RESILIENT MARTIN



MARTIN COUNTY VULNERABILITY ASSESSMENT

RESILIENT MARTIN



ARE YOU EXPOSED?

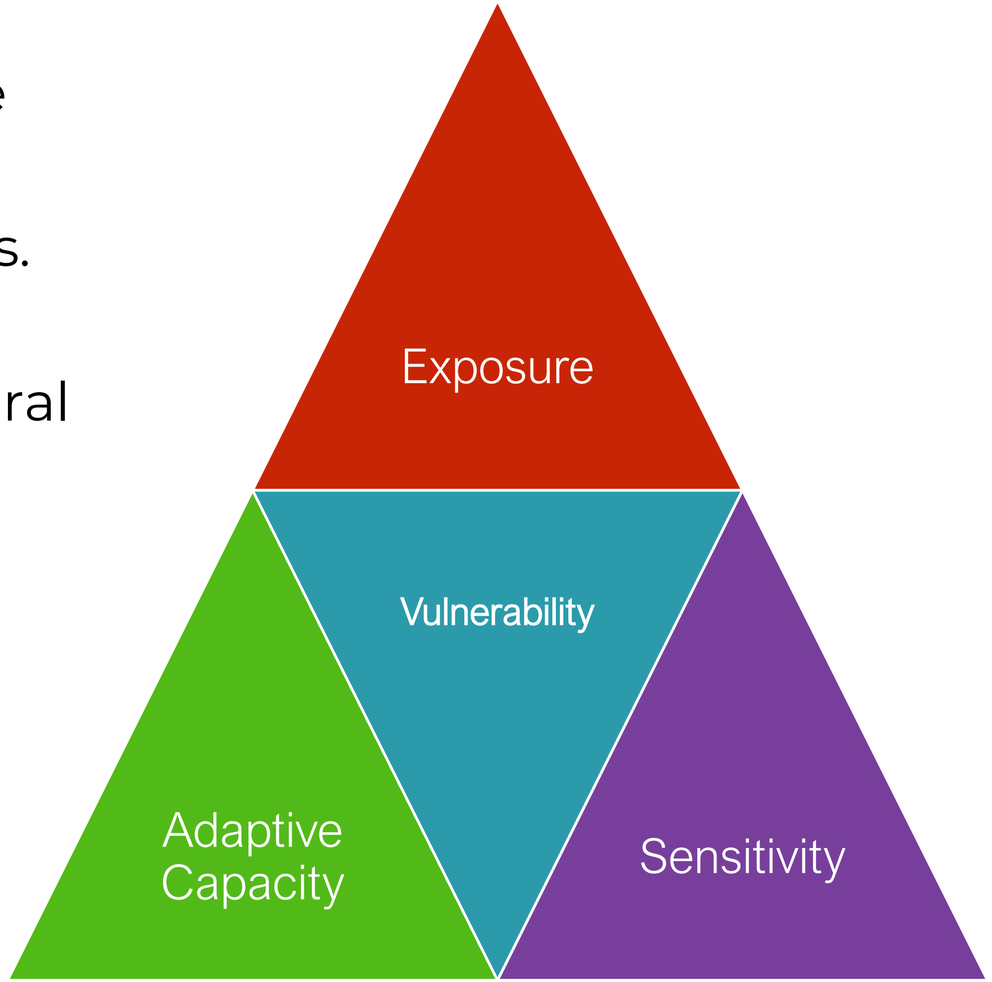
MARTIN COUNTY VULNERABILITY ASSESSMENT

WHAT IS A VULNERABILITY ASSESSMENT?

Vulnerability assessments are used to measure the impact of certain acute shocks or chronic stresses to people, infrastructure, and land uses.

It helps a community determine which structural and social assets are likely to be impacted by these stresses.



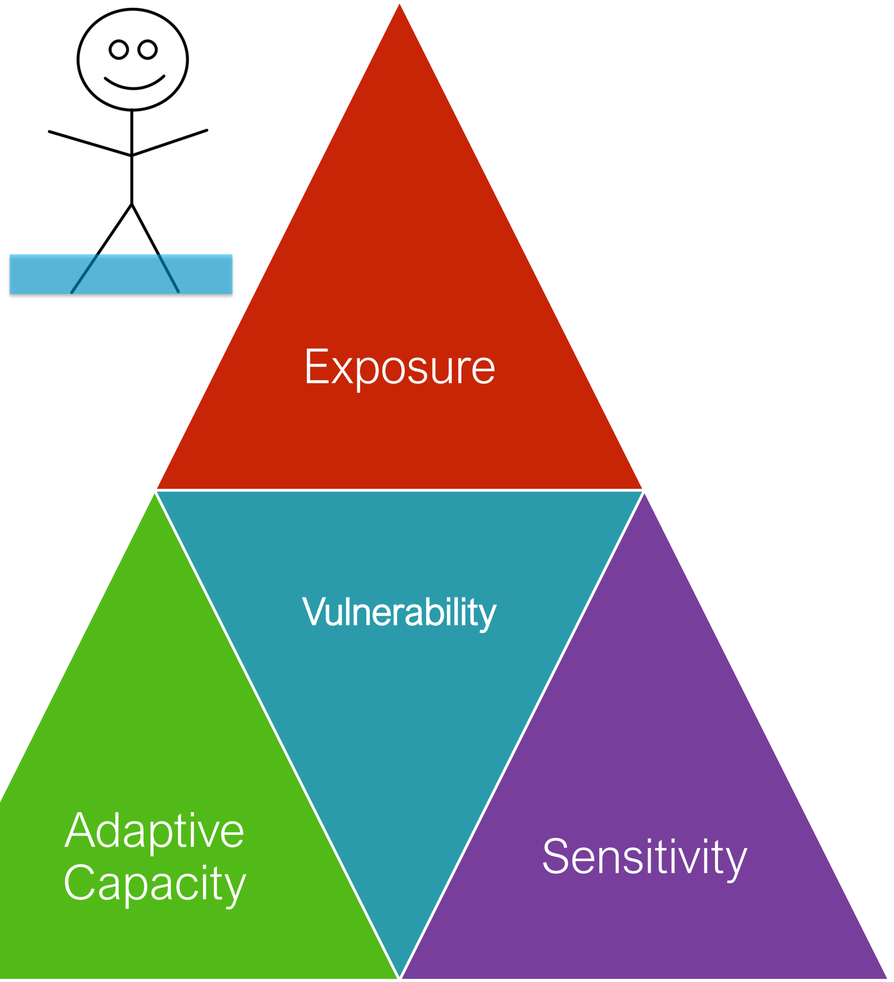


EXPOSURE

Are you wet?

The presence of people, assets, and ecosystems in areas where they are vulnerable to hazards.



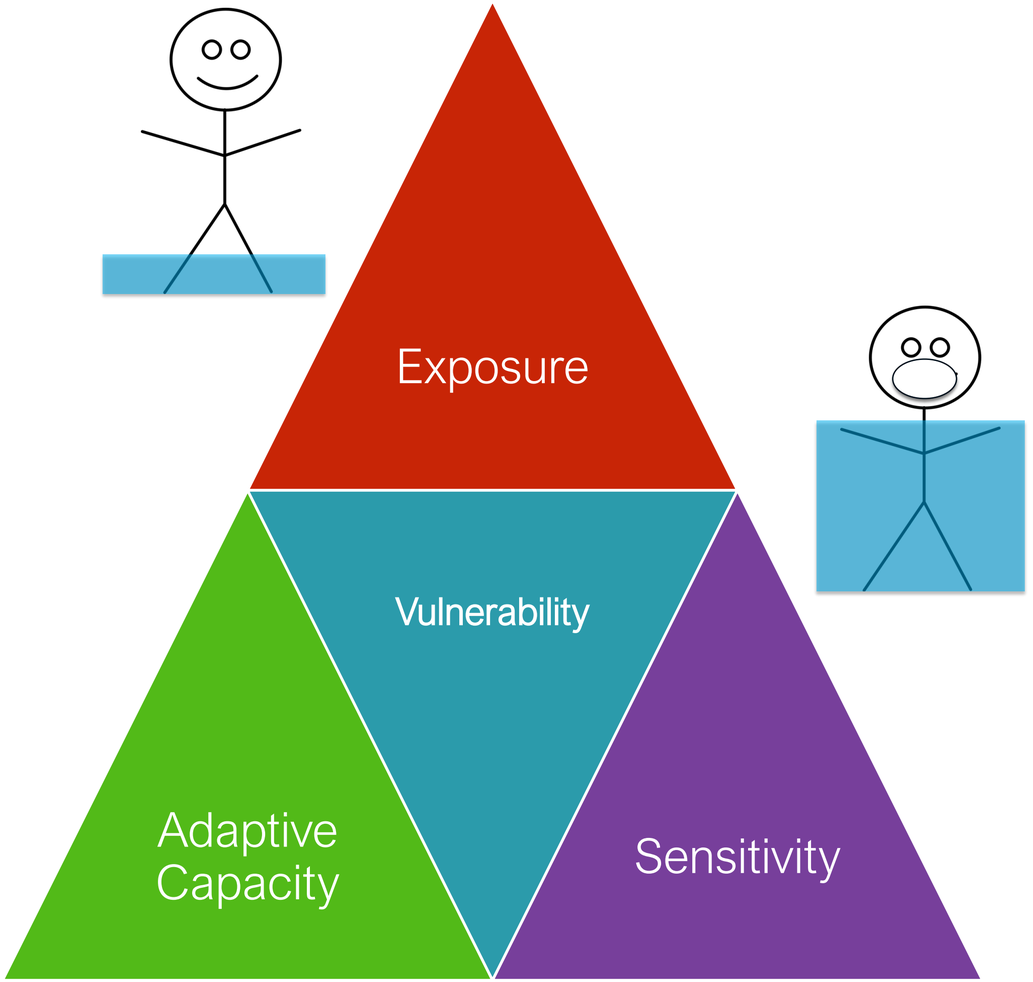


SENSITIVITY

How wet are you?

The degree to which a system, population, or resource is or might be affected by hazards.





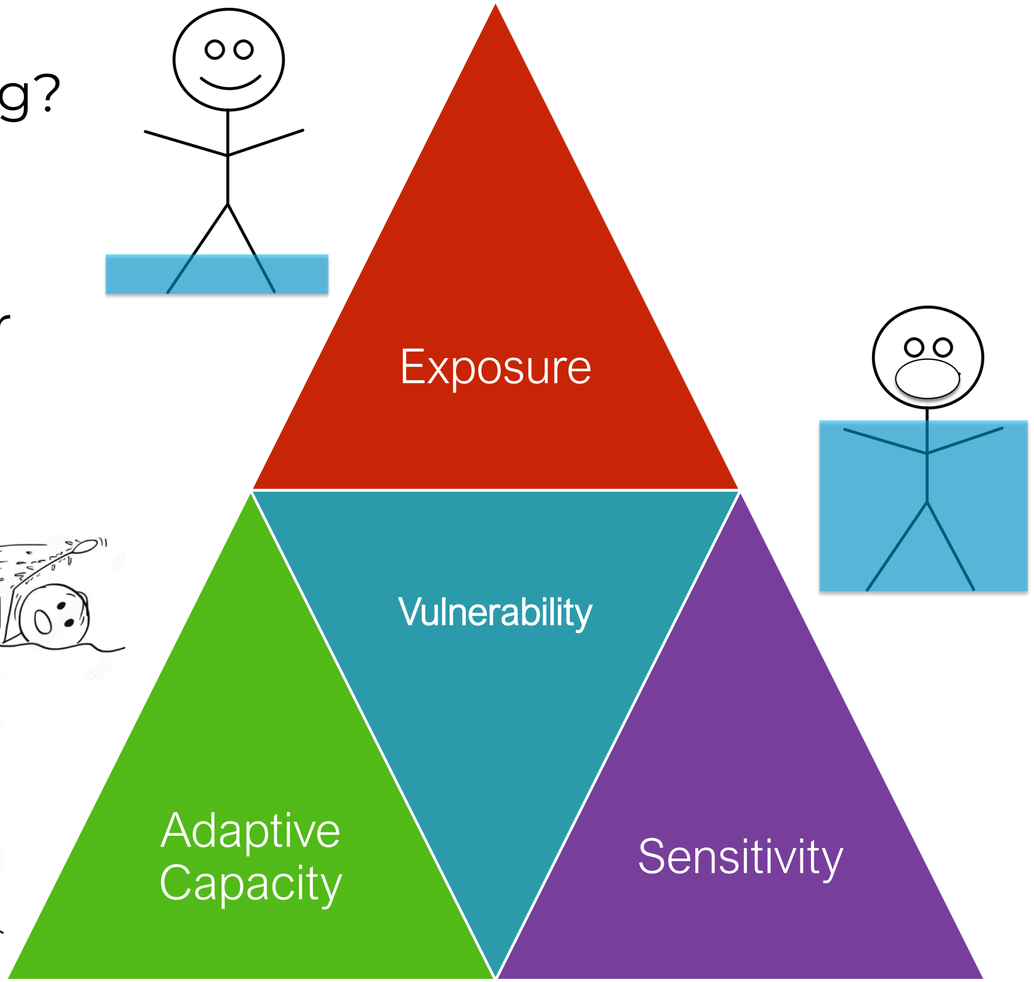
ADAPTIVE CAPACITY

Can you adapt? Are you swimming or drowning?

A system's ability to change its behavior or characteristics to cope with external stresses or hazards.







RESILIENCY

How you adapt helps you to be more resilient!

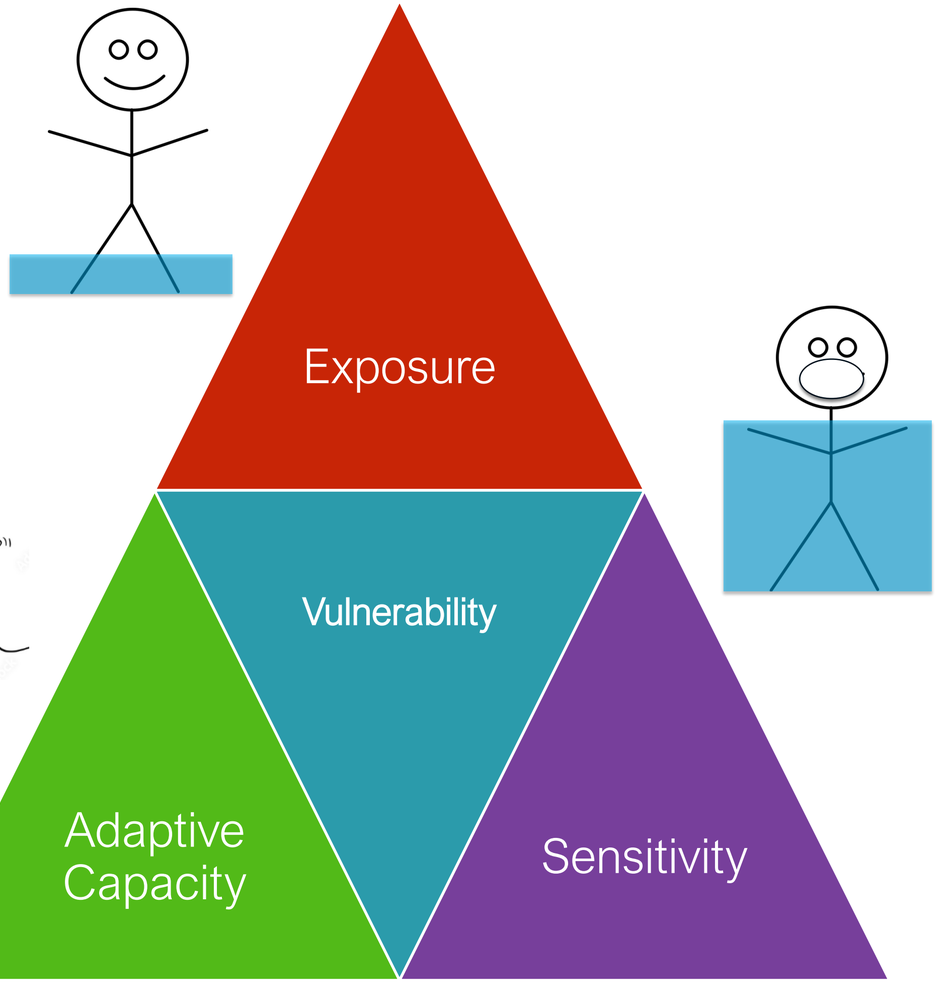
Resilience is the capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption or threat.





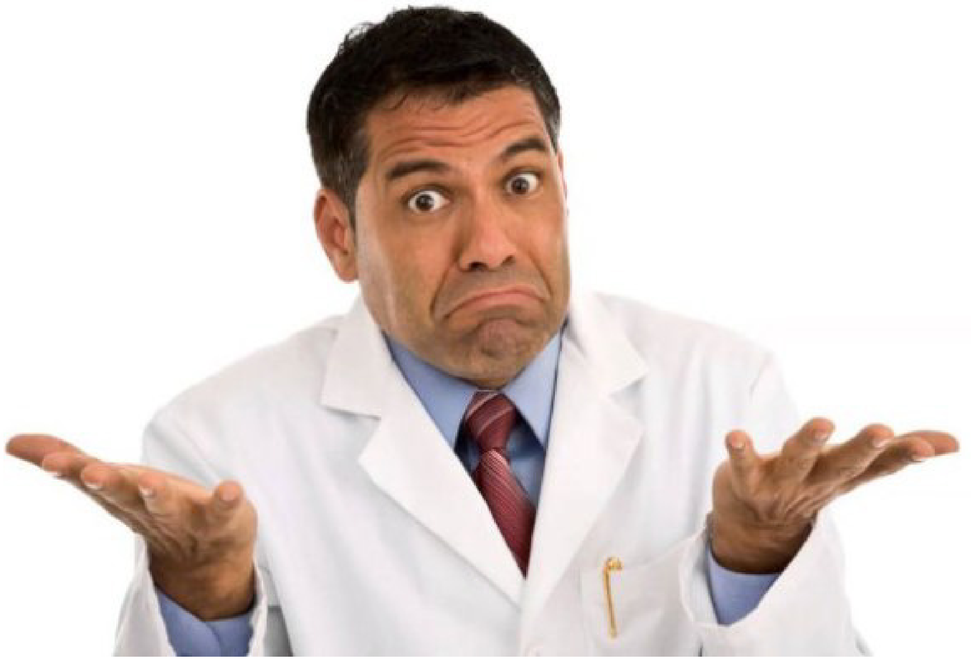






WHY CARE ABOUT A VULNERABILITY ASSESSMENT?

- Helps determine how resilient a system is
- Helps prepare in emergency situations
- Helps plan for future projects
- Helps prioritize projects
- Helps prioritize land acquisition
- Helps establish policies and code
- Helps get $$$$$$$$$ for projects



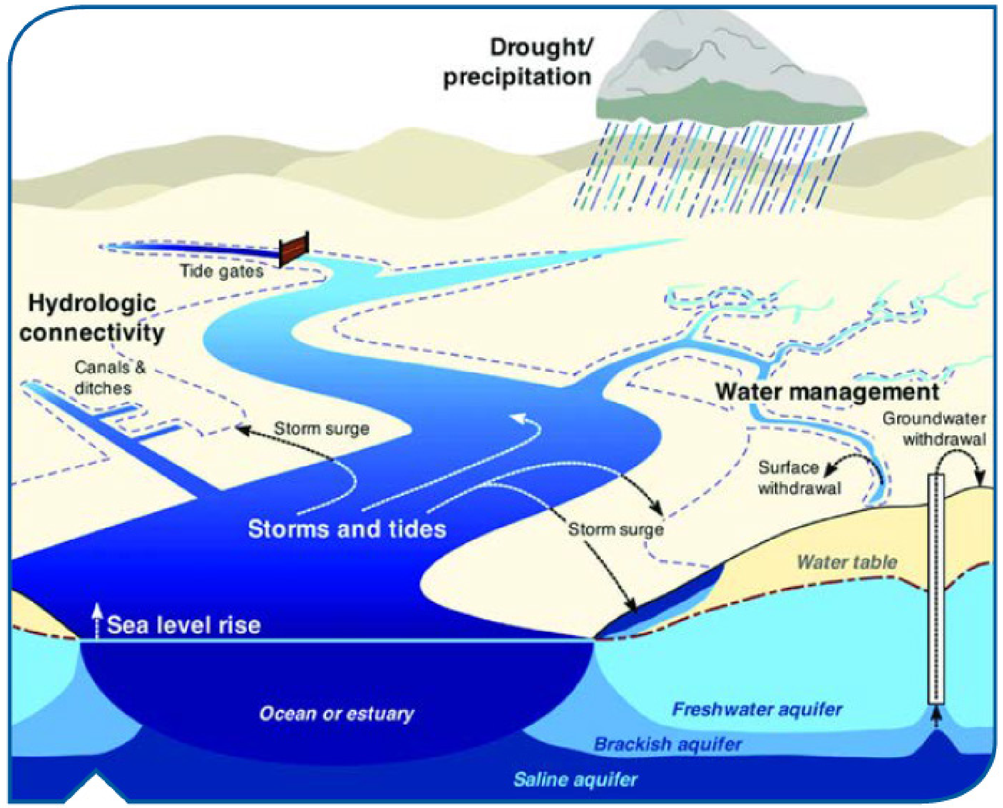
REQUIREMENTS FOR A VULNERABILITY ASSESSMENT?

