

# Adaptation Planning Phase 1

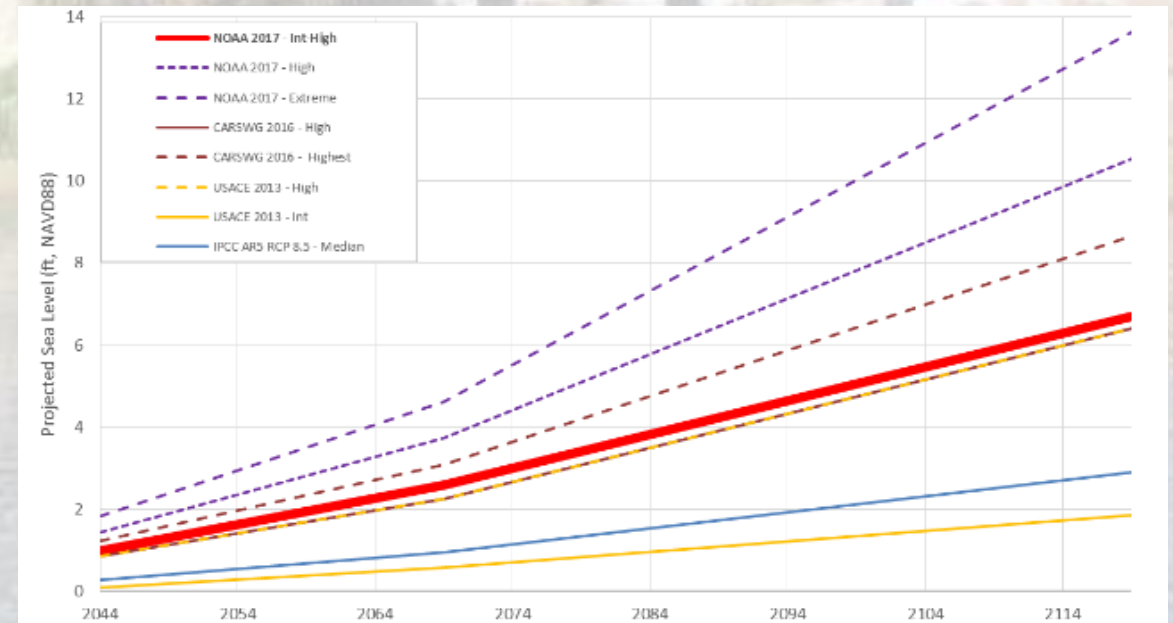
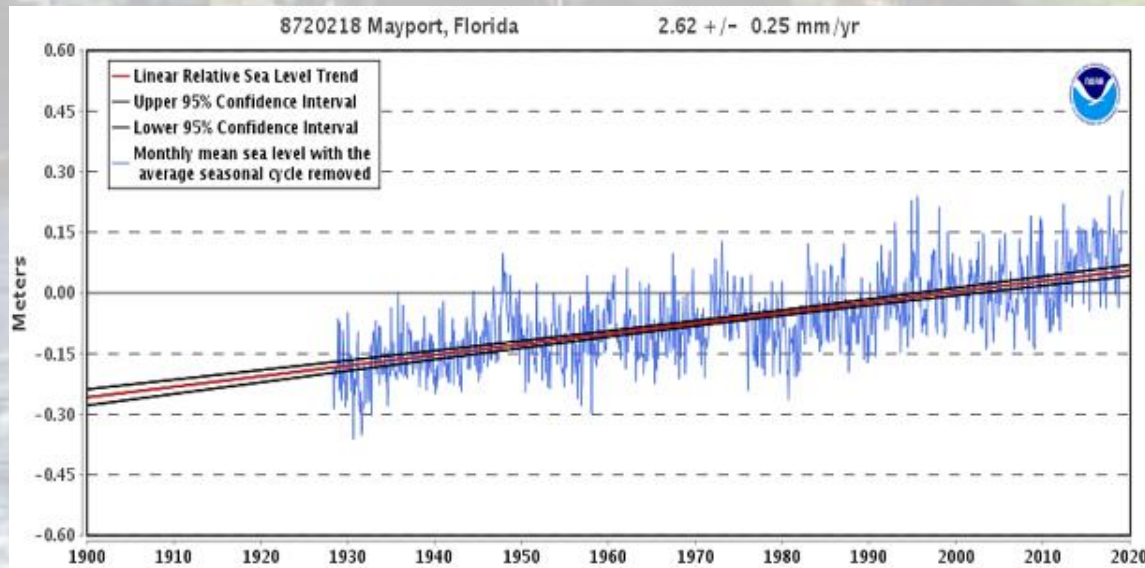
Atlantic Beach, FL

May 18, 2021



# Why are we concerned with Adaptation?

- Tidal records indicate steady rise in local sea level over past 90 years
- Rate of change in sea level rise is accelerating
- Atlantic Beach is flat and surrounded by tidal waters
- Parts of Atlantic Beach already experience “sunny day” flooding





# Coastal Vulnerability Assessment

- Completed in June, 2019 / key step in adaptation planning process
- Updated to account for Utility Service areas outside of City Limits
- Modeled 25, 50, & 100 year scenarios for:
  - Sea Level Rise
  - Nuisance or “Sunny Day” flooding
  - Storm Surge & Rainfall Flooding
  - 100-Year Flood Risks
- Assessed potential risks to property and infrastructure/facilities



# Goals of Adaptation Plan

- Protect, plan for and adapt to the impacts of sea level rise and climate change for our citizens and infrastructure
- Identify goals and strategies to minimize risk
- Establish a process to implement strategies
- Identify the tools to take action
- Identify priorities and timeframes for implantation of strategies





# Coastal Vulnerability Assessment Results

- **Projected Future Extent of:**

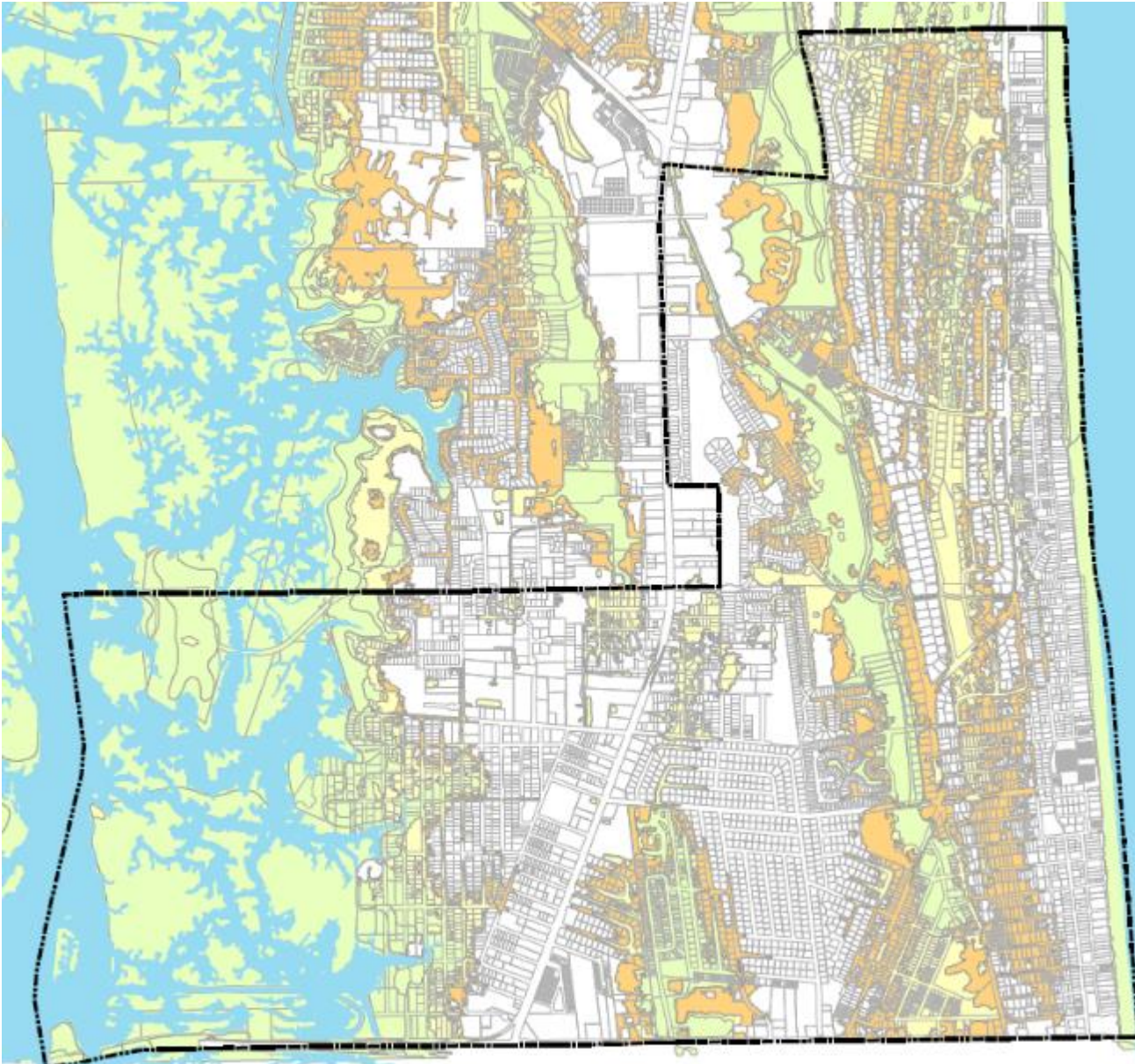
- Nuisance Flooding
- 100-Yr Flood Events

