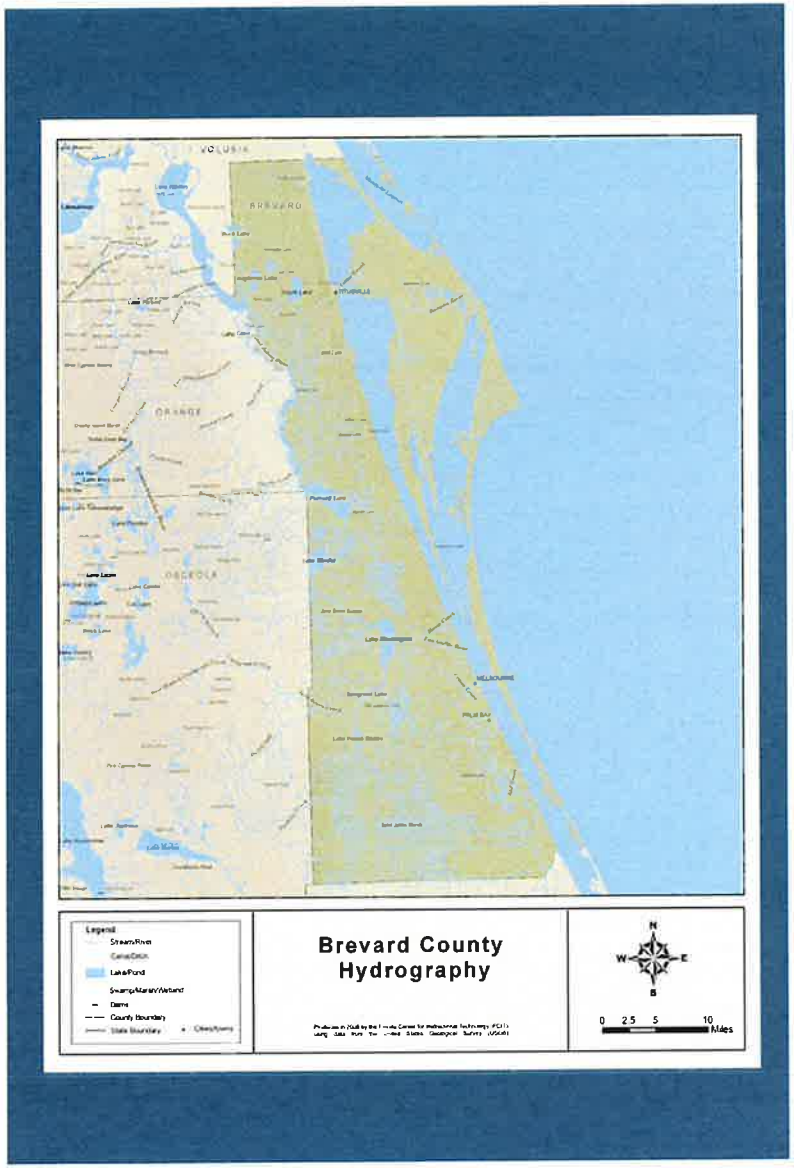
BREVARD'S WATER:
STORMWATER & DRAINAGE

C.7



BREVARD'S WATER

Ecological & Economic Value

Coastal System - Atlantic Ocean

- Managed Beaches - 50-year Federal Project & Engineered South Beaches Dune
- Infrastructure Protection from Coastal Surge

Estuarine System - Indian River Lagoon

- Save Our Indian River Lagoon Program

Riverine System - St Johns River

- Out of County Considerations
- Development /Agricultural Conversion

Rainfall

Groundwater

SAVE OUR INDIAN RIVER LAGOON STORMWATER FUNDING

Project Progress

- 58 Projects Completed
- 35 Projects Underway
- 167 More Priority Basins
  - $61M Budget Assigned

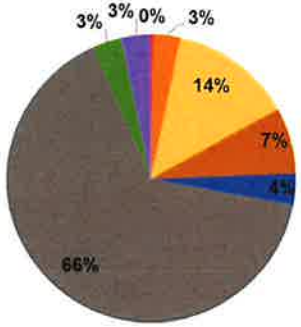
Nitrogen-Based Cost Share

- Traditional or GSI/LID BMPs

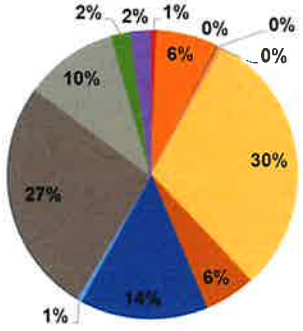
Funding Increase via Annual Updates

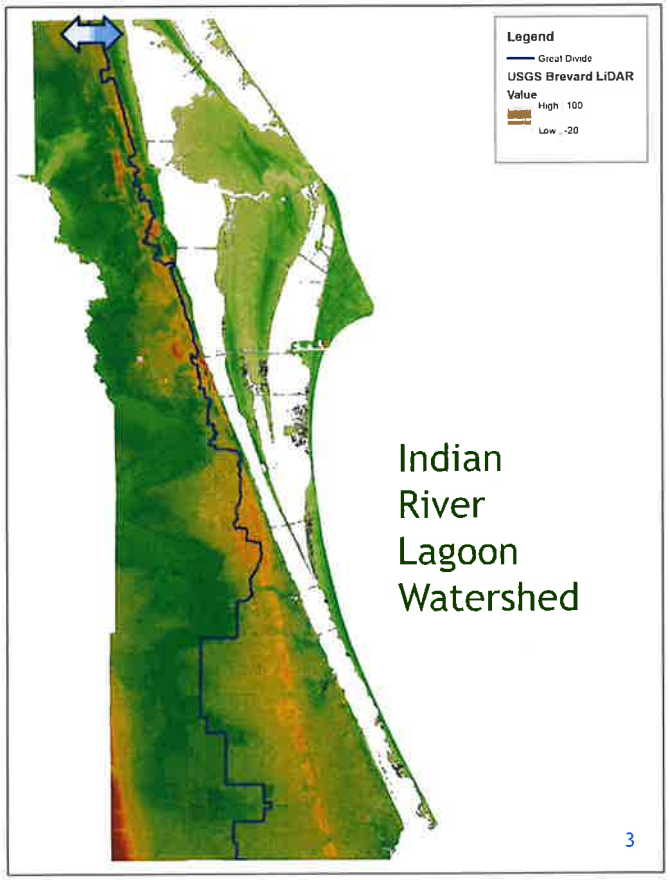
$10.4M (2016) → $86.7M (2025)

Original Plan



2025 Plan Update Total Cost





Project Types

- Wet detention ponds
- On-line retention and swales
- Off-line retention and swales
- Dry detention
- 2nd and 3rd generation baffle boxes
- Stormwater reuse for irrigation
- Alum injection
- Catch Basin Inserts/Inlet Filters
- Managed Aquatic Plant System
- Pond Circulation
- Permeable Pavement
- Bioswales
- Green roofs
- Bioretention basins
- Rain Gardens
- Tree boxes

ROLES & RESPONSIBILITIES

Services	Public Works	Natural Resources - Stormwater
Florida DEP NPDES Permit	Reports PW work to SW per SOP.	Administer & perform required work.
Education and Outreach	N/A	Yes
Permit Review*	Development stormwater review. Driveway culverts.	Stormwater-Pay PW for Position Env & Floodplain Permit Review
Studies and Master Planning	Related to ROW flooding/drainage.	County wide - large and small areas.
Flood & Nutrient Grants	Related to ROW flooding/drainage.	Application & Administration for SW projects.
Citizen Complaints* **	Right-of-way related drainage.	Flooding, water quality, fish kills, etc. Code Enforcement related to Environmental Complaints
Projects	Right-of-way related flooding & drainage.	Implementation of studies & master plans - water quality and flood.
Interdepartmental Support	Roadway, maintenance, & construction.	Stormwater and environmental assistance.
Water Quality Monitoring	Project related.	For projects, grant, and permitting.
Pollutant Source Tracking	Related to Development Permit Construction Discharge	As needed.
SW Utility Fee & Credit	N/A	Calculation, PAO & IT coordination, administration for some cities, budget preparation, biannual site review.
Maintenance	Right-of-way related (including pumps).	Related to water quality & regional ponds. Vegetative harvesting.

*** Planning & Development** - Permit Review related to FFE's and Lot Drainage
Citizen Complaints related to non-environmental Code Enforcement

**** Emergency Operations** - Collects crisis data from departments and residents
Manages the Local Mitigation Strategy

BREVARD'S WATER RISK & DEFENSE

Causes of Risk

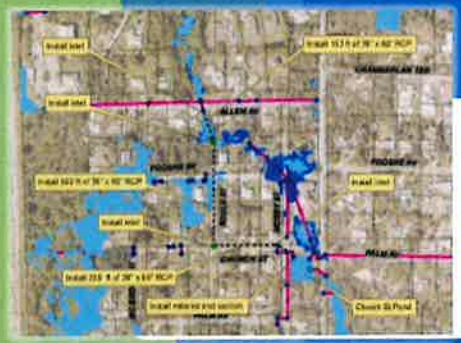
- Topography
- Storm Event Severity & Frequency
- Development Prior to Comp Plan & Stormwater Rules
- Code & Environmental Violations

Defense Tools

- Regulatory - Code Modifications
- Additional/Proactive Code Enforcement
- Green Stormwater Infrastructure & Low Impact Development - Developers & Homeowners
- Buy Outs
- Routine Maintenance
- Sufficient Staffing & Equipment Levels
- Large & Small Retrofit Projects

