

# DAVIS & FLOYD

SINCE 1954

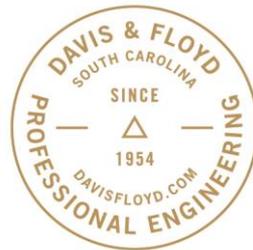


## Drainage Master Plan City of Isle of Palms

*Council Workshop - May 9<sup>th</sup> 2023*

## CONTENT

- Phase 4 Stormwater Masterplan
- Capital Improvement Plan
- Maintenance Program Review and Recommendations
- Development Regulations Review and Recommendations



# Phase 4 Stormwater Masterplan

- Draft Report of the Phase 4 Stormwater Masterplan



*"Drainage Study and Recommendations for Improvements" for*  
**City of Isle of Palms**

*January 2023*

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D|F Job No.: 031974.00

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**PREPARED FOR:**

City of Isle of Palms  
1207 Palm Boulevard  
Isle of Palms, SC 29541

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# Phase 4 Stormwater Masterplan

- Phase 4 Study Area



# Phase 4 Stormwater Masterplan

- Phase 4 Survey & Monitoring



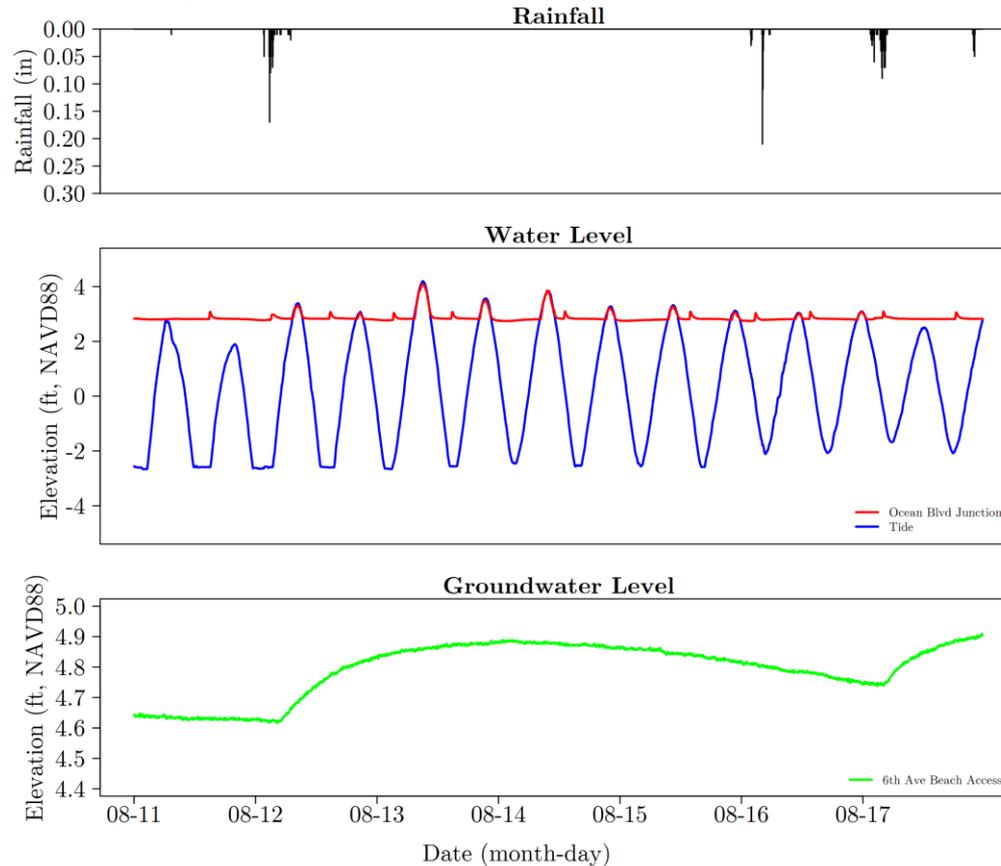
Example of a monitoring system placed on the island to monitor the rainfall and tidal conditions. This monitor was placed at the marina along the intracoastal waterway.



Example of surveying the drainage system inventory using the GPS units. This photo was taken at an outfall going to the intracoastal waterway.