- **Exposure Assessment:**

- Properties & Buildings
- Critical Facilities
- Infrastructure

- [Interactive Map Link](#)

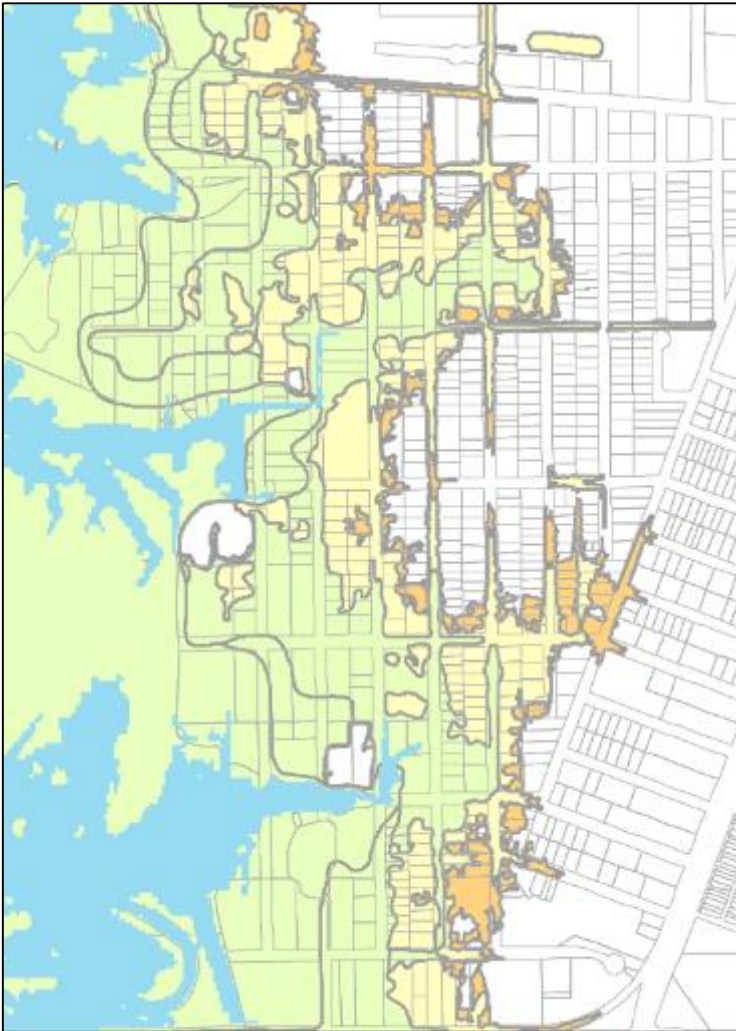
## Projected Flood Zone



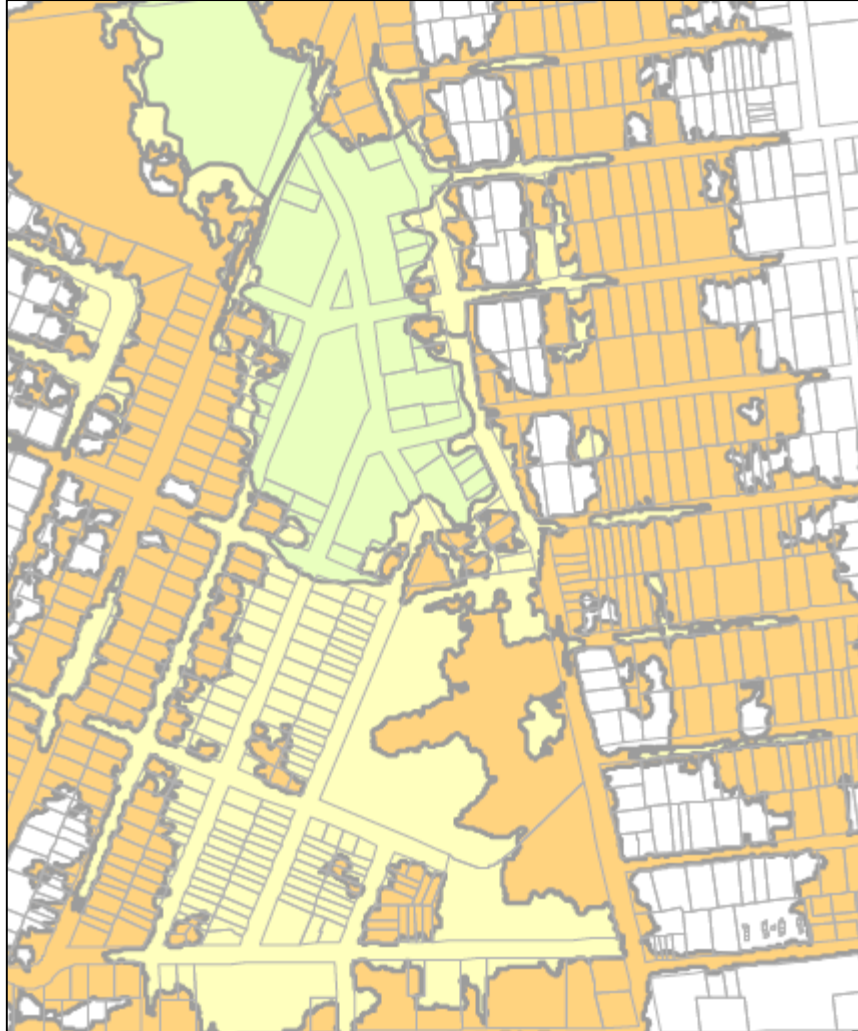


# Focus Areas of Concern

Marsh Oaks



Salt Air /Core City

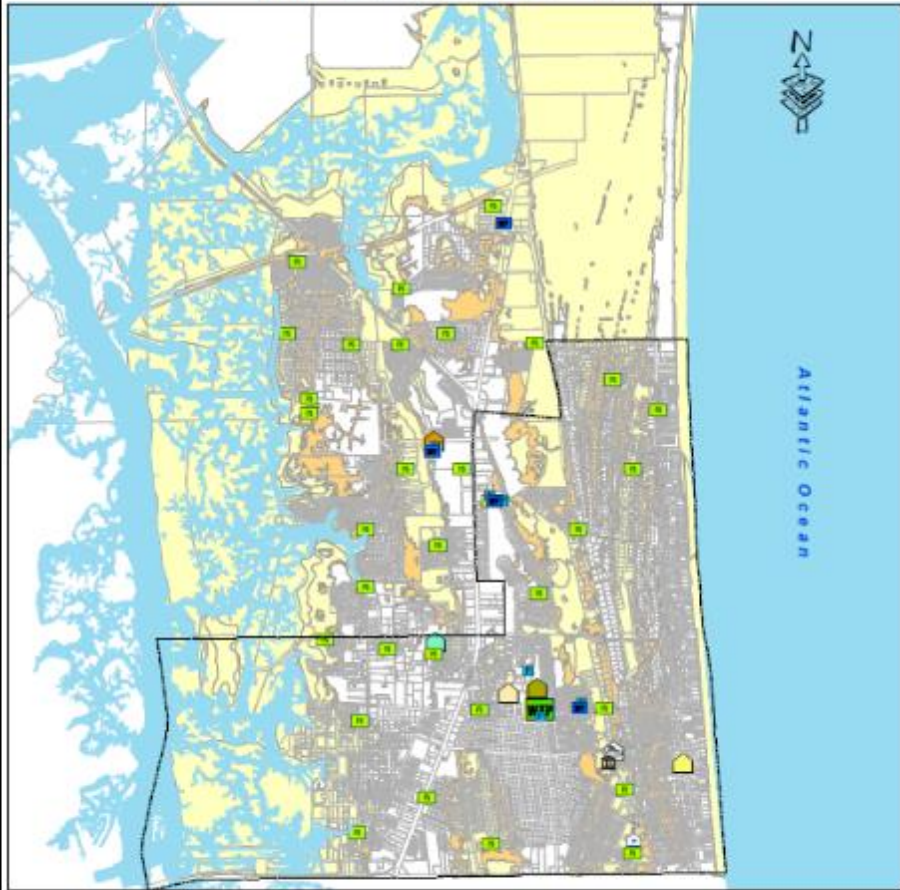


Aquatic Gardens





## Atlantic Beach Projected 100 Year Flood Zones for 25, 50, & 100 Years



### Critical Facilities and Infrastructure

- Water Treatment Plant
- Potable Water Well
- Pump/Lift Station
- Wastewater Treatment Facility
- Police & Fire Station
- City Hall
- Adele Grage Cultural Center
- Gail Baker Community Center
- Jordan Park Community Center
- Utilities Office Building
- Public Works Facility
- Atlantic Beach Elementary School