Critical Assets:

1. Transportation - Roads bridges, rail, and marina
2. Critical Infrastructure - Non-buildings, all utilities
3. Critical Community and Emergency Facilities - Buildings, schools, health care services
4. Natural, Cultural, and Historical Resources - Shorelines, conservation lands, parks

Year	NOAA Intermediate Low	NOAA Intermediate High
Present Day	0.56	0.85
2040	0.92	1.64
2070	1.48	3.51
2100	1.84	6.23

* Elevation NAVD88



- TIDAL FLOODING
- STORM SURGE
- RAINFALL
- COMBINATION

TIDAL FLOODING - EXPOSURE



- VIRGINIA KEY GAGE
- TIDAL FLOODING = MHHW + 2 FEET
- PROJECTIONS – PRESENT DAY, 2040, 2070, 2100

TIDAL FLOODING

PRESENT DAY – TIDAL FLOOD DAYS (VIRGINIA KEY)

Approximate Days of Tidal Flooding Observed	2004-2022 (NAVD88 Feet)
1	2.02
5	1.80
10	1.60
15	1.45
20	1.35
30	1.23
40	1.14
50	0.98
100	0.79
≥150	0.47

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FUTURE – TIDAL FLOOD DAYS (VIRGINIA KEY)

Approx. Days	2040-NIL	2070-NIL	2100-NIL	2040-NIH	2070-NIH	2100-NIH
1	2.10	2.76	3.28	2.92	5.06	7.82
5	1.90	2.54	3.06	2.64	4.79	7.52
10	1.74	2.32	2.93	2.50	4.58	7.31
15	1.60	2.15	2.80	2.37	4.38	7.17
20	1.49	2.05	2.70	2.26	4.26	7.07
30	1.37	1.94	2.57	2.12	4.13	6.94
40	1.27	1.85	2.48	2.02	4.02	6.84
50	1.12	1.70	2.34	1.86	3.88	6.65
100	0.93	1.51	2.14	1.65	3.66	6.38
≥150	0.61	1.17	1.81	1.30	3.24	5.85

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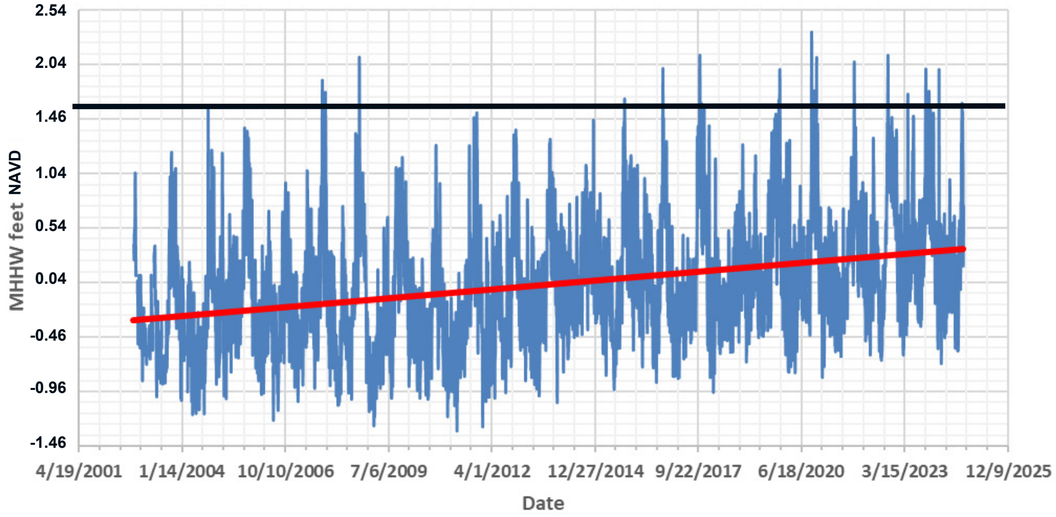

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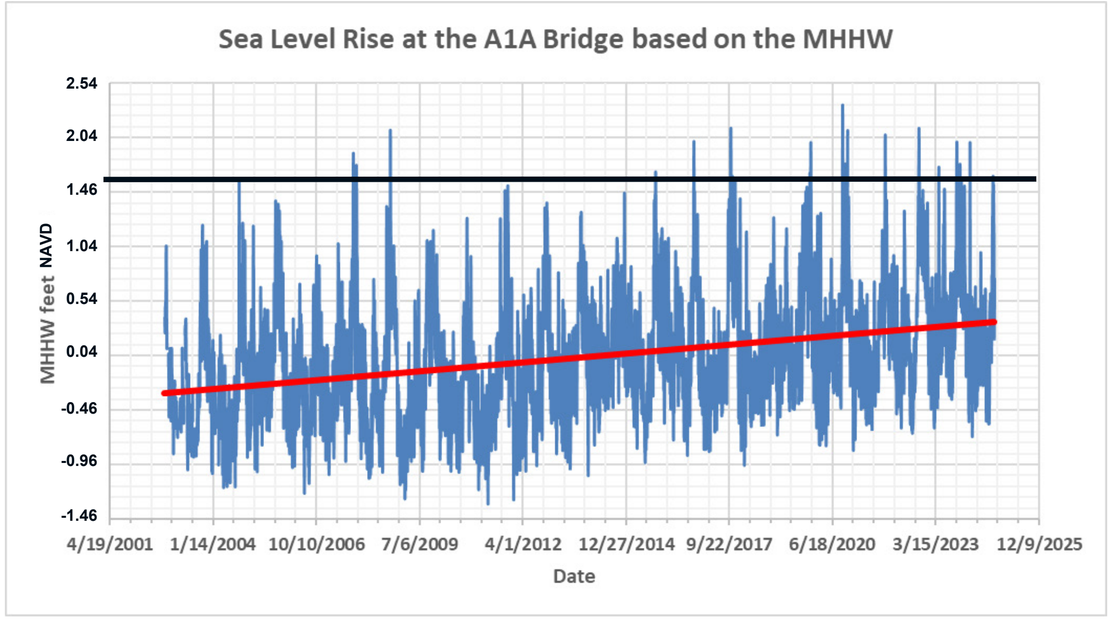

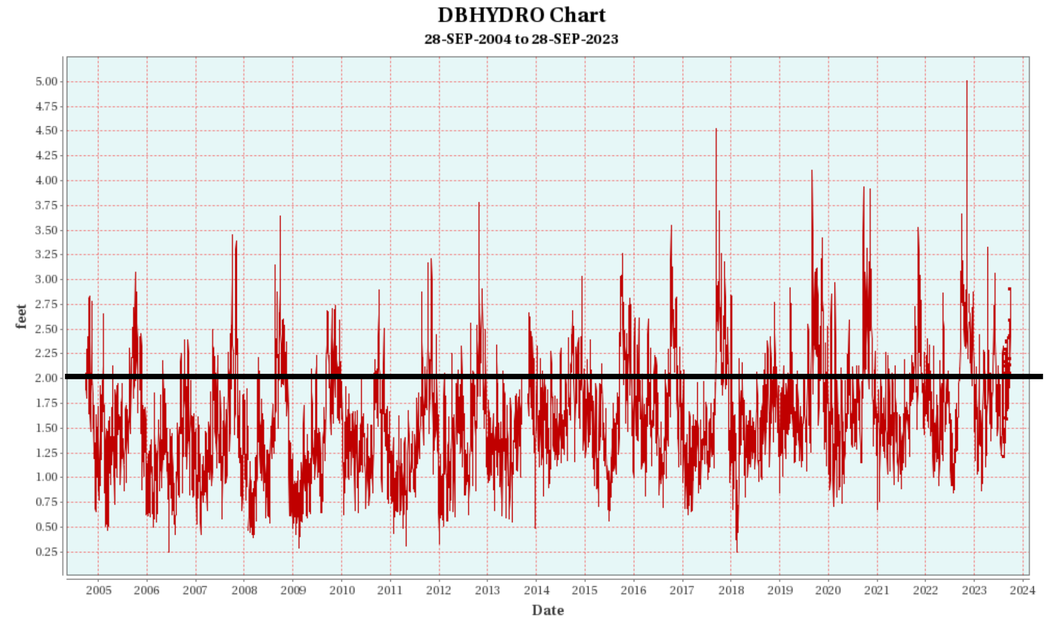

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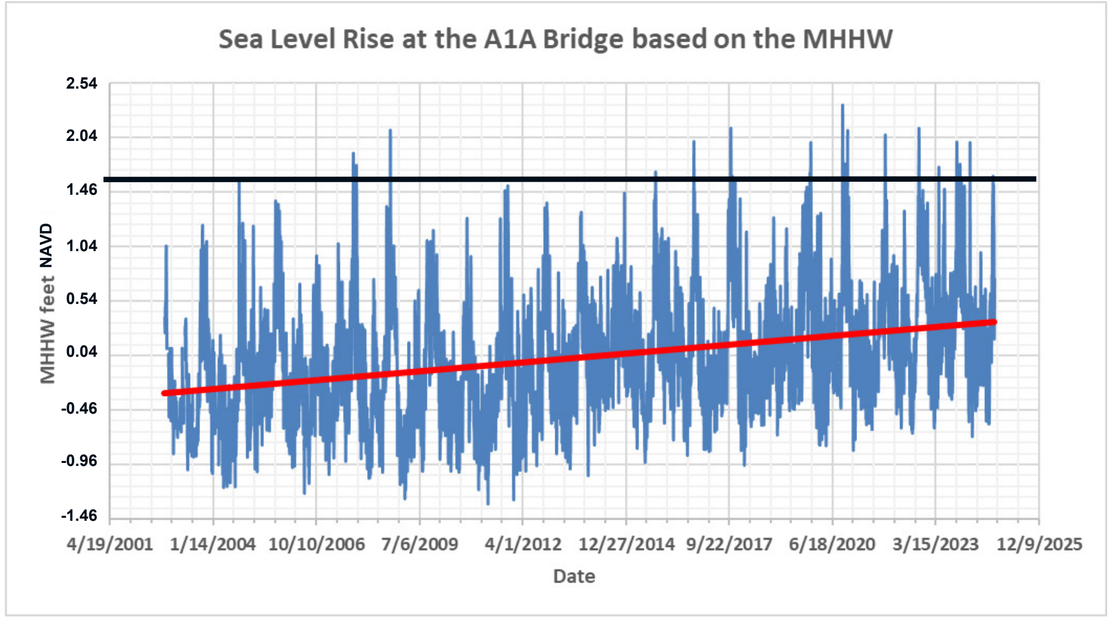
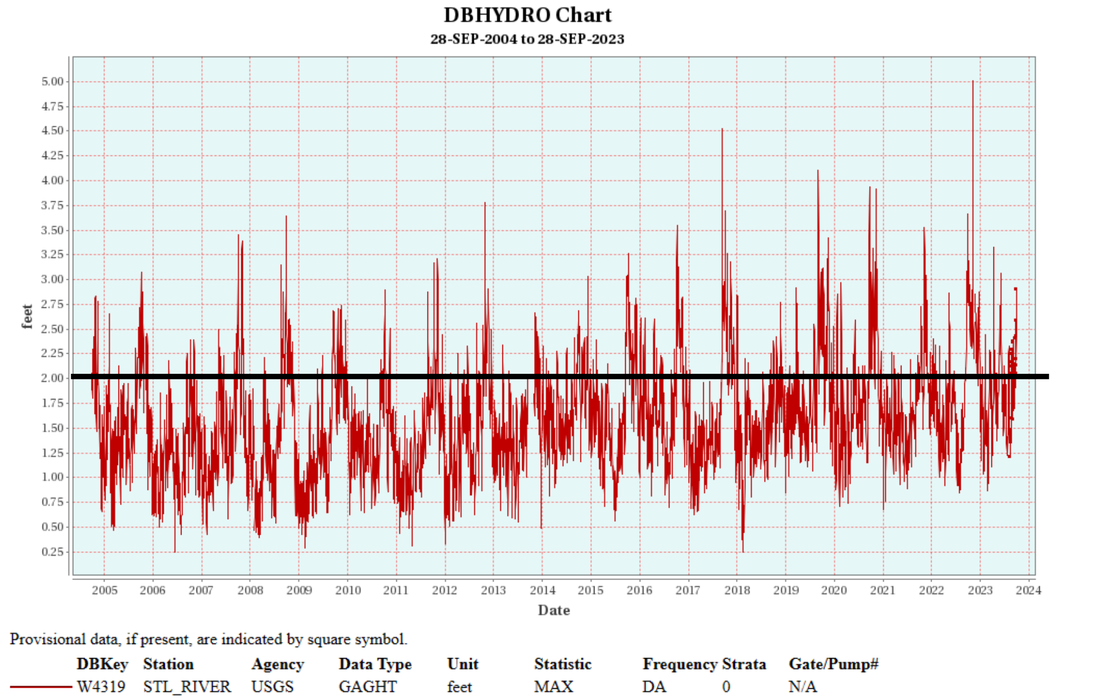
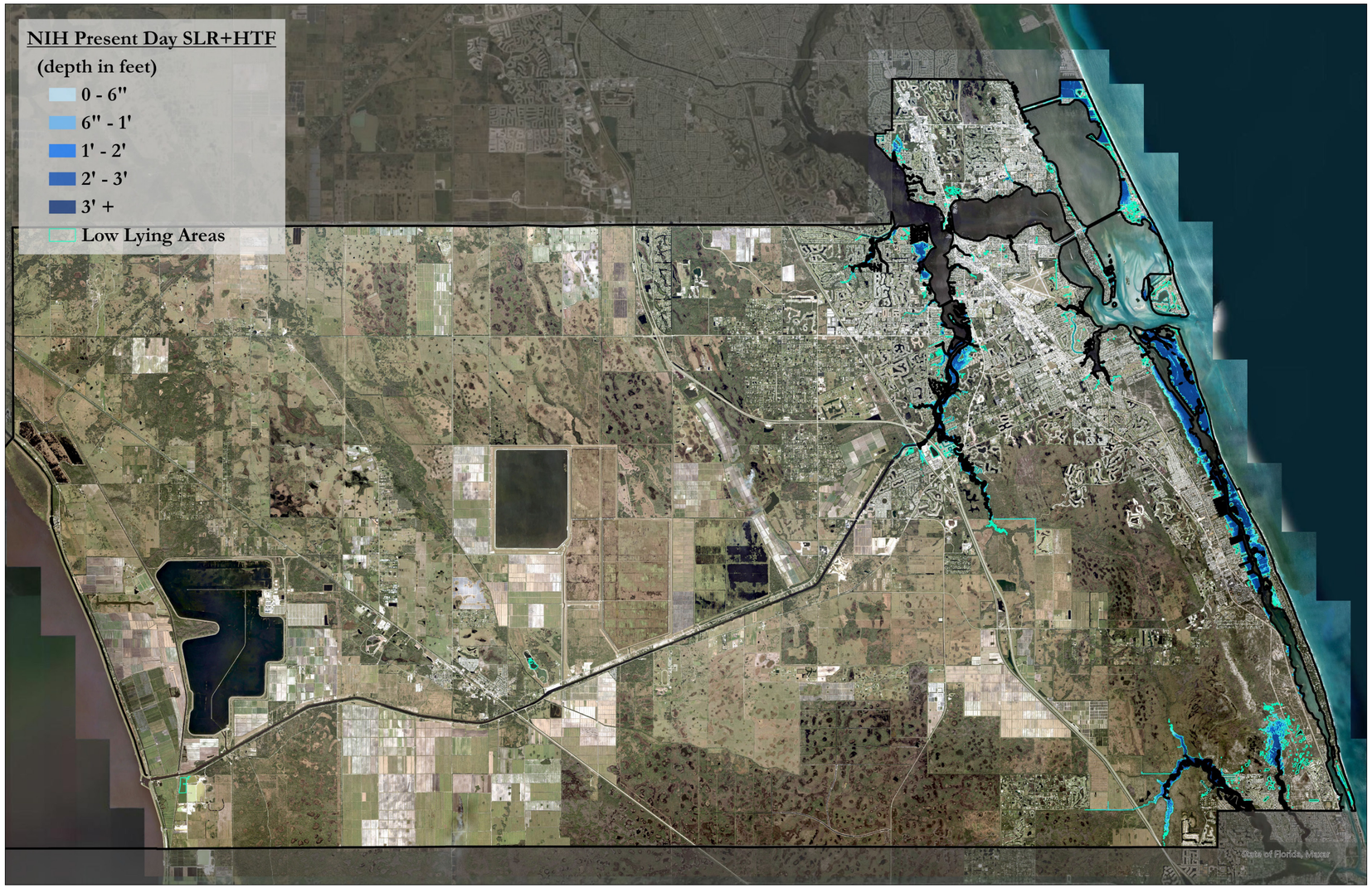


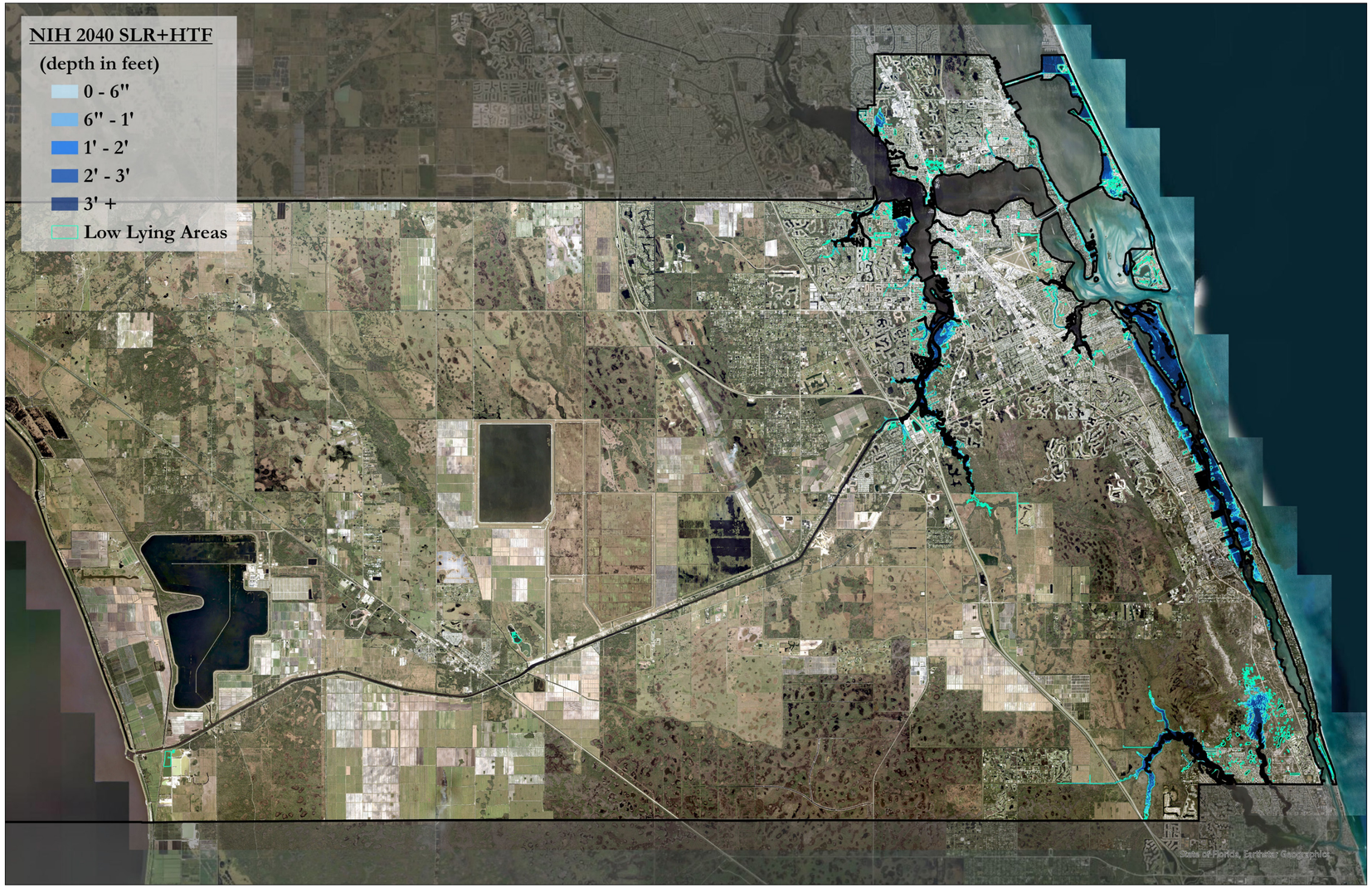
APPROXIMATELY 0.35 INCHES PER YEAR



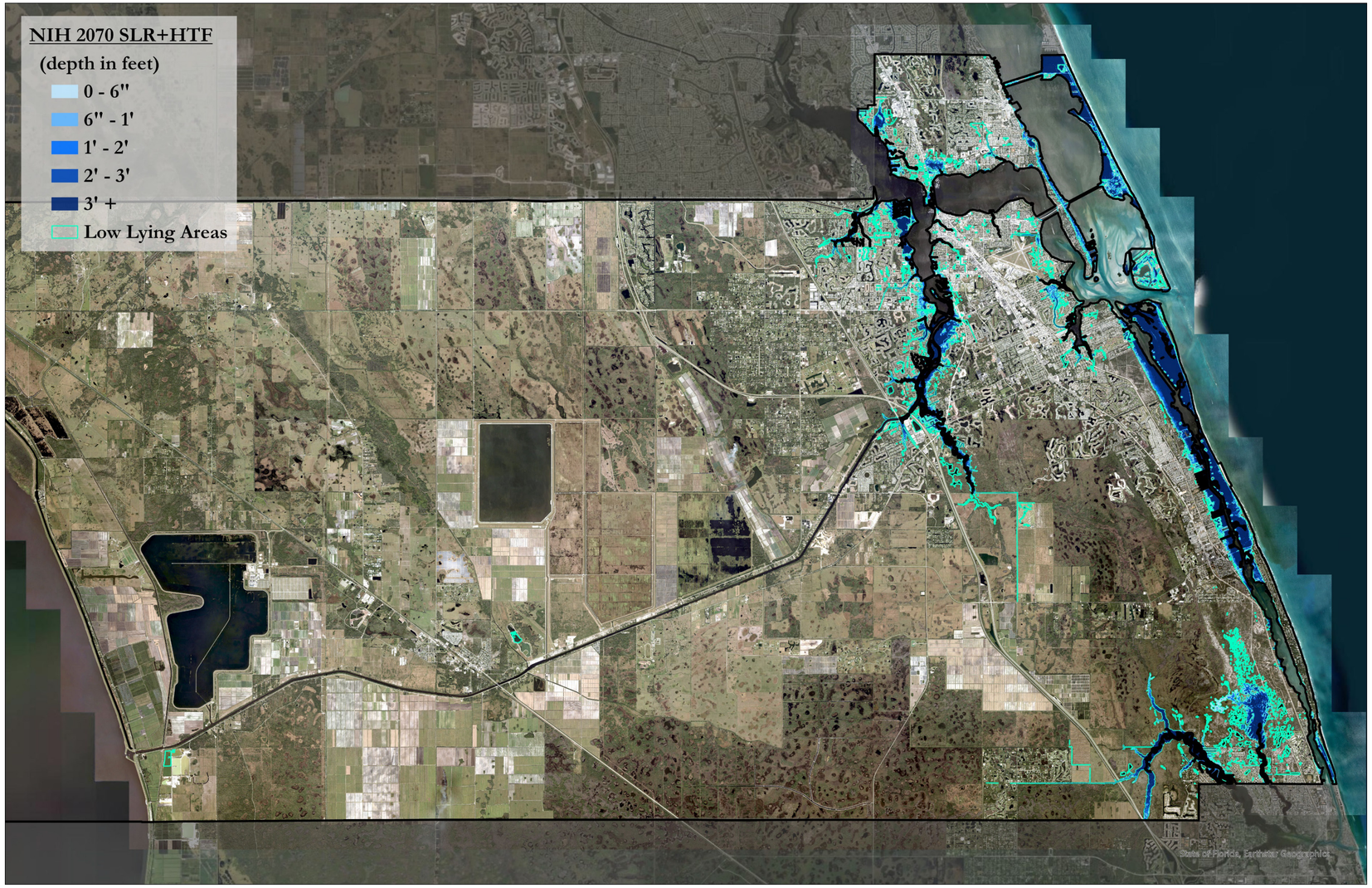
COUNTYWIDE TIDAL FLOODING MAPS (PRESENT DAY)



