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LAKE COUNTY
FLORIDA

Astor Flood Study
Lake County Public Works

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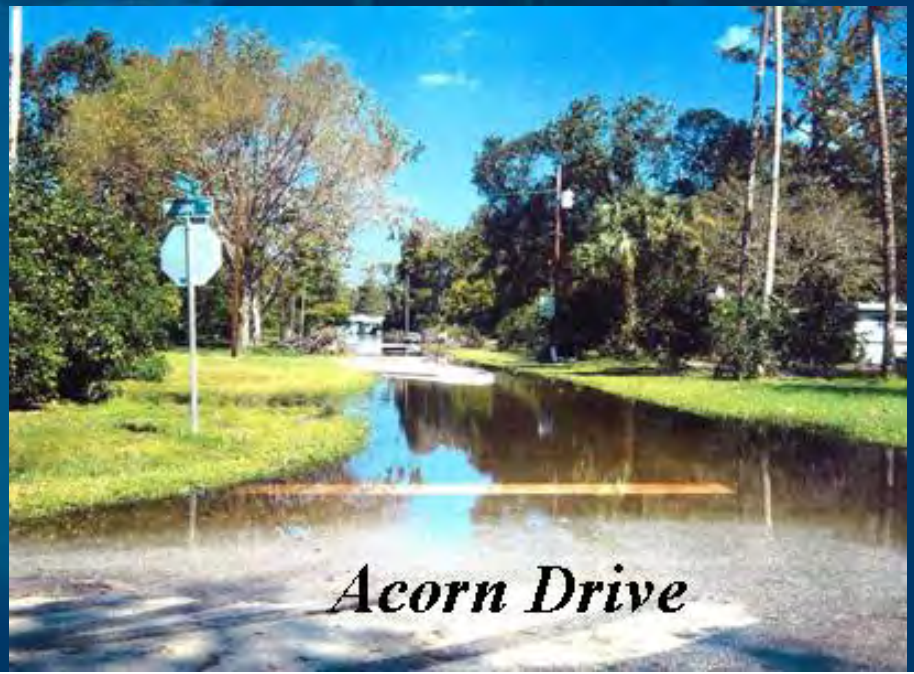
CDM
April 22, 2008

Meeting Agenda

- Introductions
- Purpose of the Study
- Project Overview
- Conclusions & Recommendations



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Purpose of the Study

- Limited Stormwater Infrastructure
- History of Residential & Street Flooding
- Study to Identify System Improvements to Address Flooding & Water Quality Issues

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Data Review & Evaluation

- Existing and Future (build-out) Land Use Map
- Wetlands Map
- Aerial Photography/LiDAR Data
- Historical Rainfall Data
- Soils Data
- Existing Engineering Reports & Studies
- Historical Flood Complaint Records and Location Map
- High Water Mark Elevations
- Flow and Stage Measurements (St. Johns River)
- 2 Public Meetings