### Projected Flood Zone

- 2044
- 2069
- Atlantic Beach City Limits

# Vulnerable Critical Facilities & Infrastructure

2069 Scenarios	City Hall, Police & Fire Station	Public Utilities Facility	Public Works Facility	Lift Stations (#)	Potable Water Wells (#)	Potable Water Plants (#)	Waste-water Facility	Atlantic Beach Elem. School	Adele Grage Center	Gail Baker Center	Jordan Park Center
SLR Only	N	N	N	Y (1)	N	N	N	N	N	N	N
Nuisance Flooding	N	N	N	Y (7)	Y (2)	Y (1)	N	N	N	N	N
100-Yr Flood Risk	Y	N	N	Y (23)	Y (4)	Y (2)	N	Y	N	Y	N



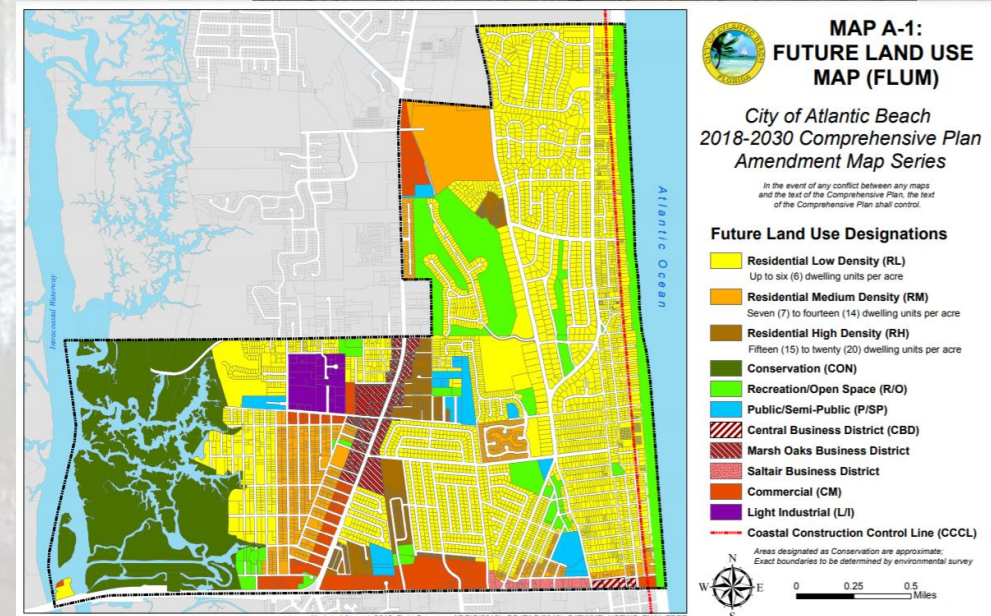
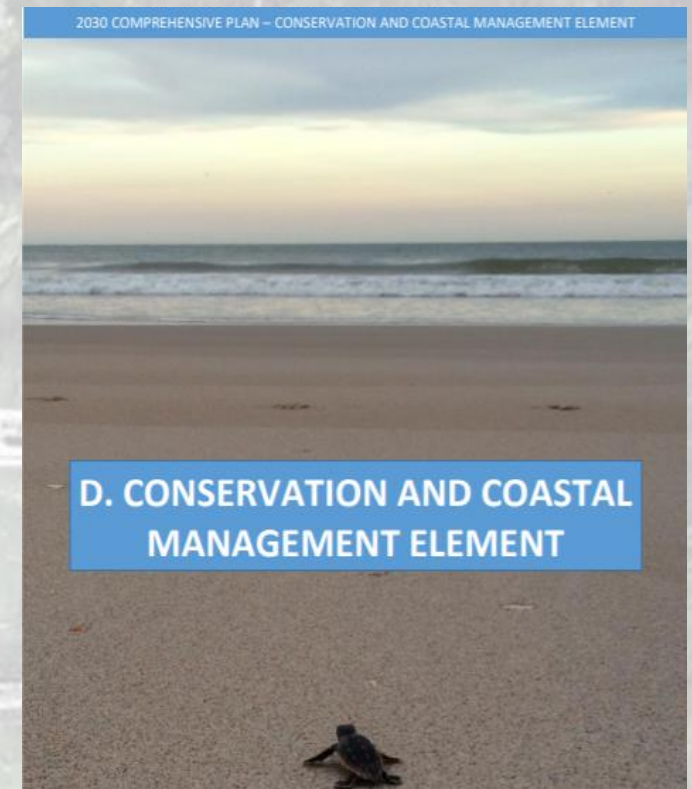
November, 2015 flooding



# Legal Context

## Comprehensive Plan

- Future Land Use Element – discouraging urban sprawl and conserving natural resources
- Conservation and Coastal Management Element
- State regulations allow – designation of Adaptation Action Areas (AAAs)





# Litigation Risk & Sea Level Rise (SLR)

- COAB could be used sued:
  - ❖ claiming injury from limitations on property use or adverse effects to property values

**OR**

- ❖ For failing to address SLR
- Face legal challenges when implementing some adaptation strategies



# Coastal Vulnerability - Exposure

- COAB located between Ocean and Intracoastal Waterway –with low elevations
- Identified Coastal Flooding – storm flooding and nuisance flooding using SLR scenarios identified in the Coast Vulnerability Assessment.

*Table 3-1 - Exposure of Property by Scenario*

2044 Scenarios	Number of Parcels Impacted (% of All Parcels)	Number of Buildings on Impacted Parcels	Land Value of Impacted Parcels	Building Value of Impacted Parcels	Taxable Value of Impacted Parcels
SLR Only	262 (4%)	391	\$38,694,113	\$87,283,163	\$106,064,775
Nuisance Flooding	249 (4%)	372	\$33,564,377	\$90,415,917	\$111,555,621
100-Yr Flood	1,035 (17%)	1,085	\$100,693,496	\$191,438,845	\$233,842,120

2069 Scenarios	Number of Parcels Impacted (% of All Parcels)	Number of Buildings on Impacted Parcels	Land Value of Impacted Parcels	Building Value of Impacted Parcels	Taxable Value of Impacted Parcels
SLR Only	391 (6%)	509	\$48,601,525	\$108,385,260	\$134,427,495
Nuisance Flooding	797 (13%)	910	\$82,899,477	\$191,359,836	\$241,442,753
100-Yr Flood	2,191 (35%)	2,248	\$246,920,675	\$424,598,402	\$576,235,059



# Coastal Vulnerability – Sensitivity & Ranking

- Identified areas/assets that are more sensitive to flooding than others
- Mapped critical assets inside COAB and our service. Exposure of each asset ranked according to current and future flooding.



Table 3-3 – Degree of Exposure of Critical Facilities

Facility Type	Facility Address/Name	Existing Condition Rainfall Induced (24-Hour Events)			FEMA 100-Yr Current	Future Conditions 100-Yr Return Period Rainfall Induced		Future Conditions 100-Yr Return Period Storm Surge Induced	
		10-Year	25-Year	100-Year		2044	2069	2044	2069
Water Plant No. 1	469 11th Street	N	N	N	N	N	N	N	Y
Water Plant No. 2	2301 Mayport Rd	N	N	N	N	N	N	N	N
Water Plant No. 3	902 Assisi Ln	N	N	N	N	N	N	N	N
Water Plant No. 4	2848 Mayport Rd	N	N	N	Y	N	N	Y	Y
Wastewater Plant	1100 Sandpiper LN	N	N	N	N	N	N	N	N
Public Works Facility	1200 Sandpiper LN	N	N	N	N	N	N	N	N
Potable Water Well	2848 Mayport Rd	N	N	N	Y	N	Y	Y	Y
Potable Water Well	902 Assisi Ln	N	N	N	N	N	N	N	Y
Potable Water Well	2848 Mayport Rd	N	N	N	Y	N	Y	Y	Y
Potable Water Well	902 Assisi Ln	N	N	N	N	N	N	N	N
Potable Water Well	2301 Mayport Rd	N	N	N	N	N	N	N	N
Potable Water Well	2301 Mayport Rd	N	N	N	N	N	N	N	N
Potable Water Well	1100 Sandpiper LN	N	N	N	N	N	N	N	N
Potable Water Well	469 11th Street	N	N	N	N	N	Y	N	Y
Potable Water Well	1200 Sandpiper LN	N	N	N	N	N	N	N	N
Life Guard Station	1 Ahern St	N	N	N	N	N	N	N	N
City Hall	800 Seminole Rd	N	Y	Y	Y	Y	Y	Y	Y
Commission Chambers	800 Seminole Rd	N	Y	Y	Y	Y	Y	Y	Y
Police & Fire Department	850 Seminole Rd	N	Y	Y	Y	Y	Y	Y	Y
Adele Grage Community Center	716 Ocean Bv	N	N	N	N	N	N	N	N
Jordan Park Community Center	1671 Francis Av	N	N	N	N	N	N	N	N
Gail Baker Community Center	2072 George St	N	N	N	N	Y	Y	N	N
Public Utility Office	902 Assisi Ln	N	N	N	N	N	N	N	N
Atlantic Beach Elementary	298 Sherry Dr	N	N	Y	N	Y	Y	N	Y



