

Okaloosa County Vulnerability Assessment and Adaptation Plan

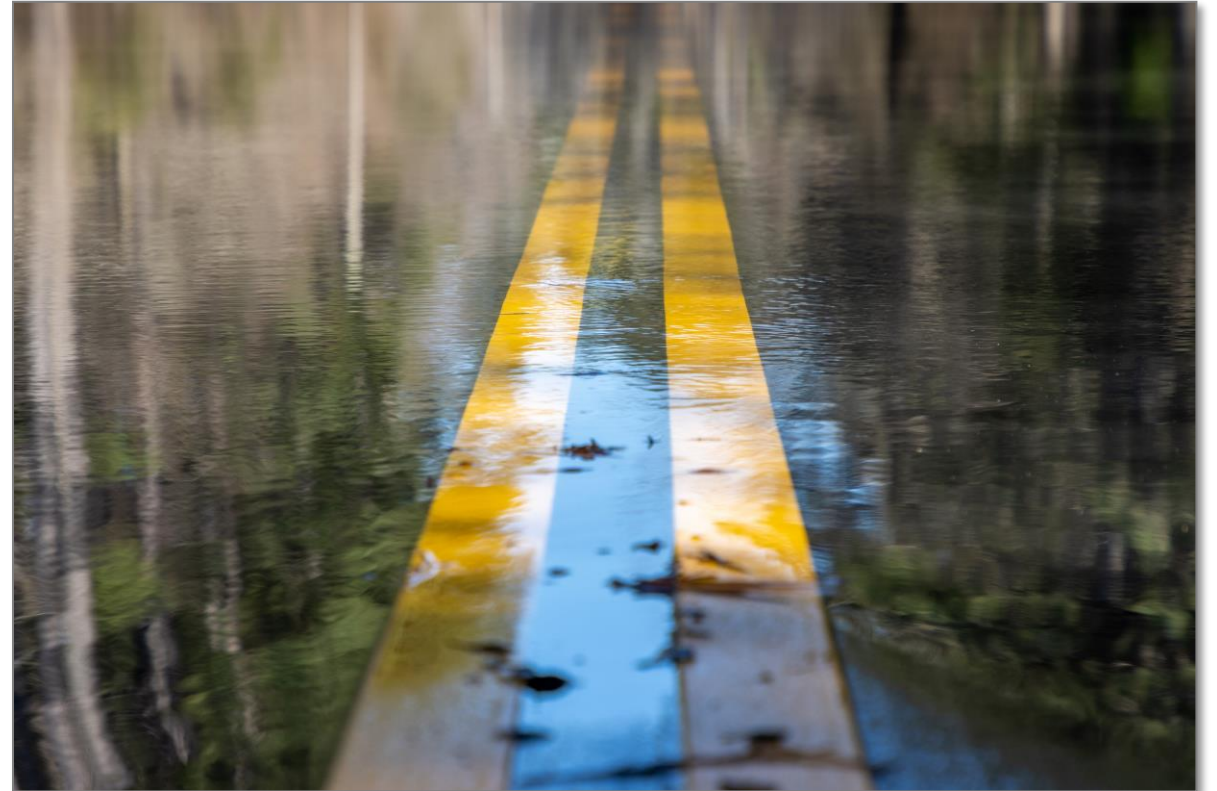
Public Meeting #2

February 10th, 2024



AGENDA

- 1. Introductions**
- 2. Project Overview**
- 3. Assets and Data Collection**
- 4. Sensitivity/Exposure Analysis Results**
- 5. Next Steps & Questions**



INTRODUCTIONS



Tanya Gallagher, PHD
Project Manager



Alec Rodriguez, PE,
CFM
Deputy PM, Engineer



Hank Hodde, CFM,
ENV SP
Task Lead



Blaine Beck, PE
Project Engineer



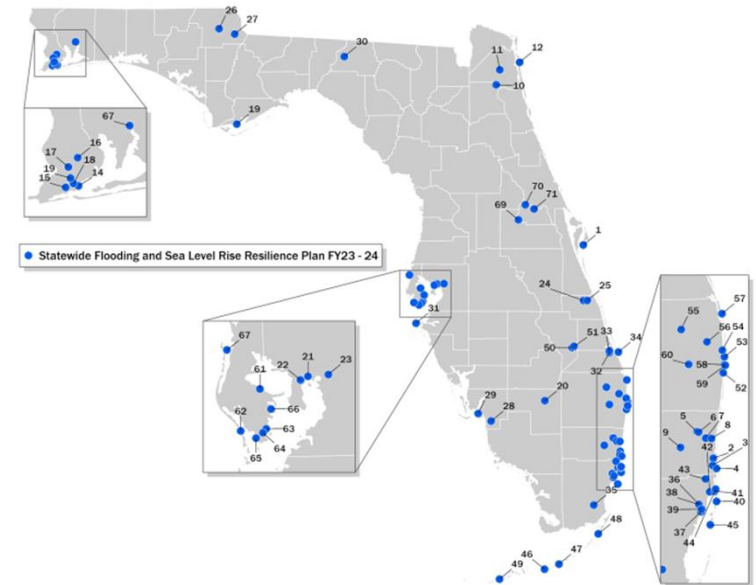
Charley Golden, EIT
Jr. Engineer



Project Overview

What is a Vulnerability Assessment?

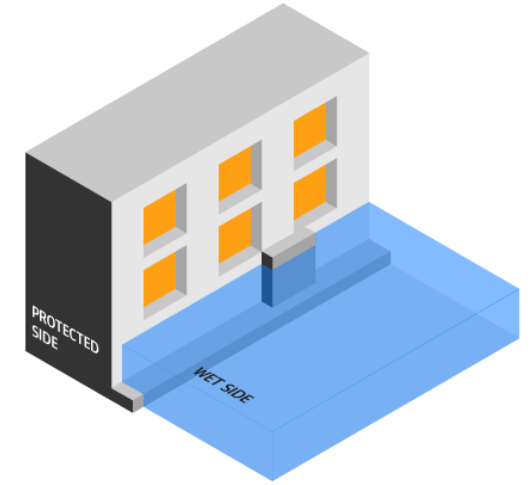
- Identifies inland and coastal infrastructure, geographic areas and communities in Florida most vulnerable to flooding and sea level rise and the associated risks.
- **A VA Does Not / Is Not:**
 - Intended for individual homeowners/property assessments
 - Account for property level improvements
 - Account for capital projects in development
 - Account for stormwater engineering projects
 - Meeting H&H modeling standings - not an H&H model



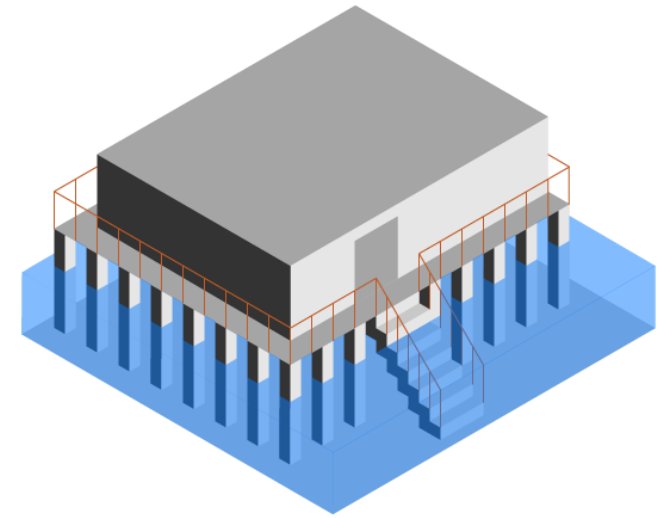
What is a Vulnerability Assessment?

- **A VA Does / Is :**
 - Make Okaloosa County eligible for future mitigation funding
 - Position the County for future grant opportunities
 - Help to identify adaptation priority areas
 - Link to other policies - local mitigation strategies
 - Help to prioritize for land acquisition
 - Help to create recommendations on policies