# Phase 4 Stormwater Masterplan

## ■ Phase 4 Survey & Monitoring



An example of the results found from the monitoring systems placed around the island.

# Phase 4 Stormwater Masterplan

## Phase 4 Existing and Proposed Conditions

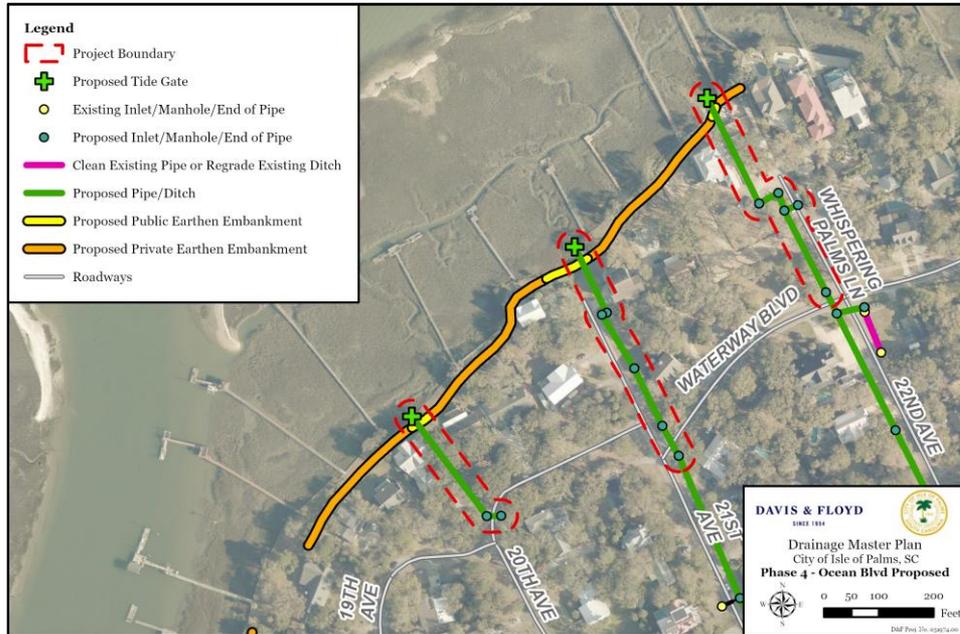


The existing conditions were determined based on the field inventory taken from the survey. The results of a 10-year 24-hour SCS type III (6.60 in) Rainfall with typical tides is shown above for a section of the island on Ocean Blvd and Merrit Blvd.

The proposed conditions were determined to improve flooding conditions from the existing system. The results of a 10-year 24-hour SCS type III (6.60 in) Rainfall with typical tides is shown above for a section of the island on Ocean Blvd and Merrit Blvd.

# Phase 4 Stormwater Masterplan

## Phase 4 Recommended Improvements



Tide gates are recommended to help alleviate frequent tidal flooding in the system.

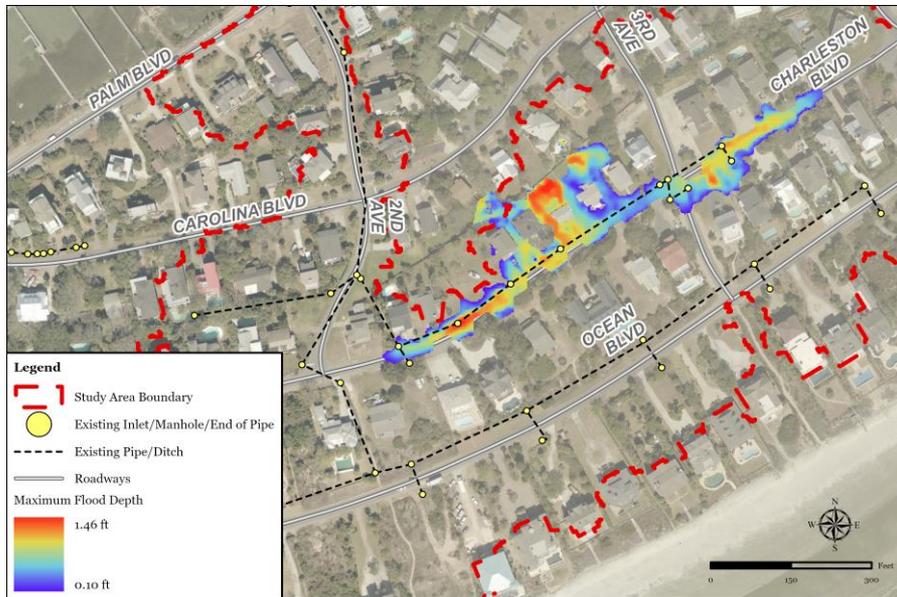


Infiltration chambers are one of the many improvements proposed to the system.