Table 3-4 - Degree of Exposure of Major Roadway Segments

Roadway	Segment	Existing Condition Rainfall Induced (24-Hour Events)			FEMA 100-Yr Current	Future Conditions 100-Yr Return Period Rainfall Induced		Future Conditions 100-Yr Return Period Storm Surge Induced	
		10-Year	25-Year	100-Year		2044	2069	2044	2069
MAIN ST	A1	N	N	N	N	N	N	N	N
MAIN ST	A2	N	N	Y	N	Y	Y	N	N
MAIN ST	A3	Y	Y	Y	N	Y	Y	N	N
MAIN ST	A4	N	N	N	N	N	N	Y	Y
MAIN ST	A5	N	Y	Y	Y	Y	Y	Y	Y
MAIN ST	A6	N	N	N	N	Y	Y	Y	Y
MAIN ST	A7	N	N	N	N	N	N	Y	Y
MAIN ST	A8	N	N	N	Y	N	N	Y	Y
MAIN ST	A9	N	N	N	N	N	N	Y	Y
DUTTON DR	B1	N	N	N	N	N	N	Y	Y
DUTTON DR	B2	N	N	N	N	N	N	N	N
CHURCH RD	B3	N	N	Y	N	Y	Y	N	Y
CHURCH RD	B4	Y	Y	Y	N	Y	Y	N	Y
DUTTON DR	B5	N	N	N	N	N	N	N	N
LEVY RD	C1	N	N	N	Y	N	N	Y	Y
LEVY RD	C2	N	N	N	N	N	N	Y	Y
LEVY RD	C3	N	N	N	N	N	N	N	Y
LEVY RD	C4	N	N	N	N	N	N	N	N
W PLAZA	D1	N	N	N	N	N	N	N	N
PLAZA DR	E1	N	N	N	N	N	N	N	N
PLAZA DR	E2	N	N	Y	N	Y	Y	N	N
PLAZA DR	E3	N	N	N	N	N	N	N	N
PLAZA DR	E4	N	N	N	N	N	N	N	Y
PLAZA DR	E5	N	N	Y	Y	Y	Y	Y	Y
PLAZA DR	E6	Y	Y	Y	N	Y	Y	N	Y
PLAZA DR	E7	N	N	N	N	N	N	N	N

Table 3-5 - Ranking of Exposed Critical Facilities

Facility Type	Facility Address	Flood Exposure	Vulnerability			Consequence				Total Score
			Sensitivity	Adaptive Capacity	Average Score	Environmental	Social	Economic	Average Score	
Water Plant No. 1	469 11th Street	4	5	3	4	1	5	5	4	11.7
Water Plant No. 2	2301 Mayport Rd	1	5	3	4	1	5	5	4	8.7
Water Plant No. 3	902 Assisi Ln	1	5	3	4	1	5	5	4	8.7
Water Plant No. 4	2848 Mayport Rd	8	5	3	4	1	5	5	4	15.7
Sewer Plant	1100 Sandpiper LN	1	5	3	4	5	5	5	5	10.0
Public Works Facility	1200 Sandpiper LN	1	3	3	3	3	3	5	4	7.7
Potable Water Well	2848 Mayport Rd	8	5	3	4	1	5	3	3	15.0
Potable Water Well	902 Assisi Ln	4	5	3	4	3	5	3	4	11.7
Potable Water Well	2848 Mayport Rd	8	5	3	4	2	5	3	3	15.3
Potable Water Well	902 Assisi Ln	1	5	3	4	5	5	3	4	9.3
Potable Water Well	2301 Mayport Rd	1	5	3	4	5	5	3	4	9.3
Potable Water Well	2301 Mayport Rd	1	5	3	4	3	5	3	4	8.7
Potable Water Well	1100 Sandpiper LN	1	5	3	4	2	5	3	3	8.3
Potable Water Well	469 11th Street	5	5	3	4	1	5	3	3	12.0
Potable Water Well	1200 Sandpiper LN	1	5	3	4	2	5	3	3	8.3
Neptune Beach PS	NA	3	5	3	4	5	3	3	4	10.7
Life Guard Station	1 Ahern St	3	1	1	1	1	1	1	1	5.0
City Hall	800 Seminole Rd	9	3	3	3	1	3	3	2	14.3
Commission Chambers	800 Seminole Rd	9	3	3	3	1	3	3	2	14.3
Police & Fire Department	850 Seminole Rd	9	3	3	3	1	5	3	3	15.0
Adele Grage Community Ctr	716 Ocean Bv	1	3	3	3	1	1	3	2	5.7
Jordan Park Community Ctr	1671 Francis Av	1	3	3	3	1	1	3	2	5.7
Gail Baker Community Ctr	2072 George St	6	3	3	3	1	1	3	2	10.7
Office Building	902 Assisi Ln	1	3	3	3	1	1	3	2	5.7
Atlantic Beach Elementary	298 Sherry Dr	8	3	5	4	1	5	5	4	15.7



Table 3-6 - Ranking of Exposed Roadway Segments

Road Name	Segment ID	Segment Length	Flood Exposure	Vulnerability Rating	Vulnerability Rating	Total Roadway Length (ft.)
MAIN ST	A1	949	1	Low	Moderate-High	16,230
MAIN ST	A2	517	8	Moderate-High	Moderate	3,253
MAIN ST	A3	184	10	High	Moderate-Low	10,219
MAIN ST	A4	326	6	Moderate	Low	15,465
MAIN ST	A5	691	9	High		
MAIN ST	A6	695	7	Moderate-High		
MAIN ST	A7	684	6	Moderate		
MAIN ST	A8	696	8	Moderate-High		
MAIN ST	A9	688	6	Moderate		
DUTTON DR	B1	650	6	Moderate		
DUTTON DR	B2	1719	1	Low		
CHURCH RD	B3	425	8	Moderate-High		
CHURCH RD	B4	925	10	High		
DUTTON DR	B5	647	1	Low		
LEVY RD	C1	244	8	Moderate-High		
LEVY RD	C2	250	6	Moderate		
LEVY RD	C3	773	4	Moderate-Low		
LEVY RD	C4	2165	1	Low		
W PLAZA	D1	861	1	Low		
PLAZA DR	E1	443	1	Low		
PLAZA DR	E2	549	8	Moderate-High		
PLAZA DR	E3	2427	1	Low		
PLAZA DR	E4	328	4	Moderate-Low		
PLAZA DR	E5	624	8	Moderate-High		





# ATLANTIC BEACH CITY COMMISSION PRIORITIES

ESTABLISHED JANUARY 21, 2021; RATIFIED FEBRUARY 22, 2021

## LIVABILITY

An initiative to improve health, education, housing conditions, culture and leisure, and other quality-of-life indicators via:

- Taking part in the assessment of City of Jacksonville's prospective participation in Blue Zones, a comprehensive communitywide well-being improvement initiative to help residents live longer, healthier, and easier for everyone
- Providing support to local nonprofits that provide health, well-being, education, recreation and affordable housing services to youth, senior citizens, low-income residents, and others.
- Promoting equity and neighborhood identity.
- Advocating/lobbying for workforce housing.
- Solidifying AB's status as a military- and veteran-friendly community through partnerships and programming, and by serving as an information resource.

## ENVIRONMENTAL LEADERSHIP

An initiative validating COAB's commitment to ecological integrity, resiliency and sustainability via:

- Advocating a no-net-loss of the tree canopy by planting trees and updating the tree-protection code.
- Establishing a City policy requiring departments to use proven techniques to prevent waste, maximize recycling and decrease the amount of plastic pollution generated by City government.
- Establishing plastic-reduction, reuse and recycling standards for individuals and groups utilizing City facilities and venues.
- Continuing efforts to understand the potential impacts of local sea level rise and work towards improving community resilience.
- Improving the City's LEED silver-certified community performance score across the five categories -- energy, water, waste, transportation, and human experience.

## PLANNING & BUDGETING

A financial and infrastructure planning initiative to prepare future needs via:

- Updating/adopting long-term capital improvement plans for the following, and incorporate them into the City's budgeting process:
  - Public Utilities
    - Potable water treatment and distribution
    - Sewer collection and treatment.
  - Public Works
    - Stormwater management
    - Adaptation and resiliency
    - Streets and sidewalks
    - Parks
    - Facilities
- Ensuring that spending and programming is equitable throughout the entire community.
- Consider impacts of spending decisions in terms of debt management and pension liability.