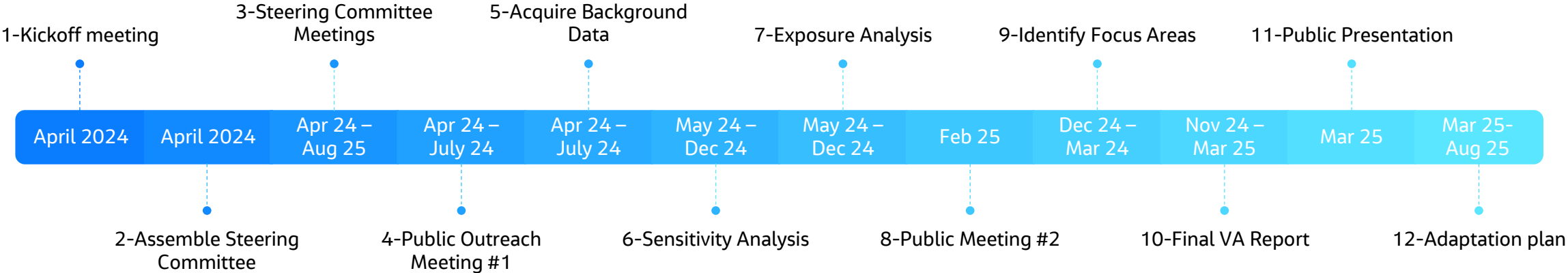
Dry-Flood Proofing



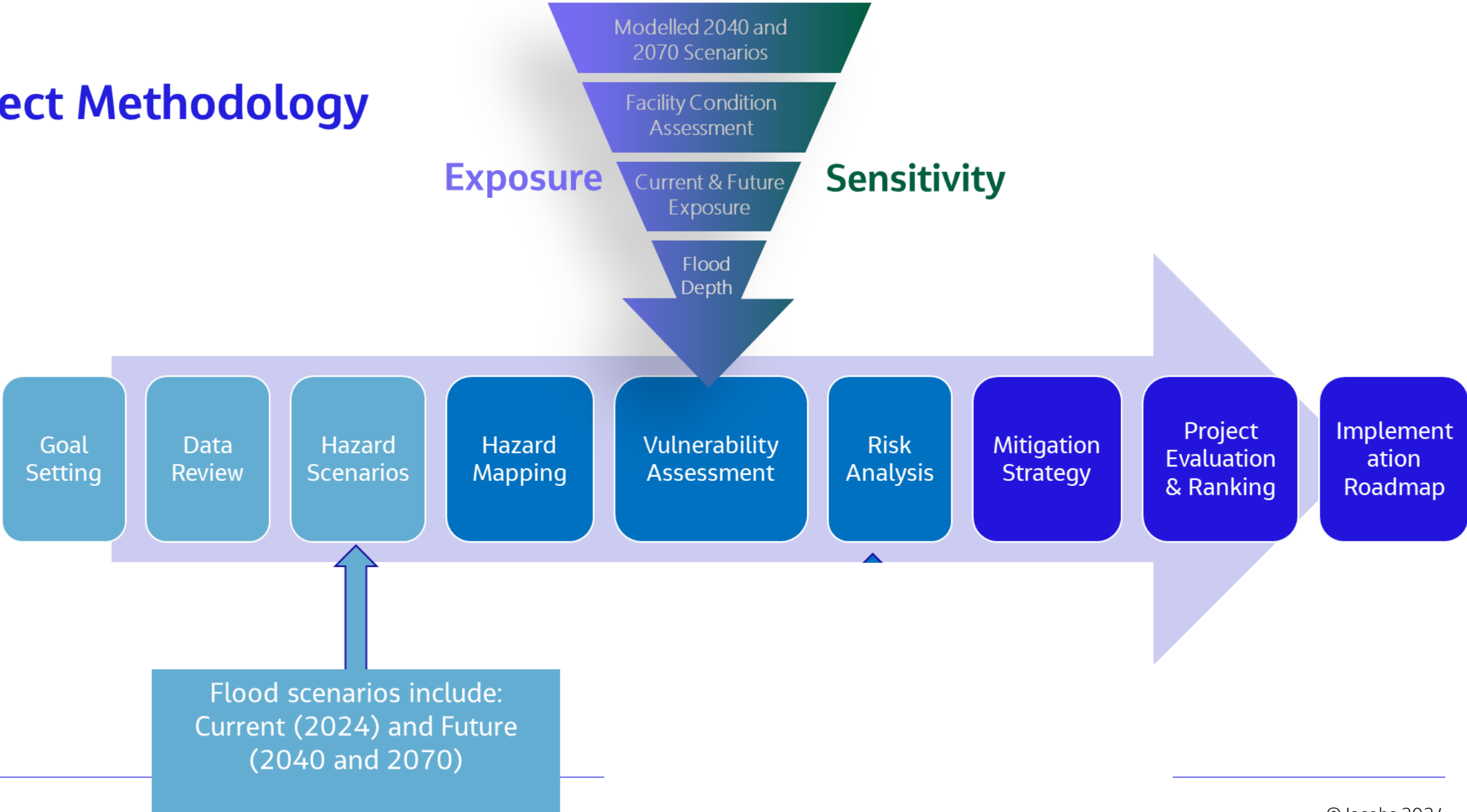
Elevating of Critical Asset



Vulnerability Assessment Tasks Overview and Timeline



Project Methodology



Assets and Data Collection

Task 4 – Public Outreach Meeting #1

- Jacobs conducted Public Meeting #1 at the end of July 2024.
- 25-30 participants from across the County.
- Collected input for the initial data collection stages, to include input on preferred methodologies, data for analyzing potential sea level rise impacts and/or flooding, guiding factors to consider, and critical assets important to the community.



Task 5 - Acquire Background Data and Municipal Outreach

- Critical Asset Data for VA:
 - Transportation/Evacuation Routes
 - Critical Infrastructure
 - Critical Community and Emergency Facilities
 - Natural Cultural and Historical Resources
- Reviewed nearly 127,000 assets
- Online Maps of data include:
 - Transportation/Evacuation Routes
 - Critical Infrastructure
 - Critical Community and Emergency Facilities
 - Natural Cultural and Historical Resources



Exposure Analysis

Where is flooding occurring?

Selected Flood Hazards

100- Year Flood



- Incorporates rainfall, coastal flooding, riverine flooding
- Range of Depths: 1-4 feet

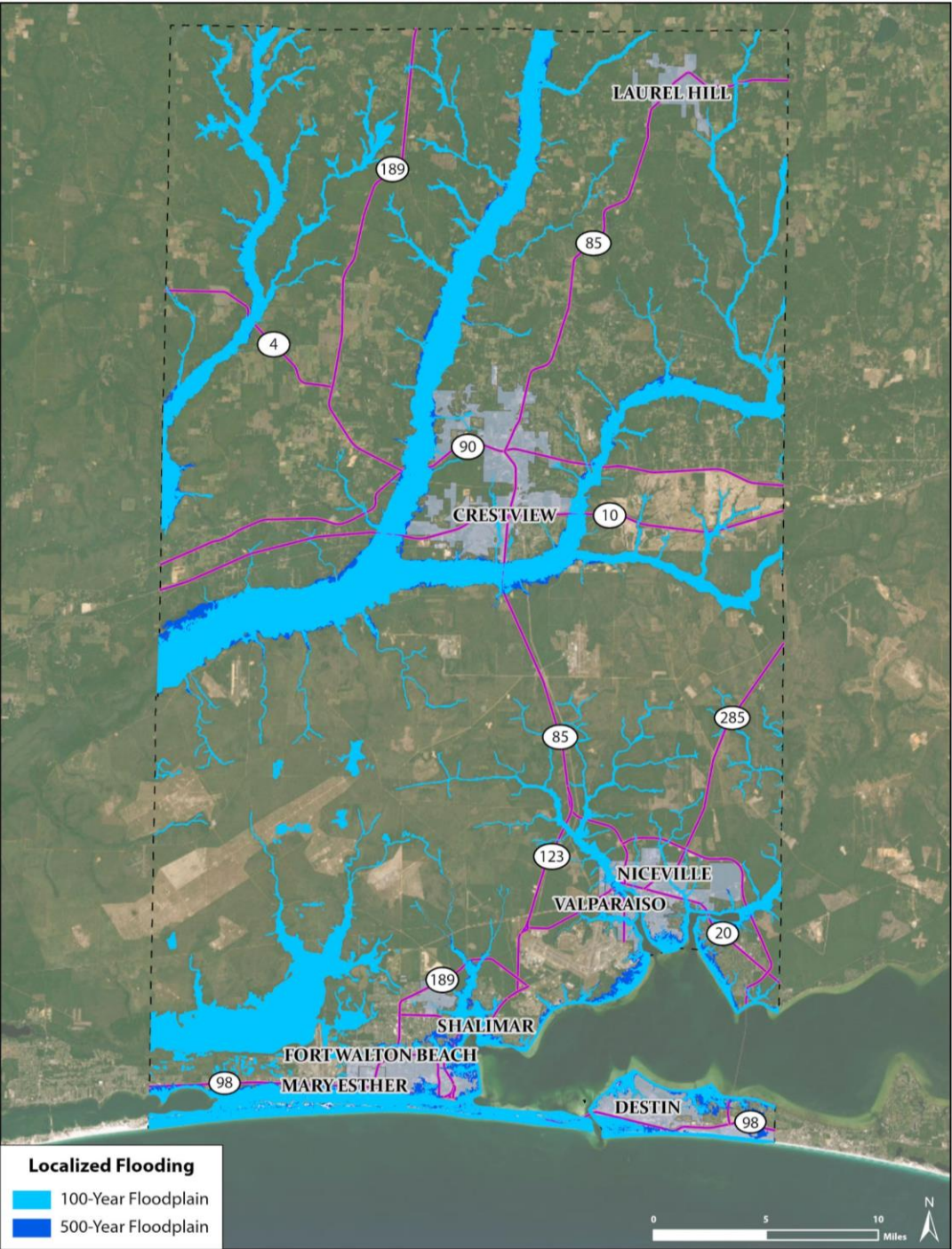
Tidal Flooding



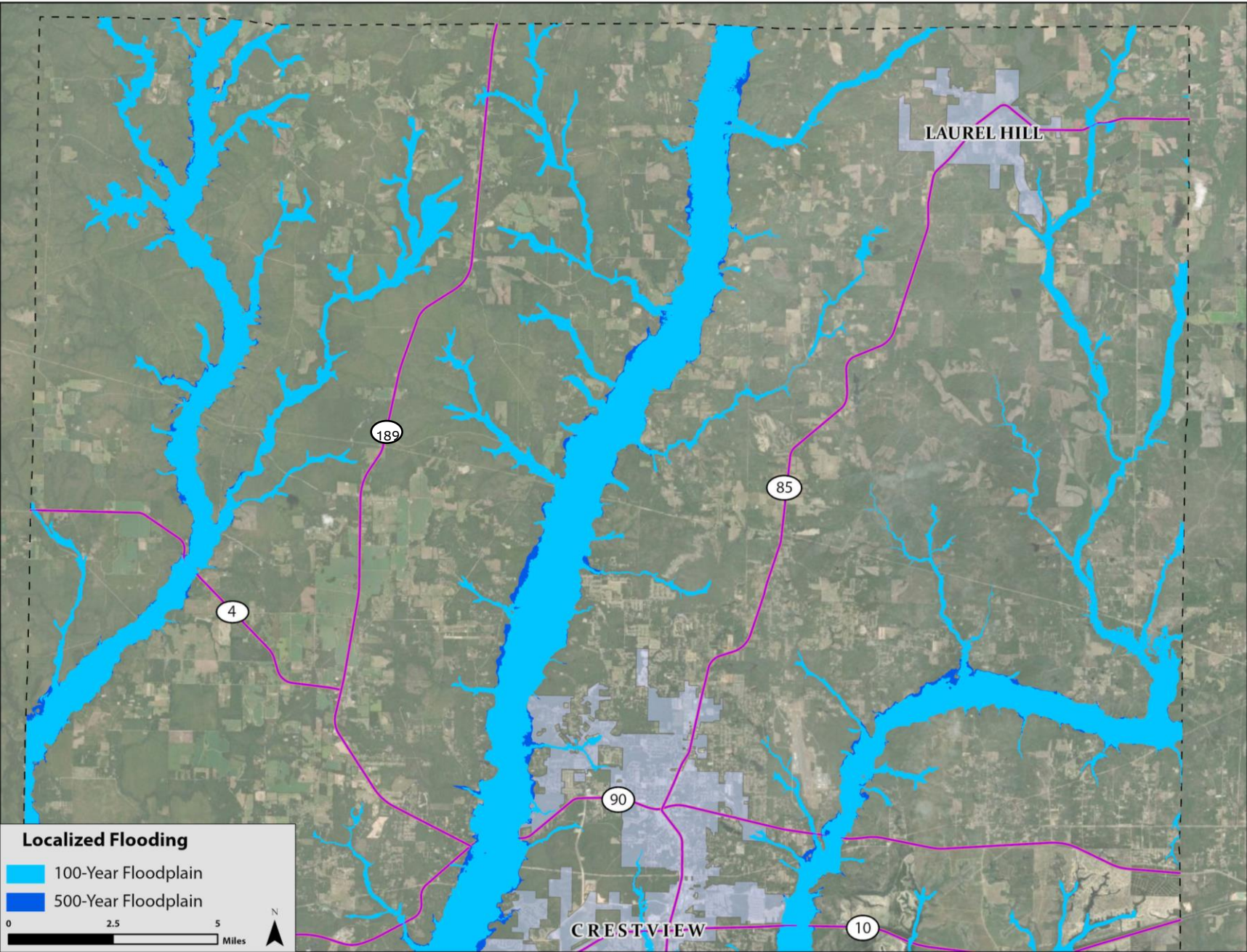
- Tidal flood (Mean Higher High Water Level + 2 feet)
- Range of Depths: 1-3 feet

