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Calhoun West Drainage Improvement & Sea Level Rise Mitigation Project

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History of City's Drainage Projects Project Overview Data Collection Watershed Assessment Potential Improvements Questions & Discussion



Project Location & Need



Project Location & Need



Project Objectives

- Identify 'short-range' alternatives to improve flooding
- Develop 'long-term' solutions to address stormwater conveyance & tidal flooding





Project Scope

- Program Management
- Data Gathering
- Watershed Assessment
- Conceptual Design
- Program Delivery





Preliminary Geotechnical Investigation



Limited Environmental Assessment



1939





Original High Water Line – Halsey Map

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HISTORIC CHARLESTON · ON · A · MAP ·

SHOWING ORIGINAL HIGH TIDE WATER LINES . FORTIFICATIONS , BOROUGHS, GREAT FIRES, HISTORIC INFORMATION , ETC.

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SUPERIMPOSED UPON CITY ENGINEERS AND DRAWN BY JOS. NEEDLE - 1946

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NEW MARKET RACE TONE

Original High Water Line – Halsey Map





1878 Tidal Drains



1950's Drainage System Map



1980's Drainage Master Plan



Field Assessment





Sump Areas



Tidal Observations



Tidal Observations



Tidal Observations – Hurricane Matthew



Nodal Schematic



10-YR Inundation Map



Historic Tidal Fill & 10-YR Inundation Map



Calhoun Street Profile





Calhoun Street Profile





2.5' Sea Level Rise (City's SLR Strategy)



2.5' Sea Level Rise

- Low Battery Wall (±5000 LF) is being designed for 2.5' SLR
- Potential to raise Lockwood Dr.
- Potential Pump Station & Outfall designed to meet SLR requirements





'Short-Range' Improvements

- Smaller-scale improvements are being investigated that can be implemented in a shorter time frame
- These include:
 - System inspection, maintenance & repair
 - Temporary pumping
 - Drainage improvements between Alberta Long Lake and Cannon Park
 - Raising streets where possible
- Tidal valves have been replaced at Rutledge, Limehouse, Beaufain, and other outfalls in the study area





'Long-Range' Improvements

- Deep tunnels with pumping appear to be the most viable long-range solutions due to:
 - Remote, low-lying areas
 - Historic urban setting
 - Dense utility grids
 - Poor near-surface soil conditions
- Permitting requirements and funding acquisition will take time
- Design for 2.5' of Sea Level Rise (per City's Sea Level Rise Strategy)





CHARLESTON GEOLOGIC PROFILE



Conceptual System Layout

Conceptual Tunnel Layout



Conceptual System Layout

Conceptual Pump Station Layout



Questions?

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