BREVARD'S WATER

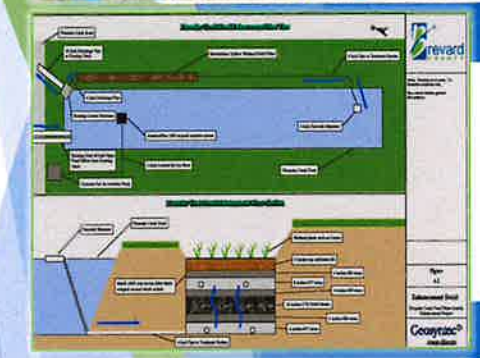
TYPES OF COUNTY PROJECTS/ DEFENSE



Flood Control

Movement of Water to Mitigate Risk

Larger Scale, Multi-Year



Water Quality

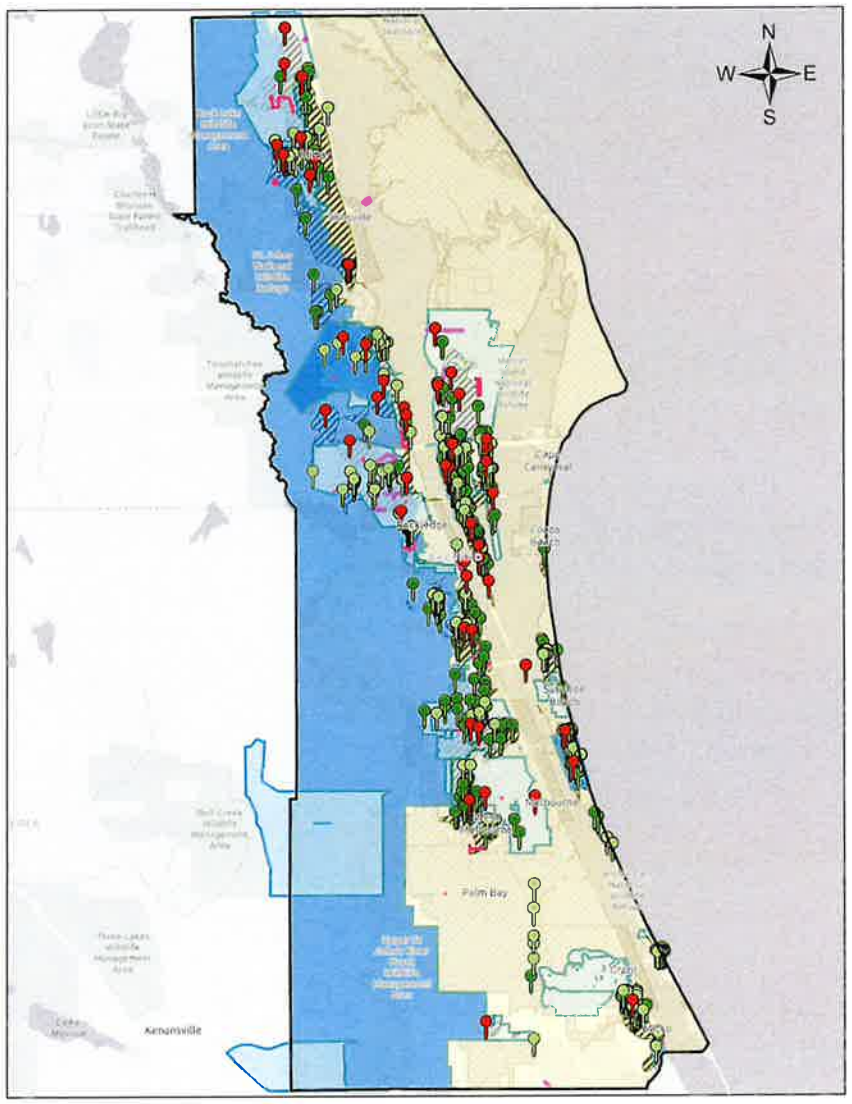
Nutrient Removal

Required by State

Resilience

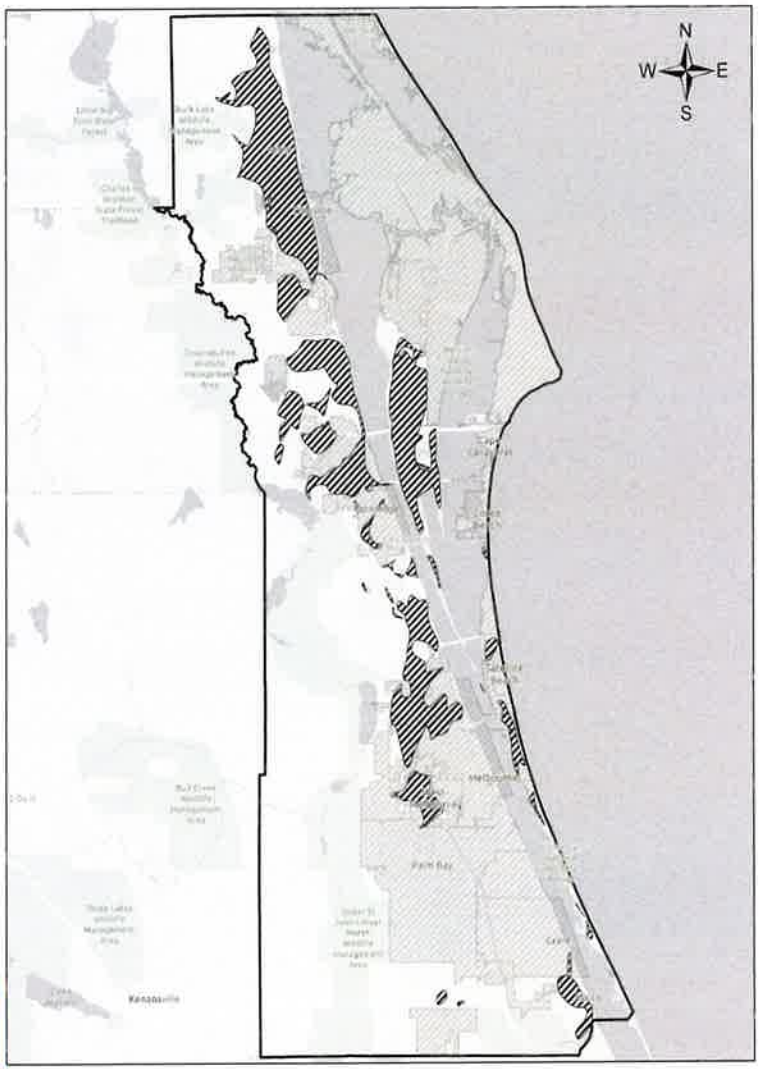
Strengthening Green & Gray Infrastructure

Protection against extreme weather



Countywide Drainage / Flooding Overview

- Countywide Vulnerability Study
- Documented drainage and flooding areas since 2012
- Historical Drainage Studies
- Current Drainage studies
- Natural Resource's 5-year CIP's
- Public Work's Funded Drainage CIP's
- PW Road and Bridge Structural Pipe Lining
- PW Road and Bridge Culvert Replacements
- PW Road and Bridge Unfunded Critical Drainage CIP's

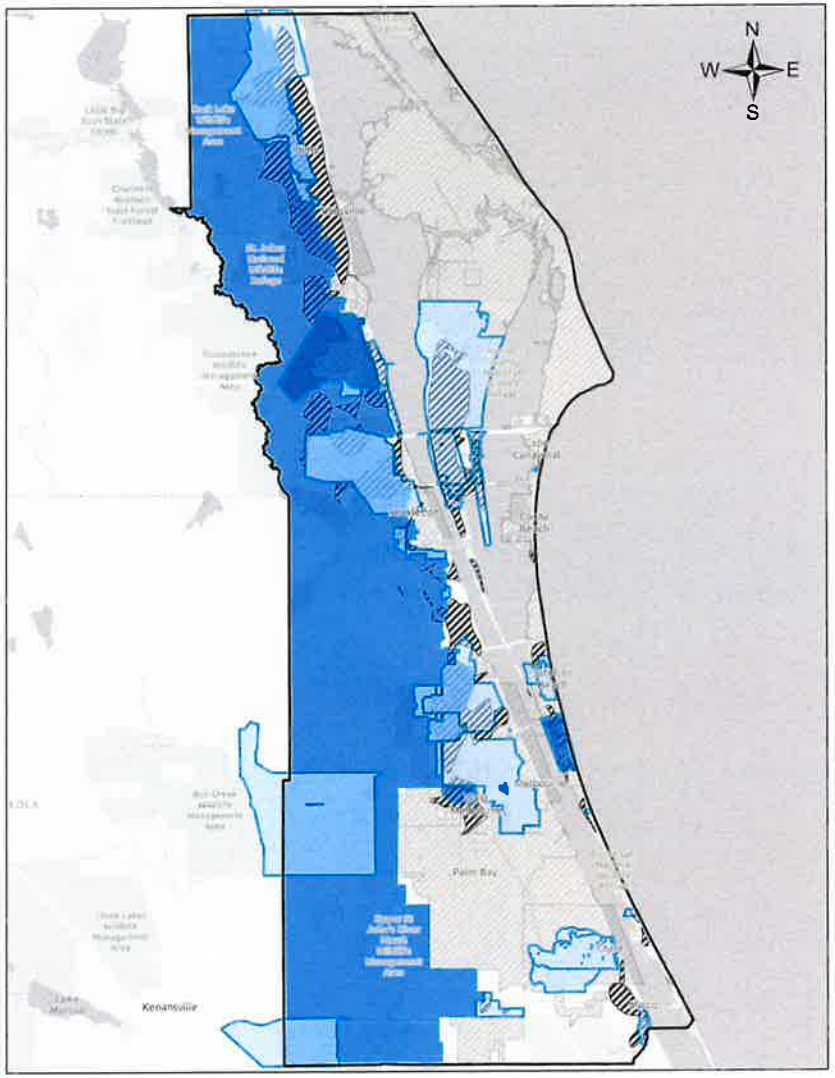


Countywide Drainage / Flooding Overview

Documented drainage and flooding areas since 2012

8

Countywide Drainage / Flooding Overview



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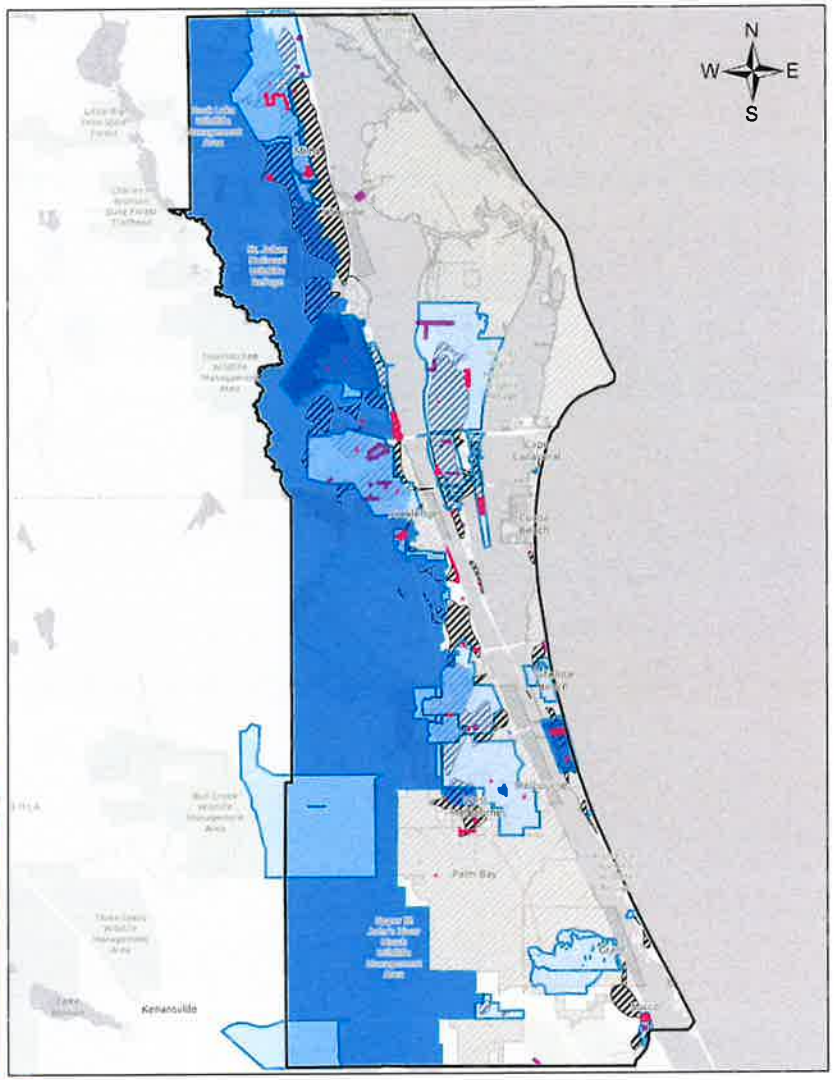
Historical Drainage Studies