- Continuing efforts to understand the potential impacts of local sea level rise and work towards improving community resilience
- Update/adopt long-term capital improvement plan to include adaptation & resiliency and stormwater
- Ensure equitable spending throughout the community
- Continuing to foster productive partnerships with neighboring municipalities and state & local agencies

# Adaptation Strategies – Reduce Exposure

- Reduce Exposure or eliminate chances of assets flooding
- Remove from future floodplain risk
- Altering drainage systems to limit future water levels

Table 4-1 - Comparison of Exposure Reduction Strategies

Adaptation Strategy	Implementation Cost	Environmental Impact	Societal Impact	Construction Feasibility	Service Life
Retreat from Vulnerable Areas	Green	Green	Red	Green	Green
Land Acquisition/Conservation	Yellow	Green	Red	Green	Green
Seawall Improvements	Yellow	Yellow	Green	Green	Yellow
Stormwater Improvements (i.e. check valves, dams, pumps)	Red	Yellow	Green	Yellow	Yellow
Raising Critical Infrastructure (i.e. Roads, Buildings)	Red	Green	Green	Yellow	Green
Coastal Dune Maintenance	Red	Yellow	Yellow	Green	Red
Marsh/Vegetative Buffer Maintenance	Yellow	Green	Yellow	Yellow	Green



# Adaptation Strategies – Reduce Sensitivity

- Protect asset by reducing exposure to hazard
- Reduce/eliminate impacts flooding has on assets during/after flooding

*Table 4-2 - Comparison of Sensitivity Reduction Strategies*

Adaptation Strategy	Implementation Cost	Environmental Impact	Societal Impact	Construction Feasibility	Service Life
Flood Proofing Water/Sewer Infrastructure	Red	Green	Green	Green	Yellow
Flood Proofing Emergency Service Operations (Police, Fire, City Hall)	Yellow	Green	Green	Green	Green
Flood Proofing Businesses and Homes	Yellow	Green	Yellow	Yellow	Green
Flood Recovery Strategies to Reduce Flood Durations	Yellow	Green	Green	Green	Green
Backup Power Generation for Critical Services (Water, Sewer, Emergency Services)	Red	Green	Green	Green	Yellow

# Adaptation Strategies – Increase Adaptive Capacity

Ability to adjust to impacts of SLR and changes in extreme storm events

- Enhance adaptive capacity by:
  - ❖ Public Outreach/Education
  - ❖ Capital Improvement Plan
  - ❖ Funding for Adaptation Projects
  - ❖ Transfer of Development Rights



Capital Improvement Program

PLAN



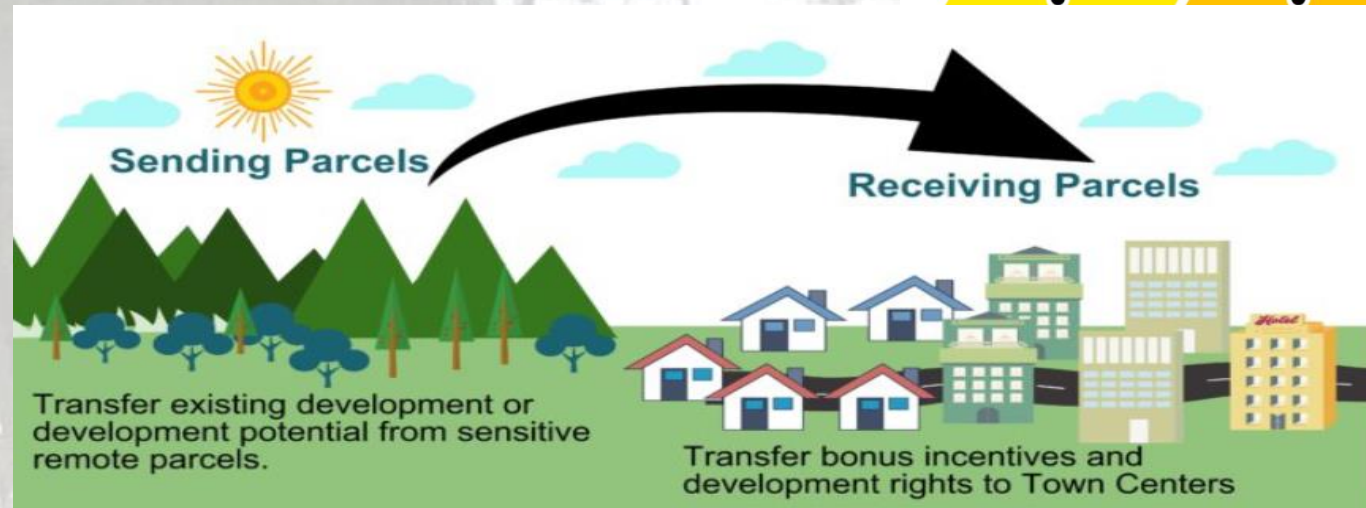
DESIGN



CONSTRUCTION



Phase 3





# Adaptation Strategies – Increase Adaptive Capacity

- Enhance adaptive capacity by:
  - ❖ Cluster development
  - ❖ Setbacks and buffers
  - ❖ Conservation Easements



'Folded terrace'  
allowing access onto  
higher terraces by  
those fish that will  
not move up and over  
submerged steps

Approximate line  
of Mean High  
Water Neap tides  
(2.65 m AOD)



Excellent intertidal  
gravel habitat for  
invertebrates

Willow edge of  
hinterland  
irrigated by  
rainwater



# Adaptation Strategies – Increase Adaptive Capacity

- Enhance adaptive capacity by:
  - ❖ Floodplain regulations
  - ❖ Building codes and standards
  - ❖ Redevelopment standards





# Current Strategies & Existing Regulations

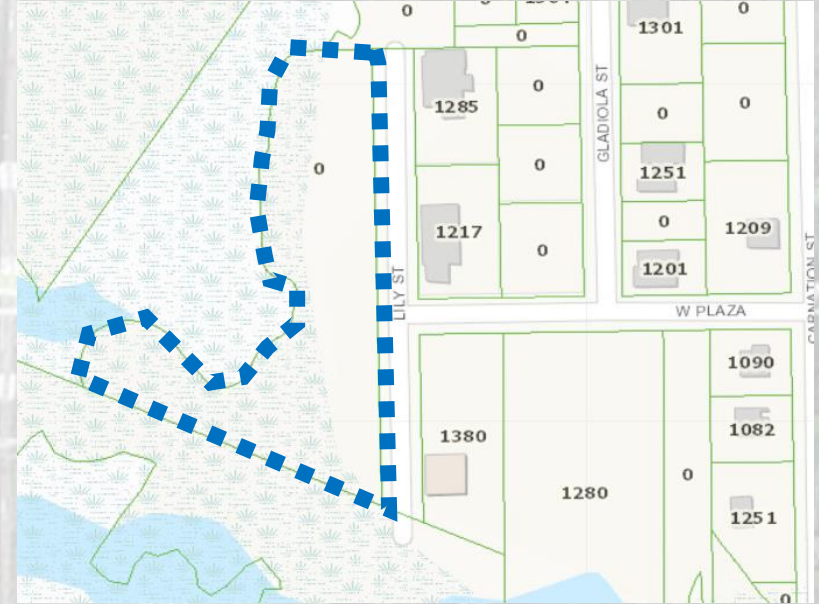
## EXISTING PLANS

- Coastal Vulnerability Assessment
- Stormwater Master Plan
- 2030 Comprehensive Plan

## DEVELOPMENT REGULATIONS

- Finished Floor Elevation
- Base Flood Elevations
- Floodplain Storage
- Onsite Stormwater Storage
- Impervious Surface Area
- Grading and Drainage
- Wetland Mitigation/Buffer

# Current Initiatives





# Focus Areas for Adaptation

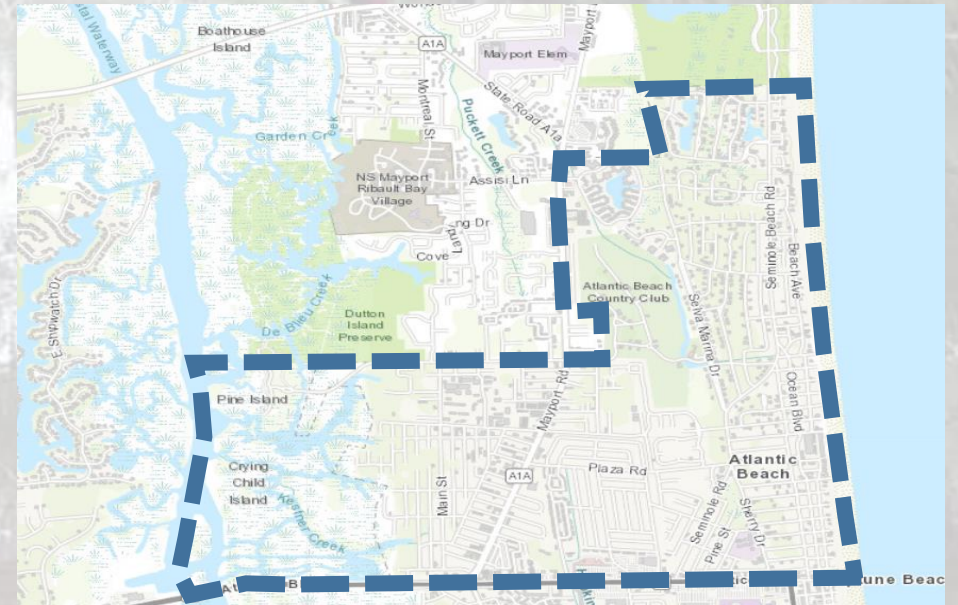
## CITY LIMITS

COAB is included in the City of Jacksonville Adaptation Action Area (AAA) (areas subject to inundation from either a 500-year flood event or a Category 3 hurricane storm surge).