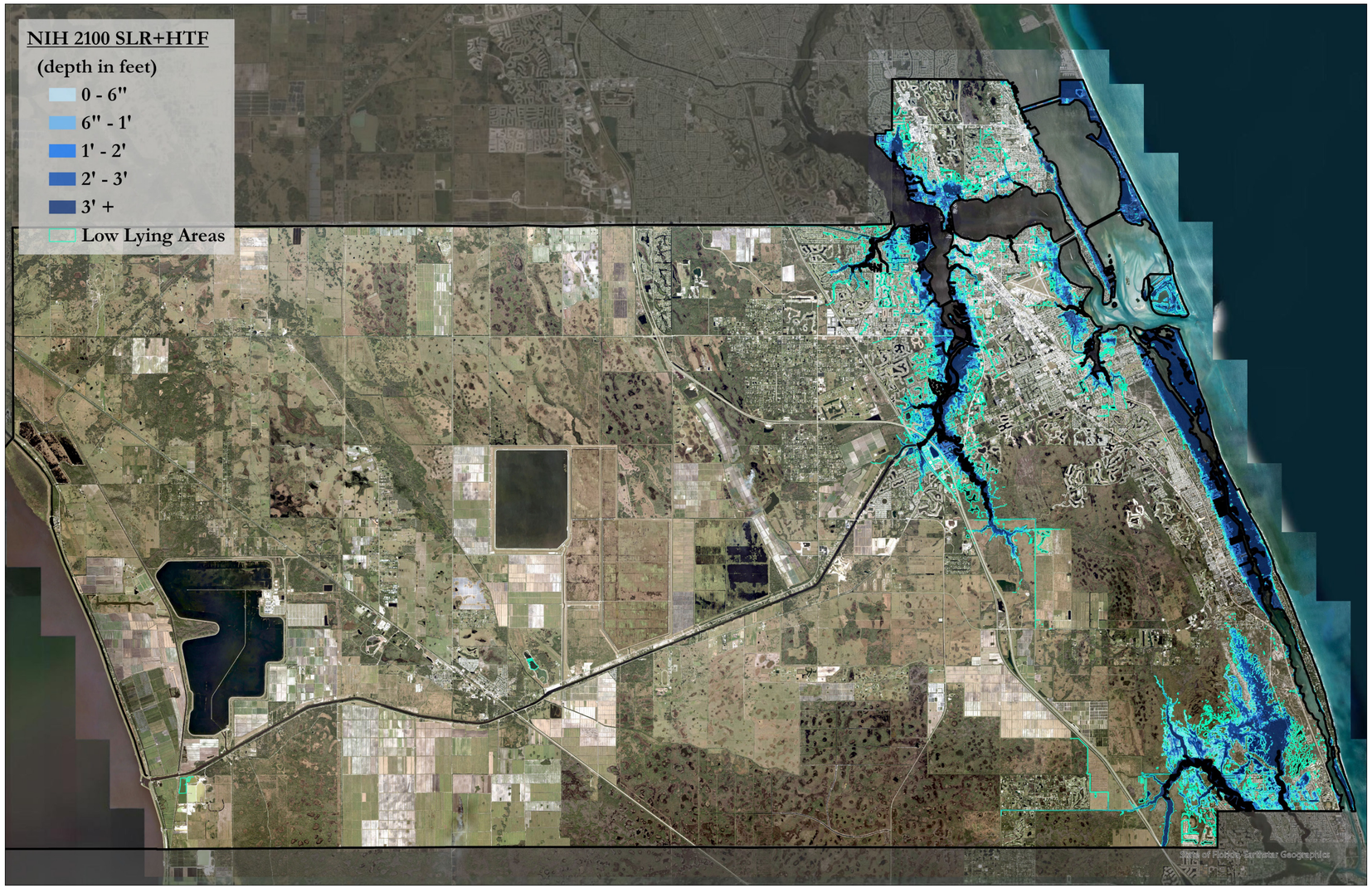
COUNTYWIDE TIDAL FLOODING MAPS (2040)



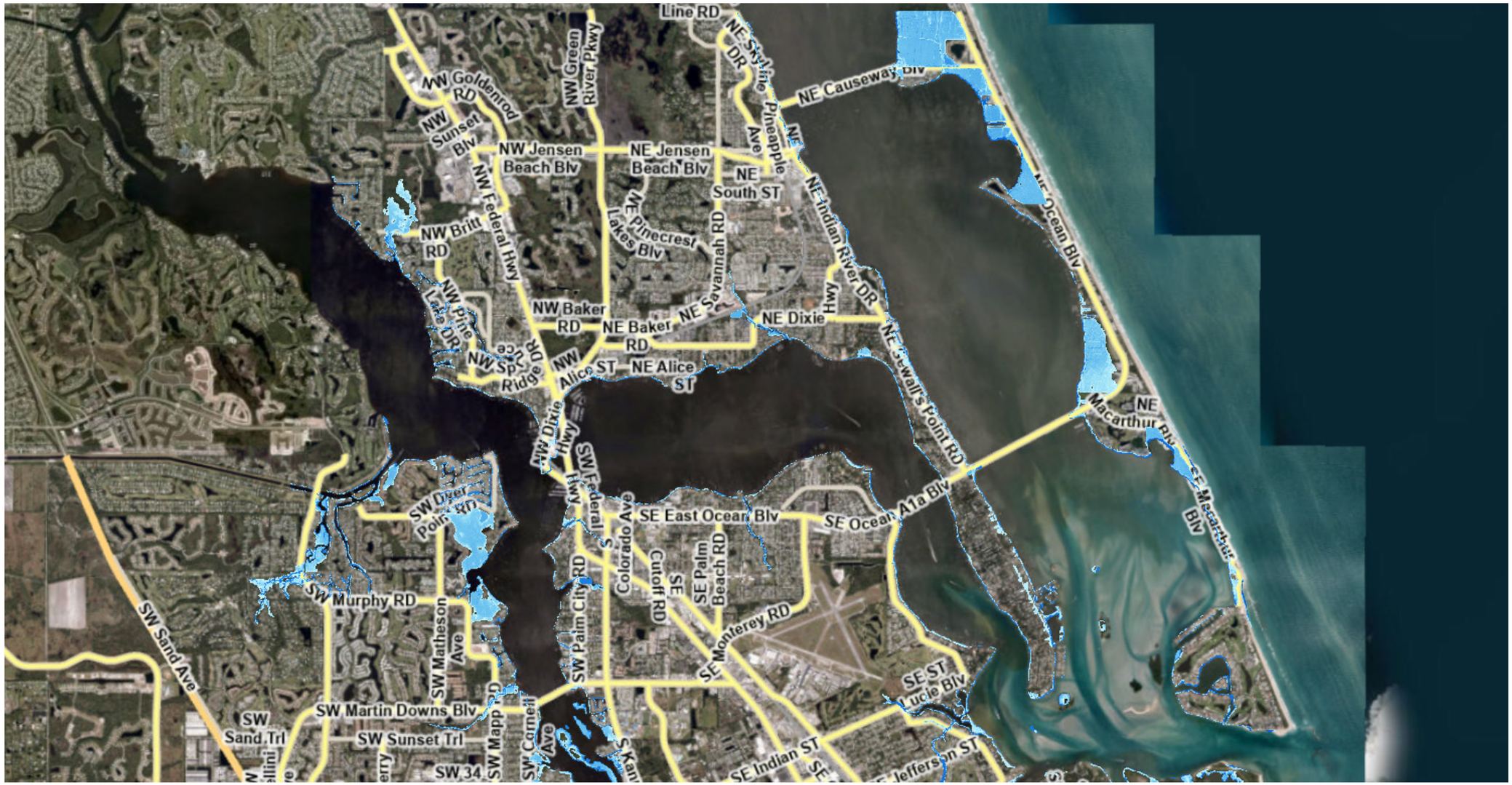
COUNTYWIDE TIDAL FLOODING MAPS (2070)



COUNTYWIDE TIDAL FLOODING MAPS (2100)

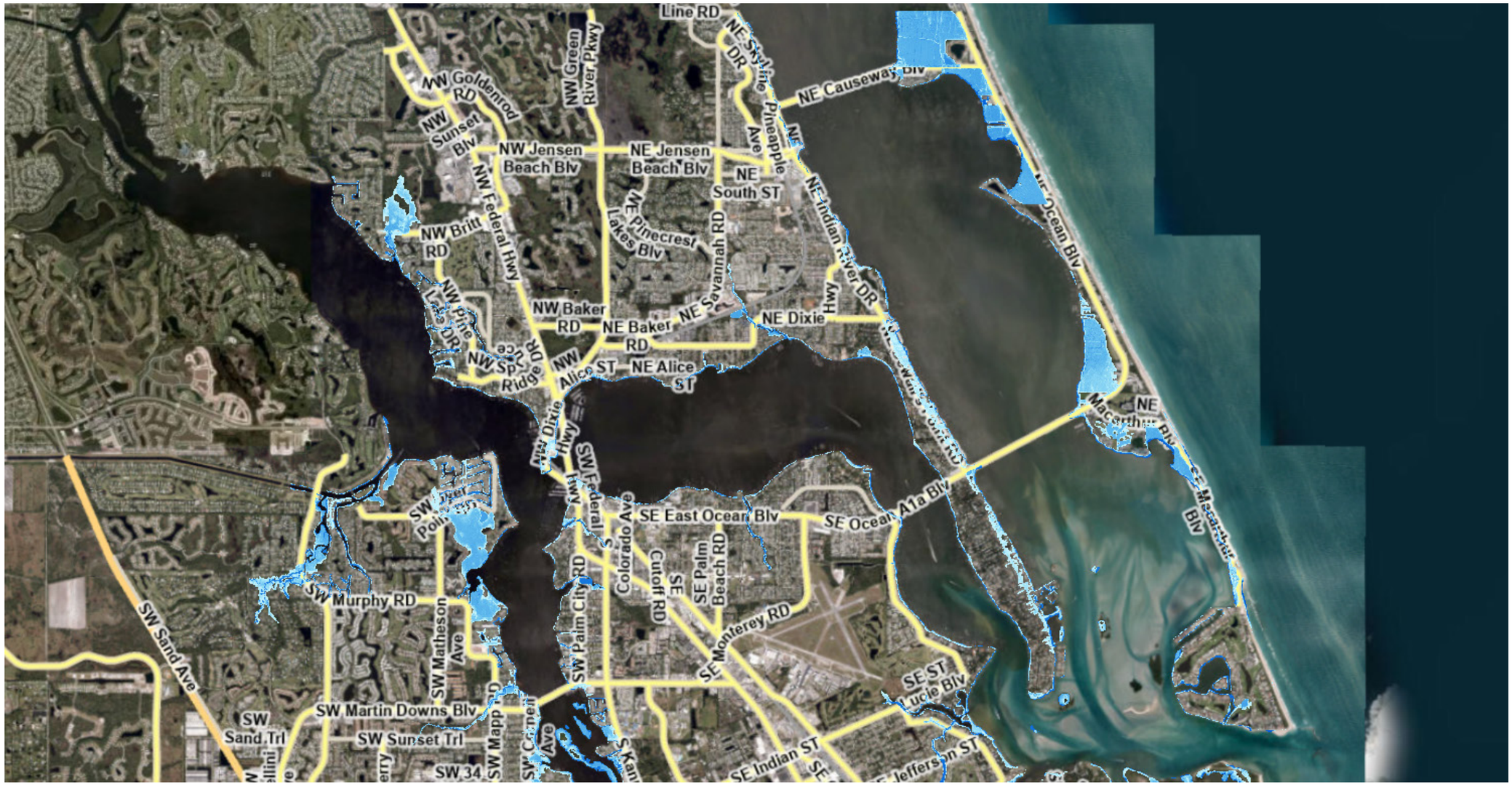


EXPOSURE ANALYSIS: SEA LEVEL RISE (PRESENT DAY)



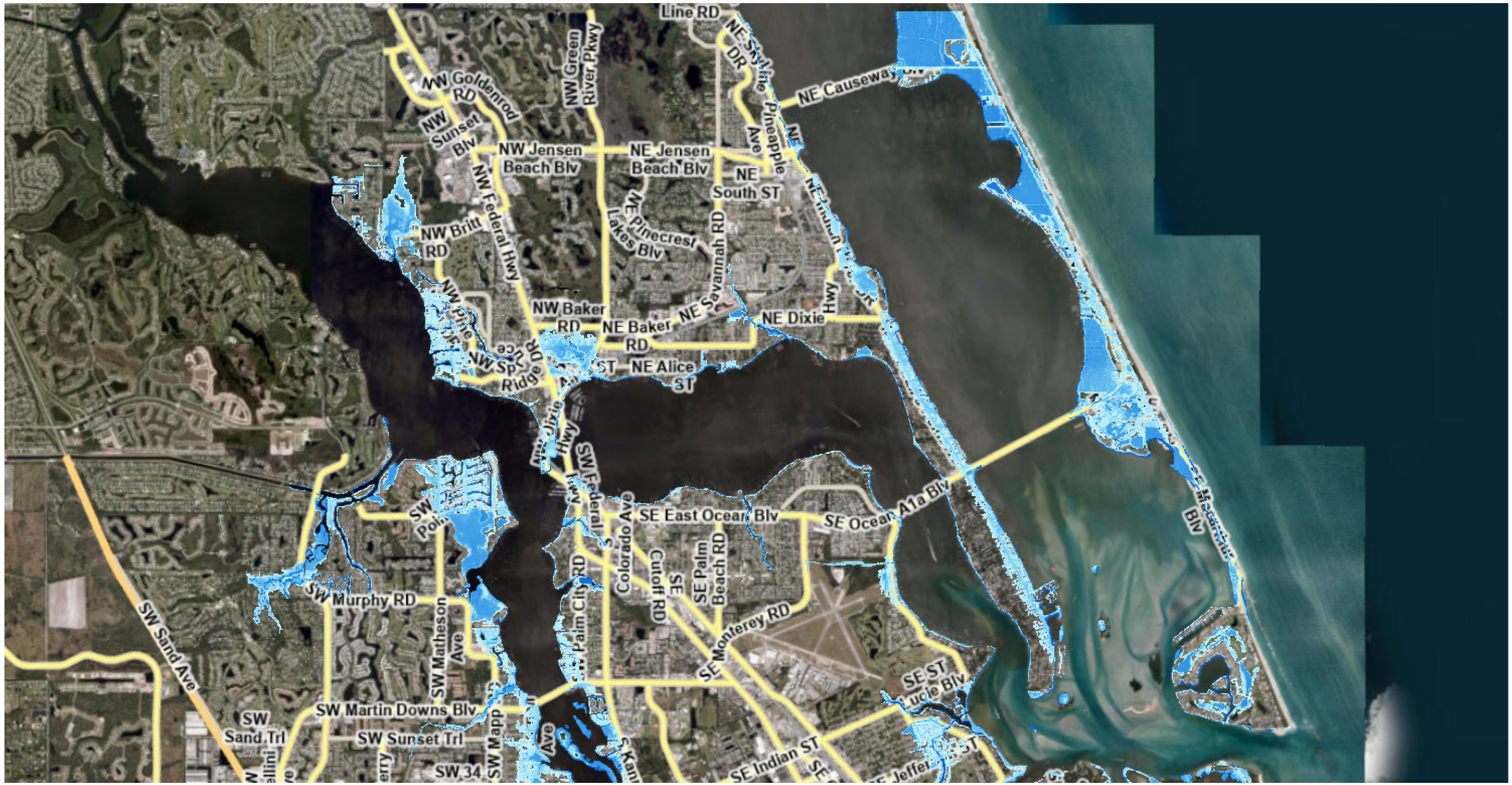
DISTRICT 1, PART DISTRICT 2, PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2040)



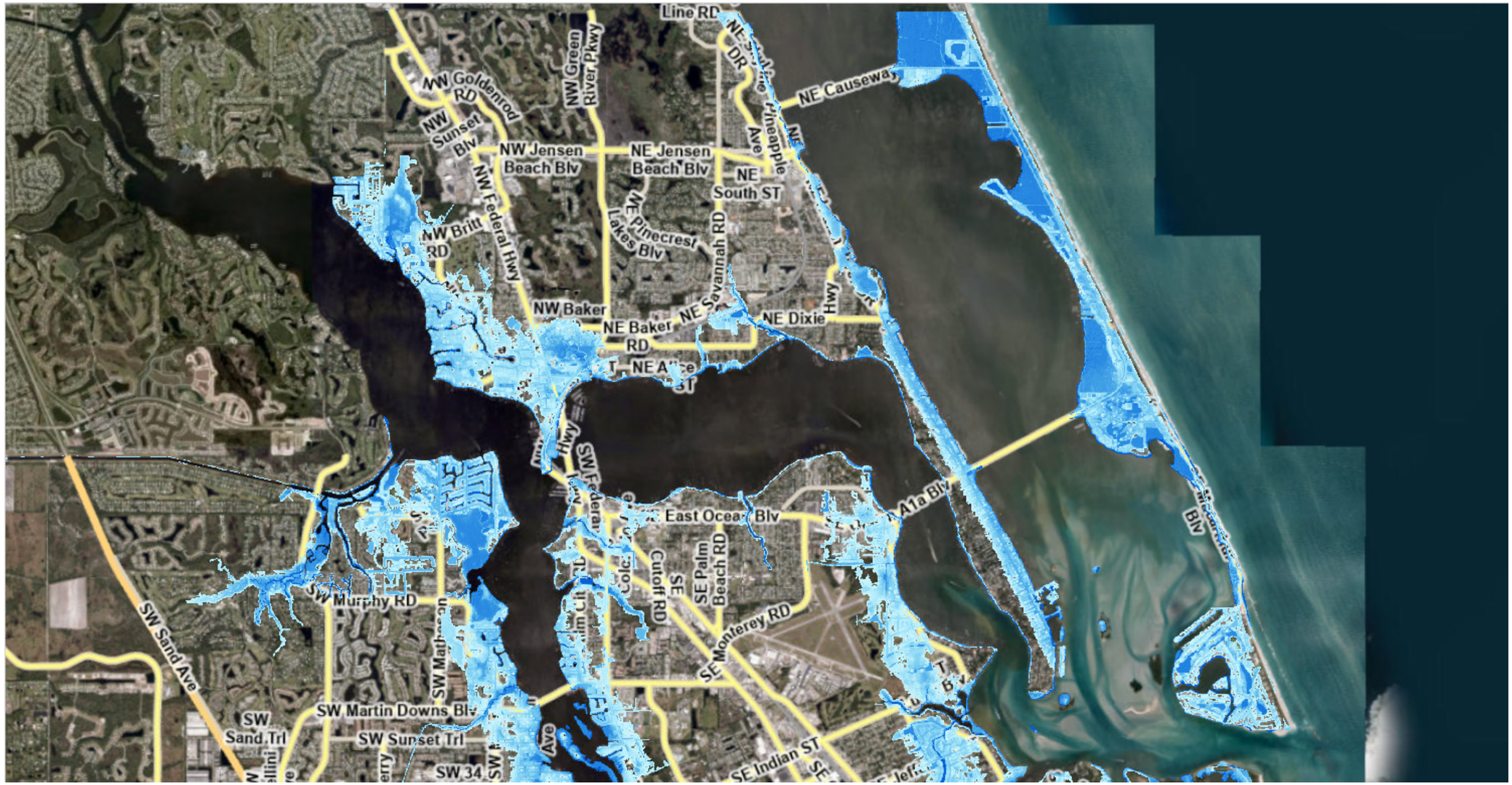
DISTRICT 1, PART DISTRICT 2, PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2070)



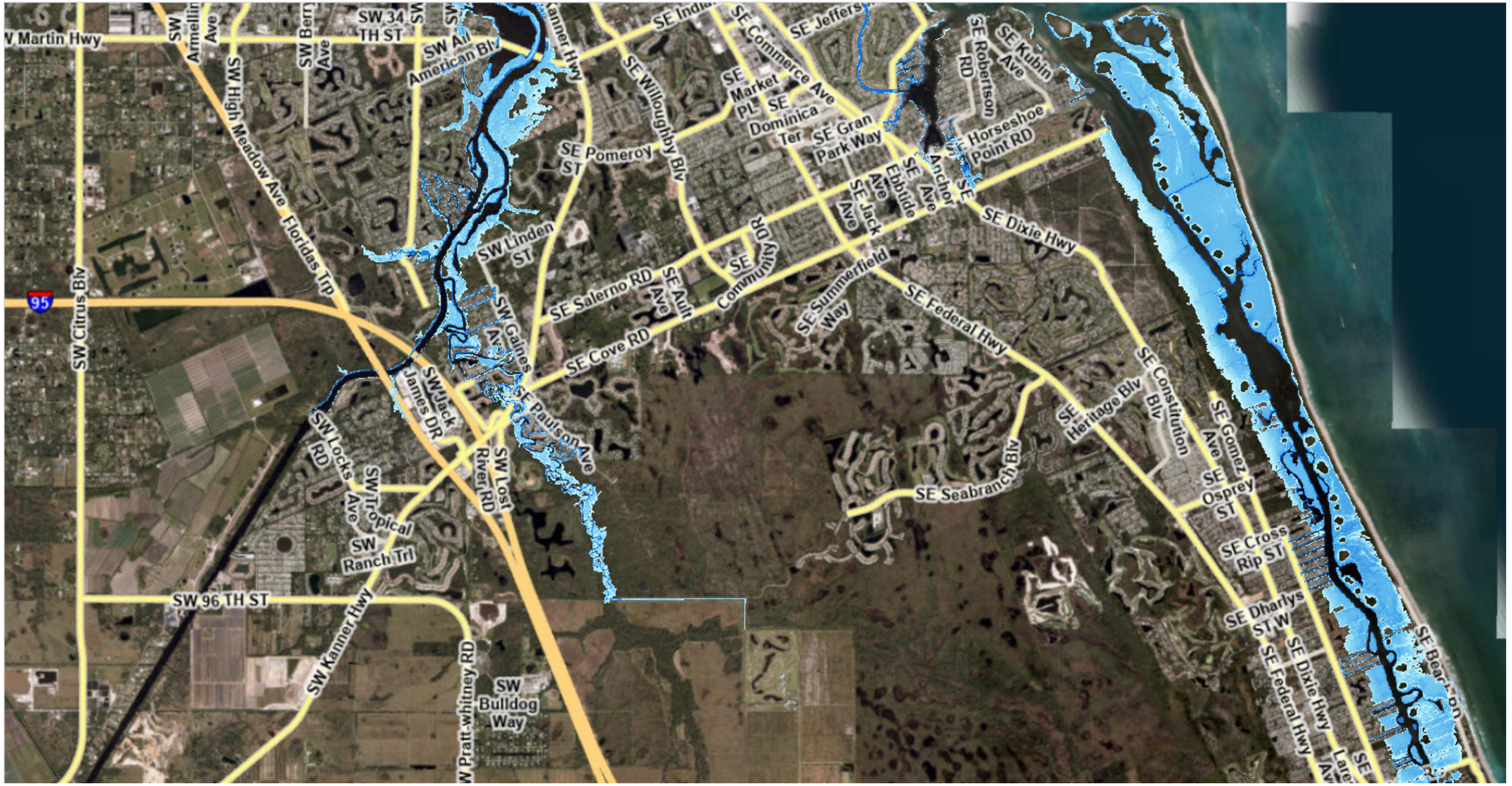
DISTRICT 1, PART DISTRICT 2, PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2100)



DISTRICT 1, PART DISTRICT 2, PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (PRESENT DAY)



PART DISTRICT 2, PART DISTRICT 3, DISTRICT 4, AND PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2040)



PART DISTRICT 2, PART DISTRICT 3, DISTRICT 4, AND PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2070)