Current Drainage Studies



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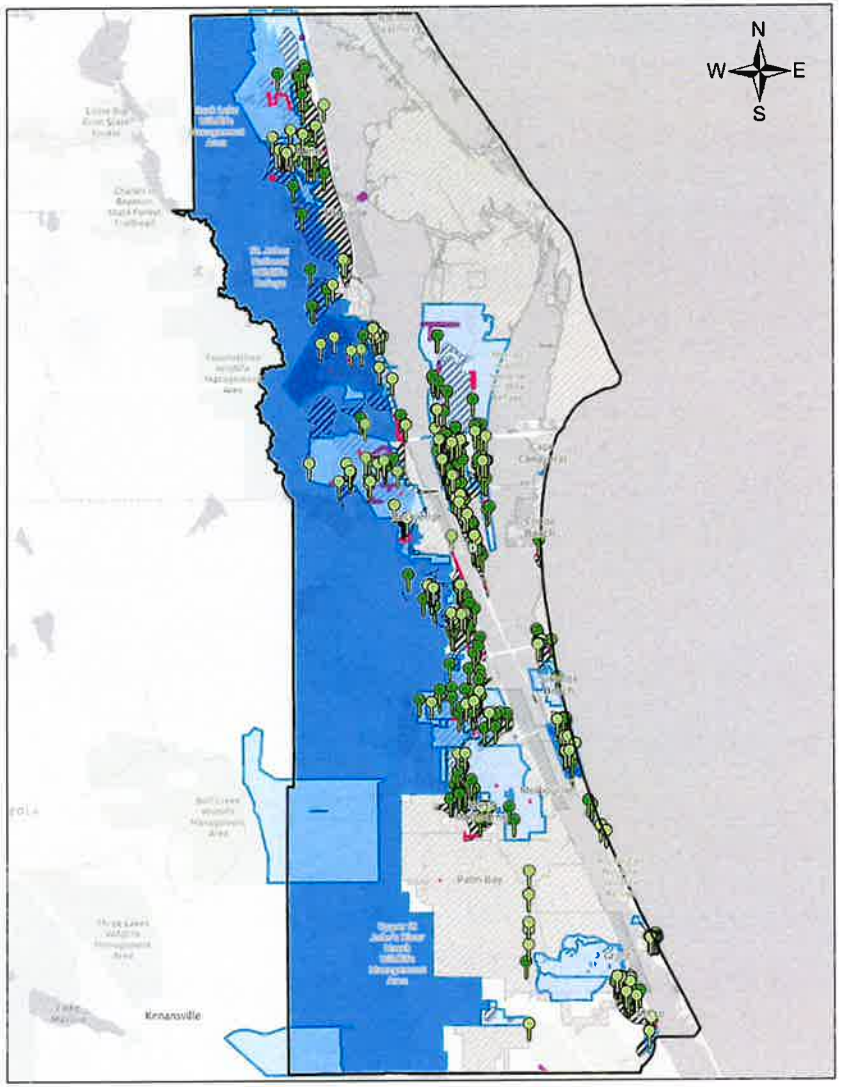

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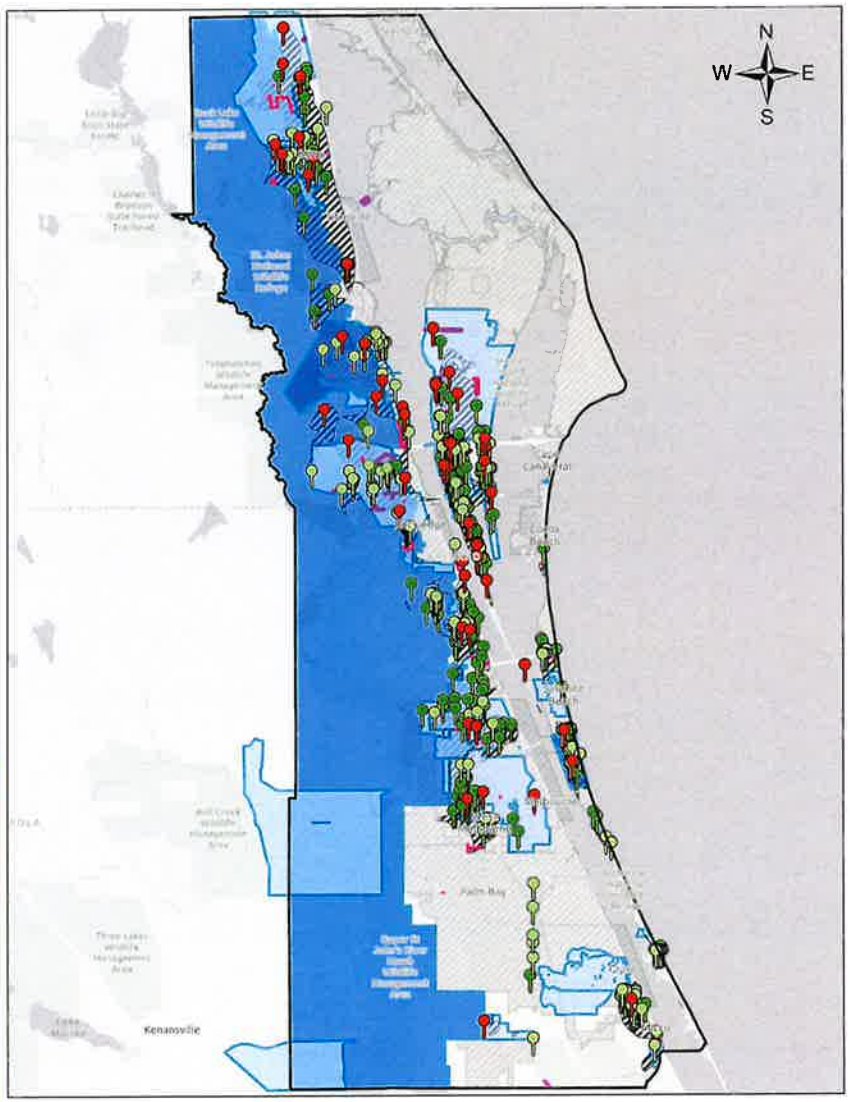

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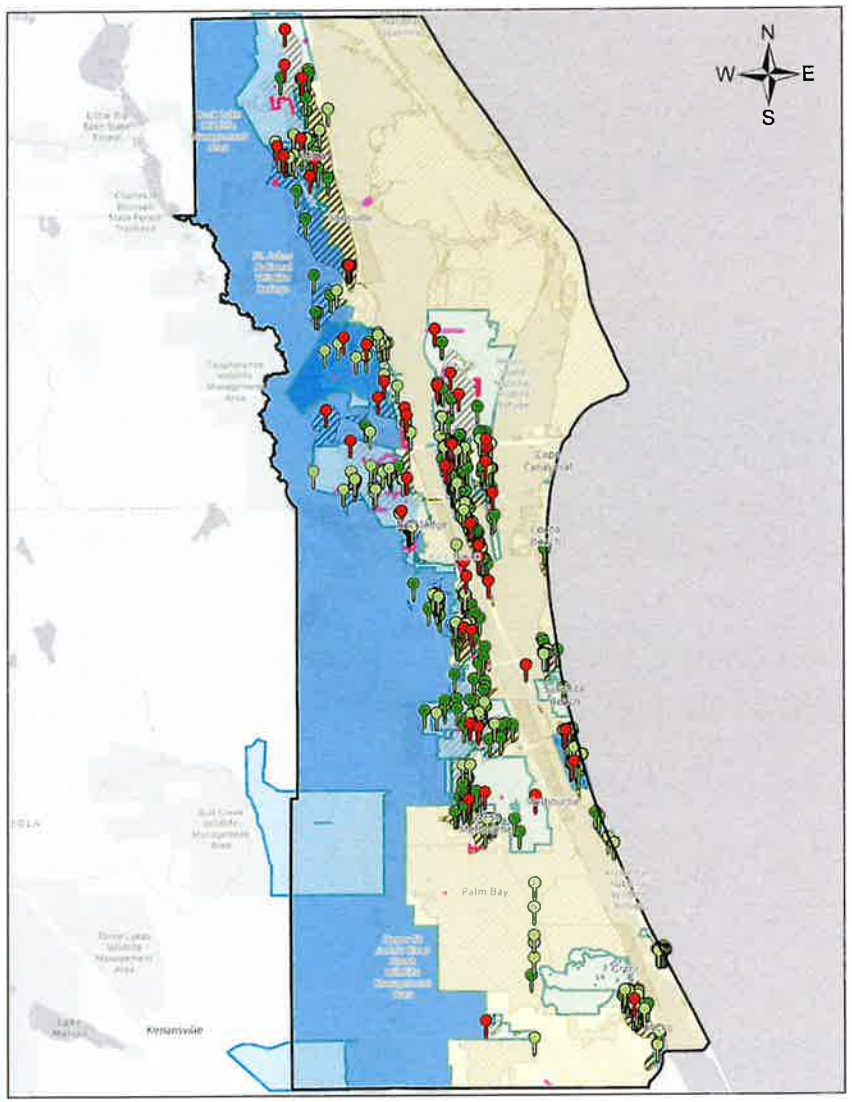