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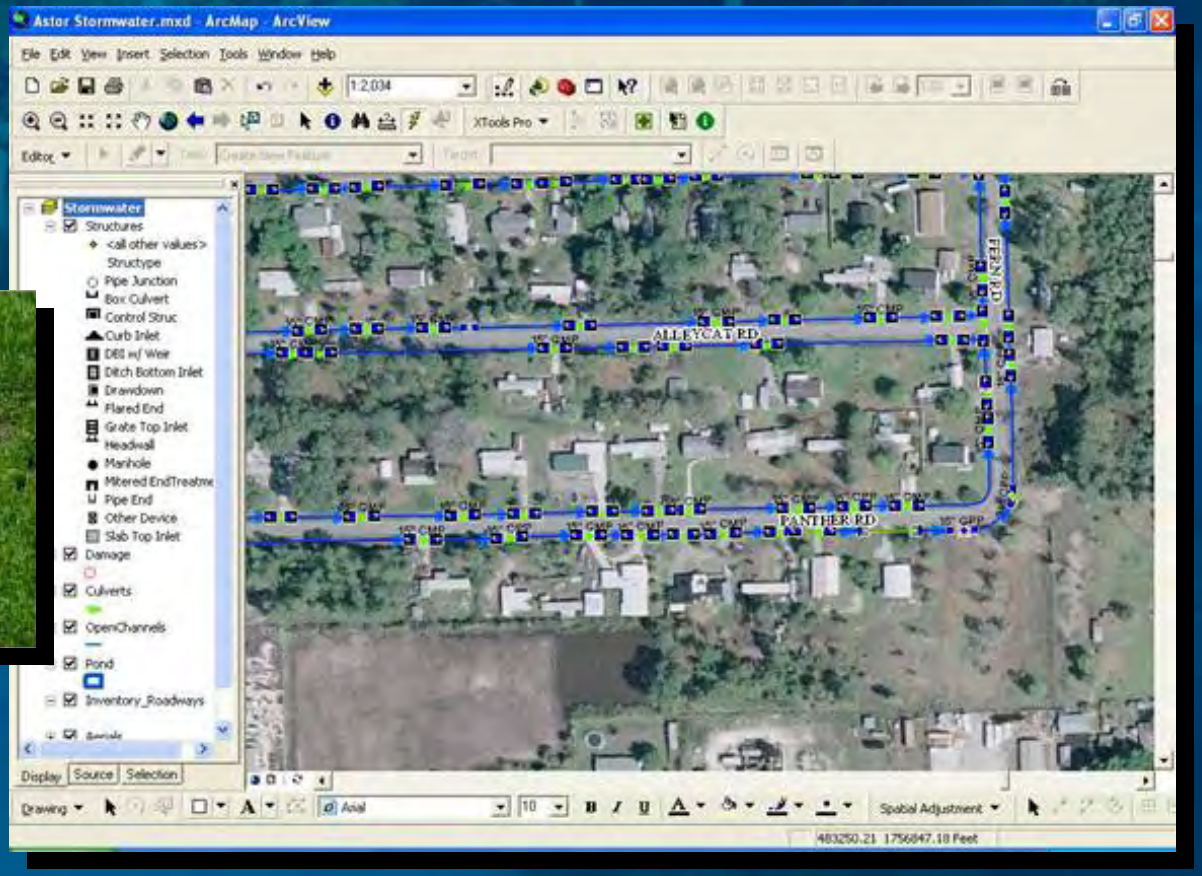
Stormwater System Inventory



- Southeastern & Survey Mapping Corporation (SSMC)
  - Culverts
  - Curb Inlets
  - Manholes
  - Swales/Ditches
  - Ponds
  - Control Structures

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Overview of Drainage System

- 23 miles of swales and channels within Astor
- 15 miles within County's maintenance jurisdiction
- 983 culverts in Astor
- 707 culverts within County's maintenance jurisdiction

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Overview of Drainage System *(cont.)*

- 21.2 miles of County maintained roads within Astor
- 5.7 miles of non-County maintained roads within Astor (unpaved)