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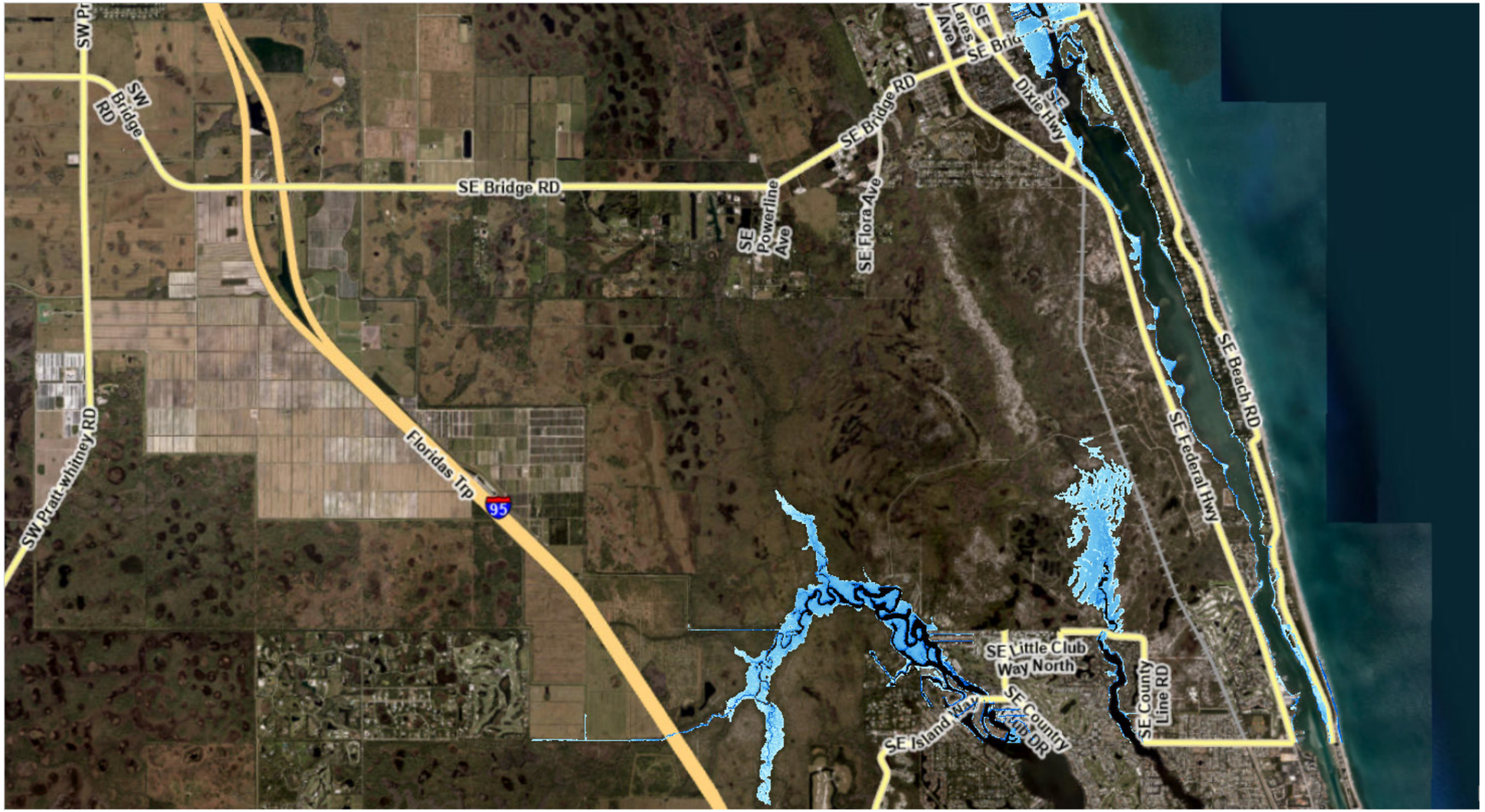
PART DISTRICT 2, PART DISTRICT 3, DISTRICT 4, AND PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (2100)



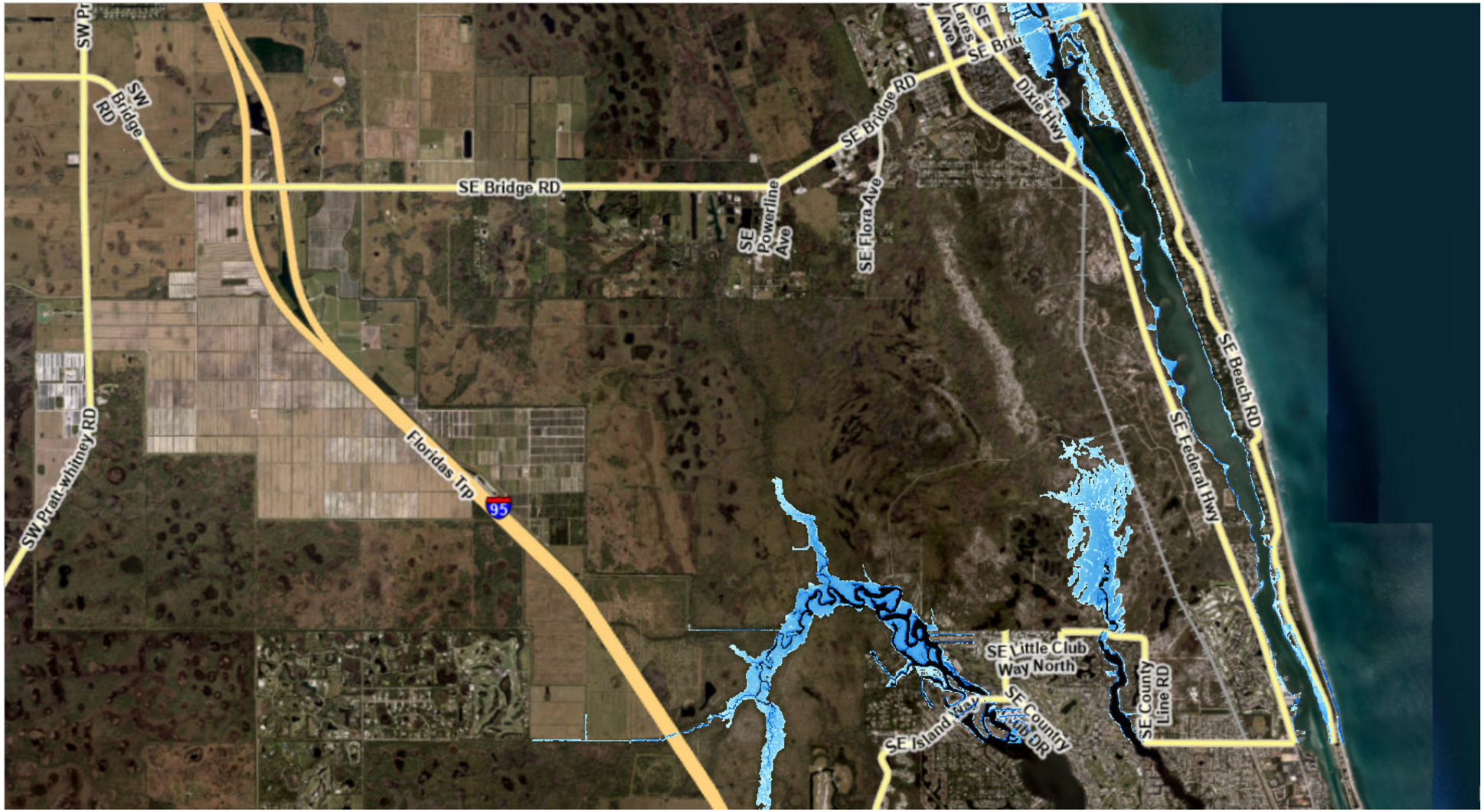
PART DISTRICT 2, PART DISTRICT 3, DISTRICT 4, AND PART DISTRICT 5

EXPOSURE ANALYSIS: SEA LEVEL RISE (PRESENT DAY)



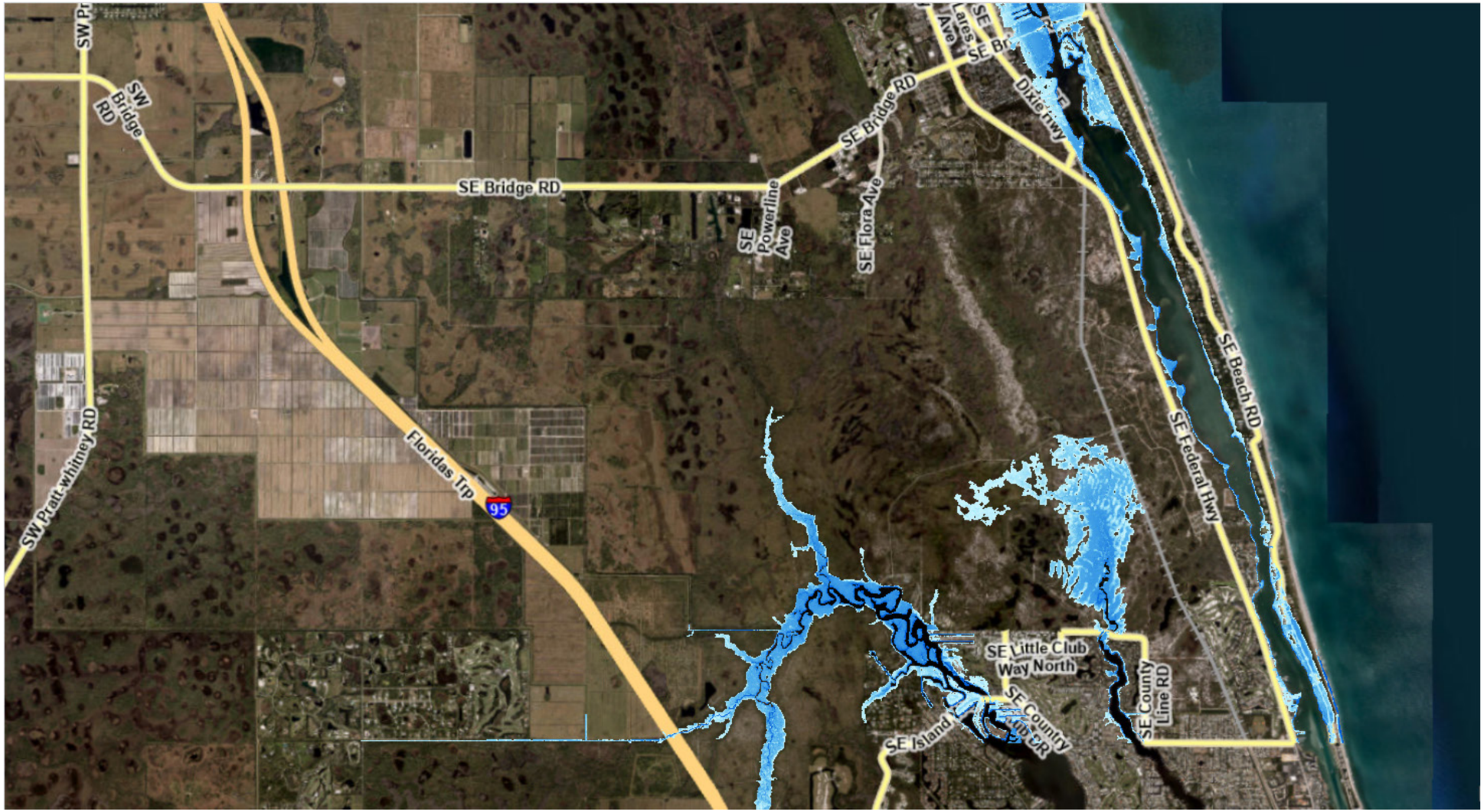
DISTRICT 3

EXPOSURE ANALYSIS: SEA LEVEL RISE (2040)



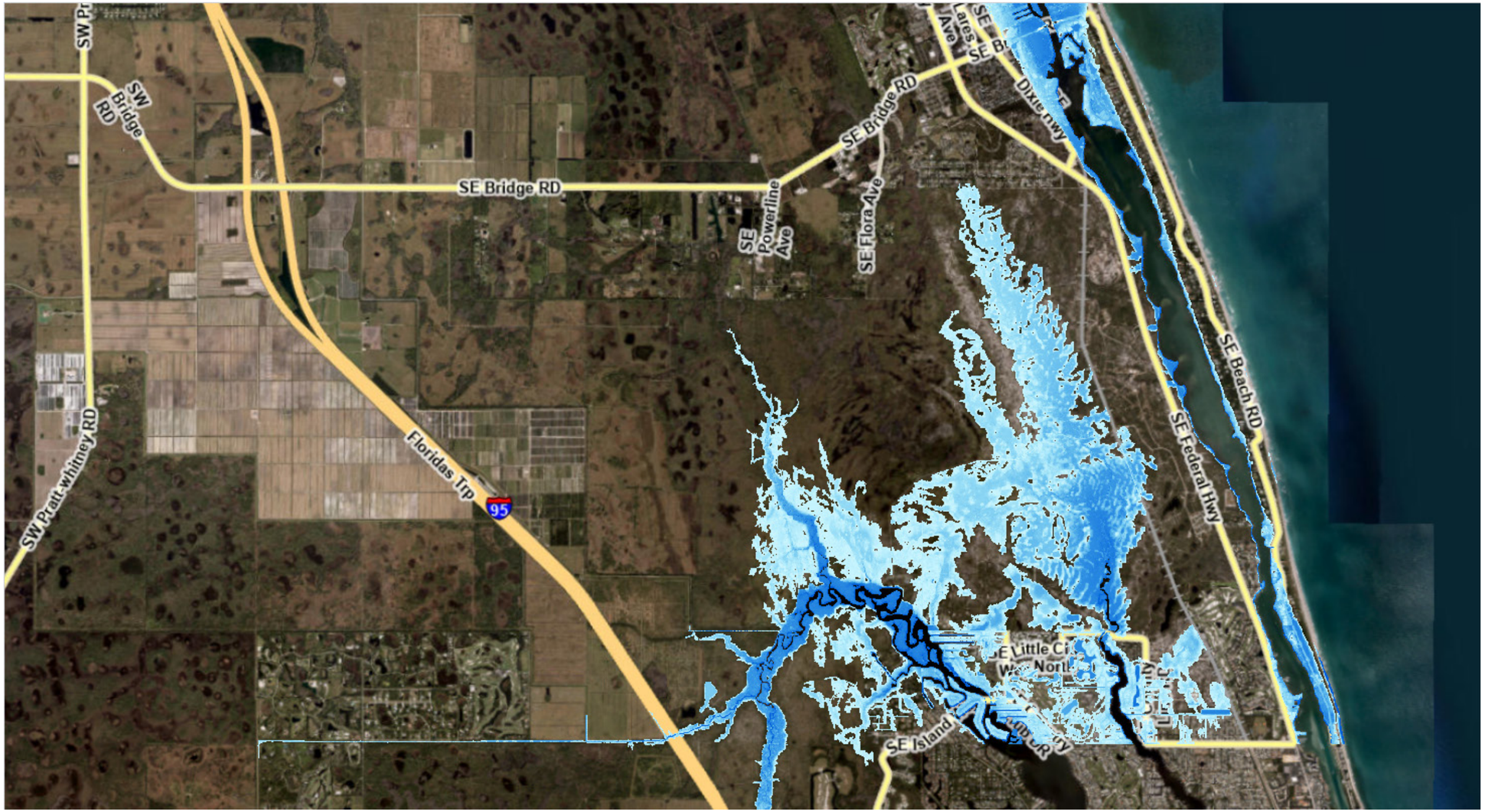
DISTRICT 3

EXPOSURE ANALYSIS: SEA LEVEL RISE (2070)



DISTRICT 3

EXPOSURE ANALYSIS: SEA LEVEL RISE (2100)

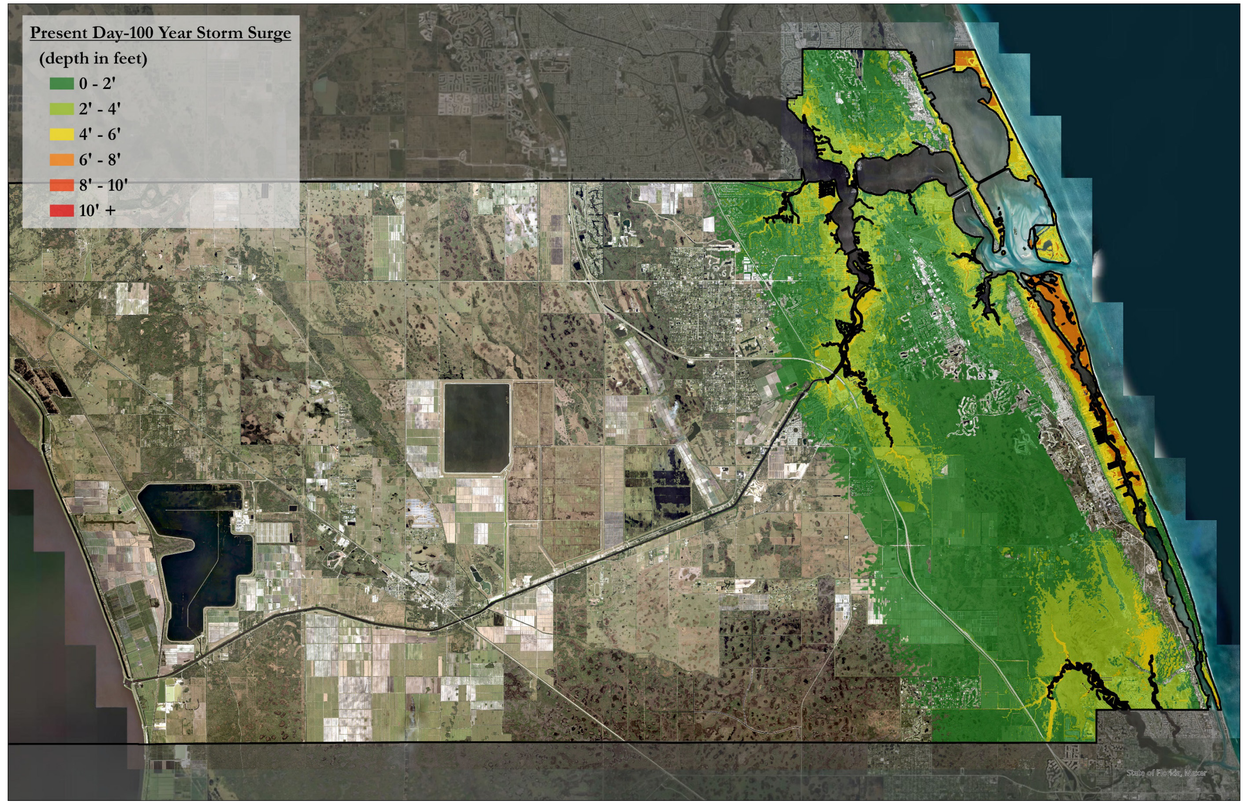


DISTRICT 3

STORM SURGE (PRESENT DAY)

- Utilized HAZUS-MH program
- Evaluated 100 year and 500 year Stillwater Elevations
- Projections – Present Day, 2040, 2070, 2100

Planning Horizon	100-Year	500-Year
Present Day Average Stillwater	4.96	6.59
NIL 2040 Adjusted Average Stillwater	5.65	7.28
NIL 2070 Adjusted Average Stillwater	6.21	7.84
NIL 2100 Adjusted Average Stillwater	6.73	8.36
NIH 2040 Adjusted Average Stillwater	6.37	8.00
NIH 2070 Adjusted Average Stillwater	8.24	9.87
NIH 2100 Adjusted Average Stillwater	10.96	12.59



STORM SURGE (2040)

- Utilized HAZUS-MH program
- Evaluated 100 year and 500 year Stillwater Elevations
- Projections – Present Day, 2040, 2070, 2100

Planning Horizon	100-Year	500-Year
Present Day Average Stillwater	4.96	6.59
NIL 2040 Adjusted Average Stillwater	5.65	7.28
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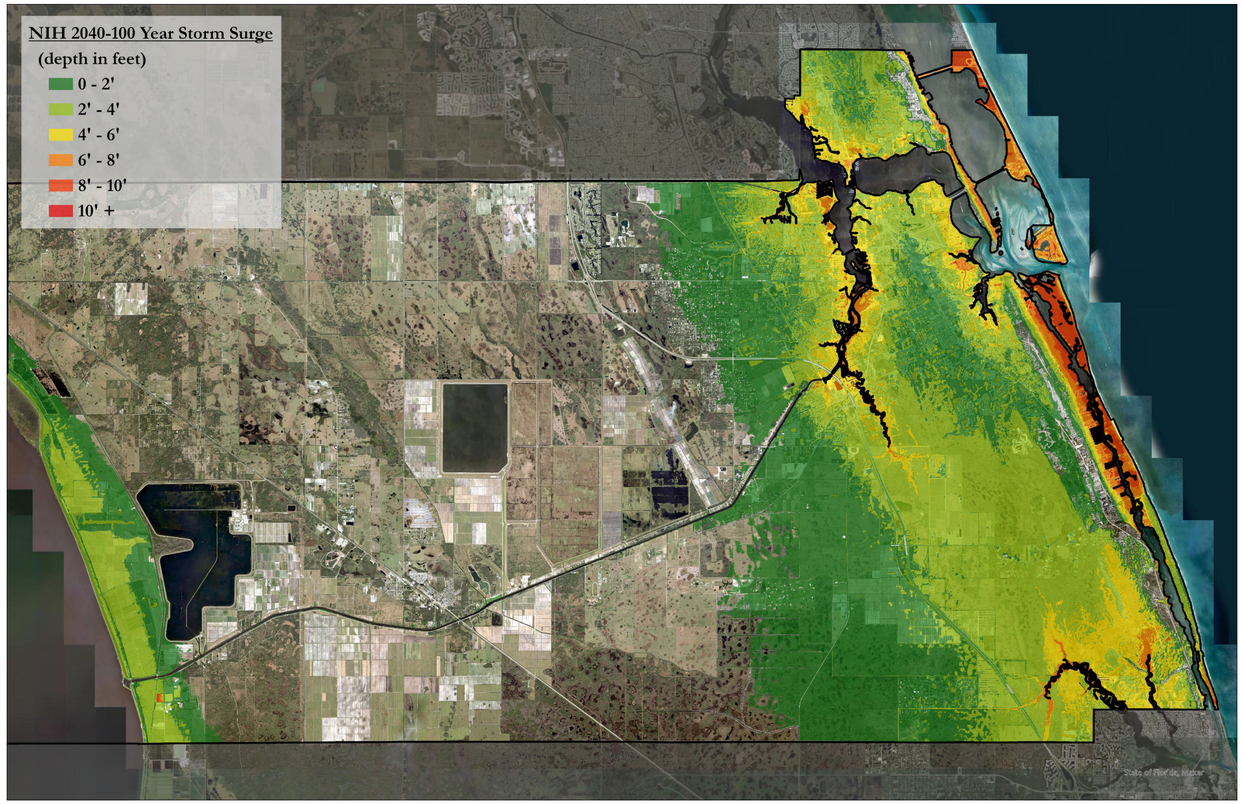

STORM SURGE (2070)

- Utilized HAZUS-MH program
- Evaluated 100 year and 500 year Stillwater Elevations
- Projections – Present Day, 2040, 2070, 2100