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Countywide Vulnerability Study

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Public Work's Funded Drainage CIP's

PW Road and Bridge Structural Pipe Lining

PW Road and Bridge Culvert Replacements

PW Road and Bridge Unfunded Critical Drainage CIP's

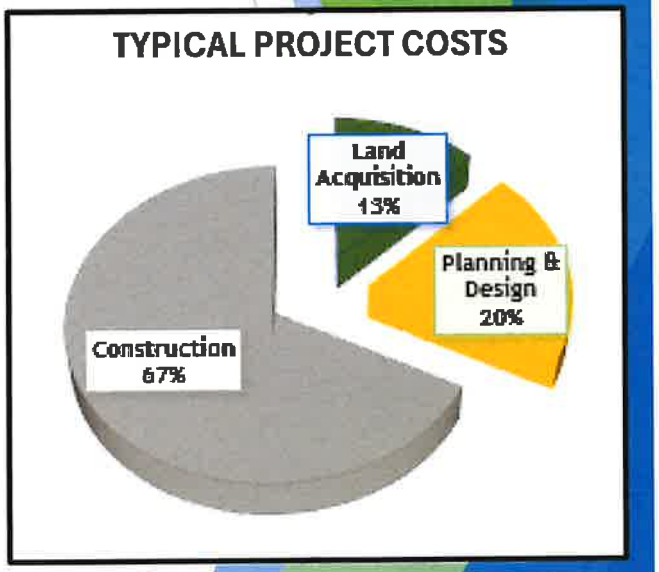
LARGE & SMALL AREA STUDIES & MODELING

Multiple modeling efforts are underway

- Identify assets and areas at risk from current and future conditions
- Required by Florida Statute
- Grant funded, including 8 municipalities
- Goal within 3 years - County-wide Vulnerability Assessment with real-time flood forecasting

Why spend time/money on studies when flooded areas are reported by citizens to the County?

- Permitting & grant applications
- Unintended consequences – wrong fix
- Waste of funds and resources
- Average stormwater project - 7 years



LARGE AREA FLOOD MITIGATION - CRANE CREEK/LAMPLIGHTER

←BEFORE

AFTER↓

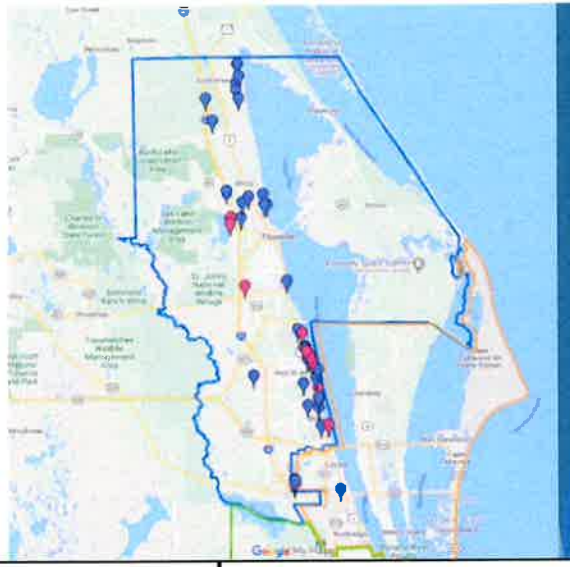
Flood Mitigation - Lamplighter homes flooded after Tropical Storm Fay

Groveland and Yacht Harbor also at reduced risk post-project

LARGE AREA FLOOD MITIGATION - CRANE CREEK/LAMPLIGHTER

Multiple culverts under I-95 and Eau Gallie & new channels provided flood mitigation and nutrient reduction

District 1 Stormwater CIP Projects



PROJECT DETAILS			BENEFITS			FUNDING		
Project Name	*Project Cost FY25–26*	*Total Project Cost (All Years)*	*Flood Control*	*Water Quality*	*Resilience*	*Stormwater Assessment*	*SOIRL*	*Grants*
W Cocoa SW Drainage Improvements D1 - 2016-27	$4,306,108	$13,082,524	☑	☐	☑	☑	☐	☑
Max Brewer Storm Damage Restoration - 2021-25	$400,000	$4,269,406	☐	☑	☑	☑	☑	☑
Fay Lake - 2015-28	$550,006	$4,145,994	☑	☑	☑	☑	☐	☑
West County Stormwater Improvements D1 - 2023-28	$900,000	$3,100,000	☑	☑	☑	☑	☐	☐
Ditch Outfall Denitrification D1 -2015-29	$141,812	$2,117,169	☐	☑	☐	☑	☐	☐
East Main Mims Nutrient Removal - 2020-27	$790,000	$1,240,000	☐	☑	☐	☑	☑	☐
Huntington Pond Denitrification - 2017-26	$692,226	$799,977	☐	☑	☐	☑	☑	☑
N Scottsmoor C Phase 2 - 2024-26	$650,000	$700,000	☐	☑	☐	☑	☑	☐
Breezeway D1 - 2014-26	$15,000	$395,000	☑	☐	☑	☑	☐	☐
N Scottsmoor I Phase 2 - 2024-26	$270,000	$300,000	☐	☑	☐	☑	☑	☐
TOTAL	$8,679,225	$30,150,070						

District 2 Stormwater CIP Projects

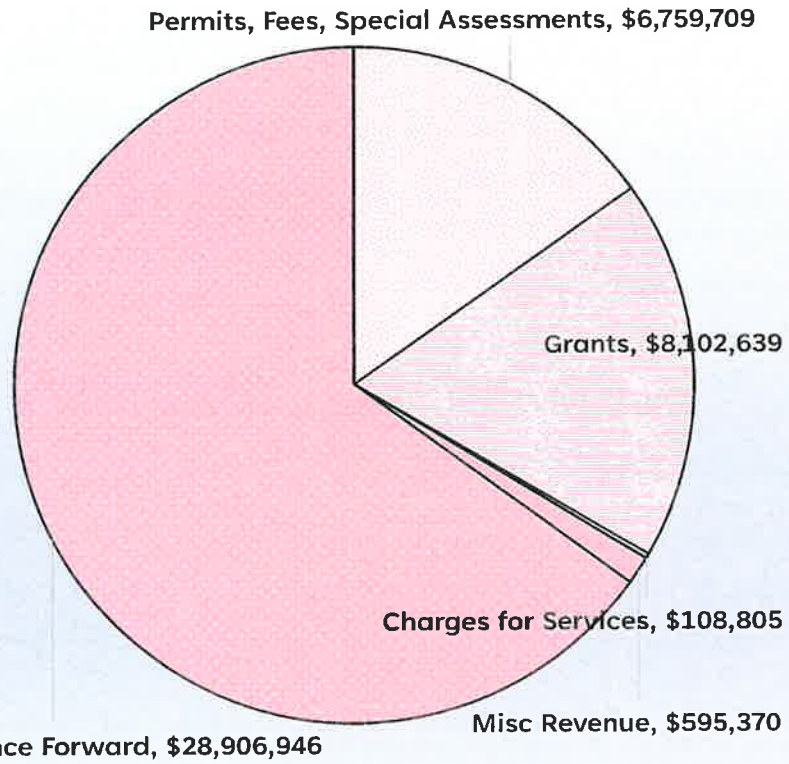
PROJECT DETAILS			BENEFITS			FUNDING		
Project Name	*Project Cost FY25-26*	*Total Project Cost All Years*	*Flood Control*	*Water Quality*	*Resilience*	*Stormwater Assessment*	*SOIRL*	*Grants*
Mud Lake - 2018-27	$ 1,025,000	$ 3,116,259	☑	☑	☑	☑		☑
Nasa Drainage Improvement D2 - 2023-26	$ 85,738	$ 2,555,981	☑		☑	☑		☑
W Cocoa Stormwater Drainage Improvements D2 - 2024-26	$ 2,060,000	$ 2,520,000	☑		☑	☑		☑
PICA PH III Emergency Outfall Weir - 2018-26	$ 415,000	$ 2,315,000	☑		☑	☑		
W Crisafulli/Church Rd Improvements - 2016-27	$ 1,170,000	$ 2,210,779	☑		☑	☑		☑
Richland Ave - 2021-30	$ 690,000	$ 1,551,629		☑		☑	☑	
Angel Ave - 2021-26	$ 1,057,593	$ 1,247,316		☑		☑	☑	☑
Ditch Outfall Denitrification D2 - 2015-29	$ 183,196	$ 1,053,039		☑		☑		
Banana/Hampton Homes - 2021-29	$ 75,000	$ 927,435		☑		☑	☑	
Pioneer Rd Ditch Outfall - 2021-26	$ 202,488	$ 783,517		☑		☑	☑	☑
Elliott Drive - 2021-27	$ 408,515	$ 657,515		☑		☑	☑	☑
N MI Pump Stations Flow Meters Retrofit - 2021-26	$ 130,000	$ 130,000	☑		☑	☑		
	$ 7,502,530	$ 19,068,470						