Countywide Flood Exposure – 100 and 500-Year Flood

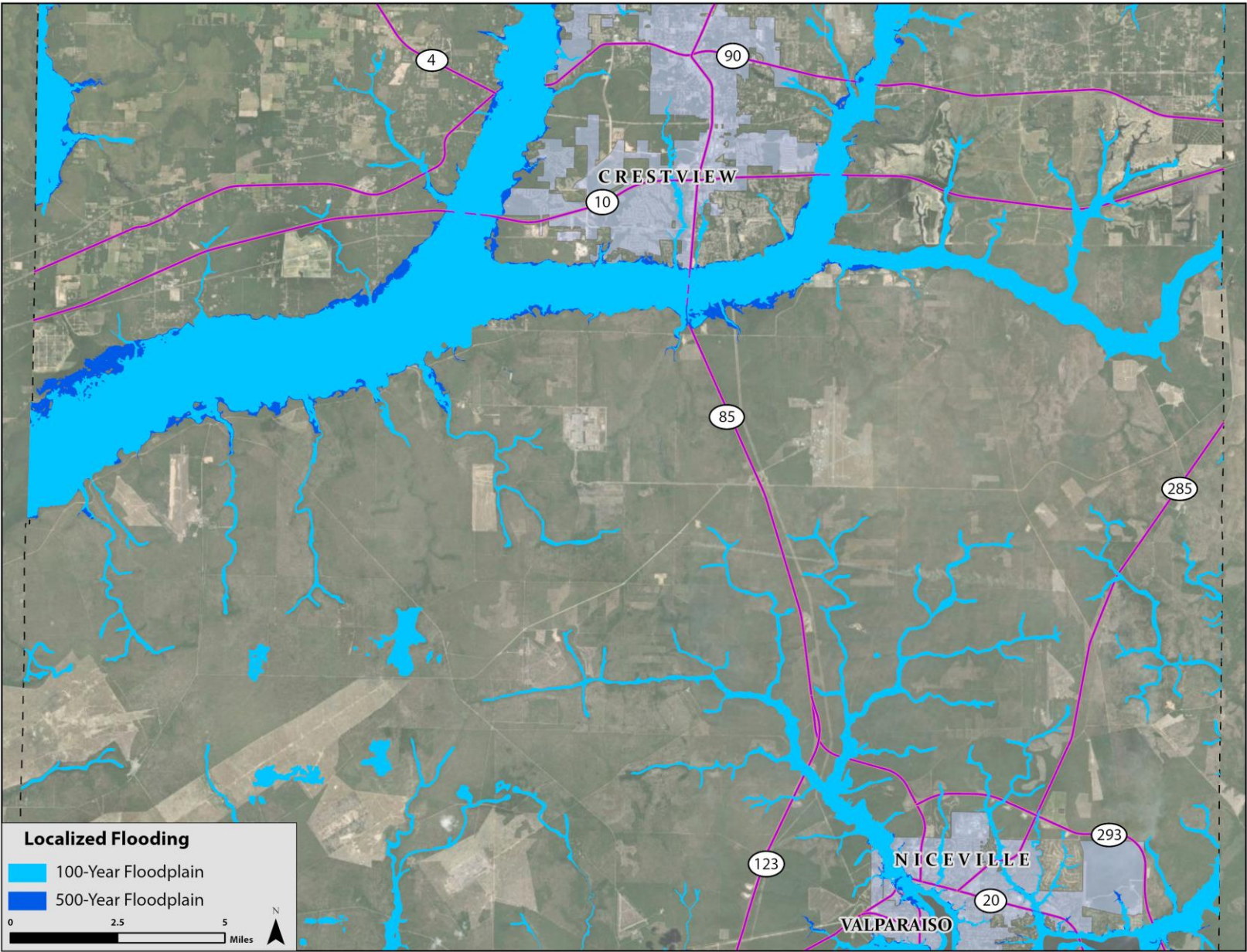
*CLOSER LOOK AT
IMPACTED AREAS ON
FOLLOWING SLIDES*



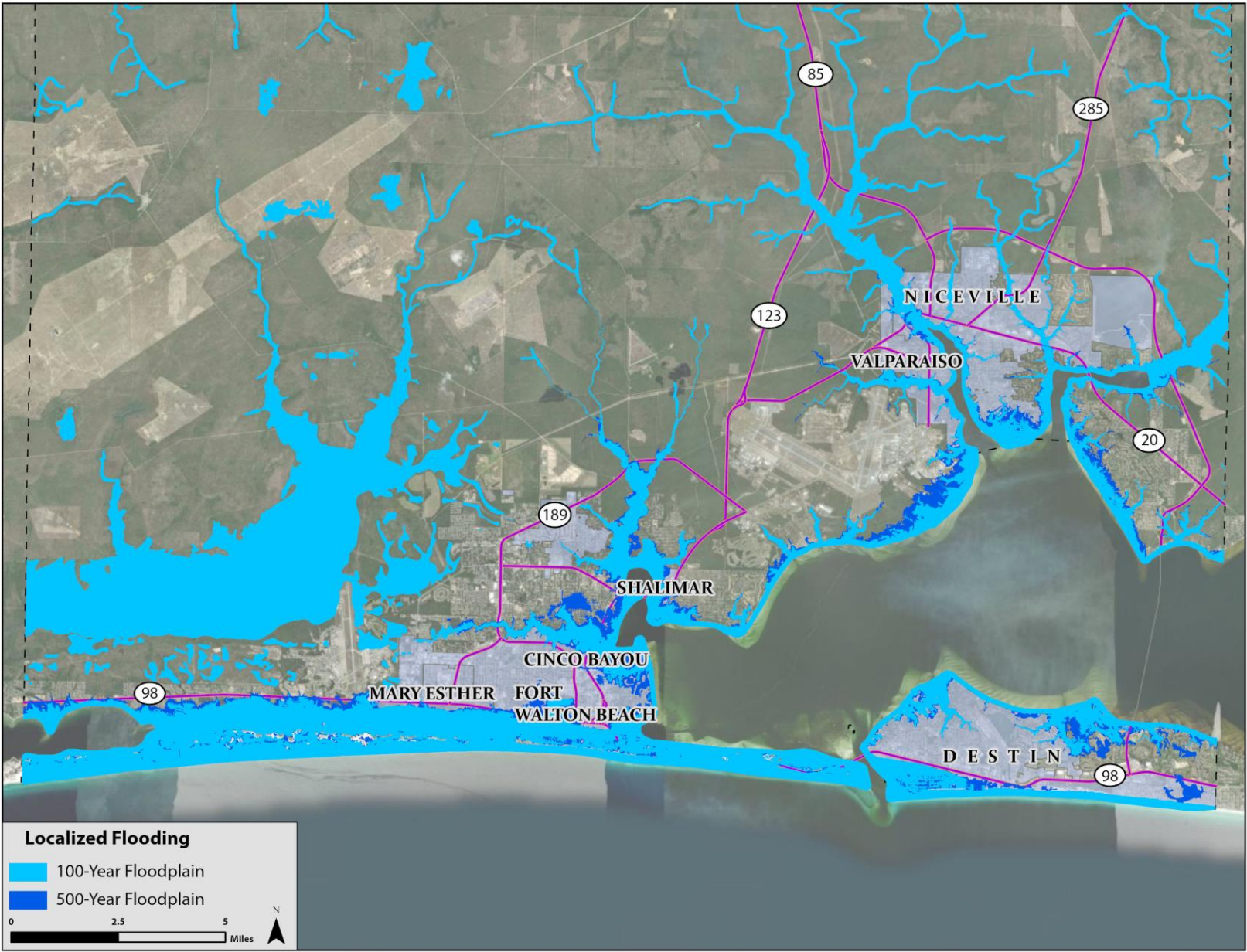
North County Flood Exposure – 100 and 500-Year Flood



Central County Flood Exposure – 100 and 500-Year Flood



South County Flood Exposure – 100 and 500-Year Flood



100-YEAR FLOOD EXPOSURE

Percent of Total Critical Assets Exposed


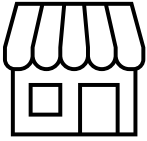
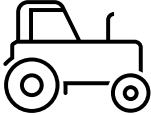
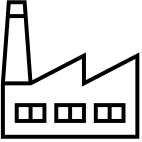


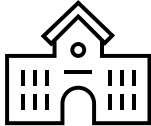
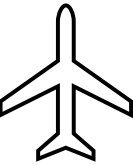
	Present-Day 100-Yr Flood Exposure	Projected 2040s 100-Yr Flood Exposure	Projected 2070s 100-Yr Flood Exposure
Number of Critical Assets (%)	11,032 (8.7%)	11,385 (8.9%)	11,392 (8.9%)

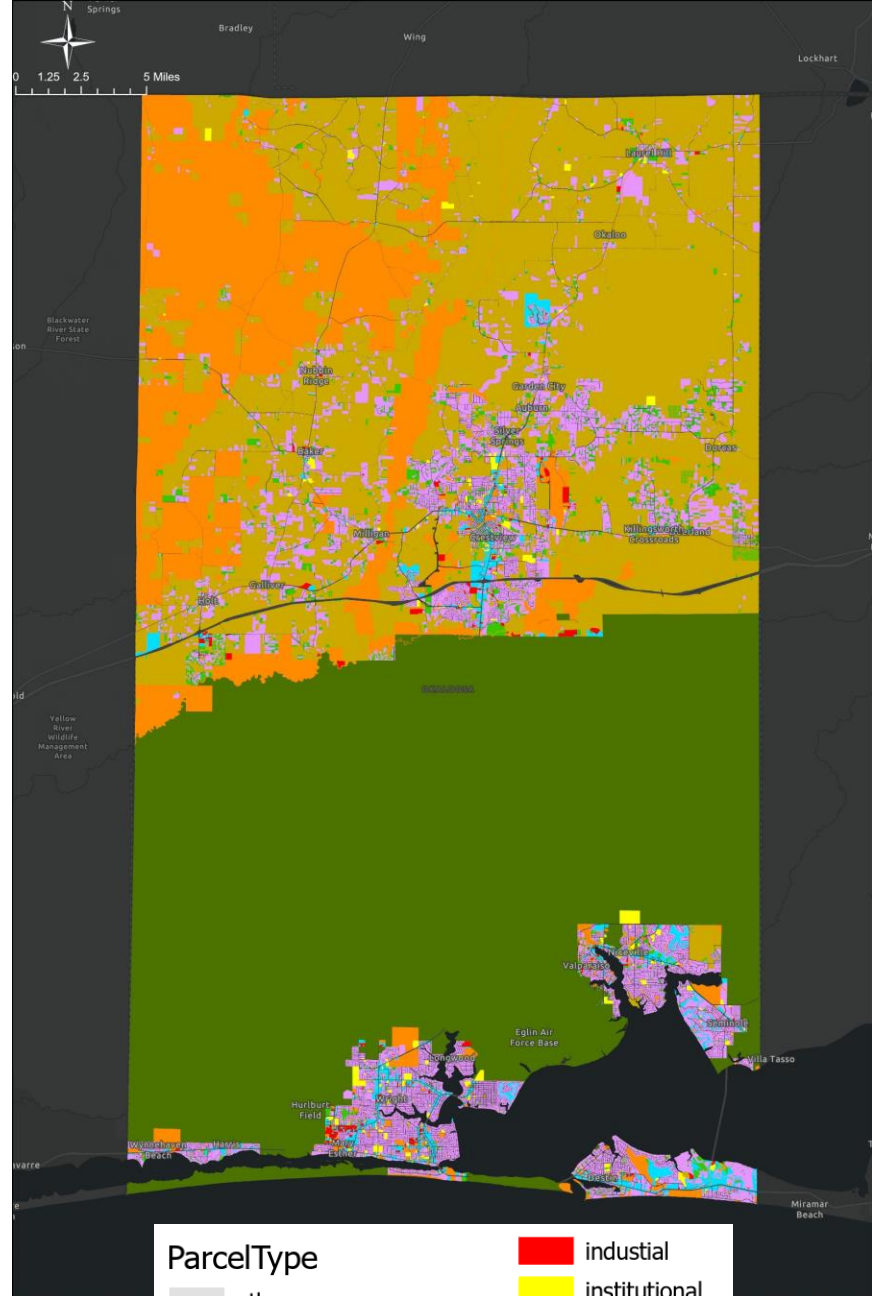


Parcel Exposure

What types of lands are exposed to flooding and where?