All of COAB is considered to have potential exposure

***“Resiliency is the ability to collaboratively prepare for, prevent, absorb, recover from and more equitably adapt for damage from chronic stressors (i.e., aging infrastructure and sea level rise) and adverse events (i.e., hurricanes, extreme heat and high-intensity flooding).”***

**COJ City Council Special Committee on Resiliency**



# Adaptation Recommendations – City Limits



Capital Improvement Projects = RESILIENCE



Building and zoning regulations = RESILIENCE



Incentivize repairs/renovations = RESILIENCE



Natural shorelines = 6 foot low maintenance buffer



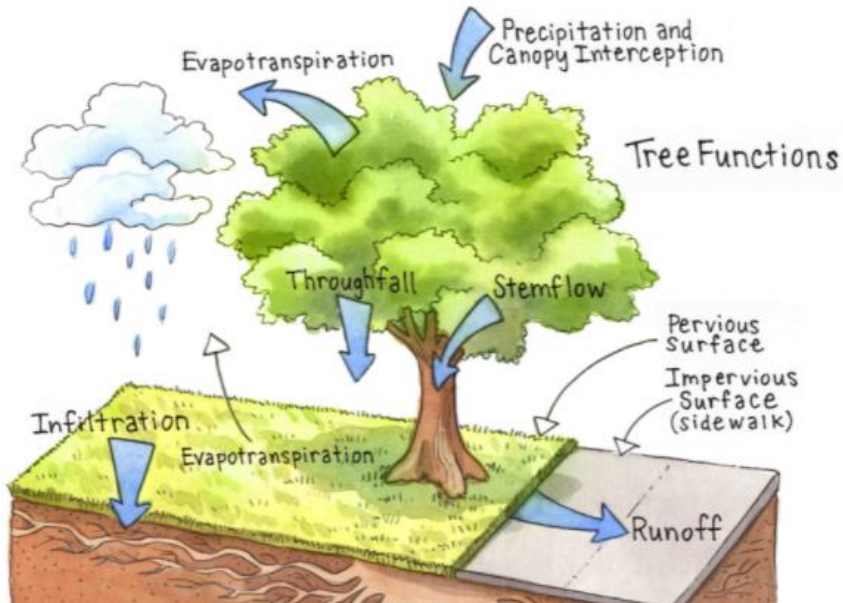
# Adaptation Recommendations – City Limits



COJ, JAXPORT and USACE  
program for dredge material

Community  
**OUTREACH**

Websites, newsletters, social media



Reinforce value of trees for  
absorbing

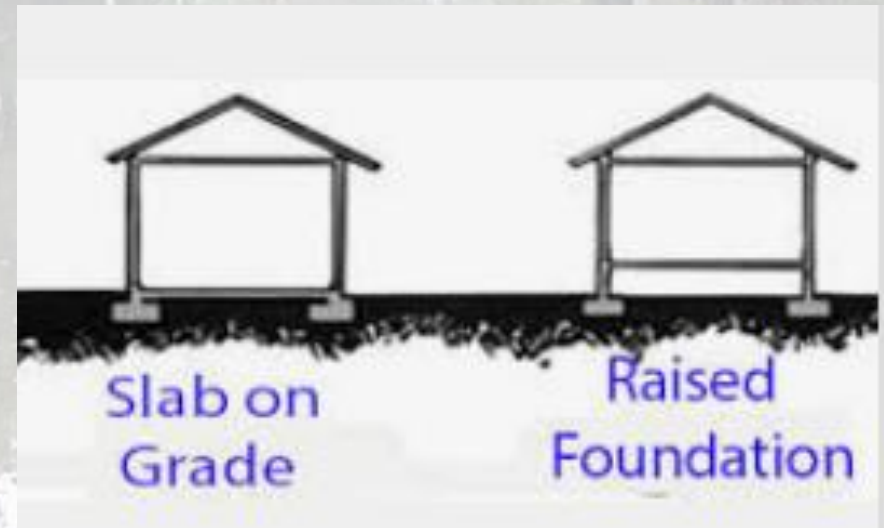
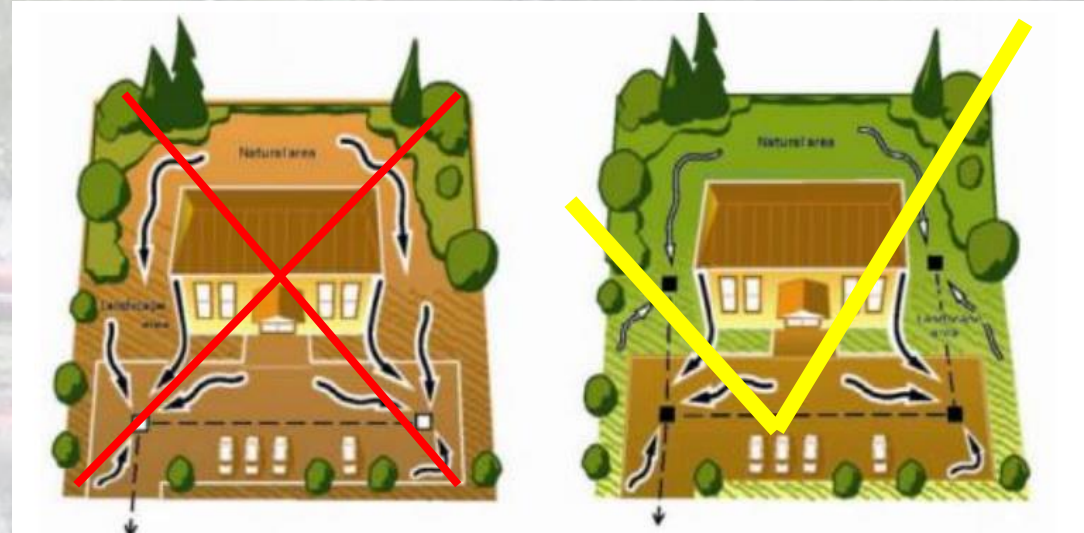
**Invasive  
Species  
Alert**

These waters are designated as  
***INFESTED WATERS*** and contain:

Develop program to  
eradicate invasive species



# Adaptation Recommendations – City Limits



Increase Finished Floor Elevations in the 500-year Flood zone



# Adaptation Recommendations West of Mayport Rd.



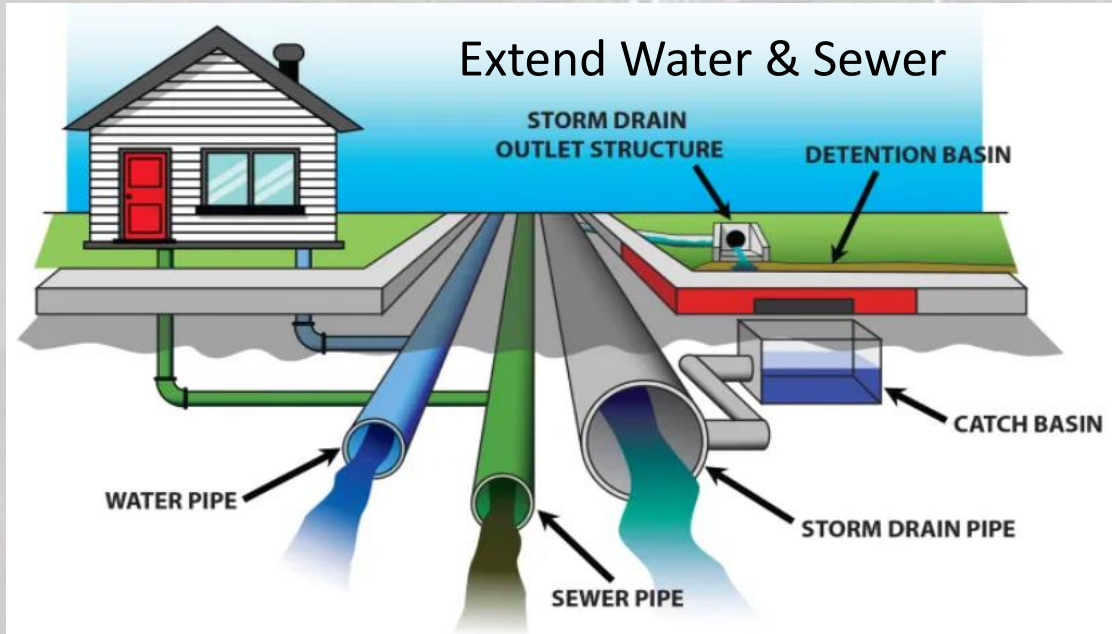
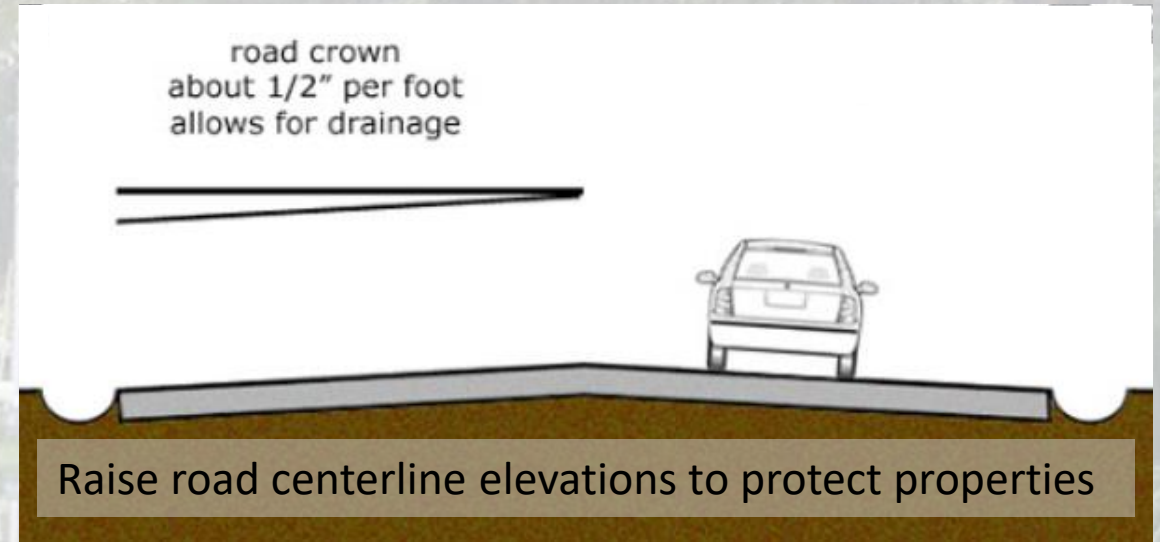
Evaluate cost effected means to protect  
w. of Mayport Rd.



Figure 4-2 - 2044 Nuisance & 100-Yr Storm Flooding West of Mayport Rd



# Adaptation Recommendations West of Mayport Rd.

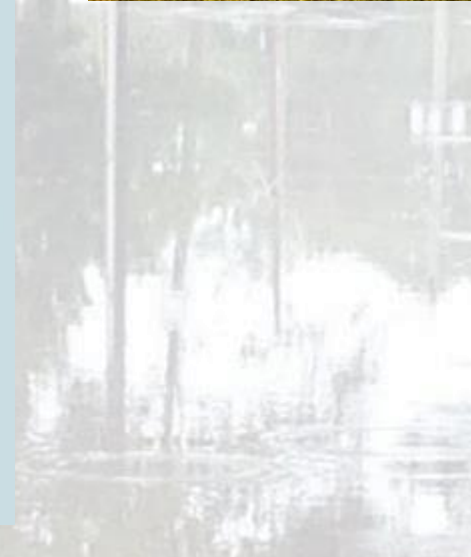
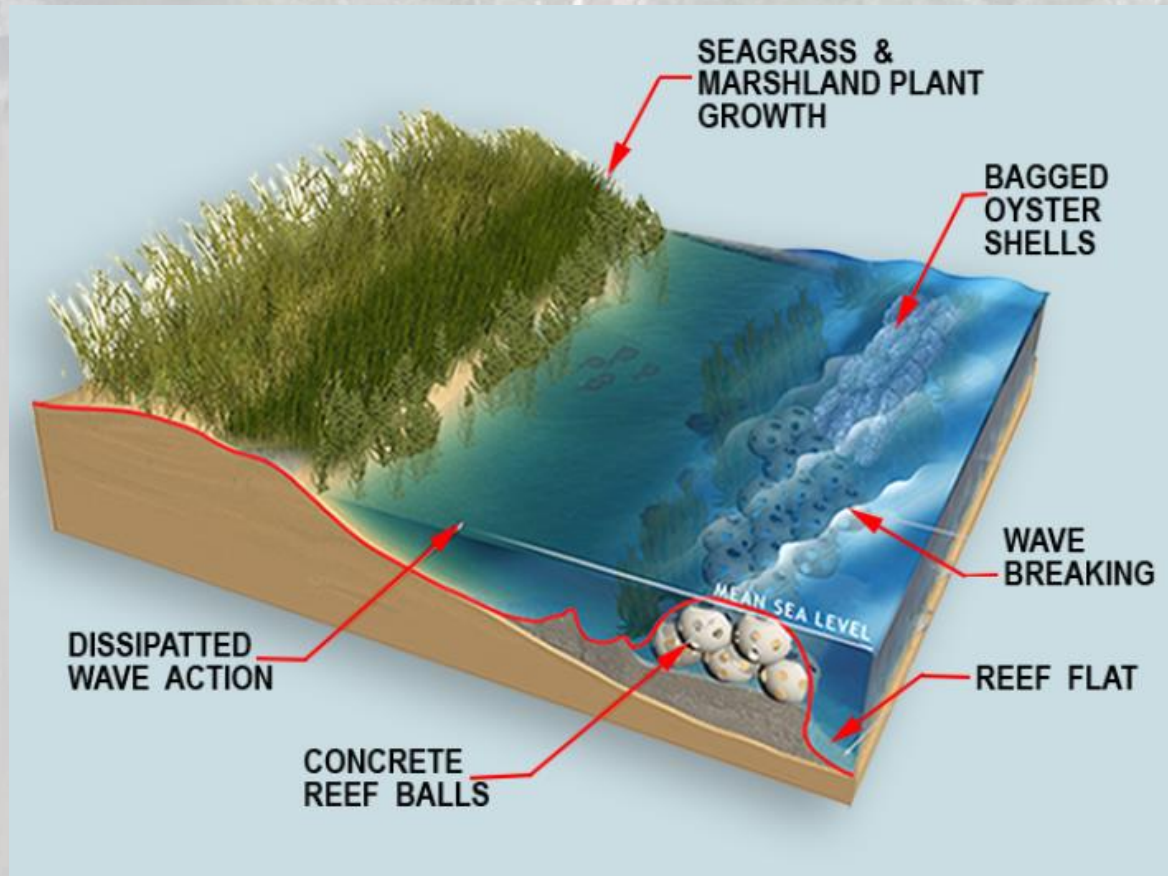


needed to assure  
ically located along  
ility to reduce  
land areas  
and develop  
urate loss of





# Adaptation Recommendations West of Mayport Rd.



Conserve properties located along the marsh edge to maintain or develop the ability to reduce wave impacts on the immediately adjacent upland areas



# Adaptation Recommendations

## Major Drainage ways

- Protect & enhance performance of major drainage ways
- Initiate an in-depth study (Major drainage projects in context of CIP)
- Develop 50 year for managing major drainage ways