Planning Horizon	100-Year	500-Year
Present Day Average Stillwater	4.96	6.59
NIL 2040 Adjusted Average Stillwater	5.65	7.28
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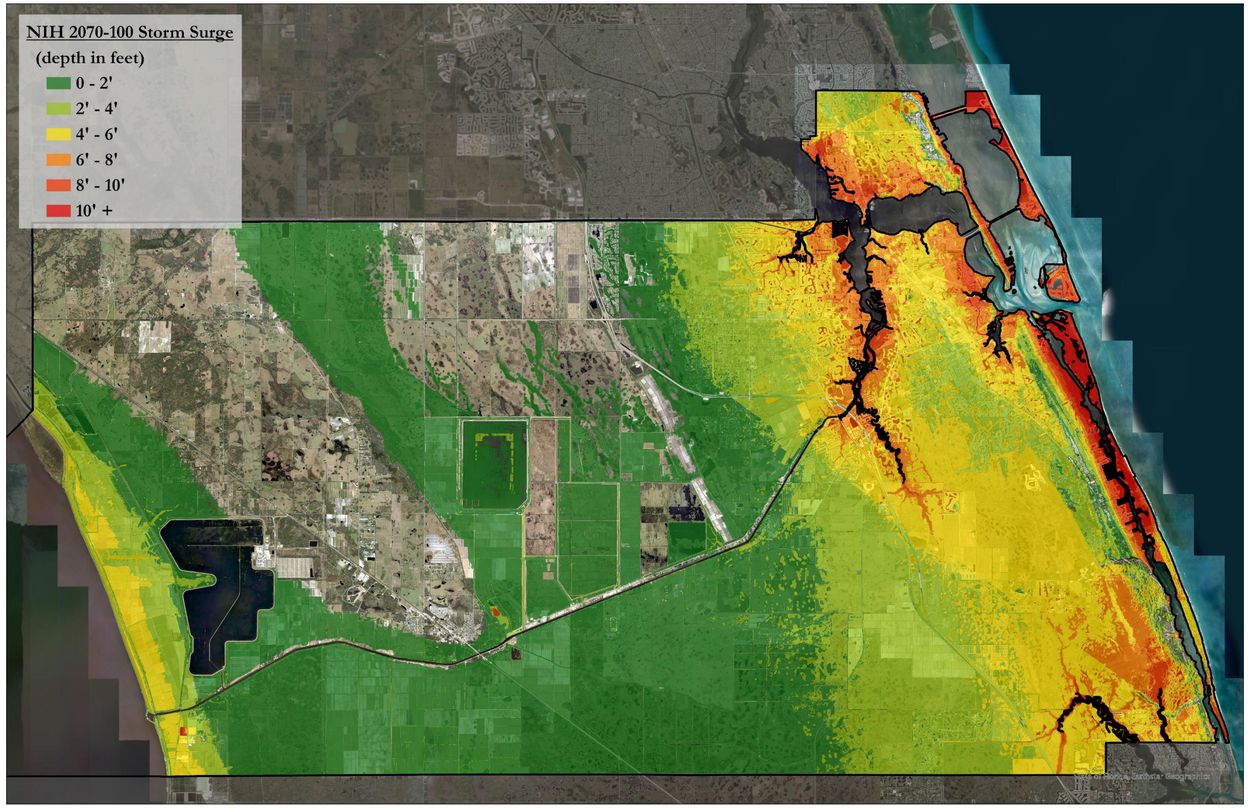

STORM SURGE (2100)

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- Evaluated 100 year and 500 year Stillwater Elevations
- Projections – Present Day, 2040, 2070, 2100

Planning Horizon	100-Year	500-Year
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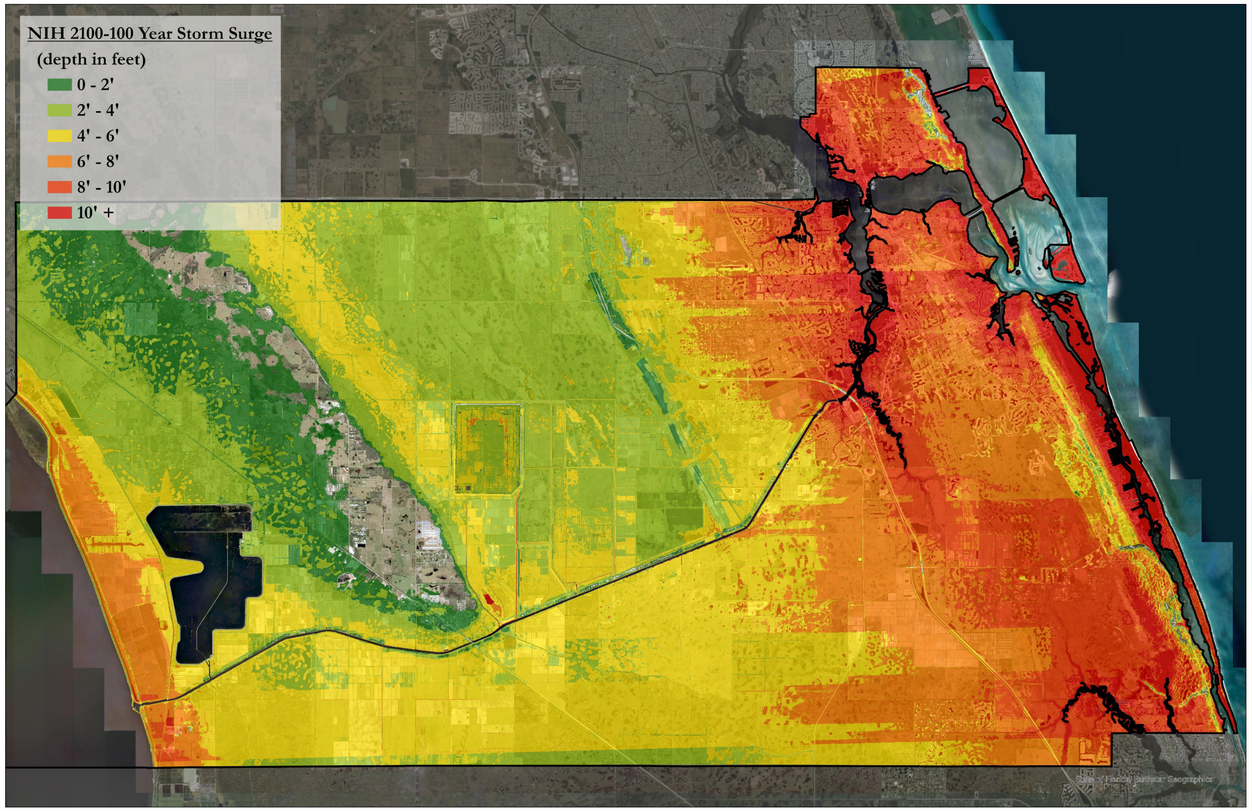
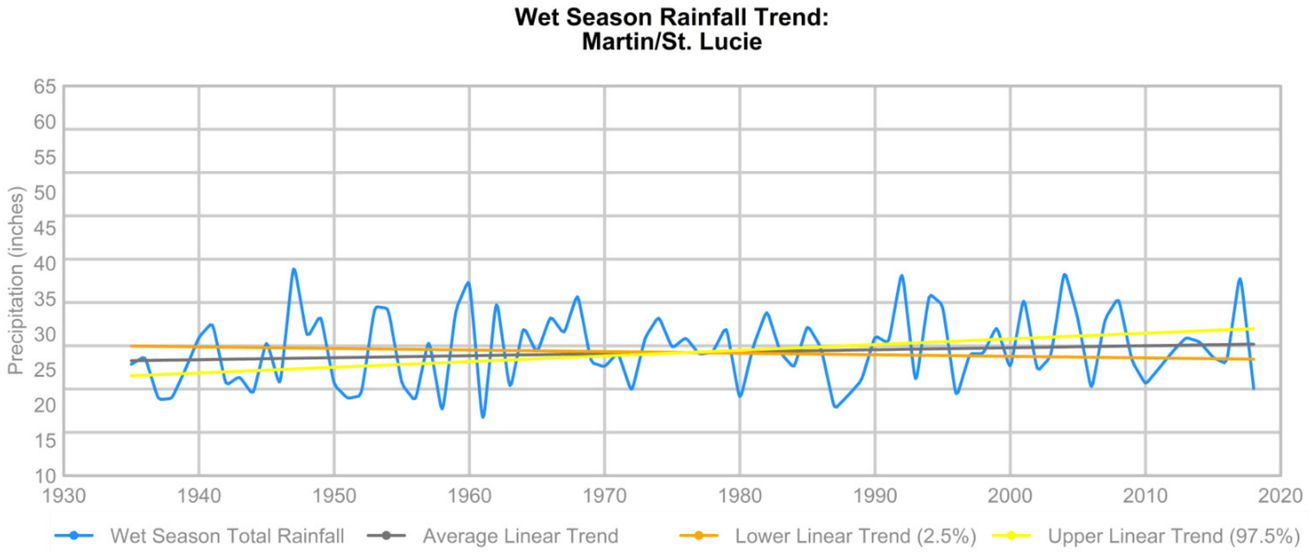


RAINFALL

- HEC-RAS
- Storm Events – 10YR-1D, 25YR-1D, 50YR-1D, and 100YR-1D
- Utilized SFWMD Rainfall Change Factors
- Projections – Present Day, 2040, 2070, 2100

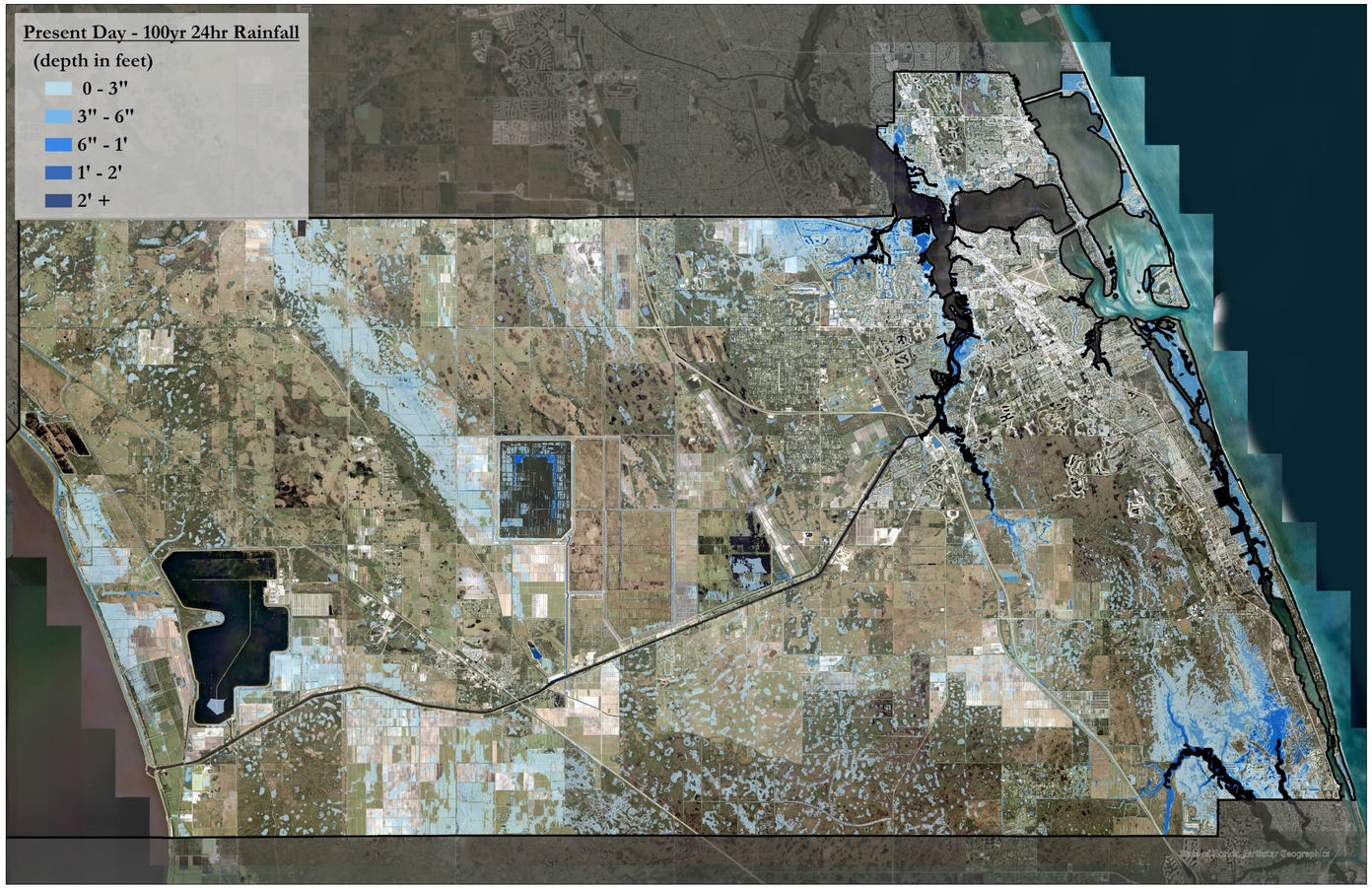
Return Period	2040	2070	2100
10	1.09	1.12	1.25
25	1.11	1.15	1.31
50	1.11	1.17	1.36
100	1.12	1.19	1.43

Year	Scenario	Precipitation (inches)
Present Day	10-Year	7.50
Present Day	25-Year	9.34
Present Day	50-Year	10.90
Present Day	100-Year	12.50



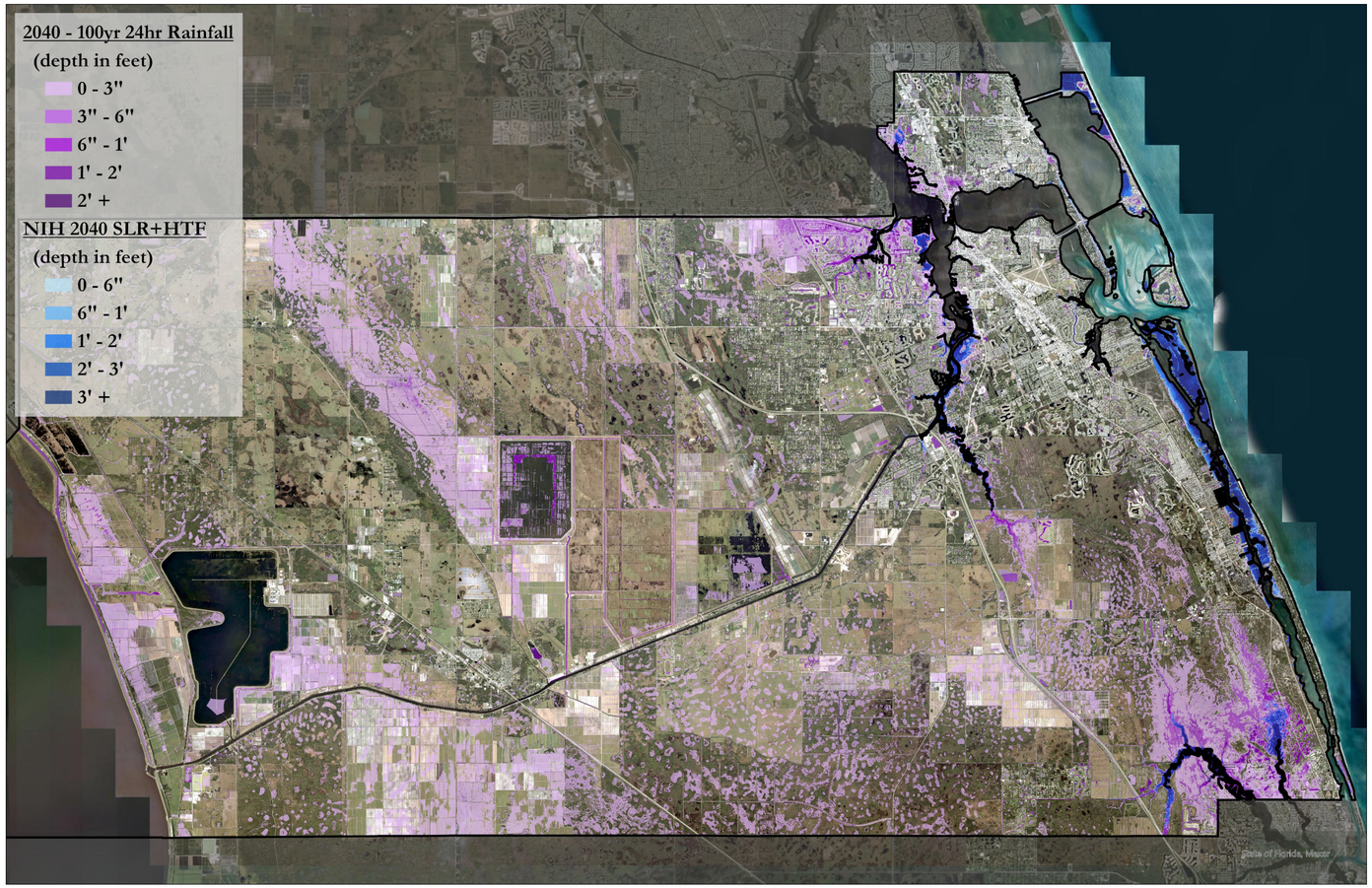
EXPOSURE ANALYSIS: RAINFALL (PRESENT DAY)

- NOAA Intermediate High – 2040, 2070, 2100 for the 100YR-1D



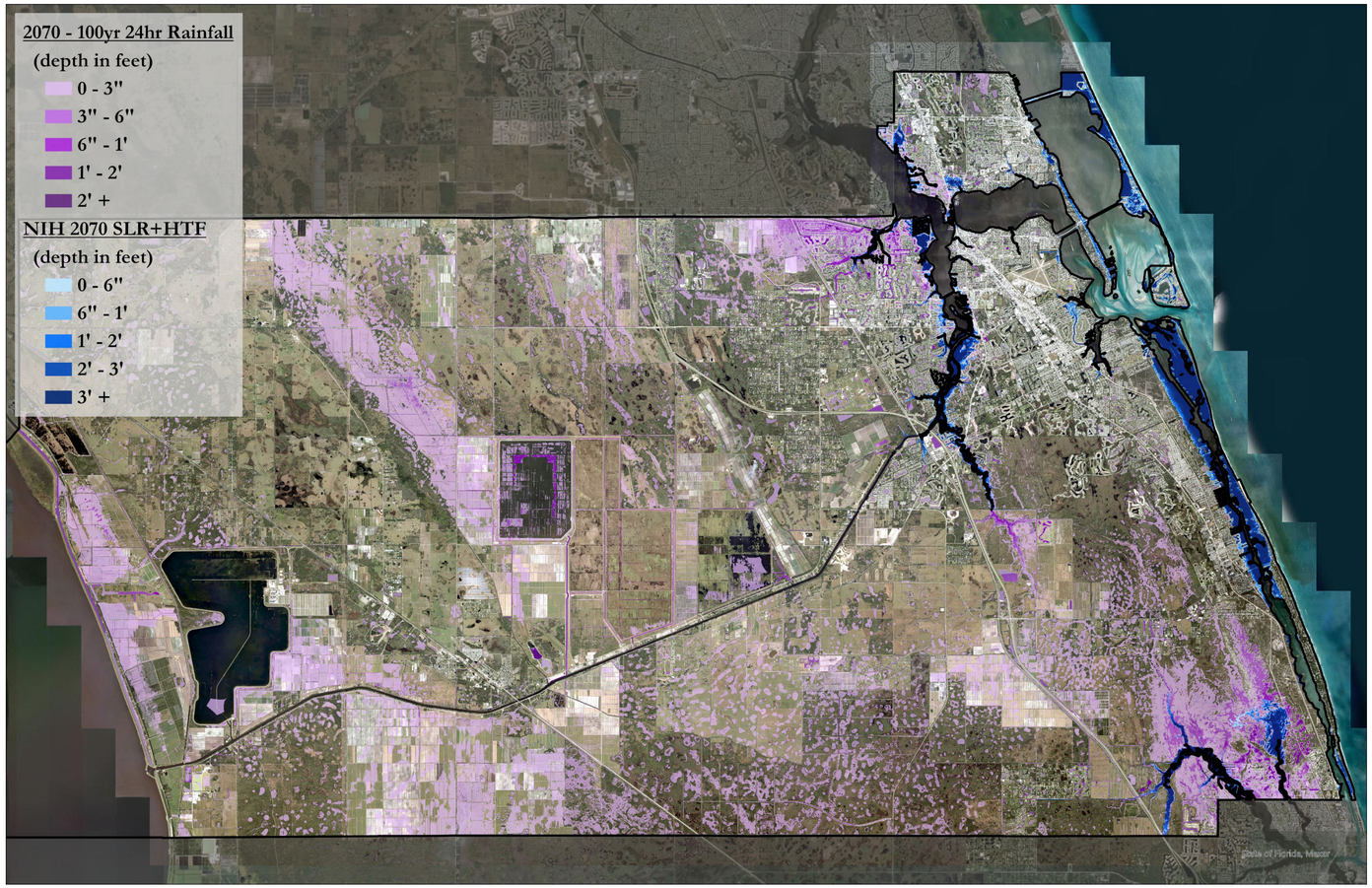
EXPOSURE ANALYSIS: RAINFALL (2040)

- NOAA Intermediate High – 2040, 2070, 2100 for the 100YR-1D



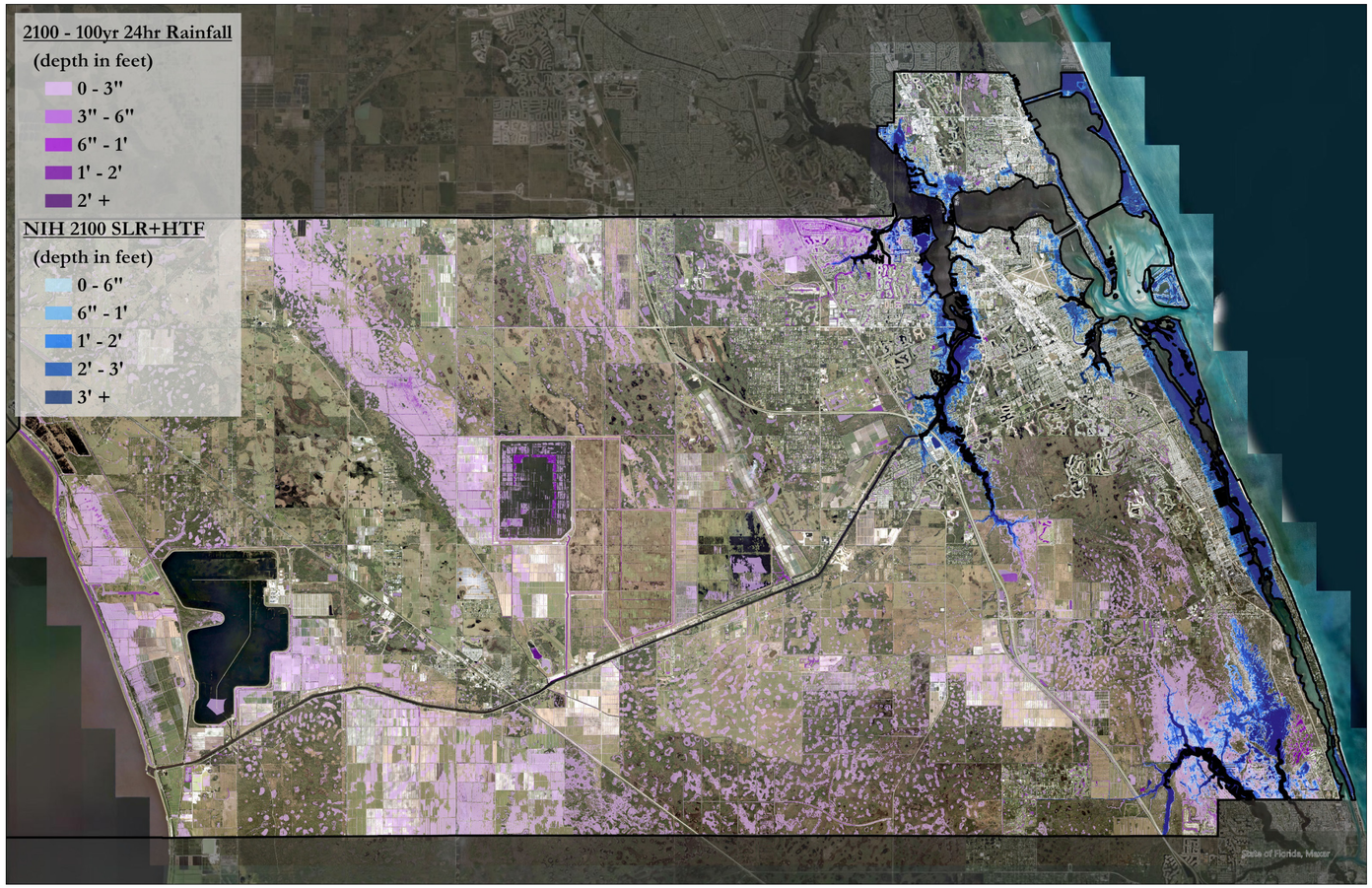
EXPOSURE ANALYSIS: RAINFALL (2070)