Parcel Types

<p>Residential</p> <ul style="list-style-type: none"> • Single family homes • Townhomes • Condos 	<p>Commercial</p> <ul style="list-style-type: none"> • Tourist attractions • Restaurants • Offices • Retail 	<p>Agricultural</p> <ul style="list-style-type: none"> • Cropland • Pastures • Timberlands 	<p>Industrial</p> <ul style="list-style-type: none"> • Warehouses • Manufacturing 
<p>Public</p> <p>Local, state, and federally-owned parcels</p> 	<p>Conservation</p> <ul style="list-style-type: none"> • Forests and Parks • Rivers and Lakes 	<p>Institutional</p> <ul style="list-style-type: none"> • Churches • Colleges • Clubs • Schools 	<p>Military</p> <p>Military-owned parcels (Eglin AFB, Hurlburt Field)</p> 



Parcels affected by Current 100-Year Floodplain – North County

ParcelType

- other
- agricultural
- commercial
- conservation/natural

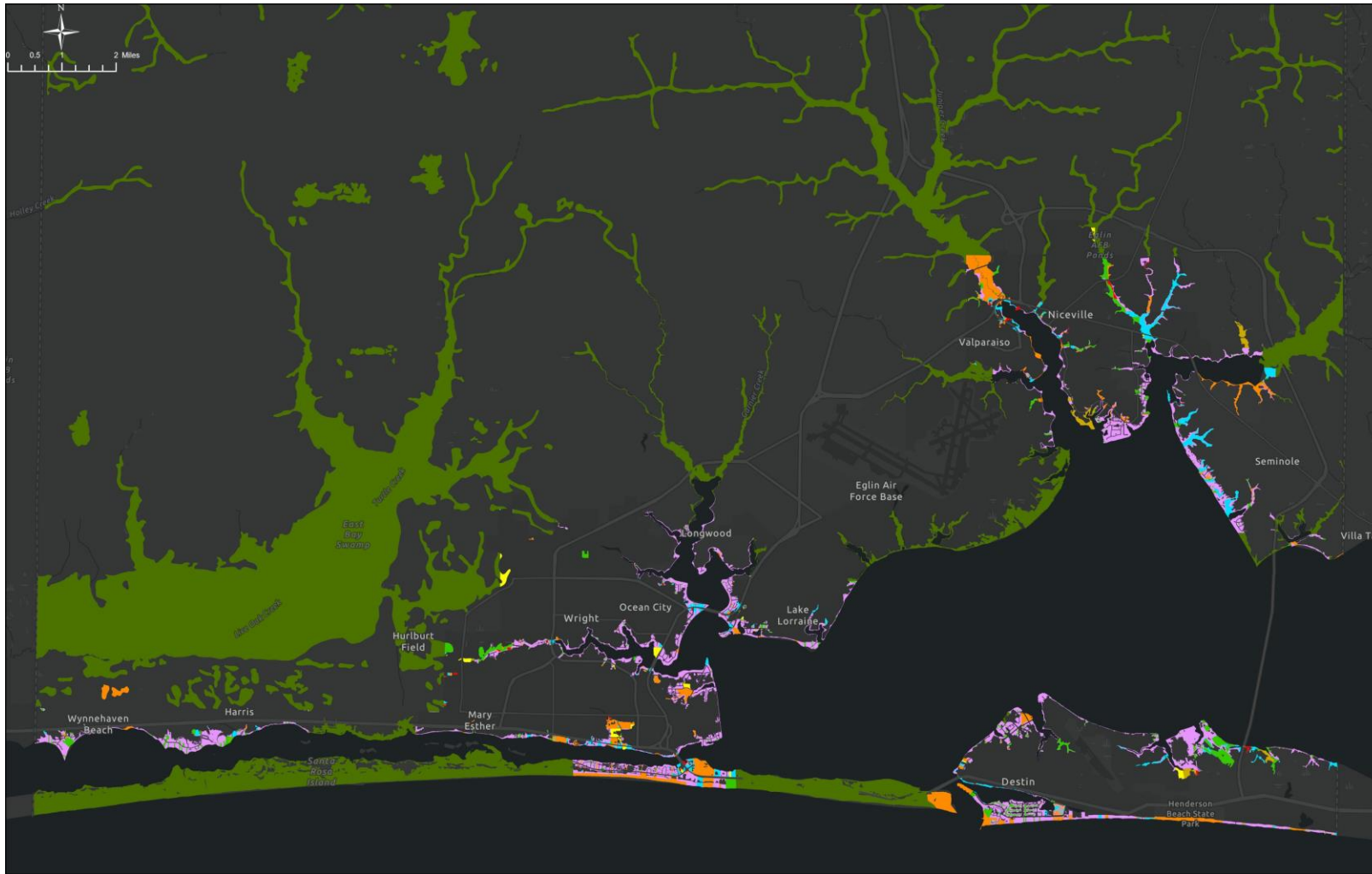
- industrial
- institutional
- military
- public
- residential



Parcels affected by Current 100-Year Floodplain – South County

ParcelType

- other
- agricultural
- commercial
- conservation/natural
- industrial
- institutional
- military
- public
- residential



Parcels affected by Current Tidal Flooding



Parcels affected by Current Tidal + 2040 Intermediate-High SLR Flooding



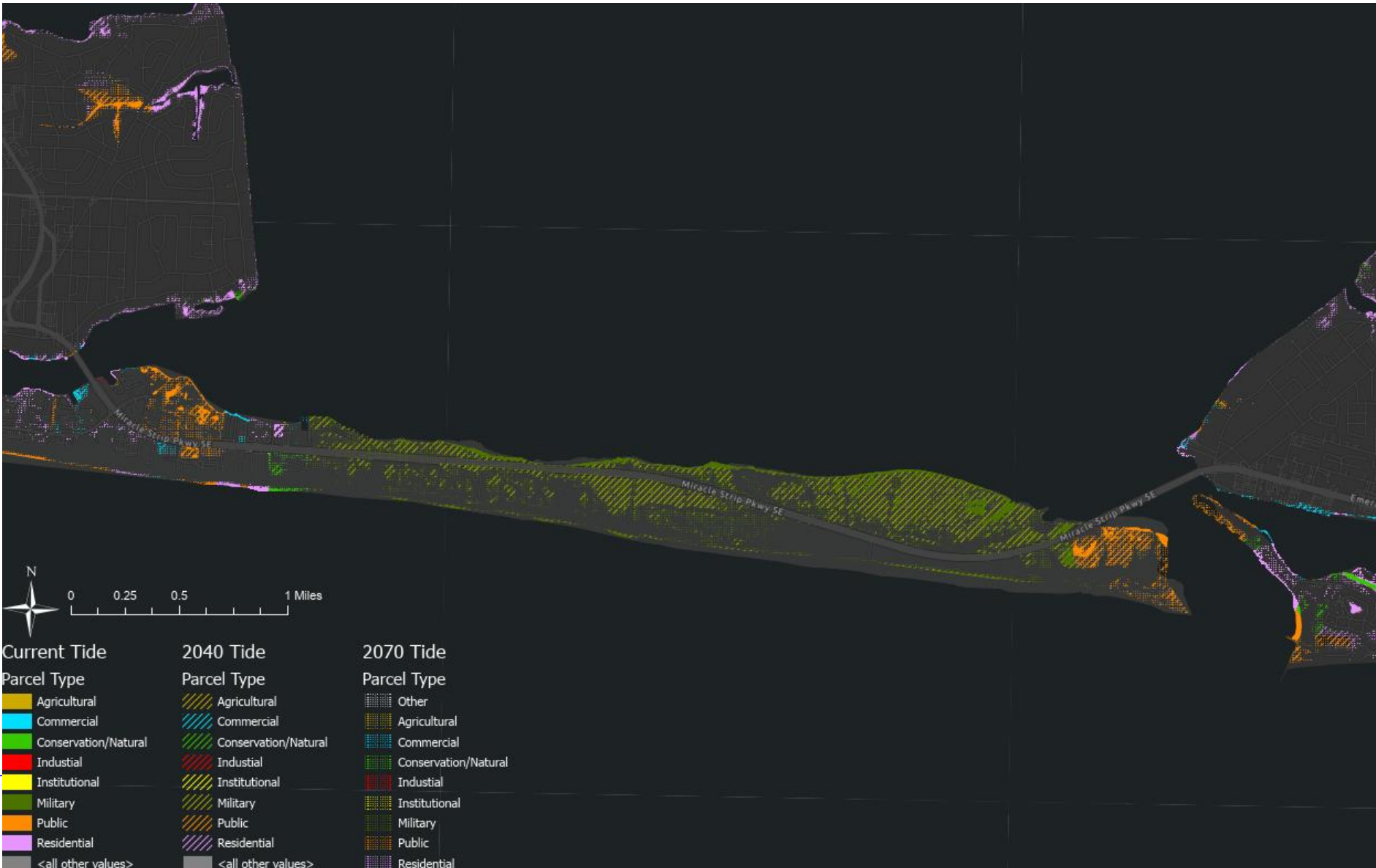
Parcels affected by Current Tidal + 2070 Intermediate-High SLR Flooding



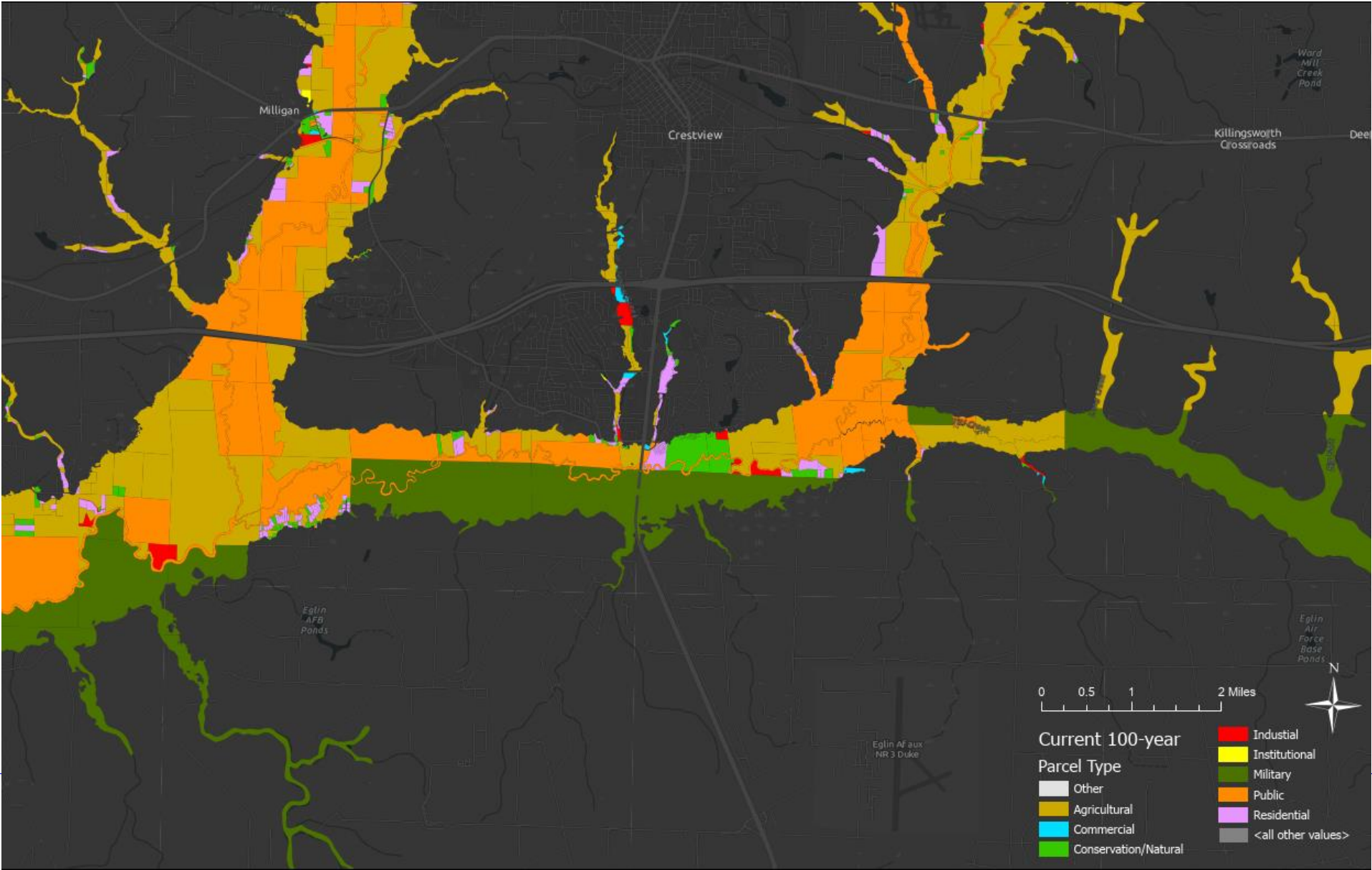
Percent Inundation by Parcel Type (Countywide)