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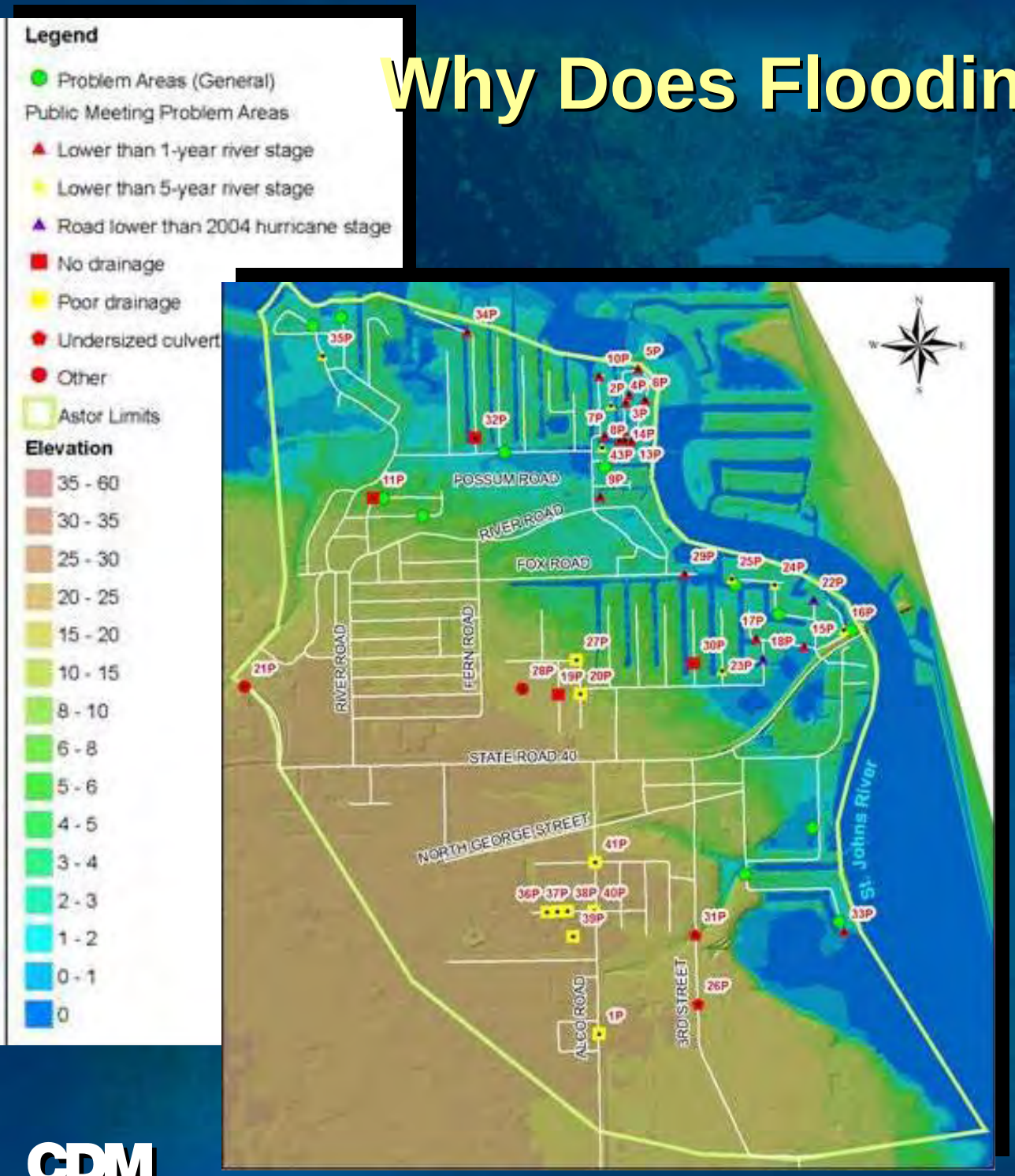
Why Does Flooding Occur in Astor?



- Low-lying areas in flood zone
- Localized Flooding
  - Areas outside of the floodplain
  - Lack of maintenance on non-County maintained roads