- NOAA Intermediate High – 2040, 2070, 2100 for the 100YR-1D



EXPOSURE ANALYSIS: RAINFALL (2100)

- NOAA Intermediate High – 2040, 2070, 2100 for the 100YR-1D



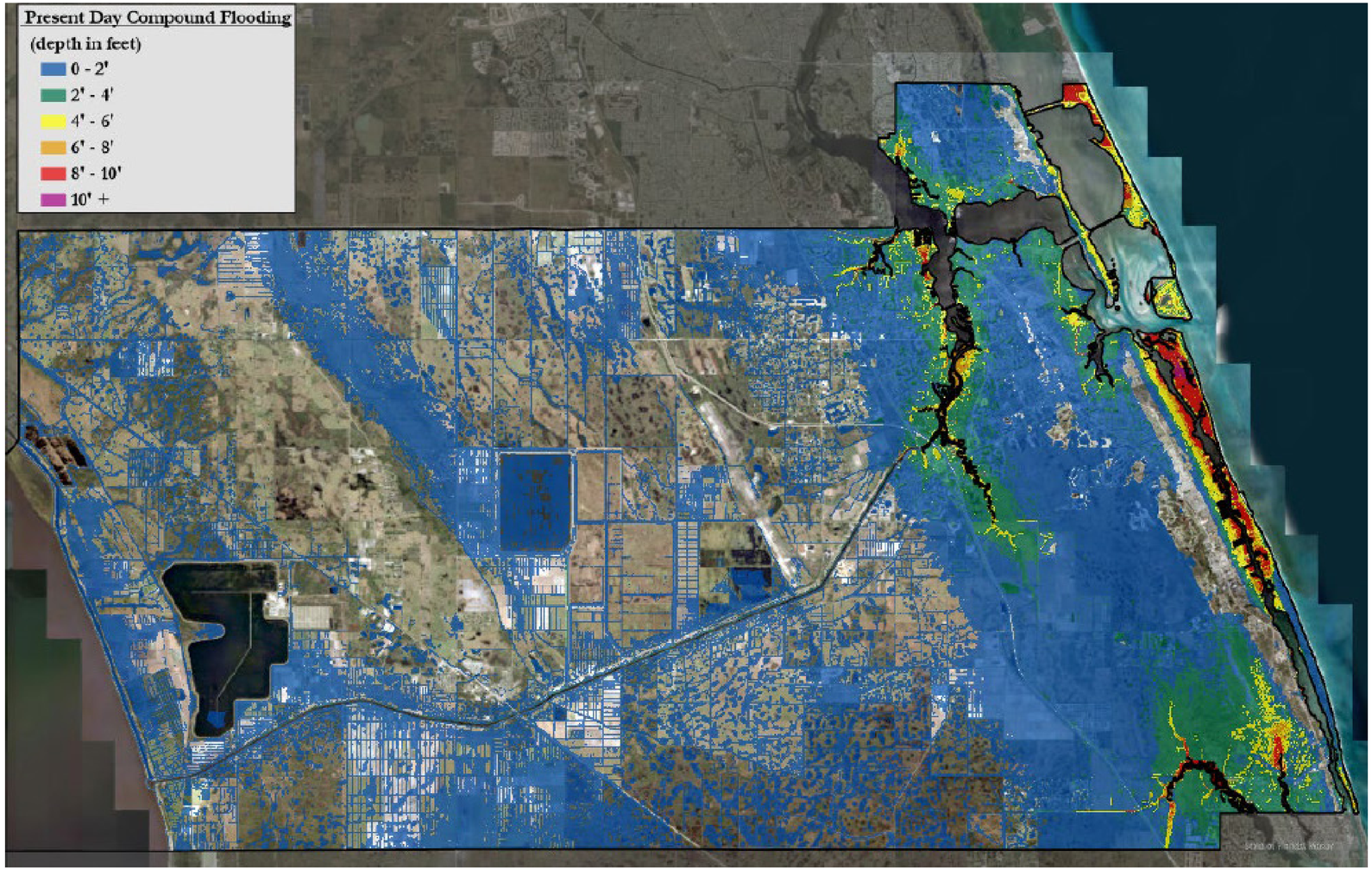
COMBINATION FLOODING

- High Tide Flooding: Projected sea level rise and high tide flooding scenarios based on NOAA Intermediate Low (NIL) and Intermediate High (NIH) projections
- Storm Surge Events: 100-year and 500-year storm surge projections
- Rainfall Events: 25-year and 100-year rainfall event

NOAA Intermediate Low and High Combined Flood Scenario Water Rise Impacts

Sea Level Rise Scenario	Surge Scenario	Rainfall Scenario	Combined Water Rise (ft)
NIH Present Day	100-Year	25 Year 24 Hour	7.55
NIH Present Day	100-Year	100 Year 24 Hour	8.00
NIH Present Day	500-Year	25 Year 24 Hour	9.18
NIH Present Day	500-Year	100 Year 24 Hour	9.63
NIL 2040	100-Year	25 Year 24 Hour	8.63
NIL 2040	100-Year	100 Year 24 Hour	9.27
NIL 2040	500 Year	25 Year 24 Hour	10.26
NIL 2040	500 Year	100 Year 24 Hour	10.90
NIH 2040	100-Year	25 Year 24 Hour	9.35
NIH 2040	100-Year	100 Year 24 Hour	9.99
NIH 2040	500-Year	25 Year 24 Hour	10.96
NIH 2040	500-Year	100 Year 24 Hour	11.62
NIL 2070	100-Year	25 Year 24 Hour	9.19
NIL 2070	100-Year	100 Year 24 Hour	9.83
NIL 2070	500-Year	25 Year 24 Hour	10.82
NIL 2070	500-Year	100 Year 24 Hour	11.46
NIH 2070	100-Year	25 Year 24 Hour	11.22
NIH 2070	100-Year	100 Year 24 Hour	11.86
NIH 2070	500-Year	25 Year 24 Hour	12.85
NIH 2070	500-Year	100 Year 24 Hour	13.49
NIL 2100	100-Year	25 Year 24 Hour	9.71
NIL 2100	100-Year	100 Year 24 Hour	10.35
NIL 2100	500-Year	25 Year 24 Hour	11.34
NIL 2100	500-Year	100 Year 24 Hour	11.98
NIH 2100	100-Year	25 Year 24 Hour	13.94
NIH 2100	100-Year	100 Year 24 Hour	14.58
NIH 2100	500-Year	25 Year 24 Hour	15.57
NIH 2100	500-Year	100 Year 24 Hour	16.21

EXPOSURE ANALYSIS: PRESENT DAY SLR + 100 YEAR STORM SURGE + 25 YEAR RAINFALL

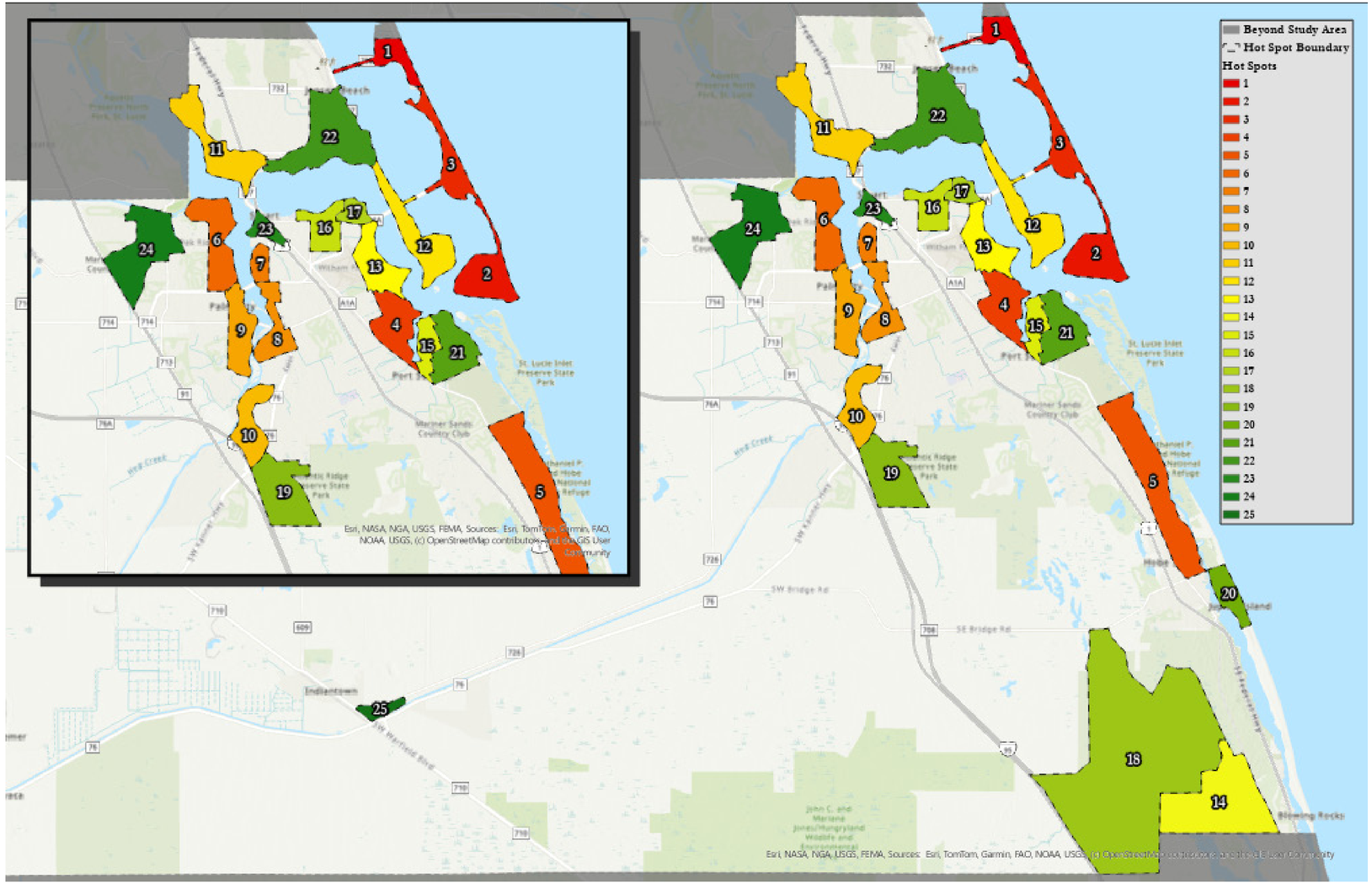


FLOODING “HOT SPOTS”

- Areas prioritized with:

1) the highest amount of critical assets

2) where those aggregations of assets are also impacted by flooding



SENSITIVITY ANALYSIS

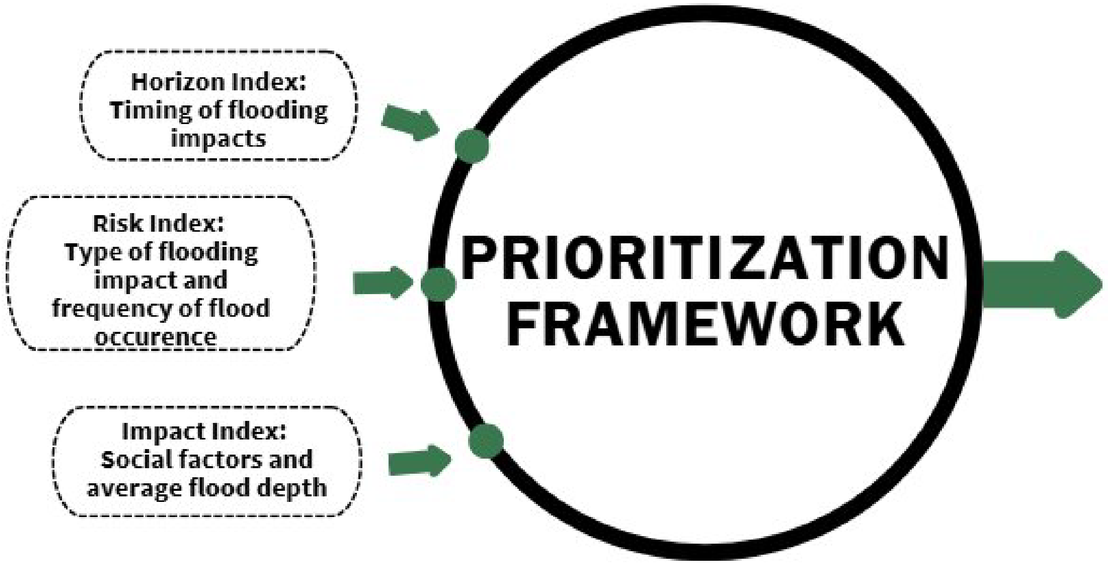
- Reflects what assets will be impacted and when
- Prioritizes Assets (both within and outside of the Flooding Hot Spots
- Provides results in both lists of assets and maps

Flood Depth	Exposure Ranking	Description
0 feet	No Exposure	No flooding detected. Areas with no impact from sea level rise or flooding.
0 to 0.5 feet	Low Exposure	Minor flooding. Shallow inundation typically causing minimal impact.
0.5 feet to 1.0 foot	Medium Exposure	Moderate flooding. Likely to impact structures and disrupt daily life. One foot or more of flooding also generally compromises emergency management operations.
1.0 foot to 3.0 feet	High Exposure	Significant flooding. Serious degree of inundation causing damage and major disruptions.
More than 3.0 feet	Very High Exposure	Severe flooding. Extensive inundation posing critical threats and causing extensive damage.

Asset Name	Asset ID	NIH Present Day SLR+HTF	NIH 2040 SLR+HTF	NIH 2070 SLR+HTF	NIH 2100 SLR+HTF
Roads	SE CENTERBOAR LN	0	0	0	2.644902436
Roads	SE GEORGES WAY	0	0.21310965	1.11062812	2.52779549
Roads	SE FALMOUTH DR	0	0	1.62090993	4.340909751
Roads	SE JIB LN	0	0	0.73403641	3.089915044
Roads	SE CENTERBOAR LN	0	0	0.71766302	2.595556804
Roads	SE WHITICAR WAY	0	0	0.60260123	3.250777977
Roads	SE MICANOPY TER	0	0	1.45702078	4.17702055
Roads	SE QUANSET TER	0	0	1.24506054	3.965060326
Roads	SE CENTERBOAR LN	0	0	0	1.688506441
Roads	SE FALMOUTH DR	0	0	1.64898928	4.368989068
Roads	SE DE SOTO AVE	0	0.32723358	2.19810333	4.918103153
Roads	SE MICANOPY TER	0	0	1.4992604	4.219260172
Roads	SE GLASGOW CT	0	0	1.0806726	3.800672386
Roads	SE AMHERST ST	0	0	0.58415335	1.699901083
Roads	SE GLASGOW DR	0	0	1.42123241	4.141232198
Roads	SE BENT BANY WAY	0	0	0	1.583537875
Roads	SE CLUBHOUSE PL	0	0	0	1.231010319
Roads	SE WHITICAR WAY	0	0	1.00049945	3.67819511
Roads	SE QUANSET CIR	0	0	1.48887498	4.13745429

ASSET PRIORITIZATION FOR MAPPING

- Reflects: timing of impacts, type of flooding impact, severity/frequency of impact and social vulnerability of those people affected



Composite Index Score Threshold	Assigned Priority
Top 5% Highest Values	1
5-10%	2
10-15%	3
15-25%	4
25-50%	5
Below 50%/Median Value – Not Prioritized	0

SENSITIVITY ANALYSIS
HOT SPOT 5 – HOBE SOUND

- Reflects what assets will be impacted and when
- Prioritizes Assets
- Provides results in both lists of assets and maps

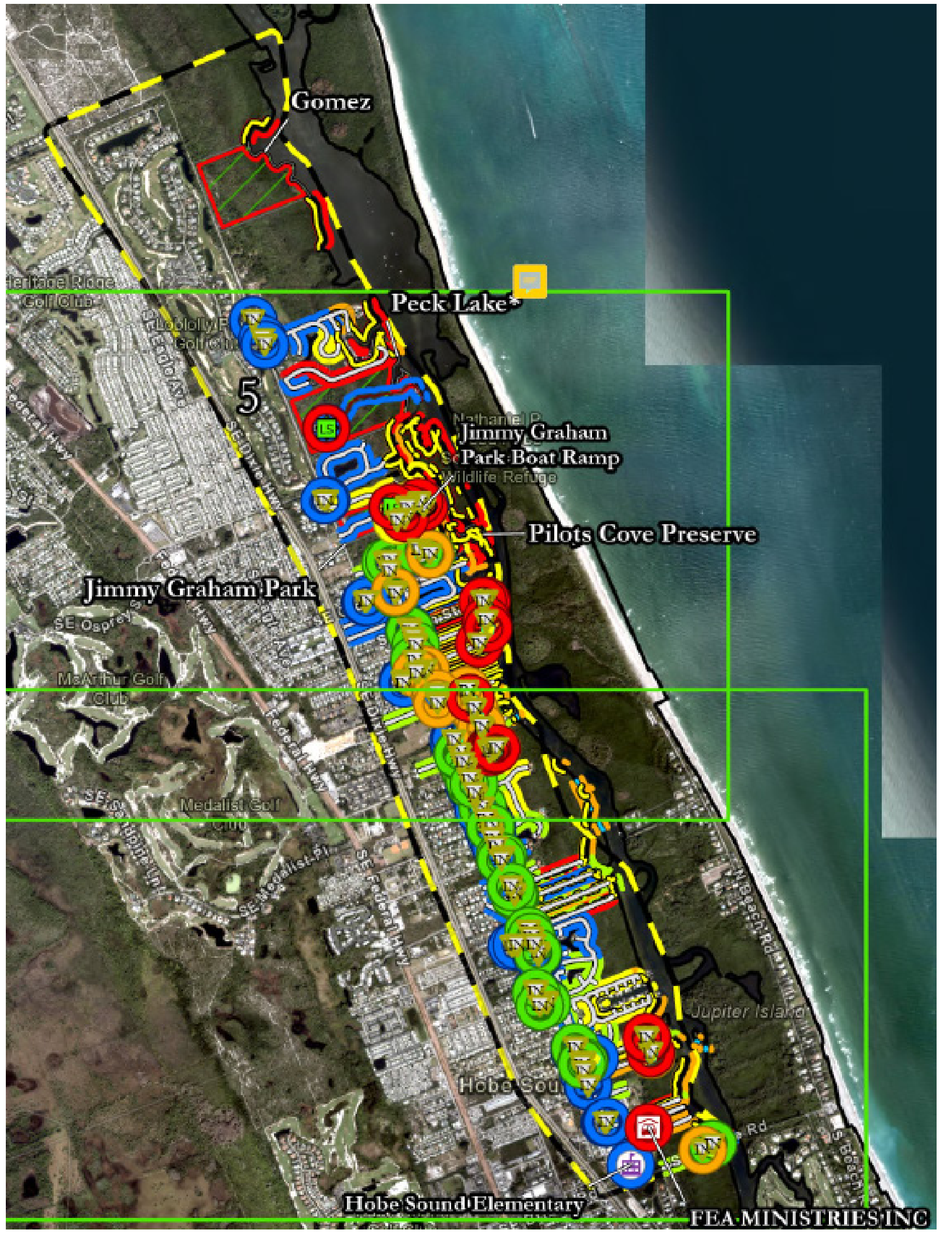


Critical Assets Prioritized within Flooding Hot Spots
Subsection 380.093, F.S.
Martin County, Florida
Feet 0 500 1,000
12/23/2024
N
Impact Scenario:
Hot Spot: 0, Slide 0 of 0
Page: 0 of 72
INDEX
PROJECT PARTNERS
PROVIDED BY

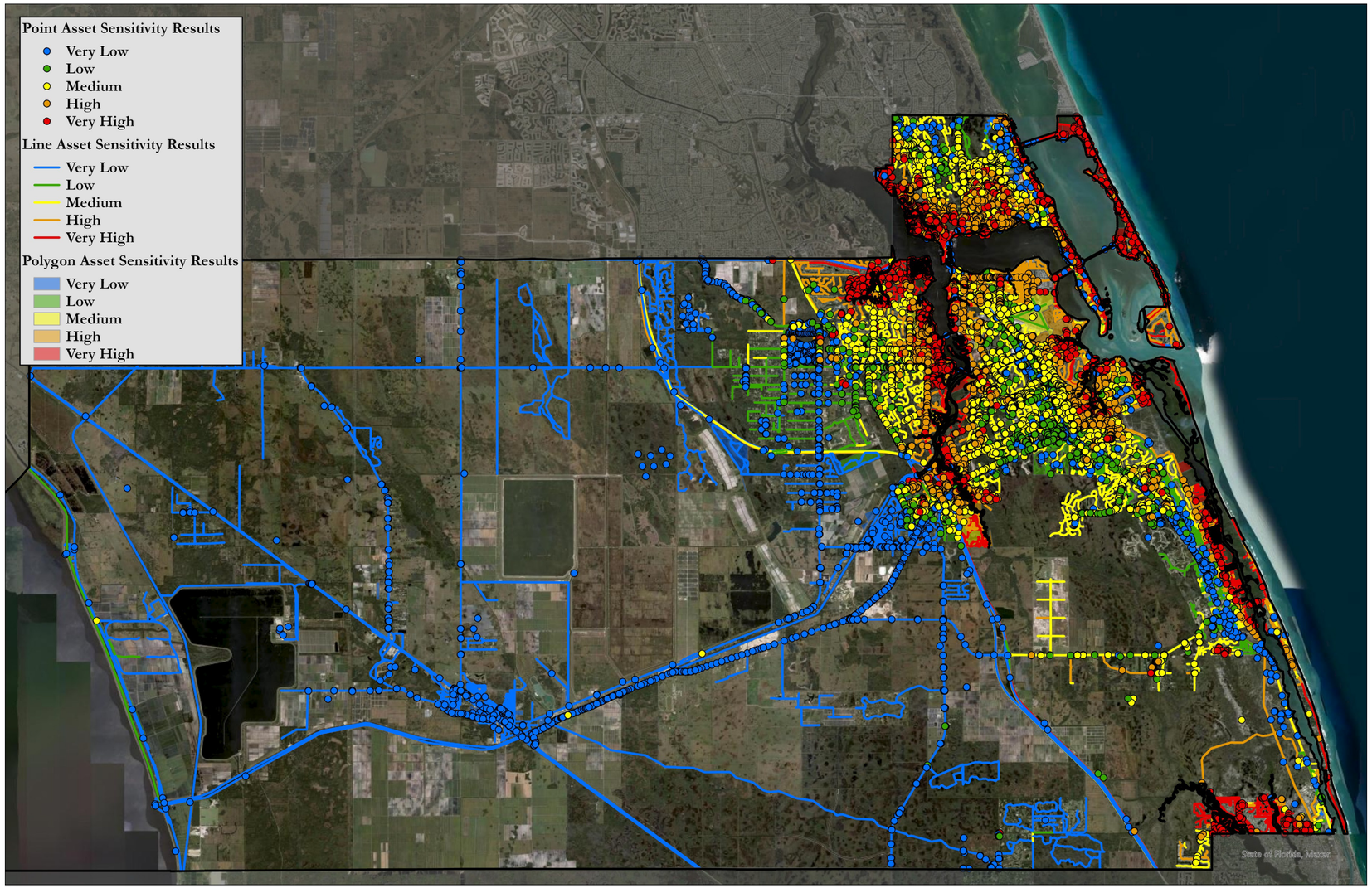
Hot Spot Boundaries
Map Series Frames
Priority
1 2 3 4 5
Disaster Debris Management Sites
Stormwater Stuctures
Stormwater Inlet
Stormwater Backflow
Potable Interconnects
Sanitary Sewer Wells
Sanitary Sewer Services
Sanitary Sewer Pumps
Sanitary Sewer Lift Stations
Sanitary Sewer Publicly Owned Lift Stations
Publicly Owned Sewer Pumps
Potable Wells
Potable Pumps
Potable Water Facilities
Potable Backflow
Bridges
Public Marinas
Helipads
USPS Facilities
Martin County Government Buildings
Bus Stops
Boat Ramps