Districts 3, 4, & 5 Stormwater CIP Projects

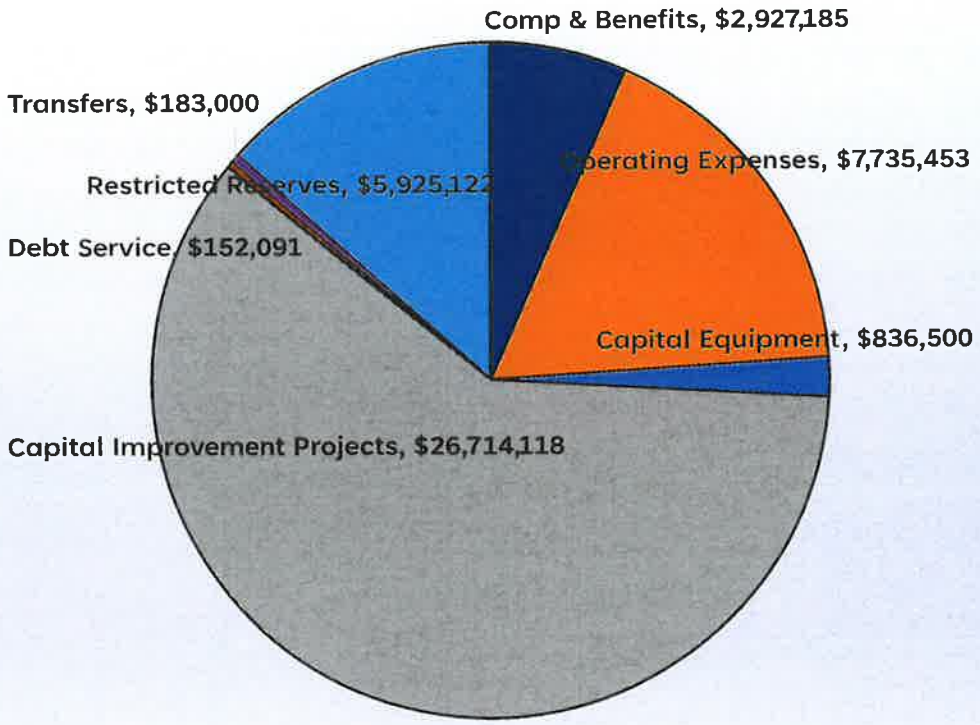
PROJECT DETAILS				BENEFITS			FUNDING		
District	*Project Name*	*Project Cost FY25-26*	*Total Project Cost All Years*	*Flood Control*	*Water Quality*	*Resilience*	*Stormwater Assessment*	*SOIRL*	*Grants*
3	Micco Central - 2018-26	$ 1,659,472	$ 2,255,247	☑		☑	☑		☑
	Ditch Outfall Denitrification D3 - 2015-29	$ 819,710	$ 1,902,724		☑		☑		
		$ 2,479,182	**$ 4,157,971**						
4	Ditch Outfall Denitrification D4 - 2015-29	$ 1,230,641	$ 4,231,626		☑		☑		
	Kingsmill - 2017-26	$ 3,070,803	$ 3,224,249	☑	☑	☑	☑	☑	☑
	Ruby St - 2018-26	$ 1,030,000	$ 1,123,385		☑	☑	☑	☑	☑
	Flamingo - 2021-26	$ 458,623	$ 932,692		☑		☑	☑	☑
	Stormwater Performance Retrofits D4 - 2022-26	$ 317,401	$ 828,957		☑		☑	☑	☑
	W Arlington -2021-26	$ -	$ 345,498		☑		☑	☑	☑
		$ 6,107,468	**$ 10,686,407**						
5	Sandollar Canal - 2021-26	$ 1,700,000	$ 1,896,503		☑		☑	☑	☑
	Hoover and Ocean Park SW Improvements - 2018-26	$ 1,114,574	$ 1,200,000	☑		☑	☑		
	Ditch Outfall Denitrification D5 - 2015-29	$ 451,351	$ 1,197,471		☑		☑		
	Basin 2258 Ditch Outfall Denitrification - 2019-26	$ 441,124	$ 508,543		☑		☑	☑	☑
		$ 3,707,049	**$ 4,802,517**						

STORMWATER PROGRAM - 34 PROJECTS, 13 FLOOD CONTROL

Revenue - $44,473,469

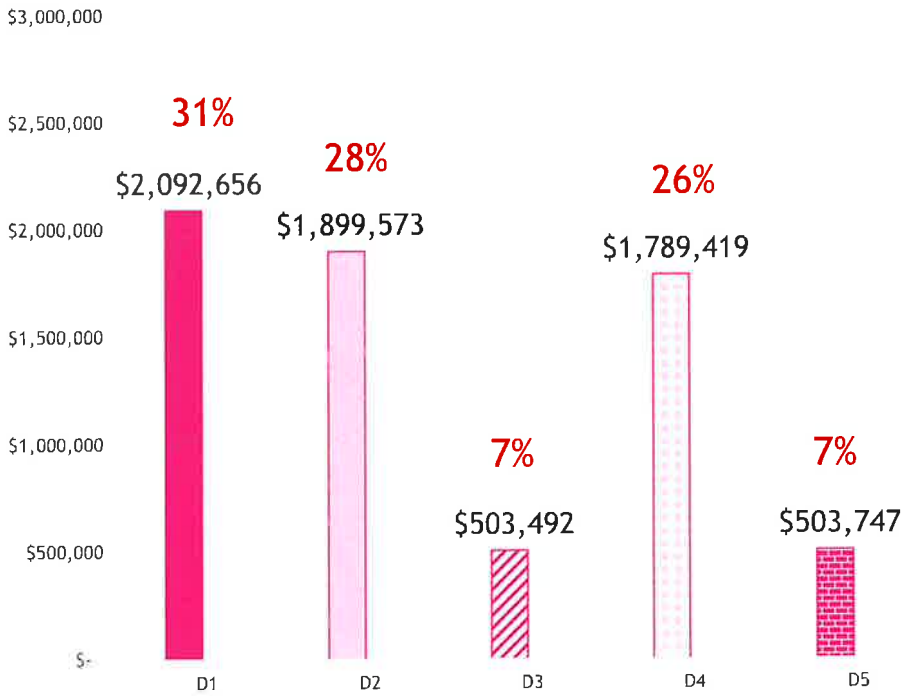


Expense - $44,473,469

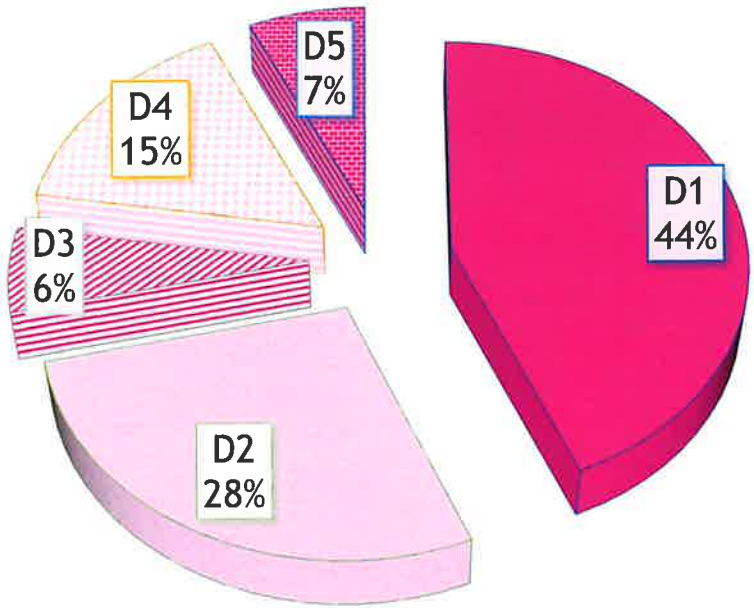


District Revenue v. Project Expenditures

FY25/26 PROJECTED STORMWATER ASSESSMENT REVENUE BY DISTRICT



BOARD APPROVED CURRENT CAPITAL IMPROVEMENT PROJECTS (CIP) BY DISTRICT



PW Road and Bridge Unfunded Critical Drainage CIP's

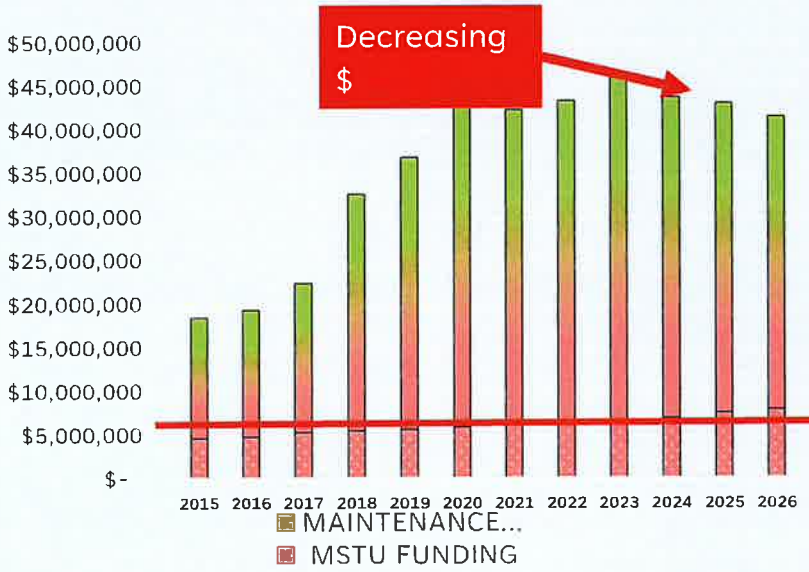
PW R&B Funding

MAINTENANCE OPERATIONS ~29% Drainage

- Salary & Benefits, Major Projects, Materials
- $331.3M Total 10-Year/$33.1M Annual Average

MSTU ~64% Drainage

- Infrastructure/Right of Way Maintenance & Repair
- $62.2M Total 10-Year/$6.2M Annual Average



MSTU Districts	Available Funding @ Start of Fiscal Year
MSTU District 1	$1,837,814
MSTU District 2	$972,959
MSTU District 3	$698,828
MSTU District 4	$2,619,867
MSTU District 5	$805,402
MSTU District 4 MI	$121,155
MSTU District 4 BEACH	$250,738

