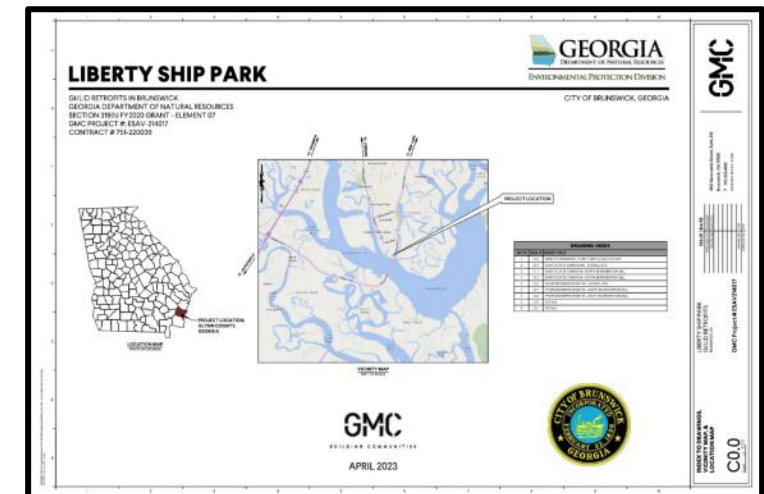
- Coastal Incentive Grant, Awarded Oct. 2023
 - 25 GI/LID Sites remaining



“Rethinking Runoff Plan – Phase II”: Objectives



- Prioritize Top 10
 - Additional Field Investigation
 - Soil Testing & Call 811
- Select Top 3
 - Infiltration Testing & Topo Survey
 - Engineering Design Plans
 - *City may be able to construct in-house or pursue grants to implement others*
- Engagement & Education in Community
 - Residential rain garden design & rain barrel building at NPA Meetings
 - ROW Rain Garden Design (template)
 - Continue outreach momentum



Questions



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