Electrical Substations
Microwave Service Towers
Mobile Home Parks
Local Law Enforcement
Local Law Enforcement
Government Facilities
Fire Stations
EMS Stations
Hospitals
Pharmacies
Nursing Homes
Non-Emergency Medical Facilites
Emergency Shelters
Public Schools
Education Center
Library
School
Child Care Centers
Trails
Bridges
Roads
Railroads
Evacuation Routes
Bus Transit
Shorelines
Existing Trails
Danforth Creek

Airports
Sanitary Sewer Vacuum Buildings
Sanitary Sewer Repump Stations
Conservation Areas and Parks
Parks
Community Redevelopment (CRAs)
CRA Boundaries
CRA Street Regulating Plan
Primary Street
Secondary Street
Proposed Waterfront Trail
Potential Complete Street Segment
Existing Trail
CRA Regulating Plan
Core
Corridor
Railroad Corridor
General
Waterfront
Industrial
Mobile Home
Multifamily
Detached
Detached Limited
Detached Estate
Future Street or Alley
Required Commercial Frontage



SENSITIVITY ANALYSIS COUNTYWIDE



URBAN HEAT ANALYSIS (2020)

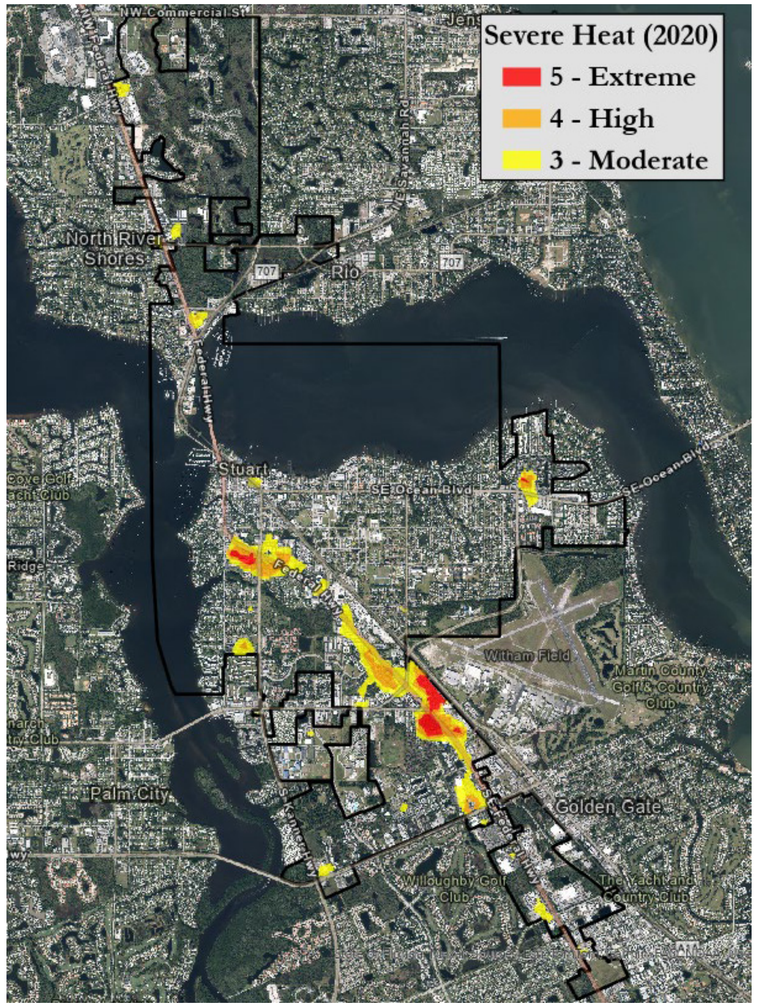
➢ <u>DATA FROM THE 2020-2023 TRUST FOR PUBLIC LAND SEVERE HEAT ANALYSIS</u>

➢ <u>KEY FACTORS</u>
- IMPERVIOUS SURFACES
- LIMITED VEGETATION
- HIGH BUILDING DENSITY

➢ <u>URBAN AREAS</u>
- JENSEN BEACH
- OCEAN BREEZE
- RIO
- STUART
- SEWALL'S POINT
- OLD PALM CITY
- PORT SALERNO
- HOBE SOUND
- JUPITER ISLAND
- INDIANTOWN

Table D - Stuart Heat Severity Statistics 2020-2023

Year	Land Area Exposed to Level 3 Heat Severity	Land Area Exposed to Level 4 Heat Severity	Land Area Exposed to Level 5 Heat Severity
2020	193.4 acres (3.20%)	72.8 acres (1.20%)	32.0 acres (0.52%)
2021	209.0 acres (3.40%)	94.4 acres (1.50%)	34.6 acres (0.57%)
2022	170.2 acres (2.80%)	70.0 acres (1.10%)	39.7 acres (0.65%)
2023	440.0 acres (7.30%)	222.9 acres (3.60%)	87.8 acres (1.40%)



URBAN HEAT ANALYSIS (2021)

➢ <u>DATA FROM THE 2020-2023 TRUST FOR PUBLIC LAND SEVERE HEAT ANALYSIS</u>

➢ <u>KEY FACTORS</u>
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- LIMITED VEGETATION
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RESILIENT MARTIN

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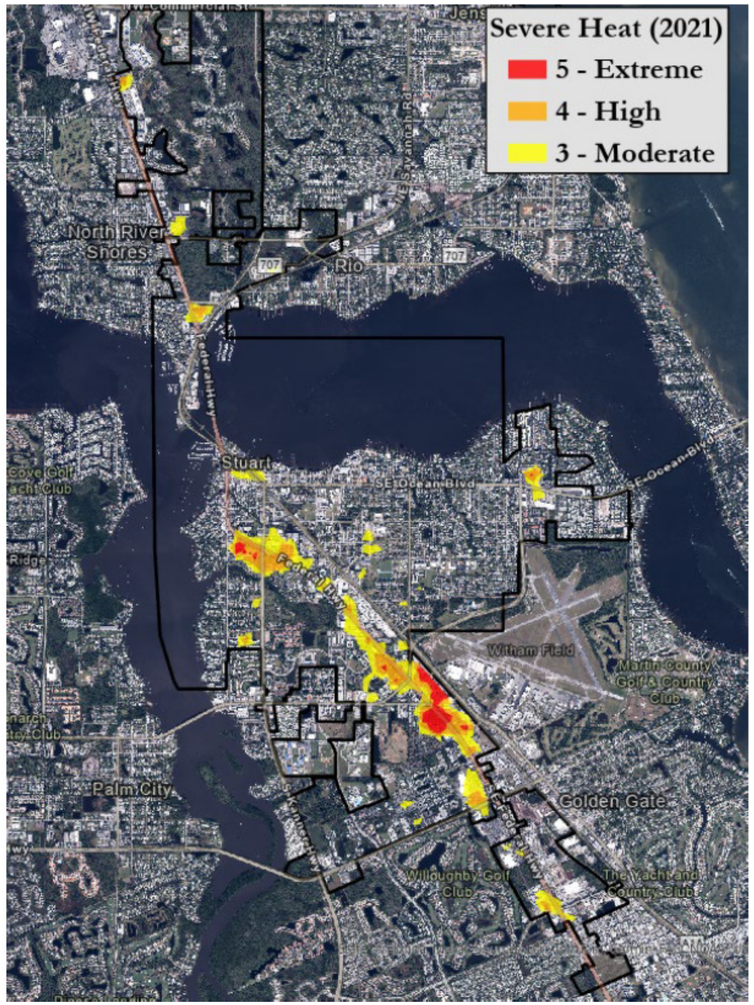

URBAN HEAT ANALYSIS (2022)

- DATA FROM THE 2020-2023 TRUST FOR PUBLIC LAND SEVERE HEAT ANALYSIS

- KEY FACTORS
  - IMPERVIOUS SURFACES
  - LIMITED VEGETATION
  - HIGH BUILDING DENSITY

- URBAN AREAS
  - JENSEN BEACH
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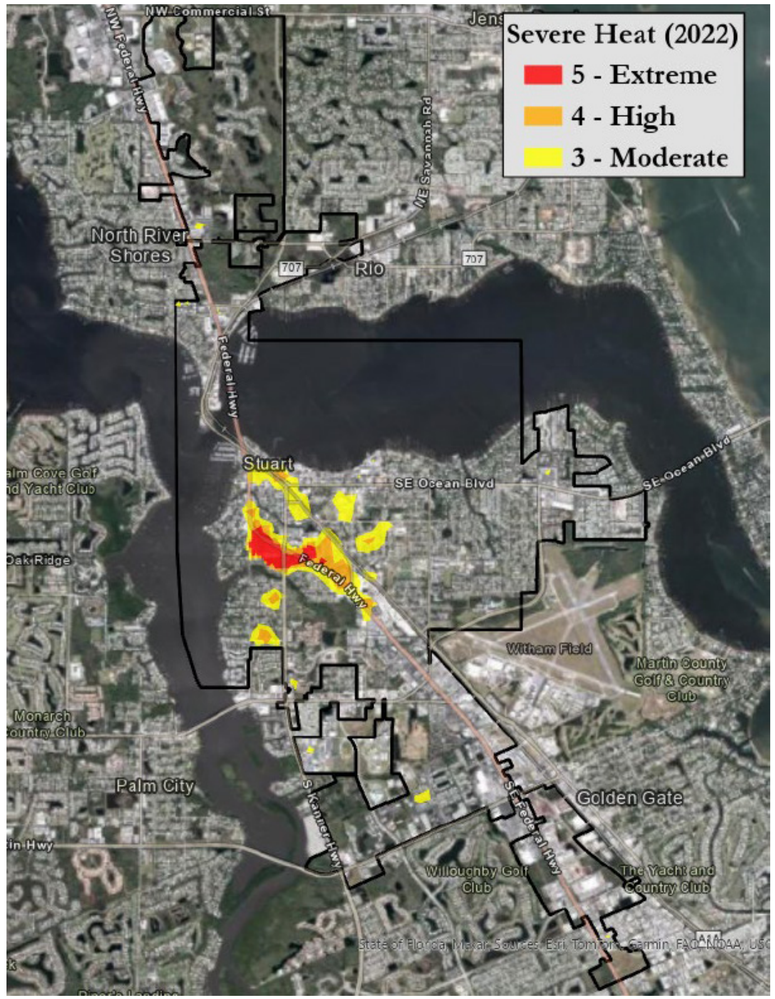

URBAN HEAT ANALYSIS (2023)

- DATA FROM THE 2020-2023 TRUST FOR PUBLIC LAND SEVERE HEAT ANALYSIS

- KEY FACTORS
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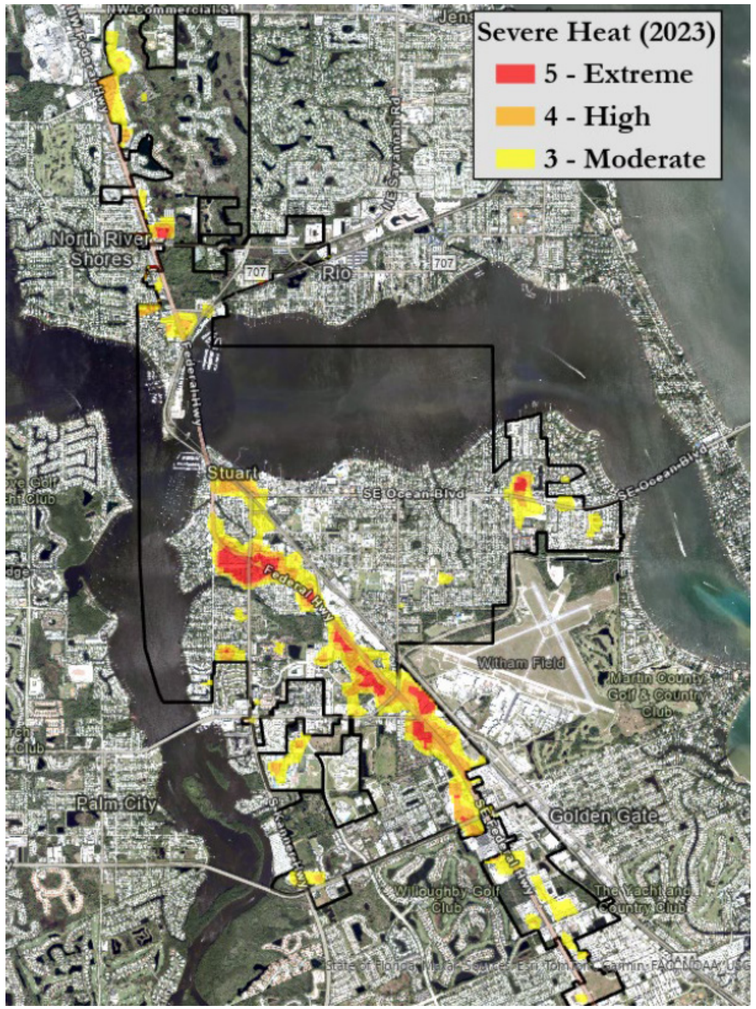
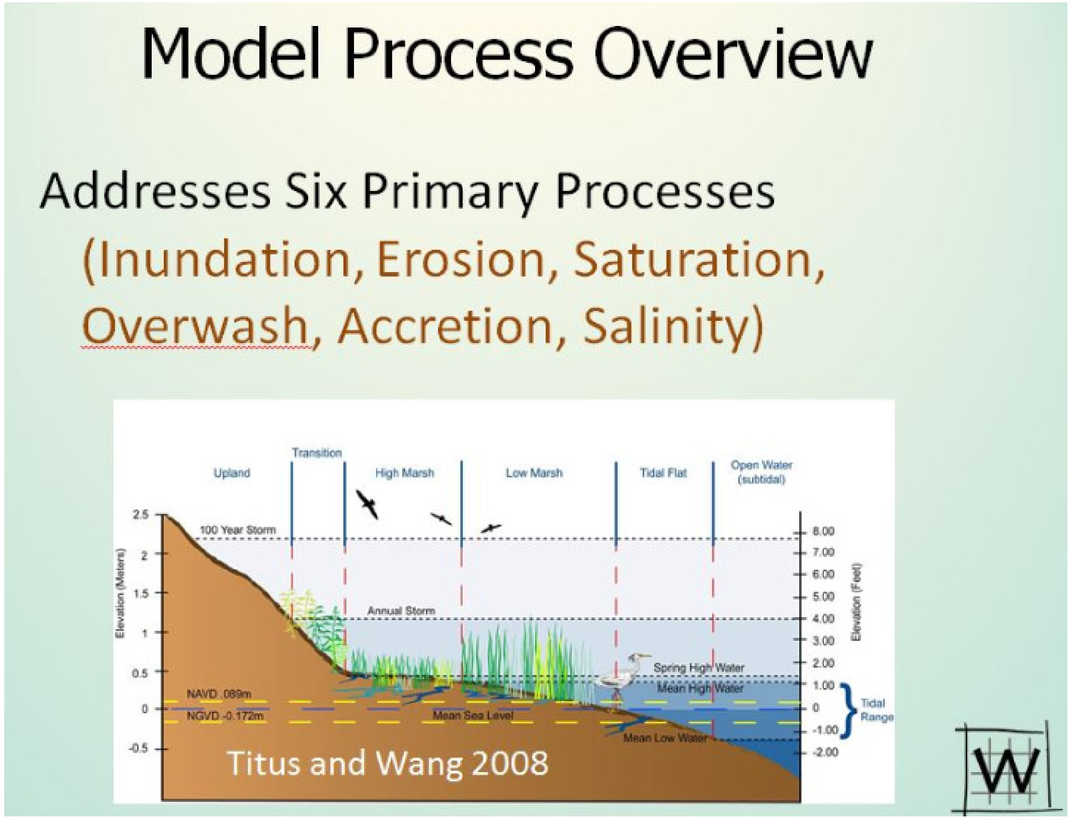
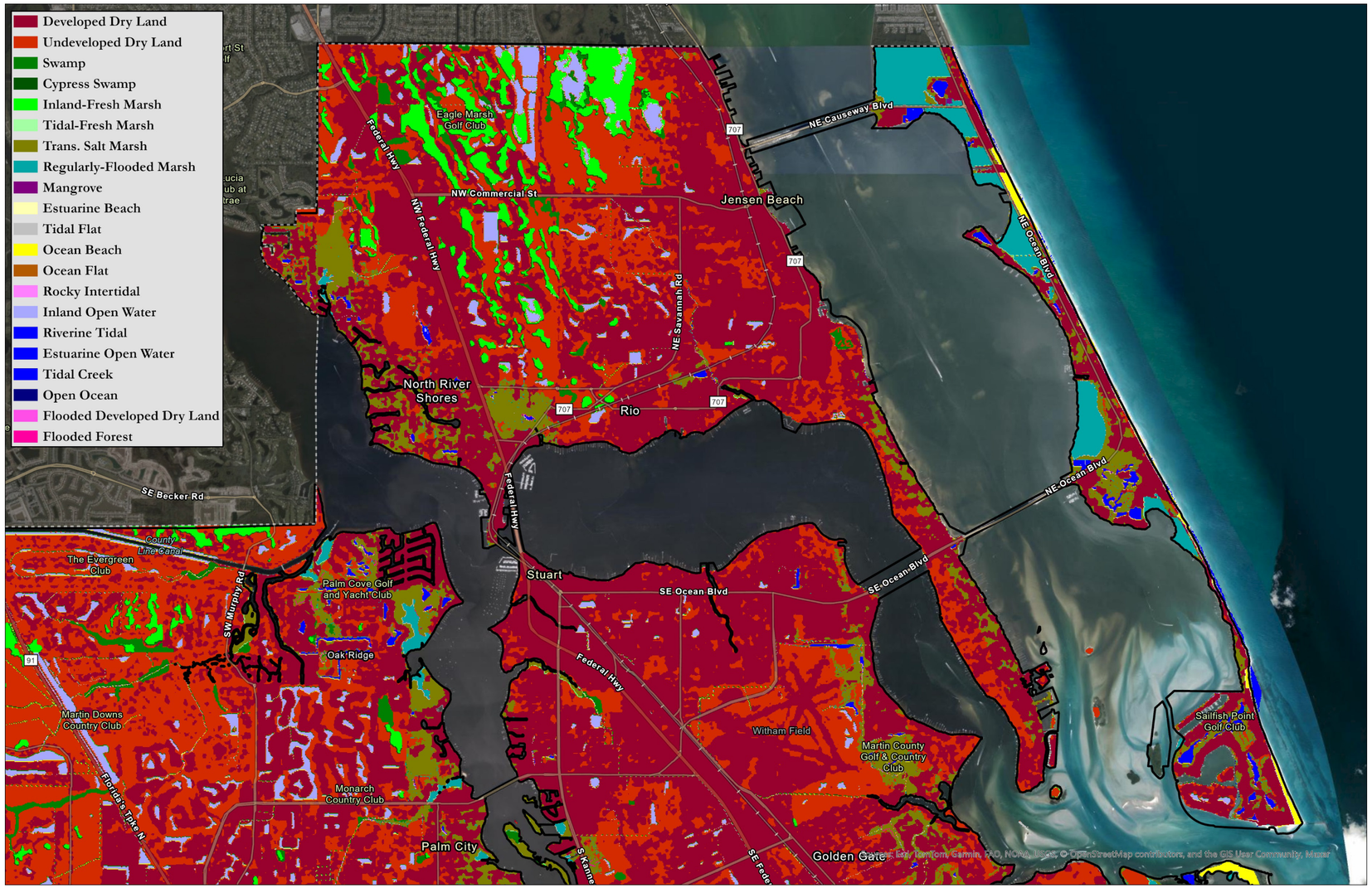


SEA LEVEL AFFECTING MARSHES MODEL (SLAMM)

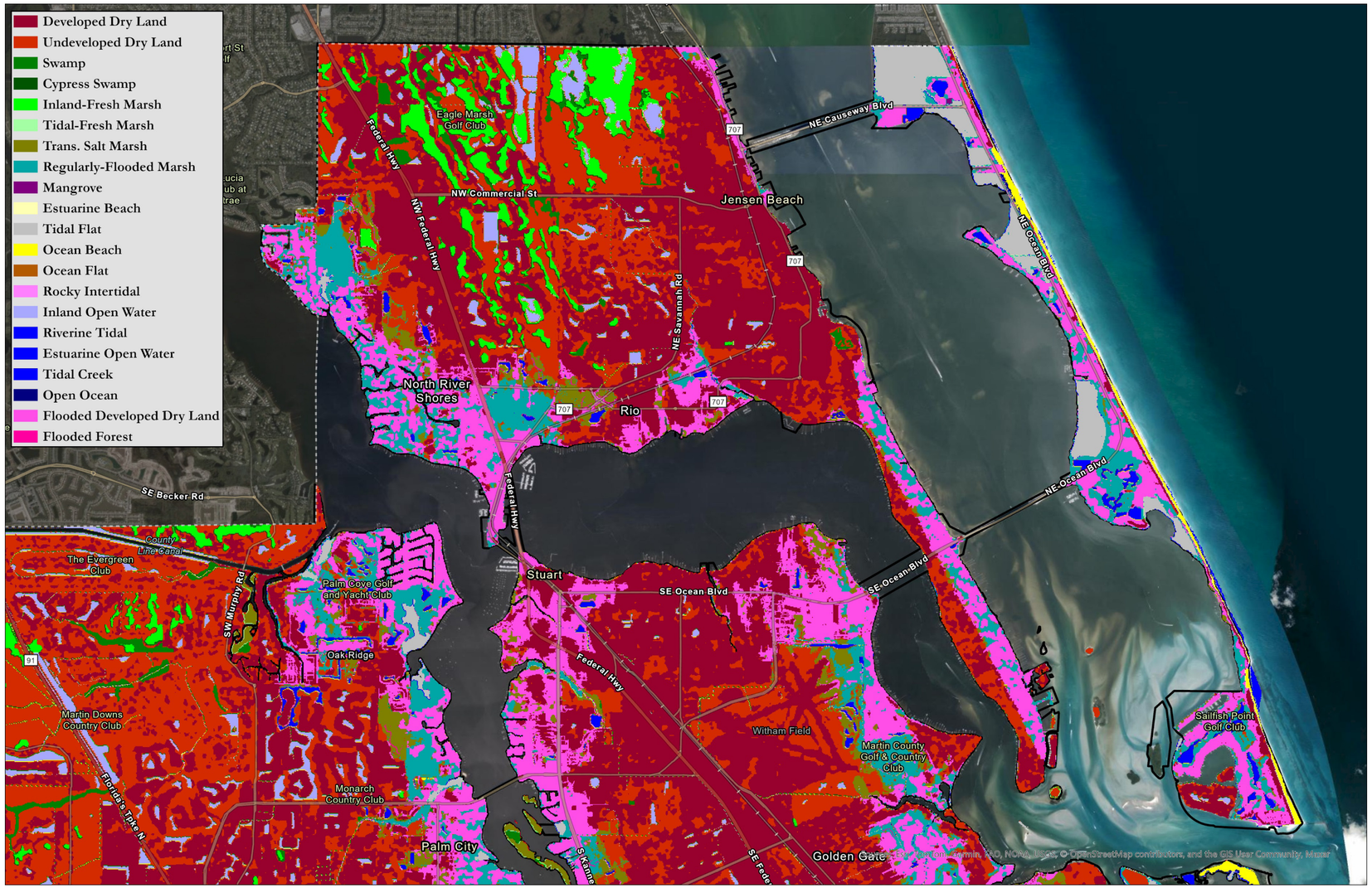
- Available on NOAA website: https://coast.noaa.gov/digitalcoast/tools/slamm.html
- Originally founded by the Nature Conservancy
- Produced by Warren Pinnacle Consulting, Inc. in partnership with ESA Associates
- Mathematical Model that uses digital elevation data and other information to simulate potential impacts of long-term sea level rise on wetlands and shorelines