Parcel Type	Current Tidal	Tidal Flooding + Intermediate-High SLR Scenario in 2040	Tidal Flooding + Intermediate-High SLR Scenario in 2070	Current 100-Year Flood	100-Year Flood + Intermediate-High SLR Scenario in 2040	100-Year Flood + Intermediate-High SLR Scenario in 2070
Agricultural	13.6%	22.3%	29.8%	26.0%	26.0%	26.0%
Commercial	7.4%	10.6%	17.9%	21.6%	21.6%	21.7%
Conservation/ Natural	22.4%	40.9%	50.7%	59.6%	59.6%	59.6%
Industrial	2.3%	7.6%	9.2%	52.2%	52.2%	52.3%
Institutional	4.7%	11.7%	20.8%	17.9%	17.9%	17.9%
Military	1.3%	2.9%	5.5%	13.9%	13.9%	13.9%
Public	8.8%	15.1%	22.2%	38.2%	38.2%	38.2%
Residential	5.3%	8.3%	12.6%	50.5%	50.5%	50.9%
Other	0%	0%	0.6%	10.8%	10.8%	11.5%
Total in County	2.7%	5.3%	9.5%	23.8%	23.8%	23.9%

Tidal Flooding Affects on Parcels along US 98 (Miracle Strip Pkwy) on Okaloosa Island



100-Year Flooding Affects on Parcels near SR 85 at Shoal River



Sensitivity Analysis

Based on flood depths at specific locations, how would you define the vulnerability of an asset?

Criteria for Assessing Sensitivity

Asset Class		No Exposure	Low	Mild	Moderate	High	Extreme
Critical Community and Emergency Facilities		0"	<3"	3–6"	6–18"	18–36"	>36"
Critical Infrastructure		0"	<3"	3–6"	6–18"	18–36"	>36"
Natural, Cultural, and Historical Resources	Buildings (Points)	0"	<3"	3–6"	6–18"	18–36"	>36"
	Parcels	0%	<25%	25–50%	50–75%	75–90%	>90%
Transportation and Evacuation Routes	Bus Terminals and Marinas	0"	<3"	3–6"	6–18"	18–36"	>36"
	Roadways	0%	<25%	25%–50%	50–75%	75–90%	>90%

Preliminary Findings

What did we learn? Which assets display highest vulnerability to flooding?

Vulnerable Critical Community and Emergency Facilities

- Overall, few critical community and emergency facilities are exposed to flood hazards
- Of the 213 facilities analyzed, 4 and 5 exhibit high vulnerability to flood hazards in 2040 and 2070, respectively
 - Schools - 3 (1 public)
 - Fire Stations – 1



Elliott Point Elementary School

Facility is in the current 100-year floodplain and has extreme vulnerability in 2024, 2040, and 2070



Okaloosa Island Fire Station #4

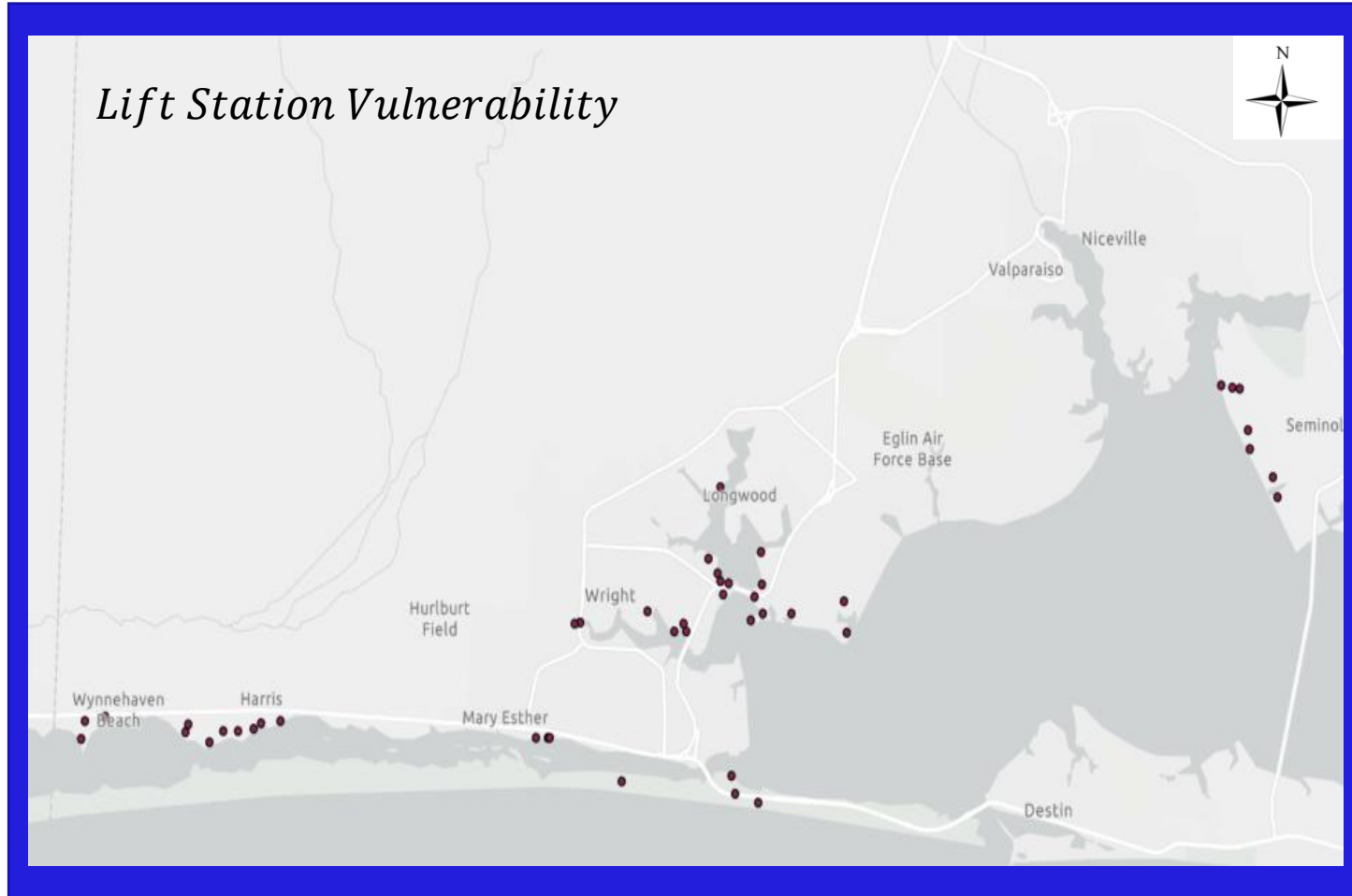
Facility is in the 100-year floodplain in 2070 intermediate high SLR scenario with 2-foot flood depths, resulting in high vulnerability

Vulnerable Critical Infrastructure

- Overall, few critical infrastructure point assets exhibit extreme or high vulnerability to flood scenarios
 - LS 562 – Gap Creek
 - Electrical infrastructure on barrier islands
- Many utility facilities (wastewater lift stations, water storage tanks, pump stations, some well sites) are vulnerable to flood hazards in 2040 and 2070

Asset Name	Asset Type	Asset Owner
Santa Rosa Island East Substation	Electric Production and Supply Facilities	FPL
Shalimar Post Office	Communication Facilities	US Postal Service
Water Storage Tank – East Island Tank	Water Utility Conveyance Systems	Okaloosa County
PW5	Drinking Water Facilities	City of Fort Walton Beach
Flagship Communications – Communications Tower	Communication Facilities	Private
Water Storage Tank – El Matador	Water Utility Conveyance Systems	Okaloosa County
Water Storage Tank – Stand Pipe Tank	Water Utility Conveyance Systems	Okaloosa County
Lower Memorial Lake Dam	Stormwater Treatment Facilities and Pump Stations	USAF AFMC
New Cingular Wireless PCS, LLC – Communications Tower	Communications Facilities	Private
Santa Rosa Island West	Electric Production and Supply Facilities	FPL
Well #1	Drinking Water Facilities	Okaloosa County