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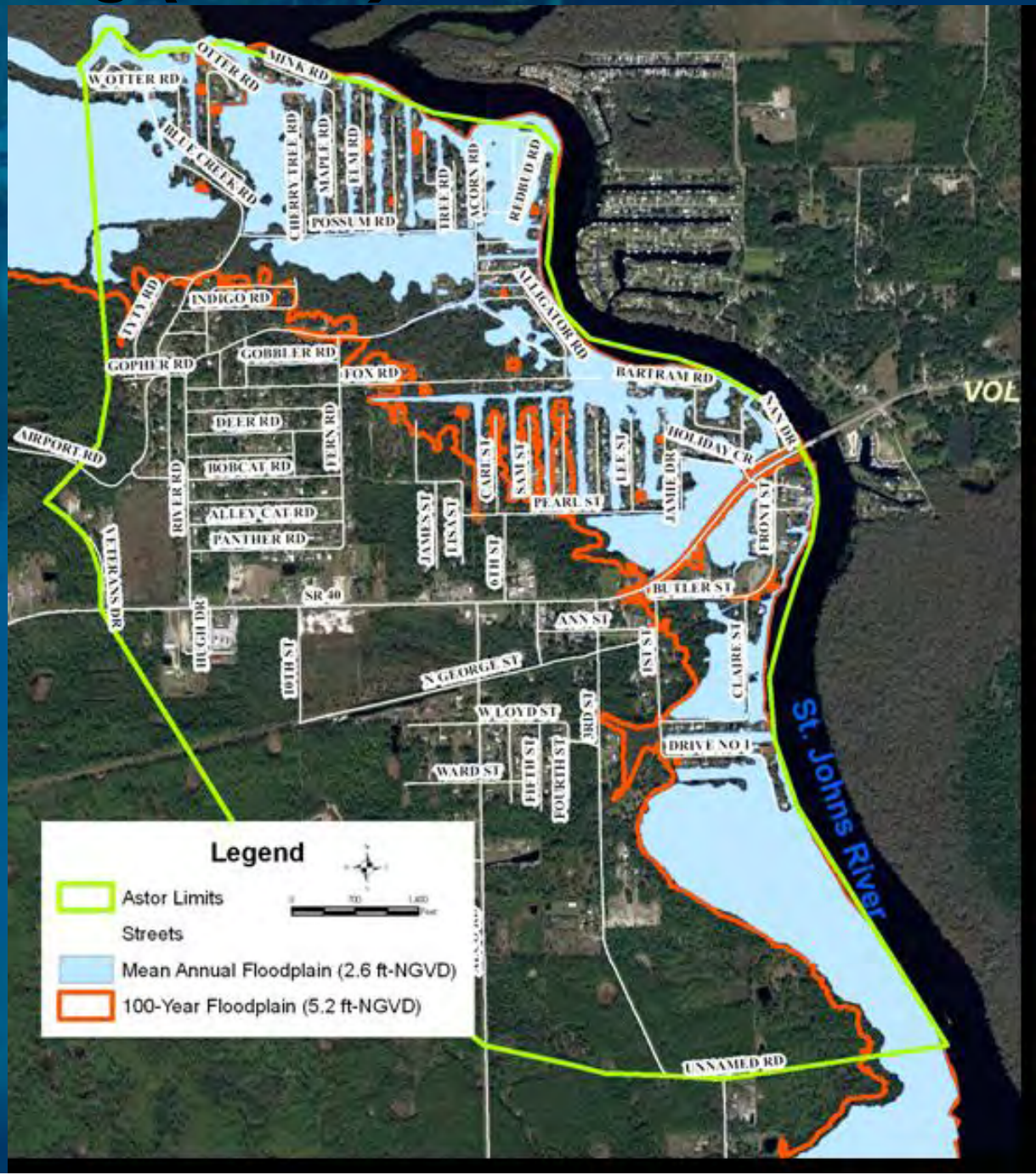
Causes of Flooding *(cont.)*