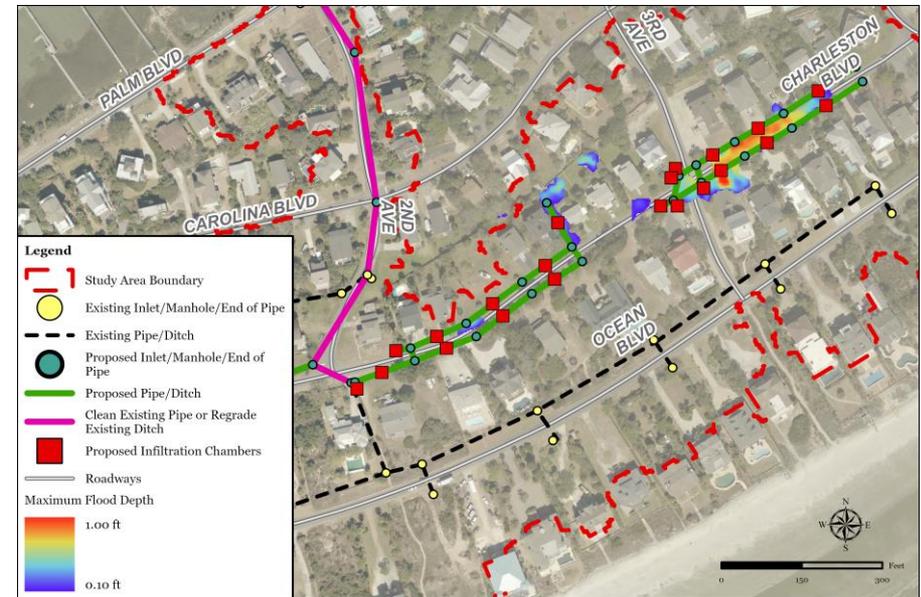
Rank	Project	Estimated Cost
1	Charleston Boulevard	\$4,600,000
2	Ocean Boulevard	\$3,100,000
3	Outfall Improvements	\$11,900,000
4	Merritt Boulevard	\$1,000,000
5	Palm Boulevard	\$5,000,000
6	9 <sup>th</sup> Avenue Minor Improvements	\$1,200,000
7	Minor Drainage Improvements	\$19,500,000
	<b>Total Estimated Project Costs</b>	<b>\$46,300,000</b>