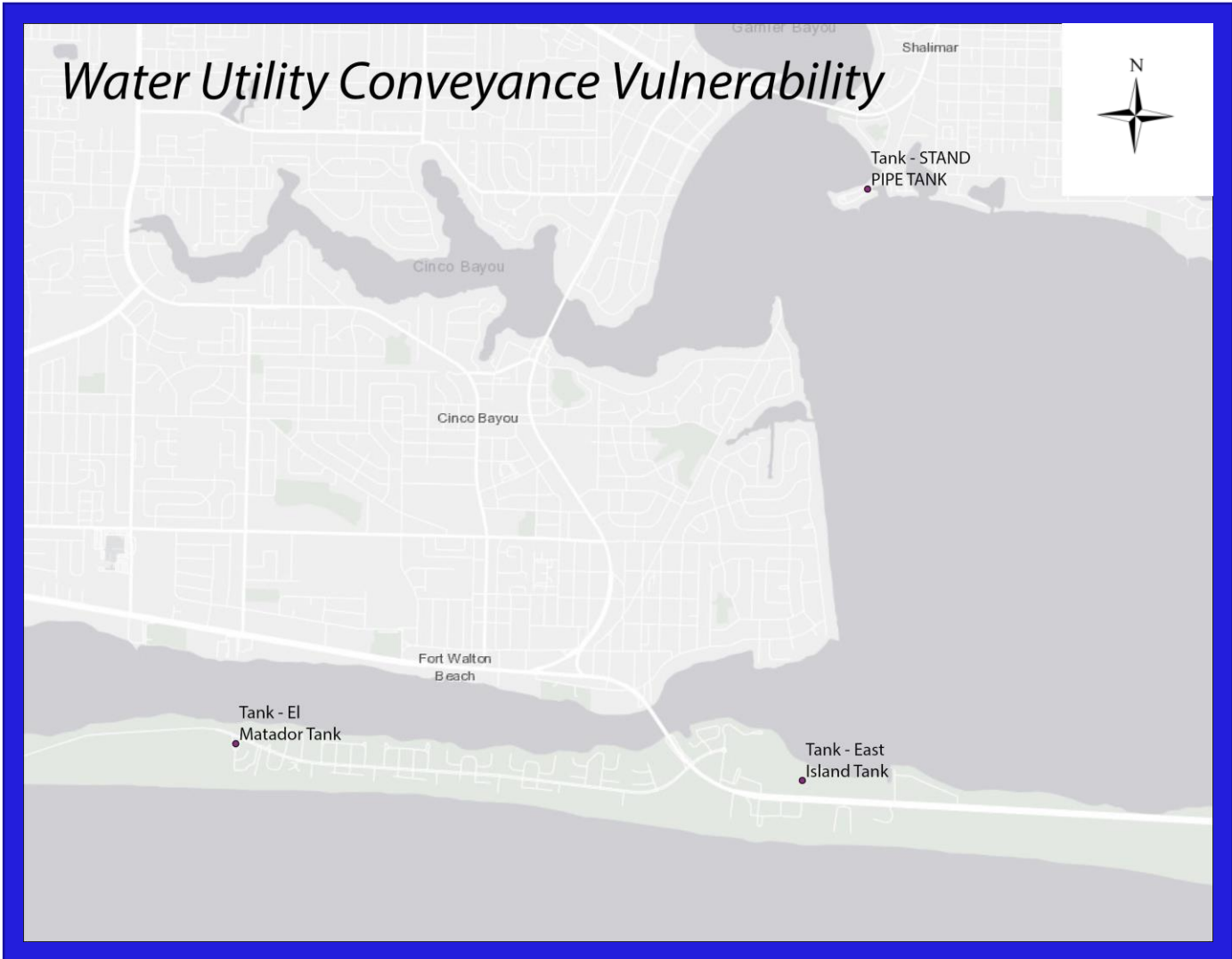
Wastewater Utility Sensitivity



Asset Name	Asset Owner
LS-562 Gap Creek	Okaloosa County
LS-581 Beal Pkwy	Okaloosa County
LS-599 Bayview	Okaloosa County
LS-039 Island #1*	Okaloosa County
LS-204 Raintree	Okaloosa County
LS-114 Southwind	Okaloosa County
LS-107 St Andrews 3	Okaloosa County
LS-061 Shalimar Dr	Okaloosa County
LS-020 Parish Point*	Okaloosa County
LS-027 Tarpon Dr	Okaloosa County
LS-018 Parish Pnt Rd	Okaloosa County
LS-592 Meigs Dr	Okaloosa County
LS-591 Eglin Pkwy*	Okaloosa County
LS-570 Cove Rd #2	Okaloosa County
LS-569 Monhan	Okaloosa County
LS-584 Cove Rd 1*	Okaloosa County
LS-004 Sandy Point	Okaloosa County
LS-594 Beachview Dr	Okaloosa County
LS-008 Emerald Point	Okaloosa County
LS-009 Wynnhaven Rd*	Okaloosa County
LS-583 Pocahontas*	Okaloosa County
LS-593 Credit Unioin*	Okaloosa County
LS-598 Harrleson	Okaloosa County
LS-595 Harris	Okaloosa County
LS-044 Eastview Ave	Okaloosa County
LS-037 Island #4*	Okaloosa County
LS-117 Southwind 2	Okaloosa County
LS-115 Lakeview	Okaloosa County
LS-104 Capri Cove E	Okaloosa County
LS-105 Lido Circle W	Okaloosa County
LS-062 Carl Brandt	Okaloosa County
LS-025 Cobia Bay	Okaloosa County
LS-017 Marsh Harbor	Okaloosa County
LS-028 Neptune Dr	Okaloosa County
LS-030 La Mar West	Okaloosa County
LS-021 Brookwood	Okaloosa County
LS-055 Lake Pointe	Okaloosa County
LS-050 Snug Harbor	Okaloosa County
LS-051 Old Ferry Rd	Okaloosa County
LS-053 4th Avenue*	Okaloosa County
LS-023 Marler Park	Okaloosa County
LS-022 Beasley Park	Okaloosa County
Sleepy Hollow Rd Lift Station	City of Mary Esther
Calle Rio Lift Station	City of Mary Esther
Islandview Drive Lift Station	City of Mary Esther

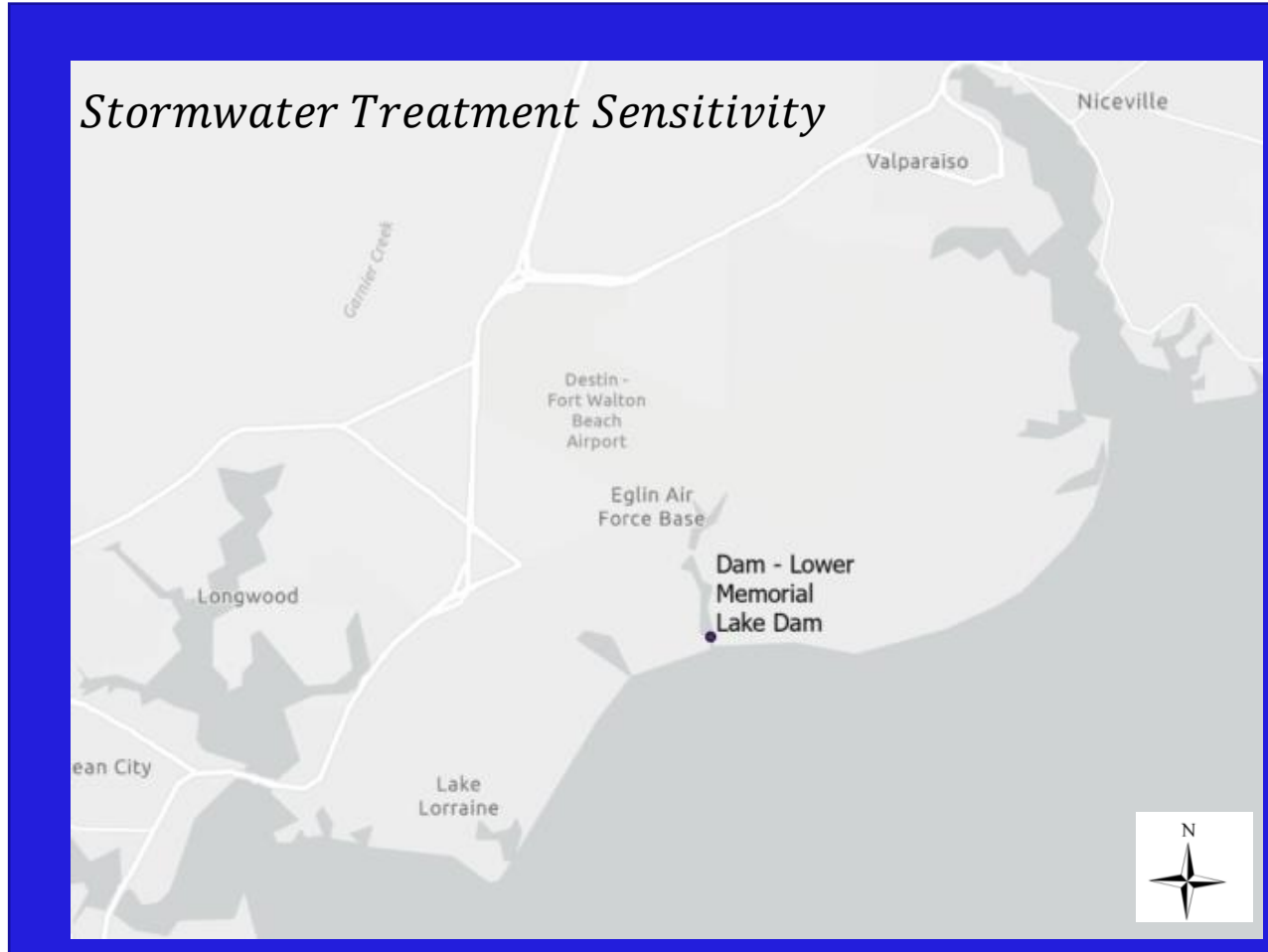
*Okaloosa County is actively upgrading or planning to upgrade these facilities in the future

Water Utility Sensitivity



Asset Name	Asset Owner
Tank - East Island Tank	Okaloosa County
Tank - El Matador Tank	Okaloosa County
Tank – Stand Pipe Tank	Private