MSTU nearly FLAT for last decade

Historical Subdivisions and Lots

1986 SJRWMD ERP Permitting
1988 Brevard County Comp Plan

→ ~108K Residential Structures

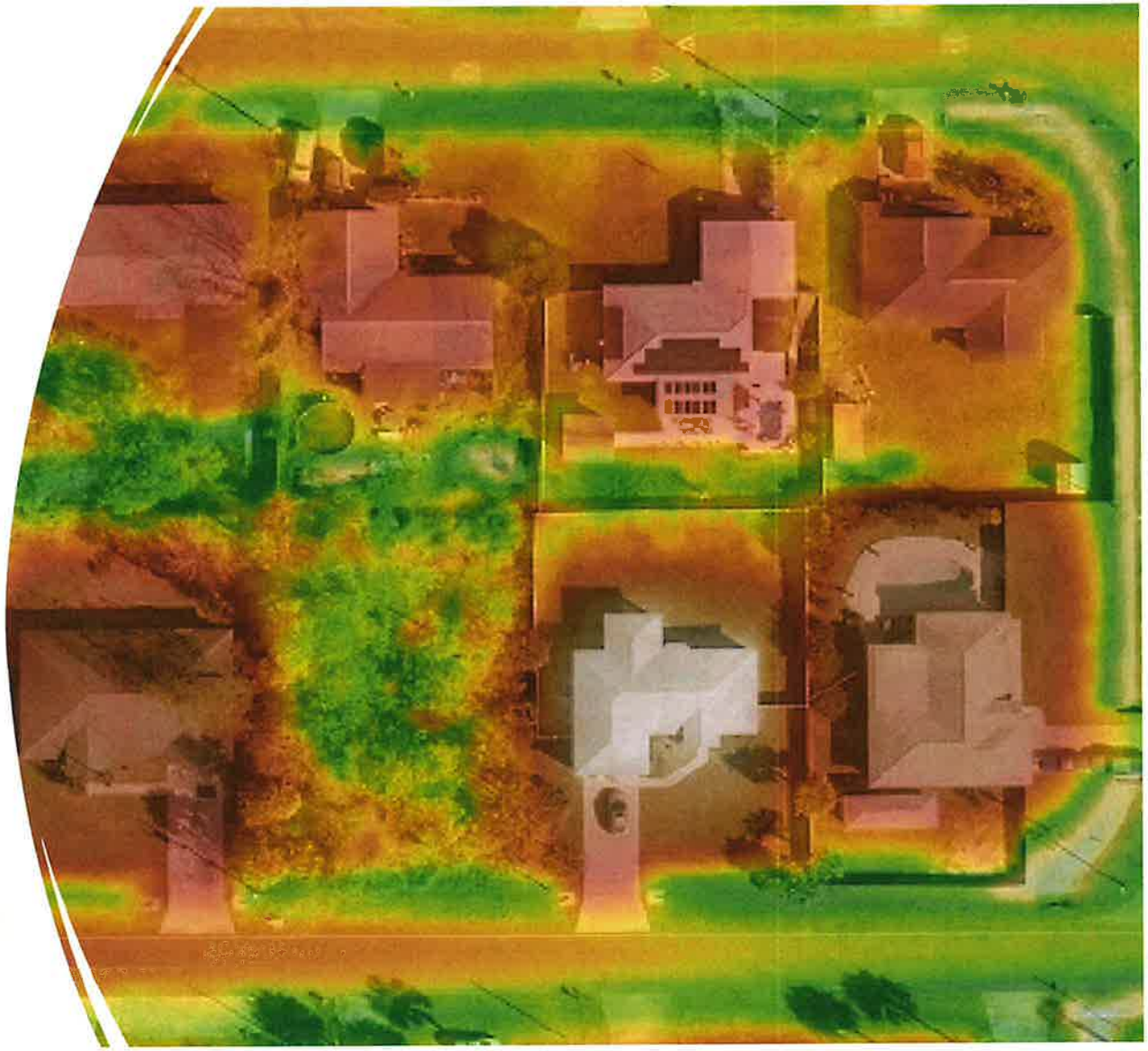
1993 County Adopts Stormwater Management Codes
1995 County Original Lot Drainage Code

→ ~130K Residential Structures

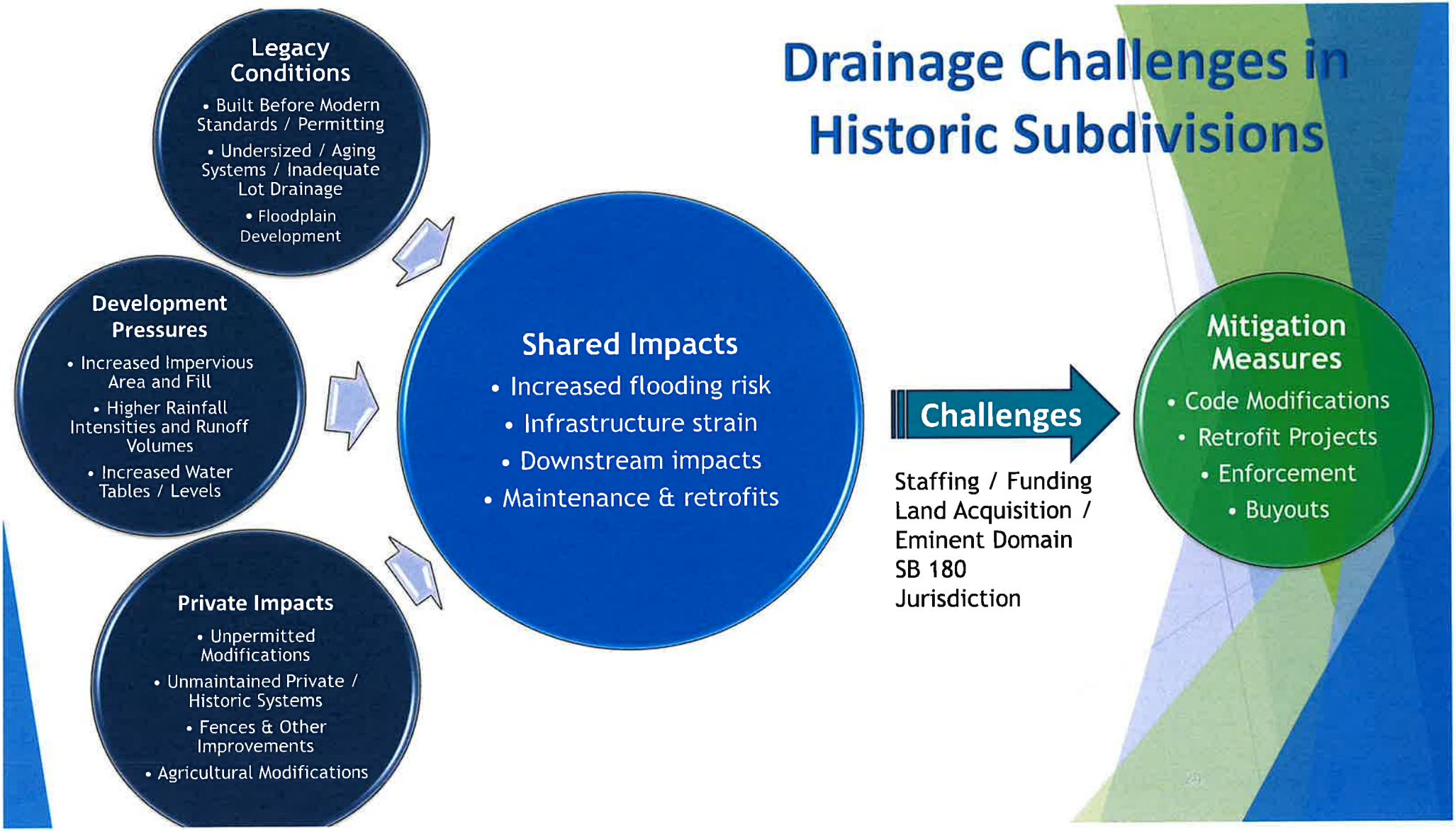
2015 County Updated Lot Drainage Code

→ ~175K Residential Structures

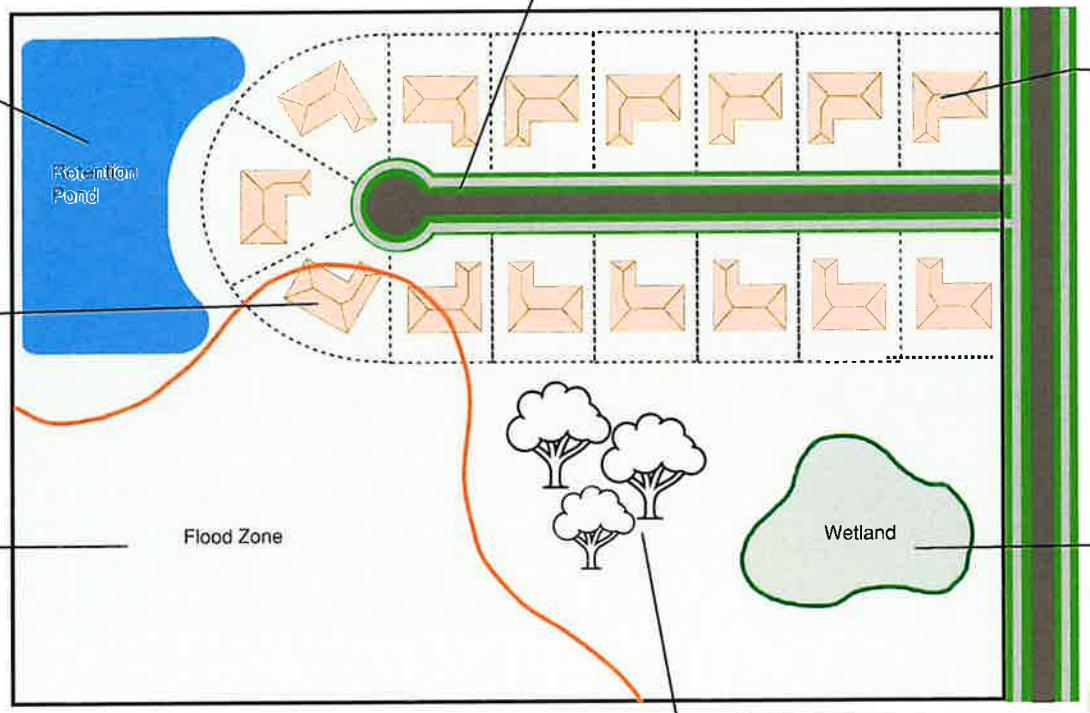
~90% of Total County Residential Structures Built Before 2015