# Phase 4 Stormwater Masterplan

## ■ Charleston Boulevard Project



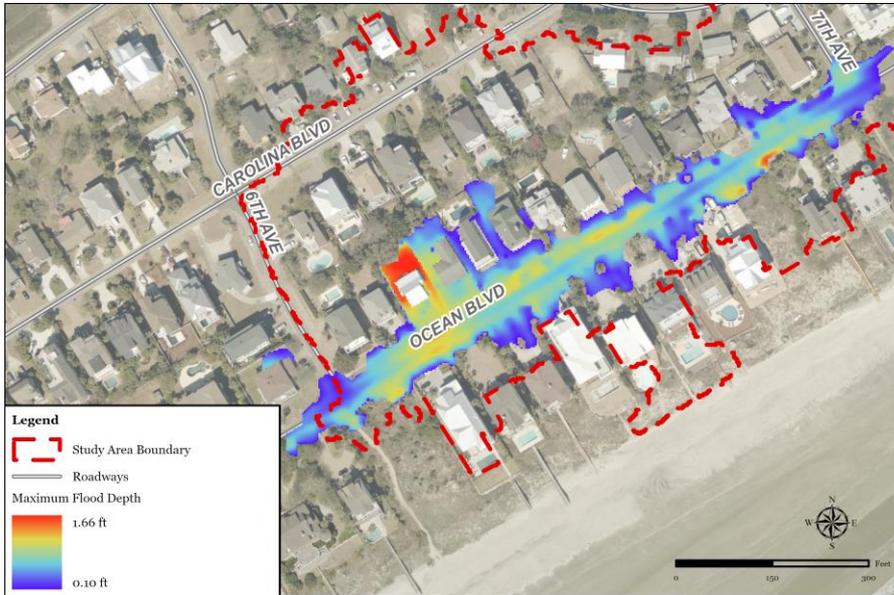
Existing Conditions



Proposed Conditions

# Phase 4 Stormwater Masterplan

## ■ Ocean Boulevard Project



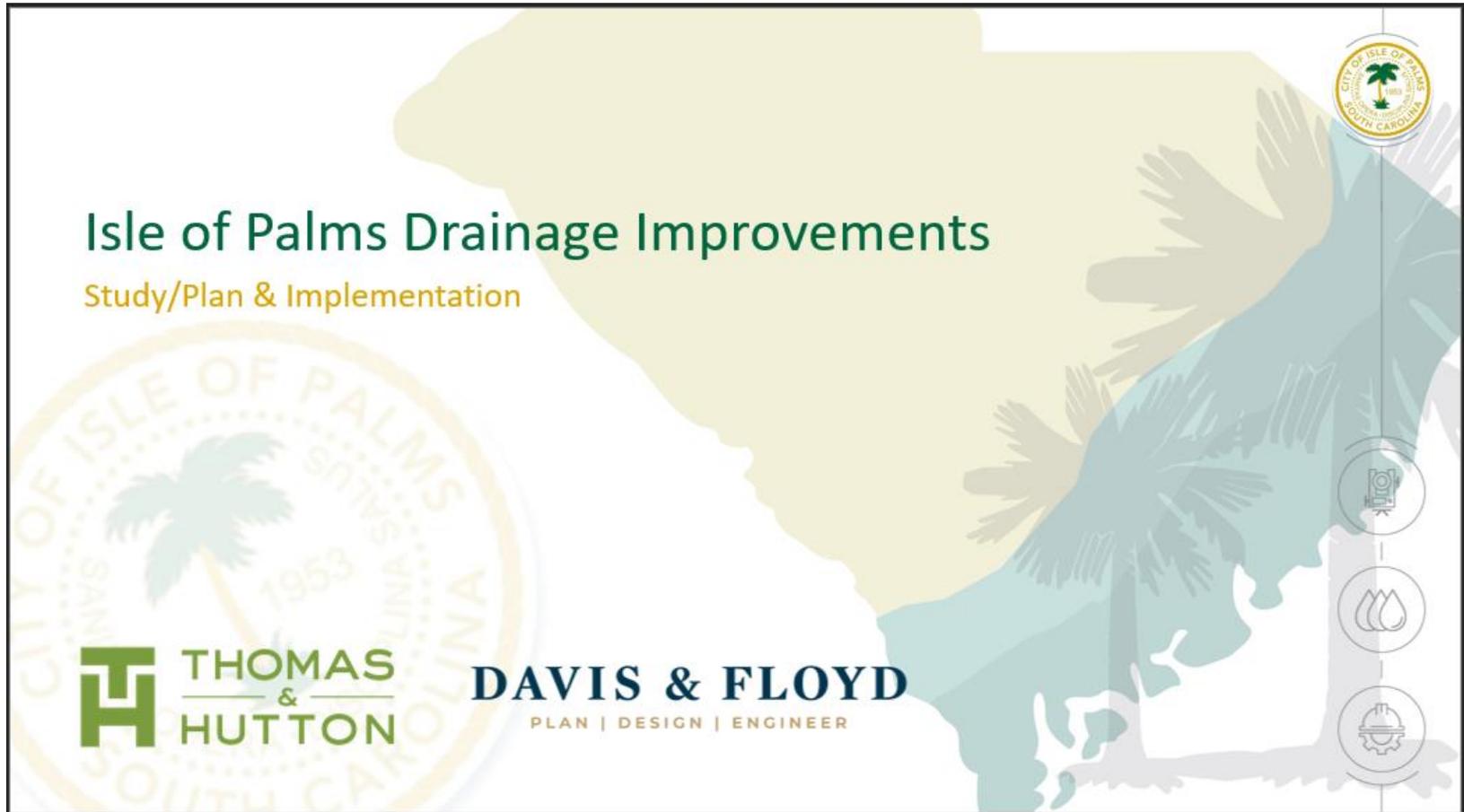
Existing Conditions



Proposed Conditions

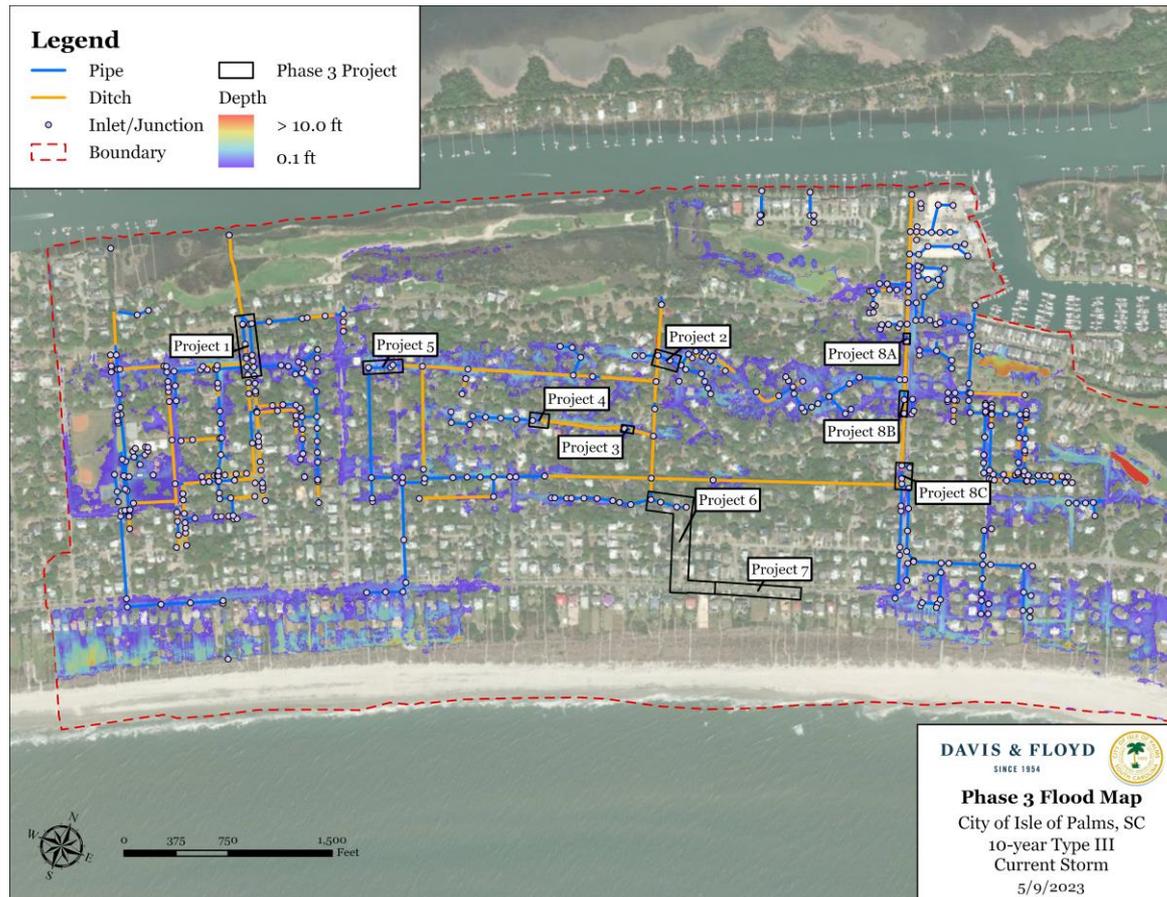
# Phase 4 Stormwater Masterplan

- South Carolina Beach Advocates Conference (1/31/23)



# Capital Improvement Plan

## Phase 3 Assimilation (Projects recommended by T&H)



The existing conditions were determined based information provided by the town. The results of a 10-year 24-hour SCS type III (6.60 in) Rainfall is shown above for the Phase 3.