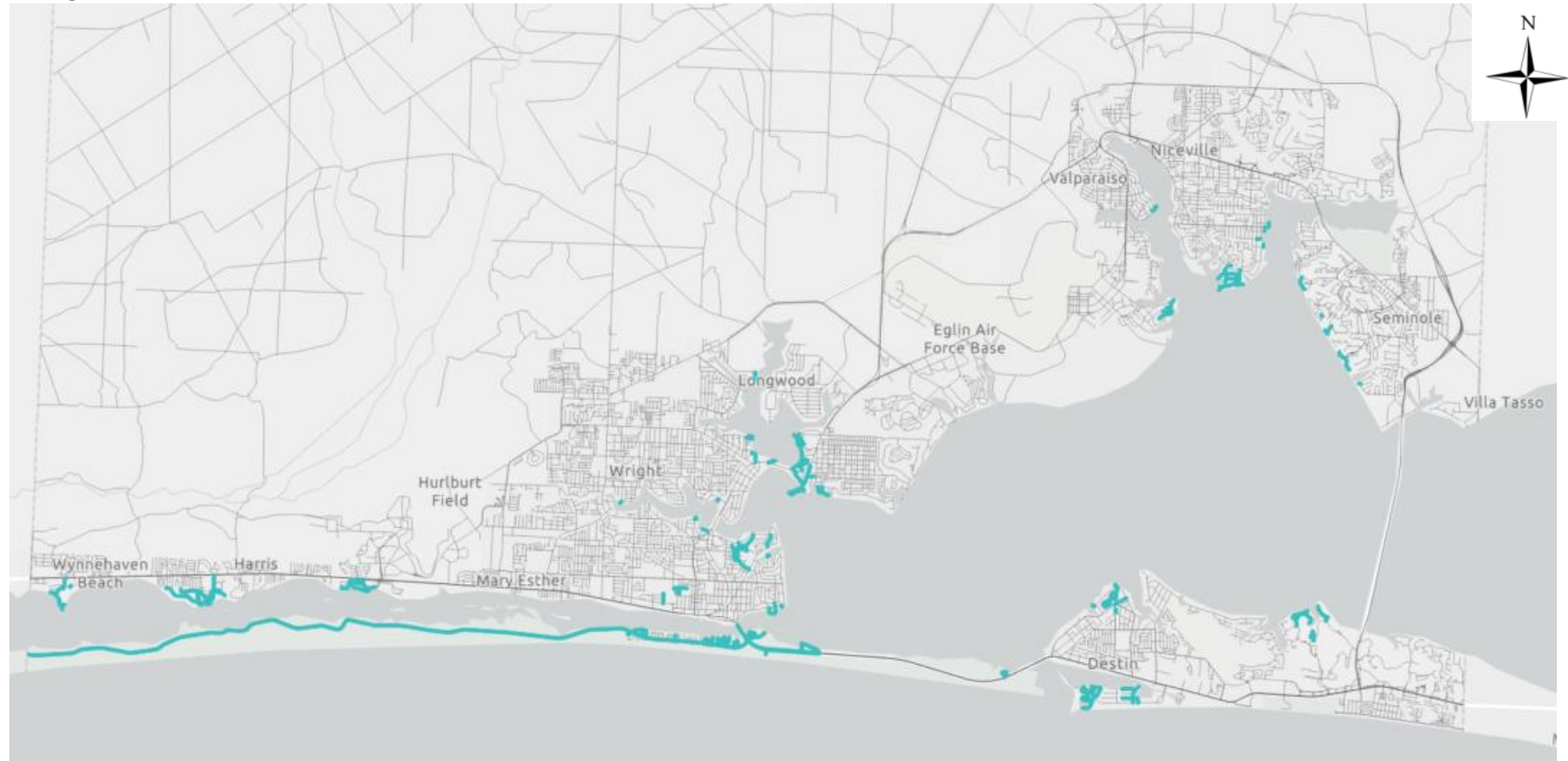
Stormwater Treatment Sensitivity



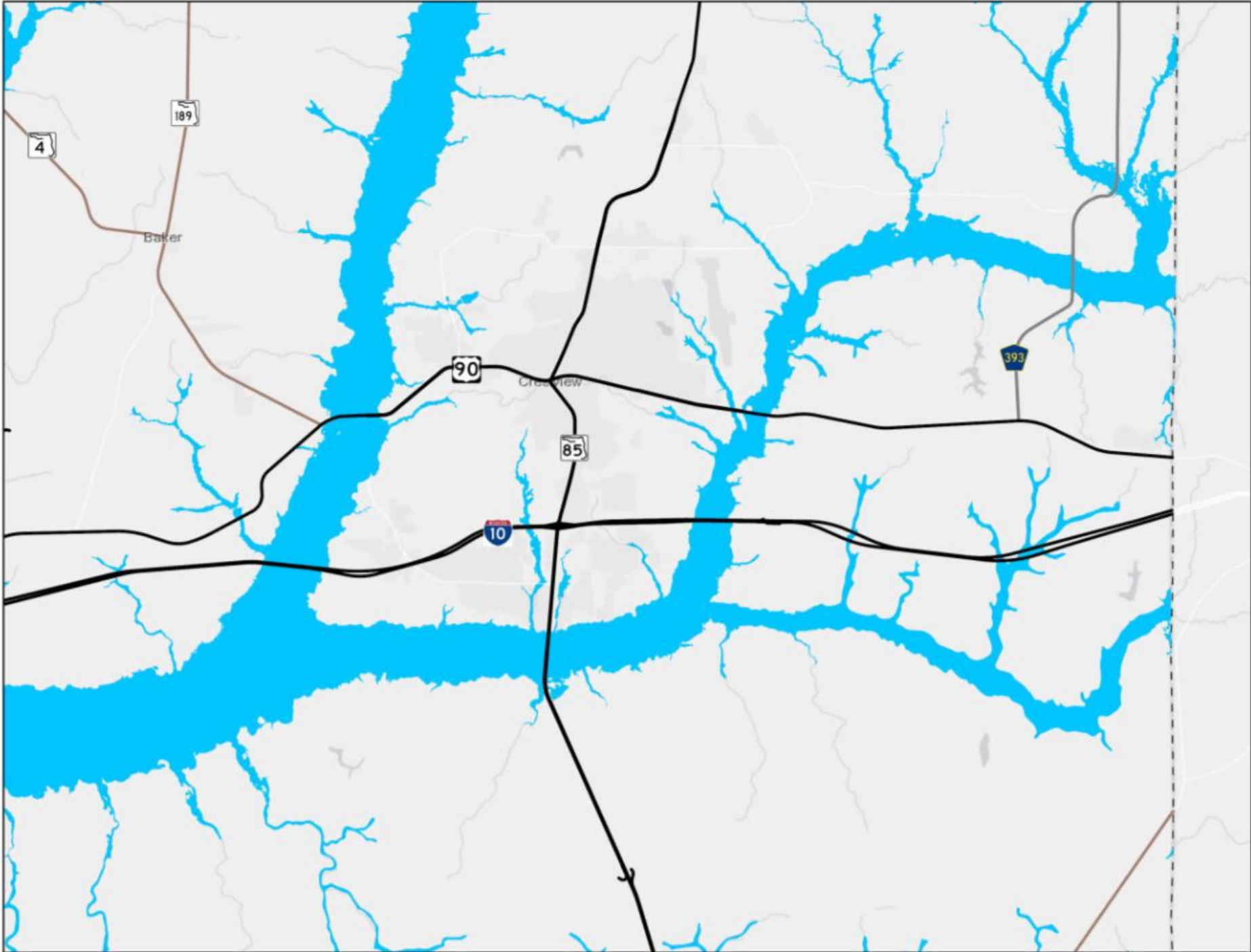
Asset Name	Asset Owner
Lower Memorial Lake Dam	USAF

Vulnerable Transportation and Evacuation Routes

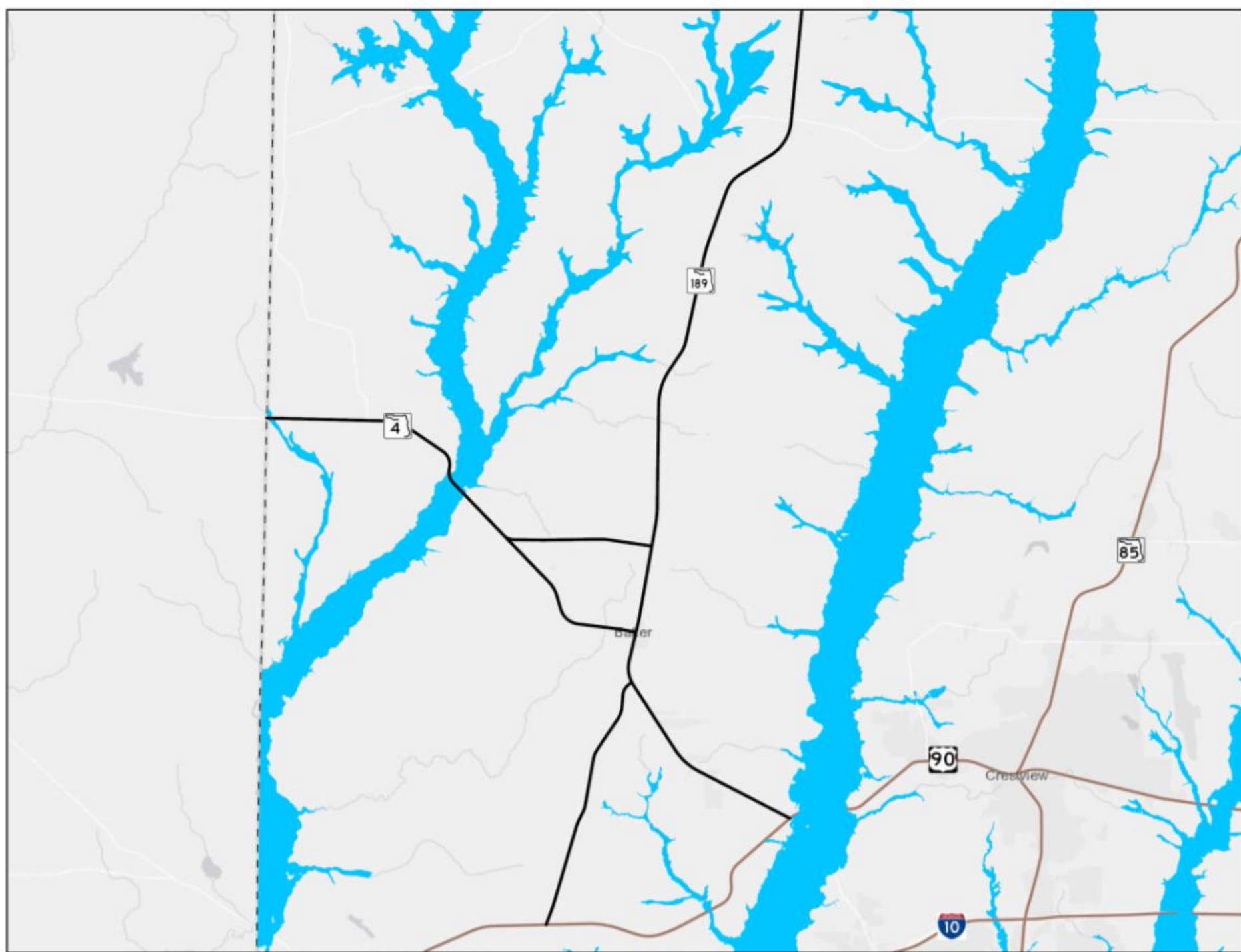
- Point transportation assets (airports, railroad crossings) experience minimal vulnerability to flood hazards
- Many roadways experience vulnerability to tidal flooding and/or the 100-year flood in the present day
 - Critical evacuation routes that experience high flood depths:
 - Miracle Strip Parkway
 - SR 85
 - Highway 98



Vulnerable Transportation and Evacuation Routes – Shoal River Crossings



Vulnerable Transportation and Evacuation Routes - Highways 4 and 189



Vulnerable Transportation and Evacuation Routes - Highway 393



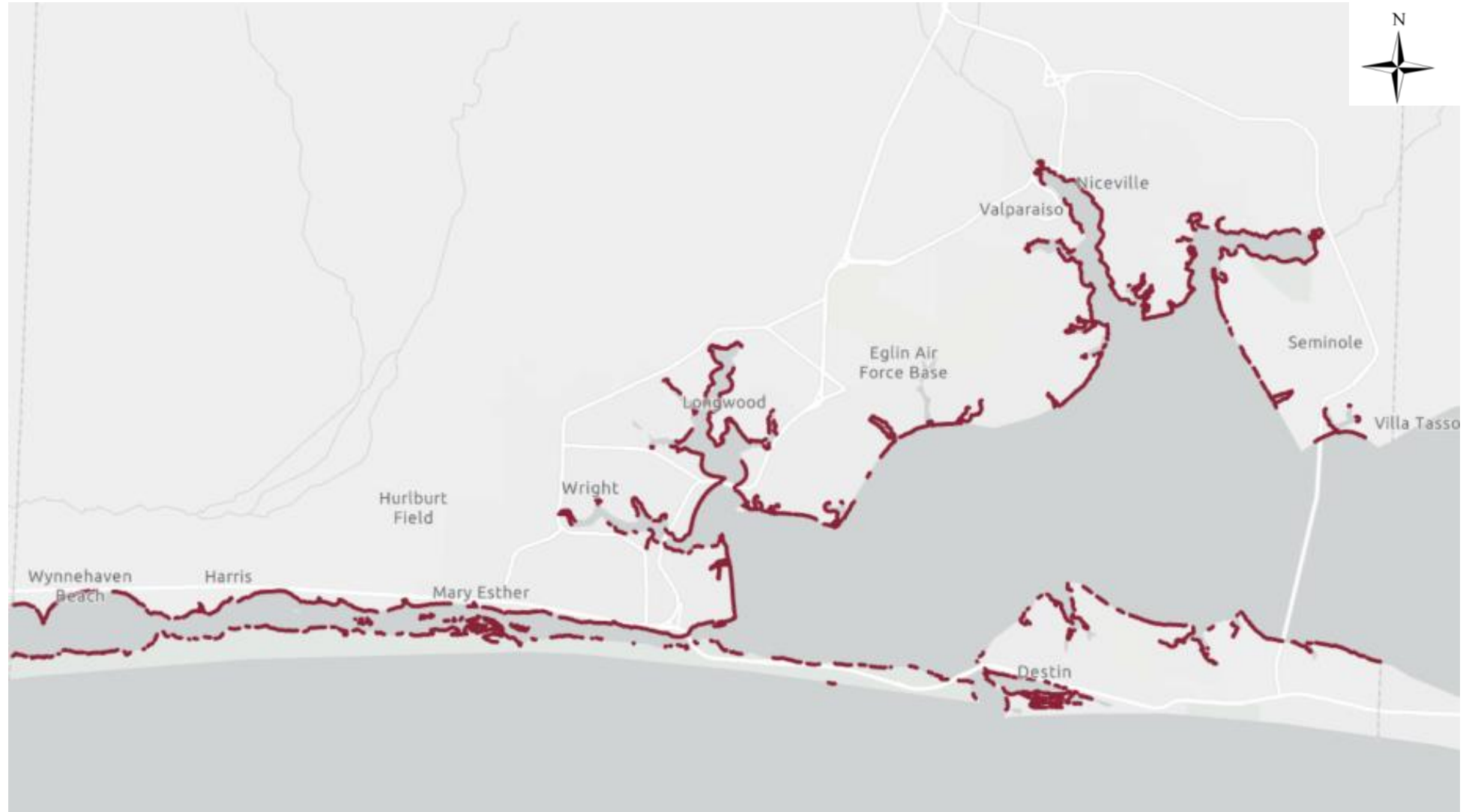
Vulnerable Transportation and Evacuation Routes – Highways 98, 85, 189