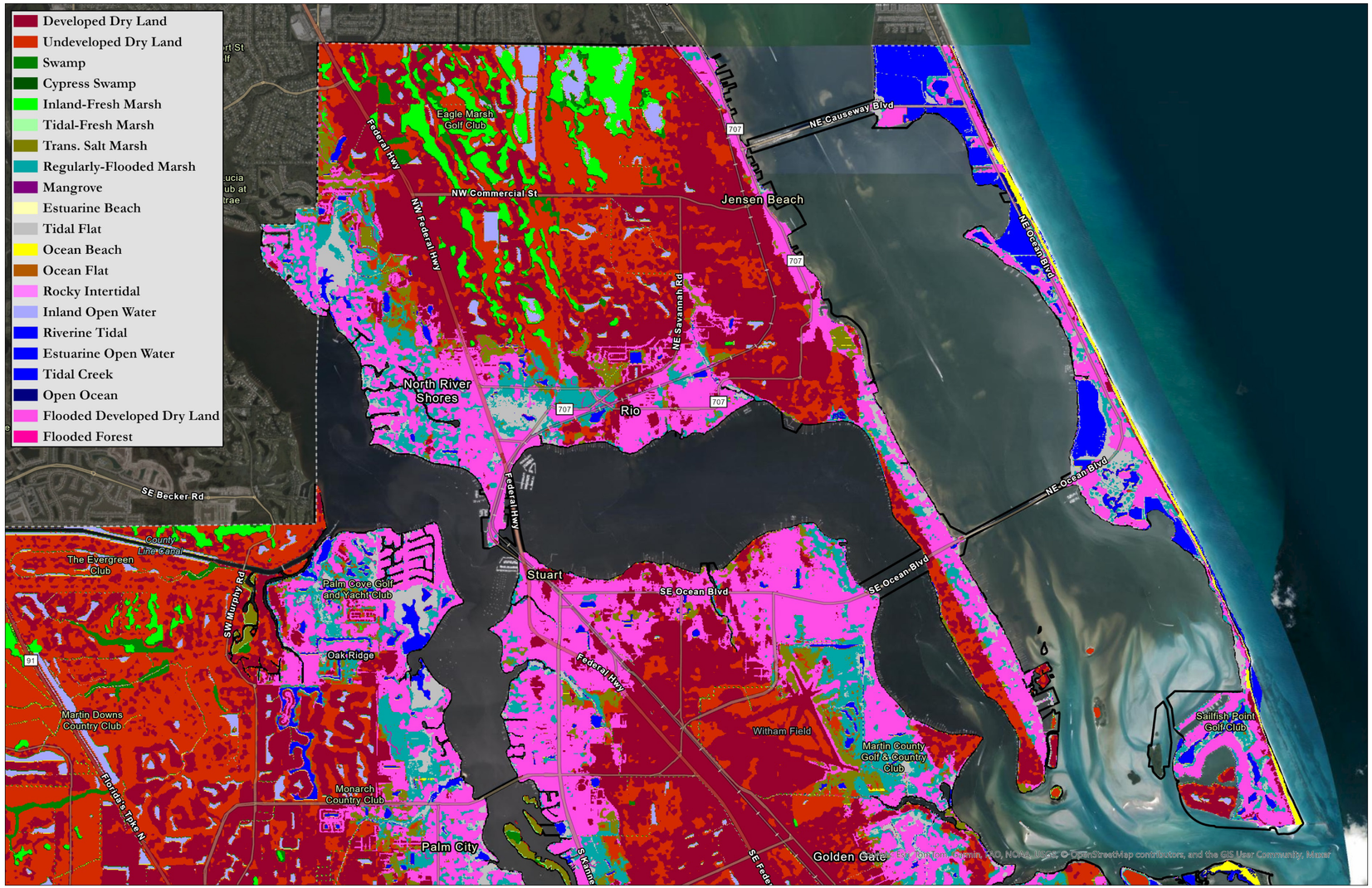
AREA 1 – PRESENT DAY (NIL – 2.56'NAVD – 0 RISE)



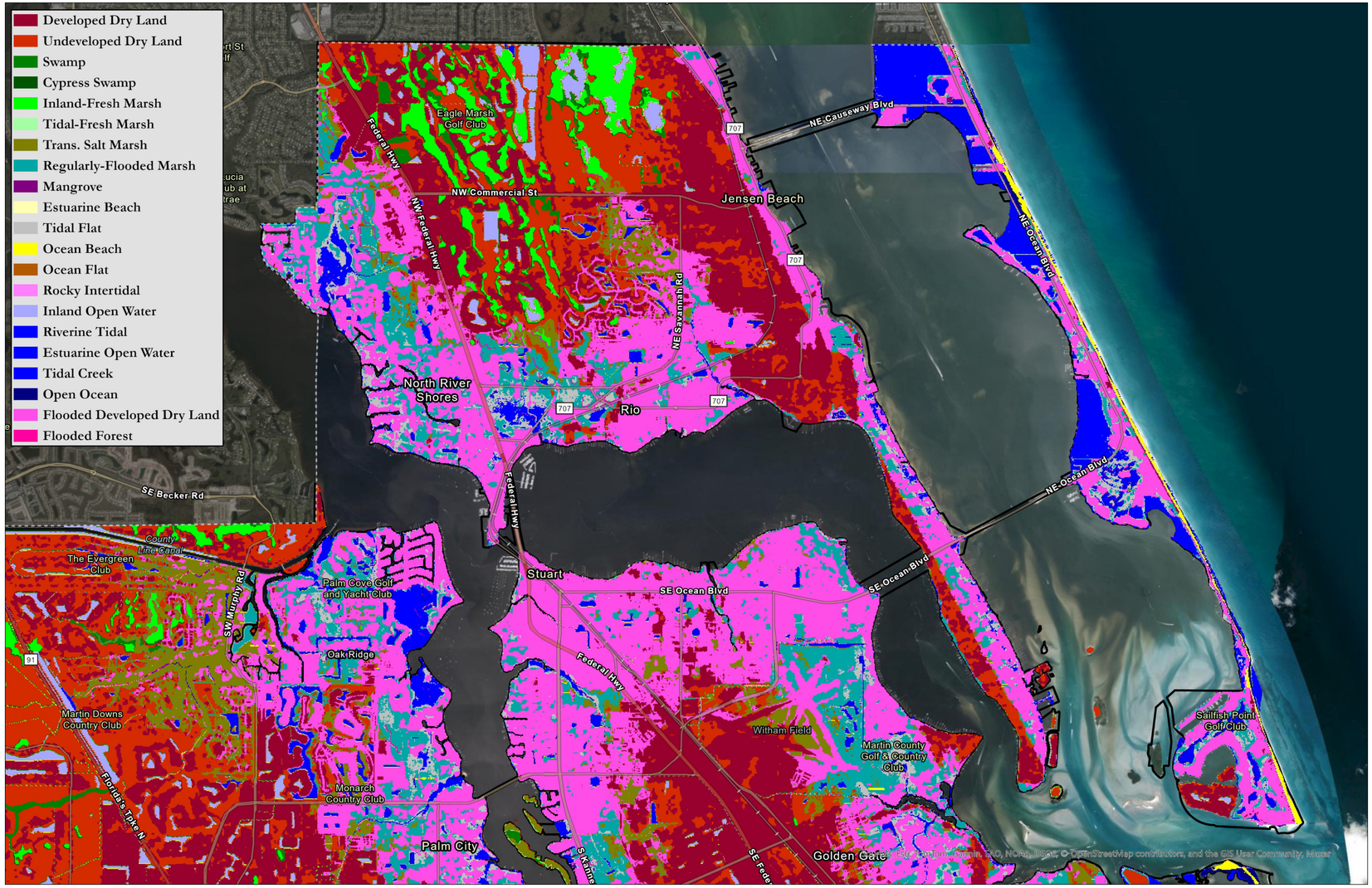
AREA 1 – 2040 (NIL – 2.92’NAVD – 0.36’ RISE)



AREA 1 – 2070 (NIL – 3.48’NAVD – 0.92’ RISE)



AREA 1 – 2100 (NIL – 3.84’NAVD – 1.28’ RISE)



MARTIN COUNTY HABITAT CHANGE - NIL

SLAMM Category	Present Day Hectares	2040 Hectares	2070 Hectares	2100 Hectares	Change from Present Day to 2040	Change from Present Day to 2070	Change from Present Day to 2100
Developed Dry Land	11081	10052	8906	7522	-9.28%	-19.63%	-32.11%
Undeveloped Dry Land	91821	90384	88653	85754	-1.56%	-3.45%	-6.61%
Swamp	13940	13066	12451	11587	-6.27%	-10.68%	-16.88%
Cypress Swamp	2559	2453	2365	2260	-4.16%	-7.59%	-11.69%
Inland-Fresh Marsh	12265	12129	12099	12079	-1.11%	-1.35%	-1.52%
Tidal-Fresh Marsh	138	128	127	124	-7.32%	-8.26%	-9.93%
Trans. Salt Marsh	1893	2469	2525	3731	30.40%	33.33%	97.03%
Regularly-Flooded Marsh	798	1927	3190	4928	141.36%	299.58%	517.23%
Mangrove	30	24	24	24	-18.97%	-19.30%	-19.30%
Estuarine Beach	17	16	14	13	-8.64%	-19.55%	-25.90%
Tidal Flat	313	1010	1314	1451	223.06%	320.39%	364.04%
Ocean Beach	1138	1129	1104	1076	-0.85%	-3.01%	-5.49%
Ocean Flat	797	786	767	743	-1.45%	-3.84%	-6.84%
Rocky Intertidal	605	599	592	582	-0.92%	-2.23%	-3.74%
Inland Open Water	4445	4361	4258	4107	-1.87%	-4.19%	-7.60%
Riverine Tidal	407	404	402	394	-0.62%	-1.32%	-3.20%
Estuarine Open Water	163	319	1197	2081	96.34%	636.20%	1180.11%
Tidal Creek	0	0	0	0	0.00%	0.00%	0.00%

Decline in Swamp and Cypress Swamp Areas

- **Current Extent:** Swamps: 13,940 hectares, Cypress Swamps: 2,556 hectares
- **2040 Projections:** NIL (-6.27%, -4.16%), NIH (-8.85%, -6.68%)
- **2100 Projections:** NIL (-16.88%, -11.69%), NIH (-73.23%, -80.68%)

Transition of Coastal Wetlands:

- **Transitional Salt Marsh:**
  - **Current:** 1,893 hectares
  - **2100:** NIL (+97.03%), NIH (+2903.08%)
- **Mangroves:**
  - **Current: 30 hectares**
  - **2100:** NIL (-19.30%), NIH (-94.92%)

MARTIN COUNTY HABITAT CHANGE – NIL (CONT.)

SLAMM Category	Present Day Hectares	2040 Hectares	2070 Hectares	2100 Hectares	Change from Present Day to 2040	Change from Present Day to 2070	Change from Present Day to 2100
Open Ocean	5	26	64	109	389.84%	1131.72%	1991.19%
Irreg.-Flooded Marsh	1	2	2	1	58.54%	55.24%	12.84%
Inland Shore	0	0	0	0	-5.80%	-38.99%	-76.65%
Tidal Swamp	8	6	3	2	-33.61%	-61.65%	-80.52%
Flooded Developed Dry Land	1203	2232	3379	4762	85.45%	180.75%	295.68%
Flooded Forest	32	138	226	331	332.75%	607.34%	935.79%
Aggregated Non Tidal	104105	102669	100937	98039	-1.38%	-3.04%	-5.83%
Freshwater Non-Tidal	28765	27648	26915	25926	-3.88%	-6.43%	-9.87%
Open Water	5019	5111	5921	6691	1.82%	17.96%	33.30 %
Low Tidal	2871	3540	3791	3865	23.31%	32.04%	34.62%
Saltmarsh	798	1927	3190	4928	141.36%	299.58%	517.23%
Transitional	1956	2633	2777	4087	34.60%	41.92%	108.91%
Freshwater Tidal	147	134	130	126	-8.83%	-11.33%	-14.00%

Expansion of Marshes and Open Water:

- **Regularly Flooded Marsh:**
  - **Current:** 798 hectares
  - **2100:** NIL (+517.23%), NIH (+2417.38%)
- **Estuarine Open Water:**
  - **Current:** 163 hectares
  - **2100:** NIL (+1180.11%), NIH (+3269.77%)

ADAPTATION STRATEGIES

TYPES OF ADAPTATION STRATEGIES

Once major needs and priorities are defined, specific adaptation strategies can be developed, vetted, and defined.



01 Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered.



02 Accommodation

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification.



03 Retreat

Retreat from areas or infrastructure where protection or accommodation will not be efficient or effective can be voluntary, incentivized, or done gradually.



04 Avoidance

Avoidance involves guiding new development away from areas that are subject to coastal hazards and can be done by implementing policy and/or offering of incentives.

ADAPTATION STRATEGIES

4:1

Building-level adaptation strategies outweigh the costs 4:1

2:1

Community-wide adaptation strategies outweigh the costs 2:1

TYPES OF ADAPTATION STRATEGIES

Once major needs and priorities are defined, specific adaptation strategies can be developed, vetted, and defined.



01 Protection

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered.



02 Accommodation

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification.



03 Retreat

Retreat from areas or infrastructure where protection or accommodation will not be efficient or effective can be voluntary, incentivized, or done gradually.



04 Avoidance

Avoidance involves guiding new development away from areas that are subject to coastal hazards and can be done by implementing policy and/or offering of incentives.

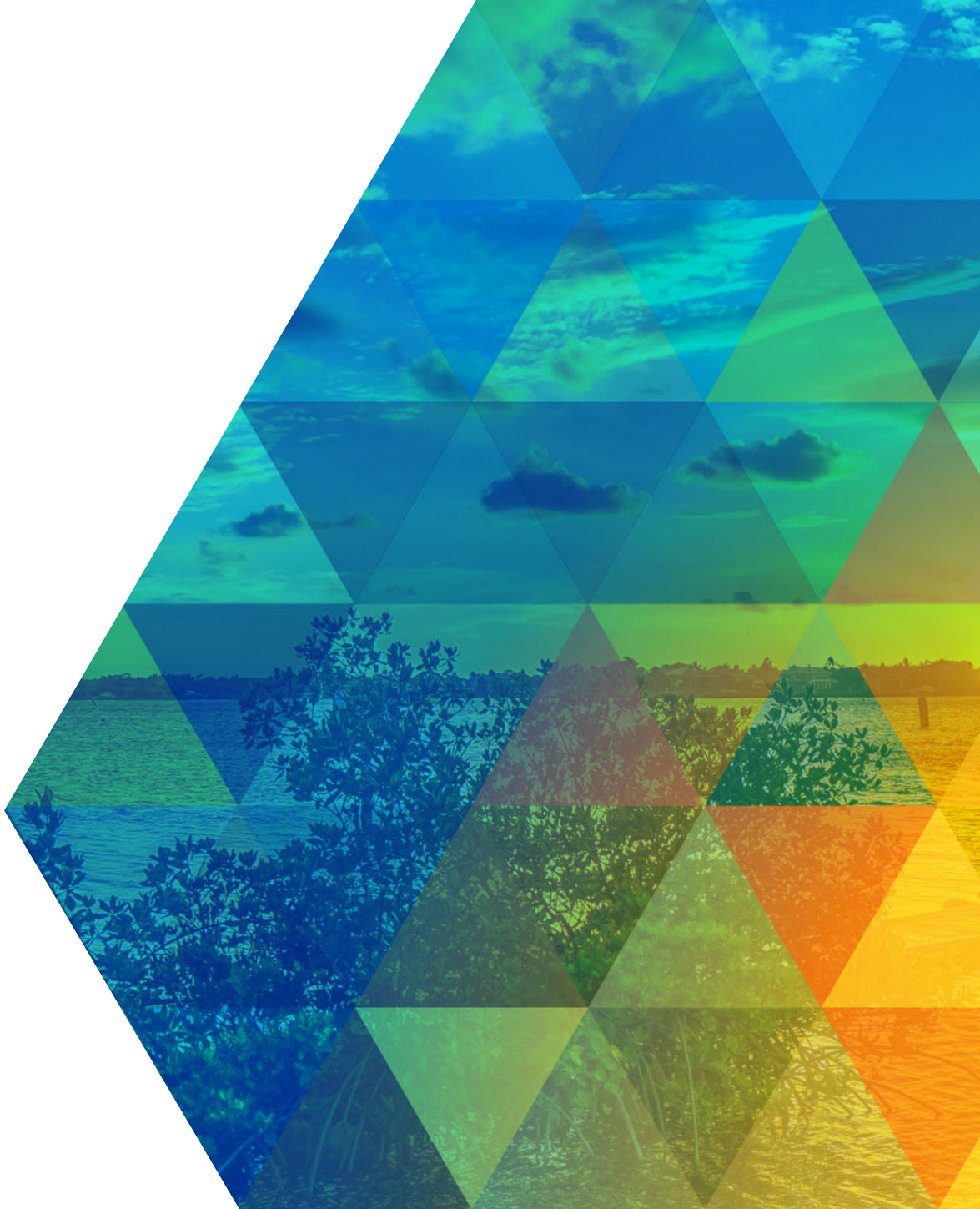
RECOMMENDATIONS - THEMES

1. **Targeted Resilience Planning:** Develop tailored adaptation strategies for each hotspot based on the specific asset vulnerabilities identified. For example, prioritize wetland restoration in areas where natural resources are significantly exposed, and reinforce transportation infrastructure in highly impacted zones.

2. **Enhanced Shoreline Protection:** Focus on hotspots with high exposure to storm surge where there is evidenced documentation of recent shoreline erosion. Implement measures such as living shorelines, dune restoration, and improved drainage systems.

3. **Infrastructure Fortification:** Strengthen transportation networks and critical facilities in high-risk areas. Consider elevating roadways and improving drainage systems to reduce flood risks.

4. **Land Use Planning:** Utilize exposure data to inform zoning and land-use policies. Limit development in high-risks zones and encourage nature-based solutions for flood mitigation.



RECOMMENDATIONS – THEMES (CONT.)

5. **Community Engagement and Preparedness:** Educate local communities on the risks identified in the assessment. Promote disaster preparedness and encourage the adoption of resilient construction practices.

6. **Long-Term Monitoring:** Establish a framework for continuous monitoring of exposure metrics across hotspots and non-hotspot areas. Use updated data to refine adaptation strategies over time.

7. **Modeling of Sample Recommendations:** Integrate the findings from the “Hot Spot Results” section of the report into the broader resilience strategy. Use this data to prioritize actions and allocate resources effectively.

8. **Regional Coordination:** Collaborate with neighboring counties and regional agencies to address shared vulnerabilities, particularly for large-scale challenges like storm surge impacts and wetland conservation.



GRANT SUCCESS TO DATE

- Vulnerability Assessment **required** for continued Resilient Florida program funding eligibility

PLANNING GRANTS

- 2018 - $34,000
- 2019 - $75,000
- 2021 - $191,000
- 2022 - $75,000
- 2023 - $250,000

TOTAL = $625,100

GRANT SUCCESS TO DATE

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2021-22 Grant Cycle Projects	Match Amount (50%)	2023-2024 Grant Cycle Projects	Match Amount (50%)
Cypress Creek Restoration Project	$750,000	MacArthur Boulevard Resilience Project	$1,235,000
Stormwater Backflow Preventer Installation	$198,380	Old Palm City North Neighborhood Improvements	$3,242,500
Golden Gate Stormwater Treatment Area North Outfall	$180,000	SW Mockingbird Lane Flood Mitigation	$1,807,000
Twin Rivers Park Shoreline Stabilization	$862,000		
Stormwater Backflow Preventer Installation Ph 2	$200,000		
Indian Riverside Park Living Shoreline Ph. 2	$1,863,938		
Total Program Funding to Date Awarded to Martin County from State of Florida: $10,338,818			

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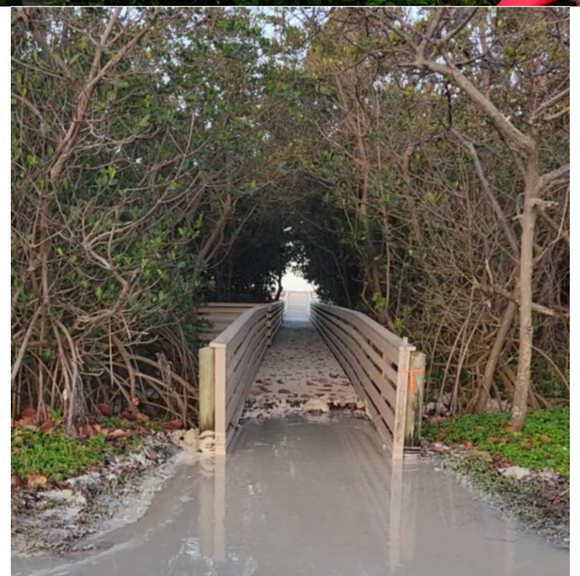
RESILIENCE IN ACTION

Bathtub Beach and MacArthur Boulevard

October 26, 2012
Tropical Storm Sandy







RESILIENCE IN ACTION (CONT.)

Bathtub Beach and MacArthur Boulevard







NEXT STEPS

- Finalize Vulnerability Assessment work products and submit to Florida Department of Environmental Protection
- Enhanced public outreach
- Adaptation planning efforts
- More refined modeling through stormwater master plan/watershed management plan



QUESTIONS/COMMENTS?



THANK YOU!

ERIN L. DEADY, P.A.

CLEARVIEW GEOGRAPHIC