# Maintenance Review and Recommendations

- Maintenance Schedule
- Maintenance Tracking
- Adopt-a-Drain Program
- Online Reporting System

Monthly	Quarterly	Following Significant Storms	Following King Tides	Review/Recommendations
	x	x		Visually assess ditches for maintenance requirements and remove heavy debris, obstructions, sediment build up, or other maintenance as necessary (i.e., repair of ditch lining).
	x	x	x	Visually assess outfalls for maintenance needs and remove debris, obstructions, or provide other maintenance as necessary.
	x			Visually inspect for tree or vegetation growth and remove, as necessary.
	x	x	x	Visually inspect and trap and maintain (i.e., stone placement) as necessary to support filter fabric / underlayment functionality.
	x	x		Visually inspect inlet systems for sand / debris accumulation and maintenance with truck vac cleanup or other suitable method as necessary.
x		x	x	Visually inspect inlet grates for obstructions / debris and cleanup as necessary.
	x			Visually assess areas for signs of frequent flooding which could be due to blocked pipes or other drainage features. Consider investigating areas of concern with video inspections or other suitable method to identify potential repair needs.
				Visually assess areas for signs of frequent flooding which could be due to blocked pipes or other drainage features. Consider investigating areas of concern with video inspections or other suitable method to identify potential repair needs.
x				Visually assess public and private properties for evidence of unauthorized land disturbance activities (fill removal/placement, new construction, removal of buffers, other) Address observations as necessary.
x		x		Visually assess community debris removal practices for potential impacts to drainage system performance (i.e., obstructing drain access / increasing debris). Address observations as necessary.
	x			Visually inspect public area slopes and embankments for bare spots and replant areas, as necessary.

# Development Regulations Review and Recommendations

- Revisions and Additions
- Best Management Practice Incentives

Title	Chapter	Article	Section(s)	Existing Ordinance	Stormwater Management Recommendation
Title 5 - Planning & Development	Chapter 4 - Zoning	Article 1 - General Provisions	Sec. 5-4-12 - Additional Regulations	p) Adding fill or importation of materials of any type, or re-contouring of a lot's existing contours, that increases a lot's existing ground elevation more than one (1) foot above existing road and results or may result in elevating an existing or proposed structure is strictly prohibited.	p) Adding fill or importation of materials of any type, or re-contouring of a lot's existing contours, that increases a lot's existing ground elevation more than one (1) foot above existing road and results or may result in elevating an existing or proposed structure is strictly prohibited, unless the elevated surface does not exceed 7.4 ft of elevation.
Title 5 - Planning & Development	Chapter 4 - Zoning	Article 1 - General Provisions	Sec. 5-4-12 - Additional Regulations	q) Any decrease in a lot's existing ground elevation is strictly prohibited.	OMIT Ordinance
Title 6 - Health and Sanitation	Chapter 1 - General Provisions	Article C - Maintenance of Property	Sec. 6-1-32 - Duty to keep property clean	c) It shall be unlawful to keep or push litter from buildings, property, sidewalks and strips onto streets, sidewalks and the storm drainage systems. Sidewalk and strip sweeping shall be picked up and put into houses or commercial material containers.	Further expanding reference to storm drainage system to include explicitly natural and man-made drainage courses (i.e. ditches).
Title 5 - Planning & Development	Chapter 5 - Land Development Regulation	(-)	NEW ORDINANCE: Engineer Review of Development	None	A third-party engineer can be hired by the city to review development plans to determine if they are in compliance with the land development regulations and other applicable Ordinances.
Title 5 - Planning & Development	Chapter 5 - Land Development Regulation	(-)	NEW ORDINANCE: Balance of Natural Sinks	None	<p>For properties that fall within a select parameter*, any fill of sinks on the property must be accompanied with an equal volumetric storage for stormwater that would be retained by that sink. This may be alleviated using BMPs or other forms of stormwater storage. Areas exempt from the required retention include:</p> <p>a) Stormwater runoff on the property flows directly into a creek or the Intercoastal Waterway.</p> <p>b) Stormwater runoff on the property flows directly into a stormwater ditch.</p> <p>The following BMPs can be considered as potential storage:</p> <p>a) Cisterns</p> <p>b) Rain Gardens</p> <p>c) Rain Barrels</p> <p>d) Retention Ponds</p>