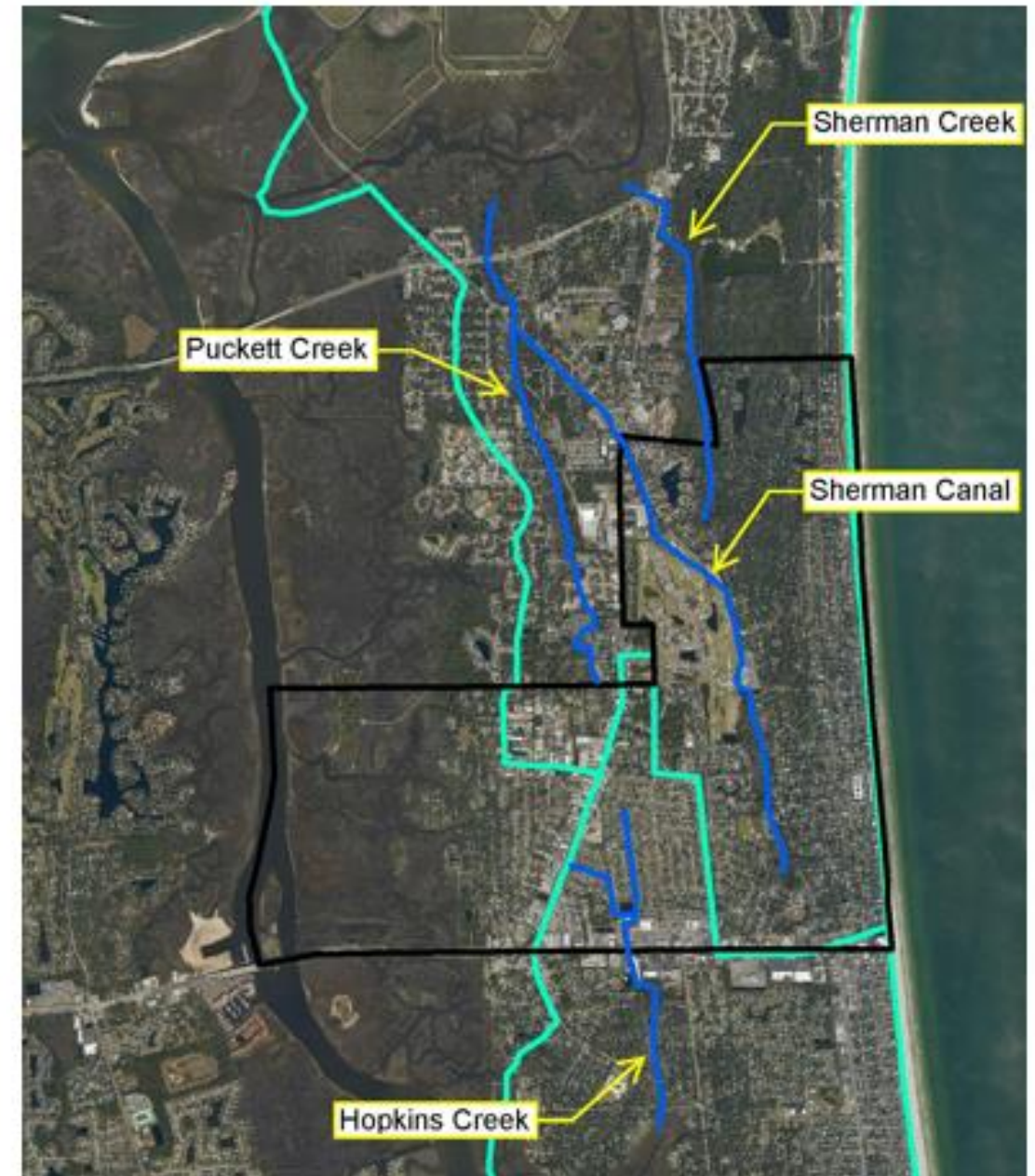


Figure 4-3 - Major Drainageways



# Adaptation Recommendations Roadways

- Protect & enhance performance of major drainage ways
- Initiate an in-depth study (Major drainage projects in context of CIP)
- Develop 50 year for managing major drainage ways

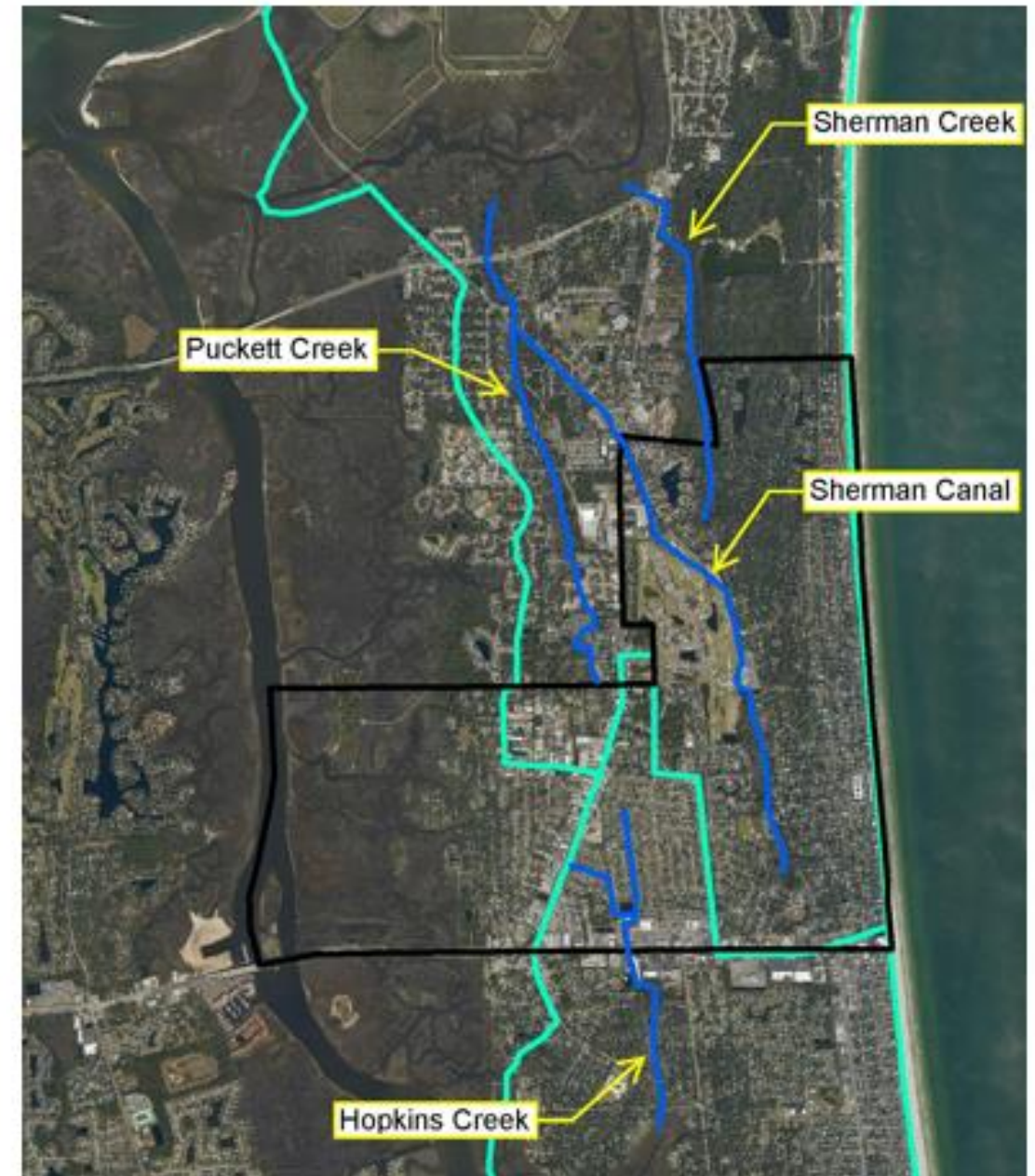


Figure 4-3 - Major Drainageways







# Adaptation Strategies

Strategies to minimize impacts of future flood risks and create a more Resilient Coastal Community

- Protection
- Accommodation
- Strategic Relocation
- Avoidance
- Procedural



*“**Resiliency** is the ability to collaboratively prepare for, prevent, absorb, recover from and more equitably adapt for damage from chronic stressors (i.e., aging infrastructure and sea level rise) and adverse events (i.e., hurricanes, extreme heat and high-intensity flooding).”*

**COJ City Council Special Committee on Resiliency**



# Coastal Vulnerability - Exposure

- COAB located between Ocean and Intracoastal Waterway –with low elevations





# Accommodation

- Altering design, construction and use of structures to handle periodic flooding
  - Incorporate future risks into Infrastructure Planning, Design & Construction
  - Elevating Structures
  - Stormwater Retrofits
  - Green Infrastructure





# Strategic Relocation

- Relocating vulnerable structures or developed areas to safer locations
  - Transition of vulnerable land from private to public ownership
  - Transfer of development rights



## City plans to return South Shores area to natural floodplain

FEMA gives Jacksonville \$3.4M grant to buy 17 homes, tear them down

By Jim Piggott - Reporter

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News4JAX





# Avoidance

- Anticipatory actions taken to direct new development to safer areas
  - Land Conservation
  - Conservation Easements
  - Increased Setbacks





# Procedural

- Procedural strategies aim to increase awareness of vulnerabilities and adaptation options or incorporate such information into plans or policies
  - Community Outreach & Education
  - Wetland Buffers
  - Comprehensive Plan changes to address Sea Level Rise
  - Real Estate Disclosures



# Next Steps

- Discussion with Environmental Stewardship Committee on April 14<sup>th</sup>
- Review City of Jacksonville Resiliency Policies & Strategies
- Develop Draft Adaptation Plan
- Present Draft Adaptation Plan to the Commission on May 24<sup>th</sup>
- COAB Coastal Vulnerability, Resiliency & Adaptation Planning Website:  
<https://www.coab.us/875/Coastal-Vulnerability-Resiliency-and-Ada>