Vulnerable Natural, Cultural, and Historical Resources - Shorelines

Significant shoreline vulnerability throughout the region*

*Vulnerability calculation does not account for shoreline type or existing protection



Vulnerable Natural, Cultural, and Historical Resources - Parks



Florida Park, Valparaiso



Pocahontas Boat Ramp,
Fort Walton Beach



Okaloosa Island Beach
Front, Fort Walton Beach



Shipyard Point Park, Valparaiso



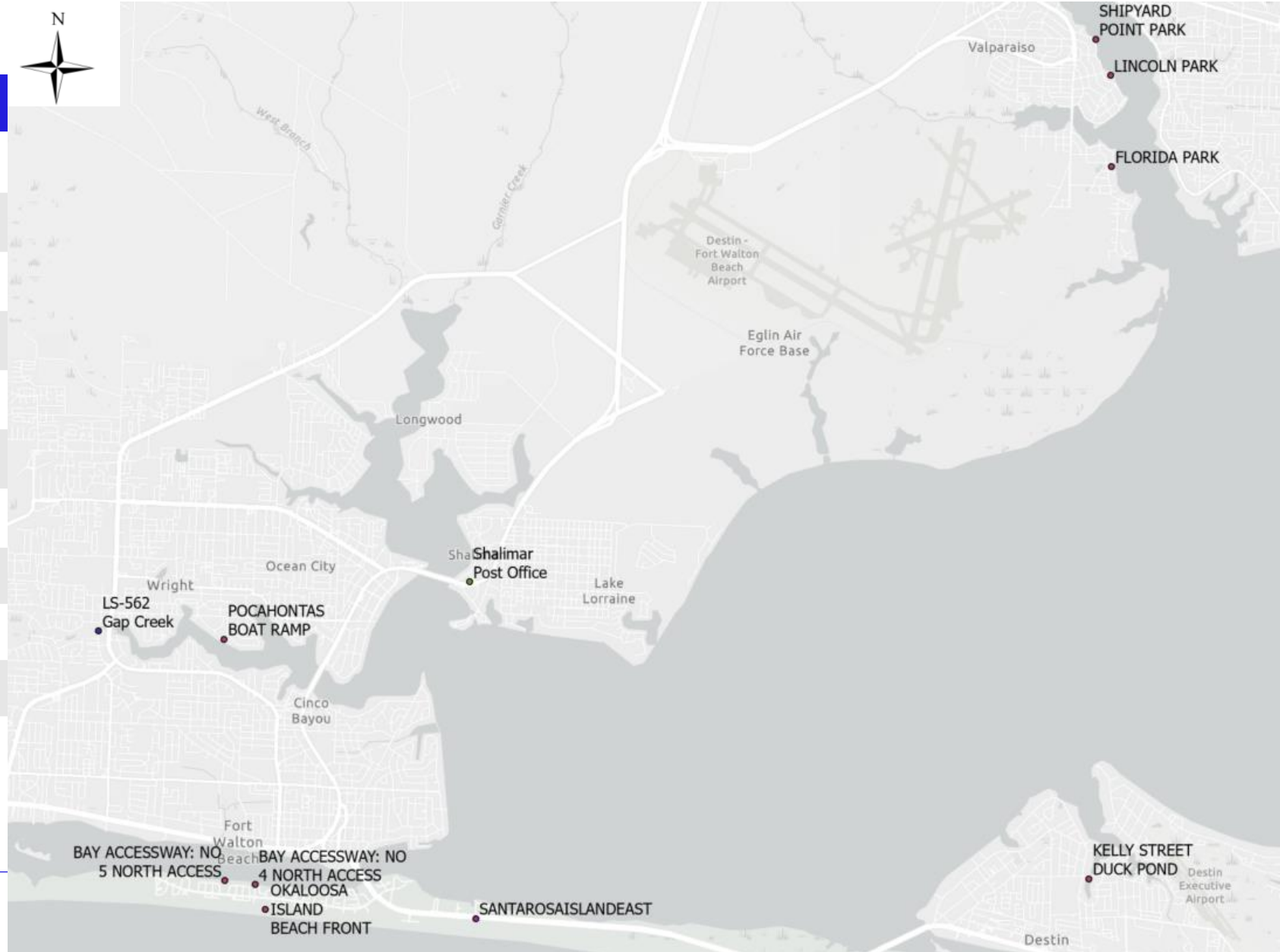
Lincoln Park,
Valparaiso

Other Highly Vulnerable Parks

- Bay Accessway: No. 4 North Access, Fort Walton Beach
- Bay Accessway: No. 5 North Access, Fort Walton Beach
- Kelly Street Duck Pond, Destin

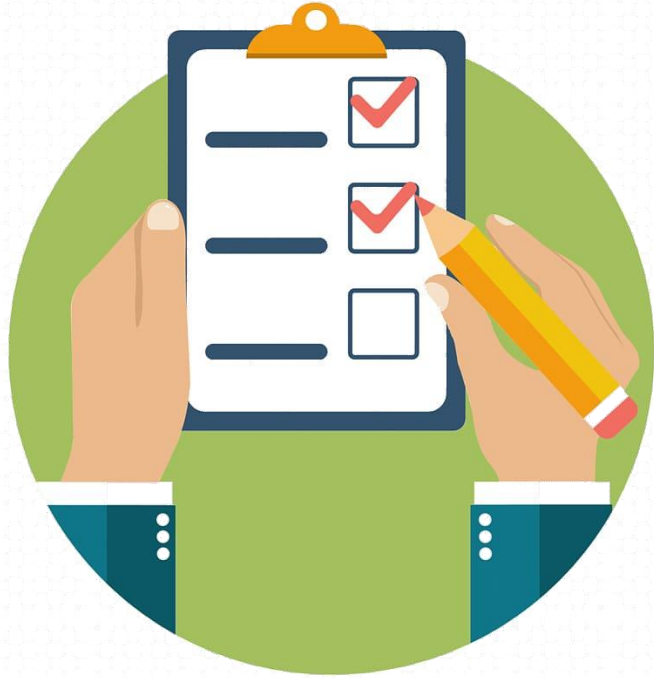
Most Vulnerable County/Municipal-Owned Vertical Assets

Asset Name	Owner
Florida Park	City of Valparaiso
Pocahontas Boat Ramp	Okaloosa County
Bay Accessway: No. 4 North Access	Okaloosa County
Okaloosa Island Beachfront	Okaloosa County
LS-562 Gap Creek	Okaloosa County
Shipyards Point Park	City of Valparaiso
Bay Accessway: No. 5 North Access	Okaloosa County
Santa Rosa Island East Power Poles	FPL
Shalimar Post Office	USPS
Lincoln Park	City of Valparaiso



PUBLIC SURVEY

OPEN DISCUSSION AND QUESTIONS



[Survey123 Link](#)



Tanya Gallagher, Project Manager
Tanya.Gallagher@jacobs.com

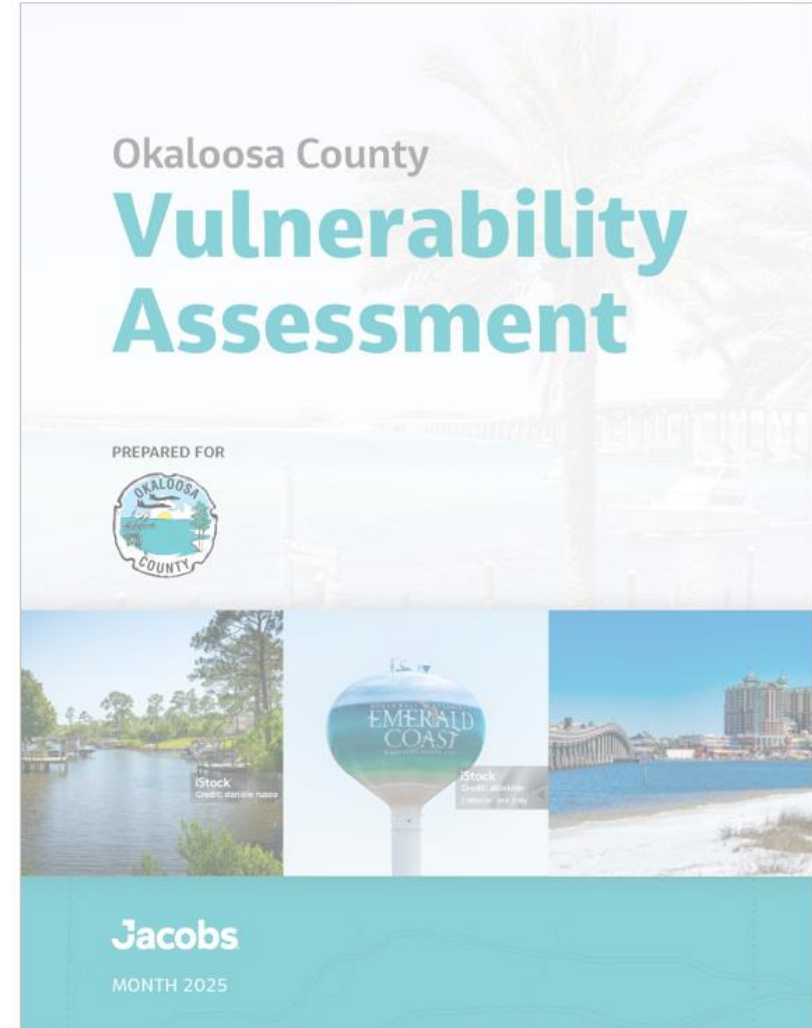
Alec Rodriguez, Deputy Project Manager
Alec.Rodriguez@jacobs.com

Blaine Beck, Technical Lead
Blaine.Beck@jacobs.com

NEXT STEPS

Next Steps

- Focus Areas
- Vulnerability Assessment Report
- Adaptation Planning



Thank you!

Tanya Gallagher, Project Manager
Tanya.Gallagher@jacobs.com

Blaine Beck, Technical Lead
Blaine.Beck@jacobs.com

Alec Rodriguez, Deputy Project Manager
Alec.Rodriguez@jacobs.com