Drainage Challenges in Historic Subdivisions



New Subdivisions & Development



Public Works: ROW and Road Drainage

Public Works: Retention, and Offsite Discharge

Building Dept: Lot Drainage

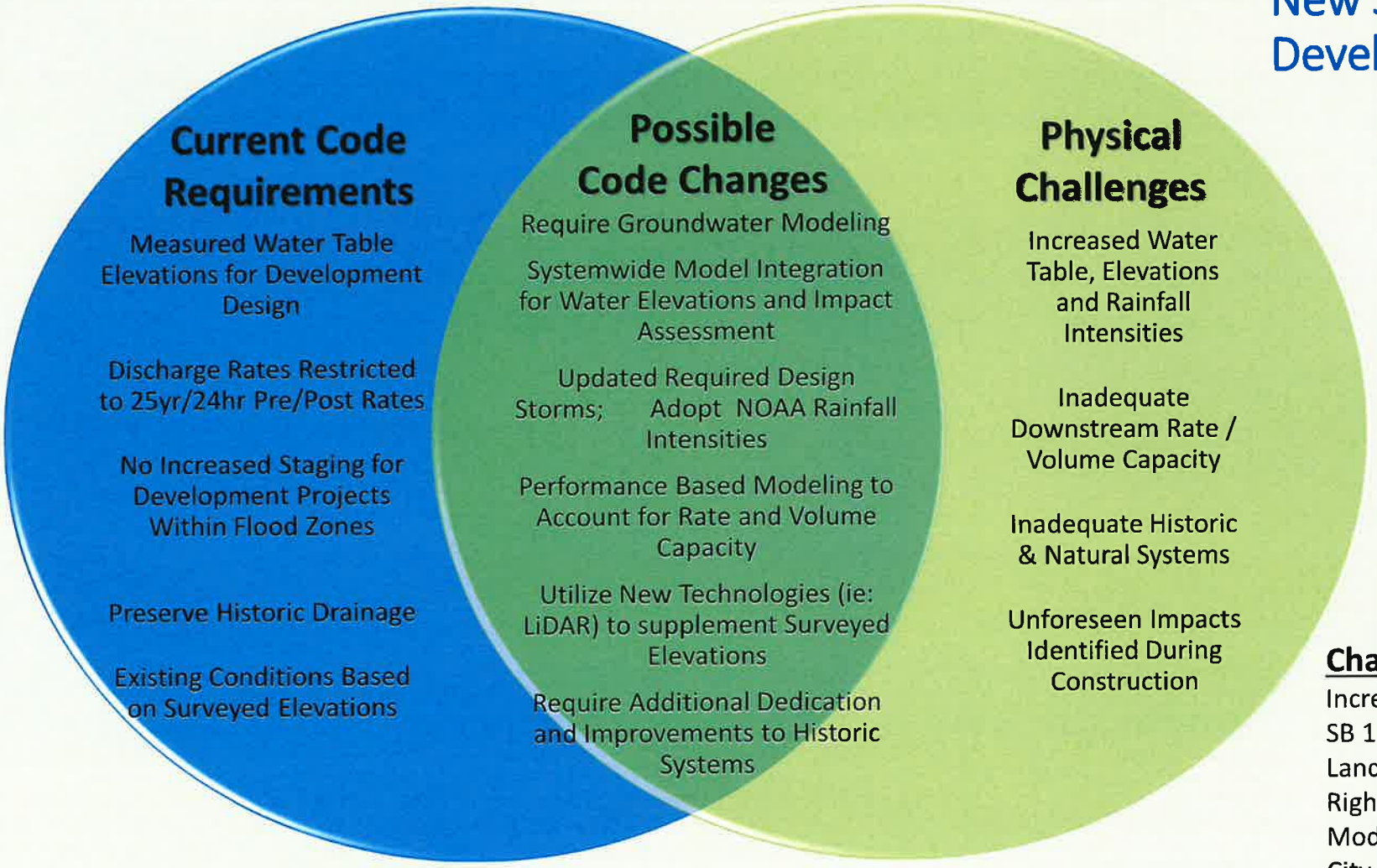
Building Dept: FEMA Elevation Certificate

Natural Resources: Flood Zone Impacts & Compensatory Storage

Natural Resources: Wetland Impacts & Mitigation

Natural Resources: Tree Preservation, Buffers, & Landscaping

New Subdivisions & Development, Cont.



Challenges:

Increased Development Costs
SB 180
Land Acquisition/Property Rights
Modeling & Staffing Costs
City Annexations

ENGINEERING A SOLUTION –

BUILDING A BETTER FUTURE

Challenges:

- SB180
- Decreased Development Potential
- Increased Capital Improvement and Development Costs
- Increased Land Acquisition Costs
- Tailwater restrictions
- Upstream Downstream Impacts for Retrofits

Current County Code Sec. 62-3756, Exh A, Article 4.1 Design Storm		
Street Pipe Systems	10yr/24hr	7.9"
Roadside Swales	10yr/24hr	7.9"
Canals, Outfall Ditches, & Ponds	25yr/24hr	9.0"
Ponds (w/ no Legal Positive Outfall)	25yr/96hr	12.5"

Storm Requirements	Increased Storm Requirements *	Cost Increase ** (New Construction)
10yr/24hr	25yr/24hr	2x
	100yr/24hr	3x
	500yr/24hr	5x

* Rainfall Distribution based on the NOAA Atlas 14 Precipitation-Frequency Atlas of the United States ** Flow rates based on USGS regression equations for ungagged watersheds in Florida, and 2025 FDOT Historical costs

Property Owner Responsibility – Code Enforcement

Property Owners fill historical drainage or wetlands or improperly follow permit:

- Exacerbates their own and/or neighbor drainage issues
- Results in extensive code enforcement and expensive restoration

Property Owner Responsibility – Code Enforcement

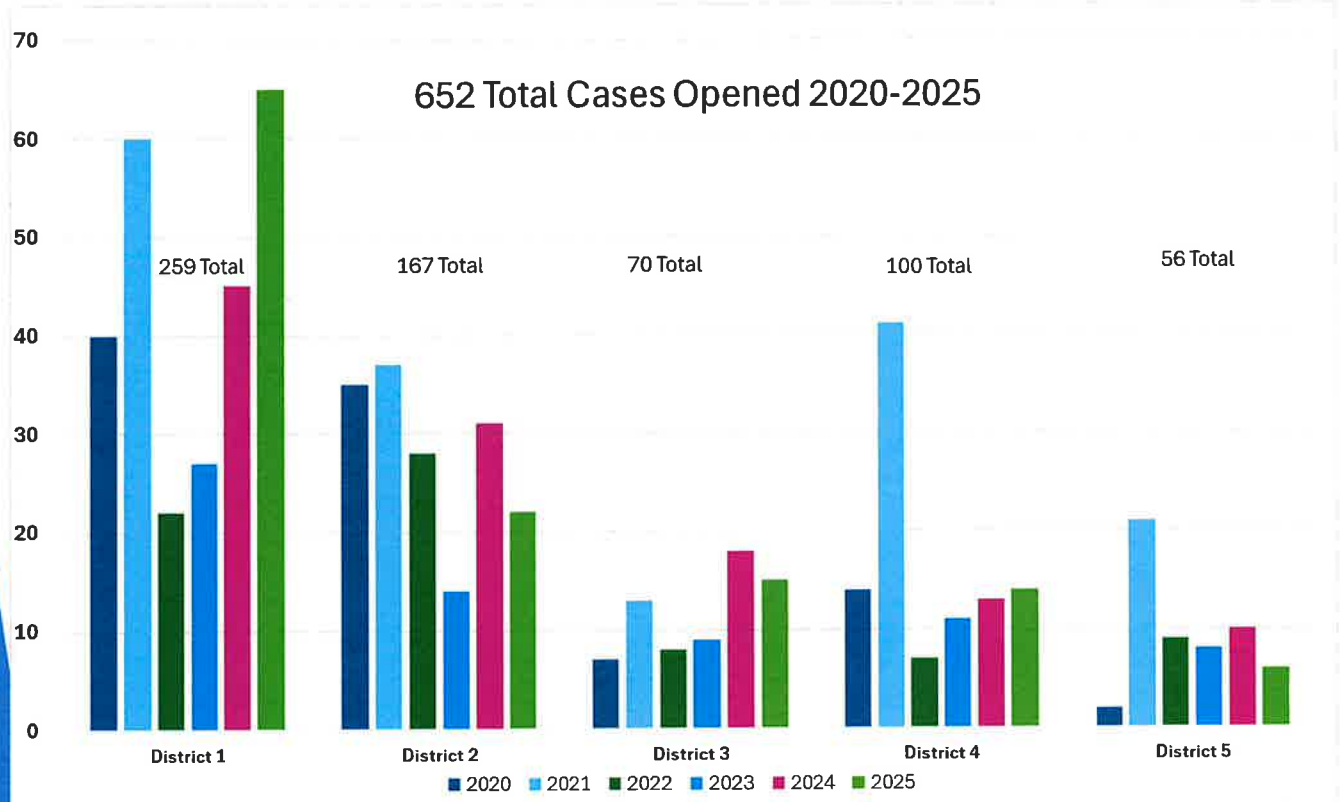


Photo Credits: IFAS

Maintenance Responsibilities

County Drainage Maintenance

Public Works Department
- PW Owned Ponds
- Public Swales, Ditches & Canals
- Culverts & Structures
- Public Bridges
- PICA, Hall & Deer Run Pumps

Natural Resources Department
- NRM Owned Treatment Ponds
- Nutrient Removal BMP's
- Baffle Boxes
- Street Sweeping
- Stormwater Utility Inspections
- Illicit Discharge Investigations

Other Public Maintenance Entities

- Cities
- FDOT
- SJRWMD
- MTWCD
- NASA

} Similar Systems & Responsibilities

Private Drainage Maintenance Responsibilities

- Subdivision Treatment Ponds
- Rear and Side Lot Drainage
  (Not conveying road drainage, Per BC Code Sec 86-71)
- Driveway Culverts and Piped in Frontage
  (When not part of a Curb & Gutter Master system,
  Per BC Code Sec 86-69 and 86-70)
- Private Drive Bridges
- Private Lot Grading
- Historic Drainage
  (Not in a publicly dedicated/prescriptive easement)
- Agricultural Drainage Systems
- Artesian Wells

Status Quo Maintenance Funding = Reduced Level of Service

2 Additional Countywide Drainage Crews

Fiscal Impact:
$2.1M (Capital)
$930K (Reoccurring)

LOS Impact:
The County has 421 Total Ditch Miles and 527 Total Swale Miles.

This will increase cycle frequency of ditch cleaning from:

2-3 years (Primary)
3-4 years (Secondary)
4-6 years (Tertiary)
To
1-2 years (Primary)
2-3 years (Secondary)
4-6 years (Tertiary)

Double R&B Drainage and Support Related Staff

Fiscal Impact:
$10M (Capital Purchase)
$11M (Reoccurring)

LOS Impact: Additional staff significantly reduce drainage cycles to:

1 years (Primary)
2 years (Secondary)
3 years (Tertiary)

Allows for additional staff for maintenance related culvert replacements.

Provide increased LOS for storm emergency response.

4 Additional Vac / Camera Truck Crews

Fiscal Impact:
$2.7M (Capital)
$600K (Reoccurring)

LOS Impact:
Helps address unfunded state mandates to conduct proactive drainage inspections and cleaning of the County's 20K+ culverts and pipes.

Establishes an ~7 year inspection and cleaning cycle rather than addressing reactively.

Provide increased LOS for storm emergency response.

Increase New and Replacement Equipment Funding

Fiscal Impact:
$2M (Reoccurring Capital)

LOS Impact:
Currently equipment replacements are budgeted at about 13% of each MSTU. This totals at approx. $1M for all new or replacement equipment.

Current total backlog exceeds $15M with $10M being drainage related.

Equipment repair costs have increased 30% in the last 5 years.

1 Additional Engineer per $10M in Projects

Fiscal Impact:
$170K (Reoccurring)

LOS Impact:
Needed to manage projects related to $½ Billion in unfunded drainage related CIP projects identified.

5 Additional Field Inspectors

Fiscal Impact:
$300K (Capital)
$550K (Reoccurring)

LOS Impact:
Allows for proactive inspection of private driveway culverts and maintenance enforcement

Funding – Stormwater (SW) Utility/Natural Resources

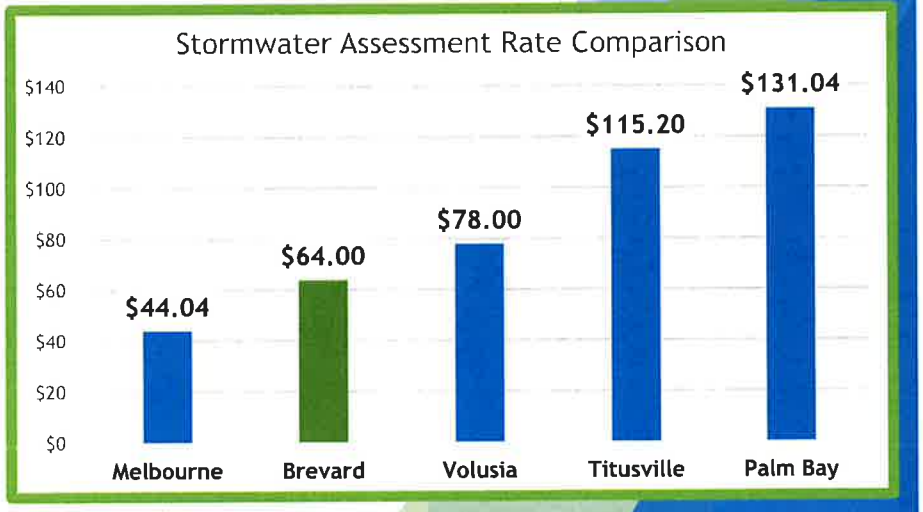
The SW Utility Est. 1990 D3 & D5; 1991 D1, D2, & D4

Board Can Direct Staff to Prepare Changes to Current Rate & Use

- SW Assessment Fee 2014 - $64/Equivalent Residential Unit (ERU) effective FY16/17
- No CPI or increase
- Allocation 70% Water Quality/30% Flood Control

Comparison & Process

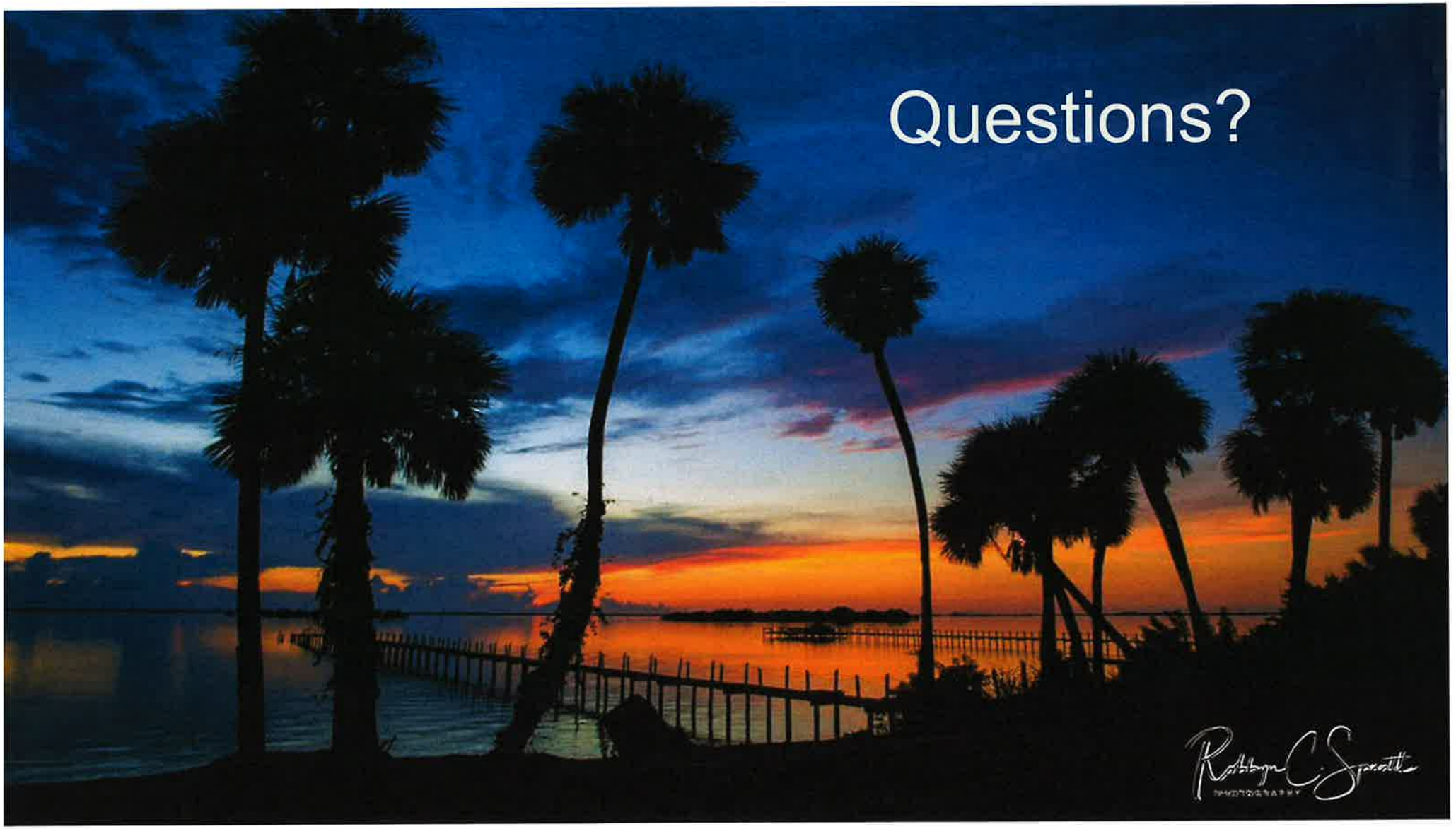
- Current Rate would be $85.80 with CPI
- County Rate is 40% below average state rate of $89.60/ERU
- 6-12 months & Costs $100k+ mailing
- Potential Revenue - $2.7M recurring if raised to average rate
- Need Legislative Intent by February for implementation next year



Revenue Generating Options

REVENUE TYPE	REVENUE AVAILABLE IF LEVY WAS ESTABLISHED	COMMENTS/ BOND STATUS
Charter County and Regional Transportation System (Discretionary Sales) Surtax* *-This may be levied at a rate of up to 1%*	**$25.1M - $100M (County Share)**	Simple majority of the County Commission required for a referendum to be held at a general election.
Local Government Infrastructure (Discretionary Sales) Surtax* *-This may be levied at a rate of .5% or 1%* *-Up to 1% can be collected, but only 0.50% is available to collect as Natural Resources is already collecting 0.50% for SOIRL until it sunsets in on December 31, 2026*	**$37.1M (County Share)**	Simple majority of the County Commission required for a referendum to be held at a general election.
Public Services Tax *-No requirement to share revenues with Cities (unincorporated areas only).*	**$3.3M - $33.4M**	Simple majority of the County Commission required for a referendum to be held at a general election. Imposed by County Charter.
9th Cent Fuel Tax (Unleaded -Motor Fuel) *-This may be levied at 1 Cent on unleaded fuel.* *-No requirement to share revenues with Cities, however, the Board may do so per Interlocal Agreement.*	**$2.7M**	Supermajority of the County Commission vote required for approval or by referendum to be held at a general election.
Local Option Gas Tax 1-5 Cent (LOGT) (Unleaded -Motor Fuel) *-This may be levied at 5 Cents on unleaded fuel.* *-Requires an Interlocal Agreement*	**$6.4M (County Share)**	Supermajority of the County Commission vote required for approval or by referendum to be held at a general election.

Potential Revenue: $179.6M (*Need Legislative Intent by February)


Questions?

Public Works Needs - No Funding Limitations – Staff and Equipment

Recommendation	Personnel	Equipment	Fiscal Impact
Double R&B Drainage Field Staff	116 Positions (Consisting of Field Staff and associated mechanics, data control specialists, and supervisors)	Equipment & Trucks to Support	$10M (Capital Purchase) $11M (Reoccuring)
Additional 2 Countywide Drainage Crews for 5 Total	9 Positions (4/Team)	2 Gradalls & 2 Pickups (1 EA/Team); 4 Dump Trucks (2 EA/Team)	$2.1M (Capital Purchase) $930K (Reoccuring)
Additional 4 Vac Truck Crews for 5 Total	8 Positions (2/Team)	4 Vac Trucks (1 EA/Team); 2 Camera Truck	$2.7M (Capital Purchase) $600K (Reoccuring)
Add 5 Private Drainage and Failed Culvert Inspectors	5 Positions	5 Crossovers, 5 Computers	$300K (Capital Purchase) $550K (Reoccuring)
Add 2 Long Booms for 5 Total		2 Long Booms	$700K (Capital Purchase)
Add 1 Kaiser for 6 Total and 4 additional Mulching Heads for 9 total		1 Kaiser, 4 Mulching Heads	$700K (Capital Purchase)
Add 5 A-booms		5 A-booms	$1.4M ((Capital Purchase)
Add 5 Gradalls		5 Gradalls	$3M (Capital Purchase)
Add 7 Dump Trucks		7 Dump Trucks	$1.5M (Capital Purchase)
Add 2 8" Pumps and 2 Light Plants		2 8" Pumps & 2 Light Plants	$250K (Capital Purchase)
Additional Dedicated Funding for Replacements of Failing Culverts			$2M (Reoccuring)
Increase paygrades of current PW GIS Techs (Total of 3, 2 vacant)			$62K (Reoccuring)
Add Drainage Superintendent and Project Supervisor	2 Positions	2 Crossover, 2 Computers	$130K (Capital Purchase) $210K (Reoccuring)
Add 2 Project Supervisors	2 Positions	2 Crossover, 2 Computers	$130K (Capital Purchase) $200K (Reoccuring)
Additional Engineers	1 per every 15 projects or $10M Added		$170K / EA (Reoccuring)
Add Contract Coordinator	1 Position		$92K (Reocurring)
Add Accountant	2 Position		$78K (Reocurring)
Add Telemetry Countywide and Remote/Automation for Pumping and Wier Gate Controls Countywide			$3.5M (Capital Purchase) $150K (Reocurring)

**All Salaries include direct compensation and benefits budgeted by the Department*