- A Large Portion of Astor Lies within the River's Natural Floodplain



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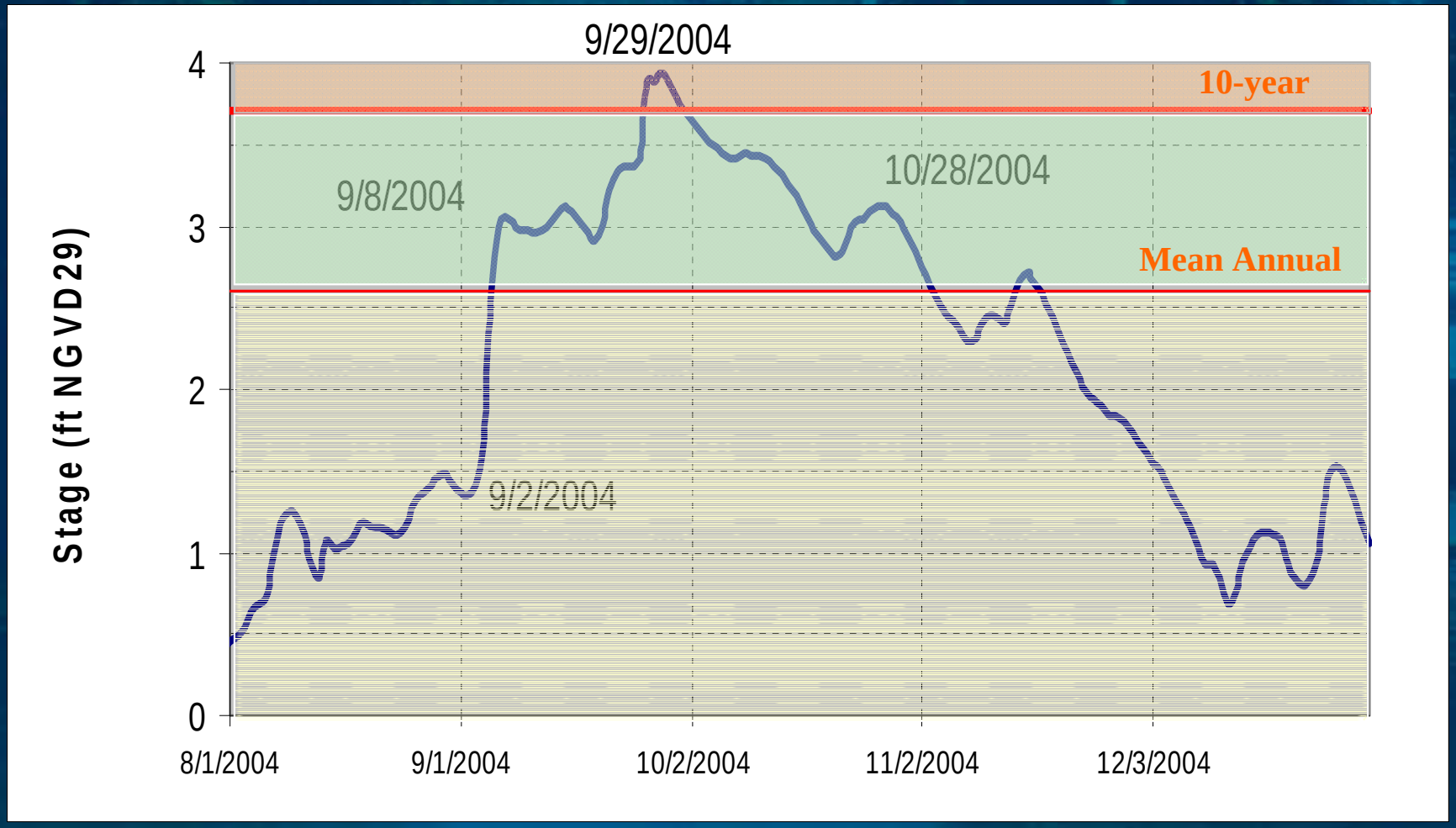
St. Johns River Rises and Recedes Slowly



- 2004 hurricanes represent a 10-year event
- Still the possibility of an event more severe than the 10-year (i.e., 25- or 100-year storm event)

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Water Quality Analysis

- St. Johns River is considered impaired by the State of Florida for Dissolved Oxygen and Nutrients (TMDL)
- The conversion of septic tanks to sanitary sewer will significantly improve water quality to adjacent waters
- Estimate stormwater-related pollutant loads generated within the Astor limits
- Help target areas that may require additional stormwater treatment for water quality as well as flooding

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Alternatives to Alleviate Flooding

- Localized Problem Areas
  - Clean, repair, reconstruct or upsize culverts
  - Clean, repair or widen channels and swales
  - Improve and/or provide drainage system
  - Construct storage facilities (i.e., ponds)
- Routine maintenance of stormwater management system
- Develop and implement a flood early warning system

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Alternative Development

- Conceptual improvements which consider:
  - Flood Severity
  - Water Quality Enhancement Potential
  - Public Benefit
  - Permittability
  - Ease of Maintenance
  - Construction Cost

Problem Area ID	Description	Estimated Cost
	Non-County Maintained	
1	Bass and Indigo Roads	$1,106,000
2	Ward Street	$4,010,000
3	James Street, Lisa Street and Trespass Trail	$649,000
N/A	Finger Canals	$544,000
1	Tyty Road	$0
9	Veterans Drive	$0
12	Aqua Utilities Pond	$0
	Total	***$6,309,000***
	County Maintained	
4	3rd Street	$1,179,000
6	Maple Road	$48,000
8	Carrol Street	$7,000
11	Fern, Bobcat, Palmetto and Deer Roads	$37,000
13	Riverview Drive	$475,000
N/A	Damaged Infrastructure	$406,000
2	West Loyd Street and Alco Road	$0
5	Butler Street	$0
5	Ann Street	$0
7	Fox Road	$0
10	Alco Road	$0
N/A	Flood Early Warning System	$0
	Total	***$2,152,000***

Estimated Cost to Address Existing Problems in County Maintained Areas is $2,200,000

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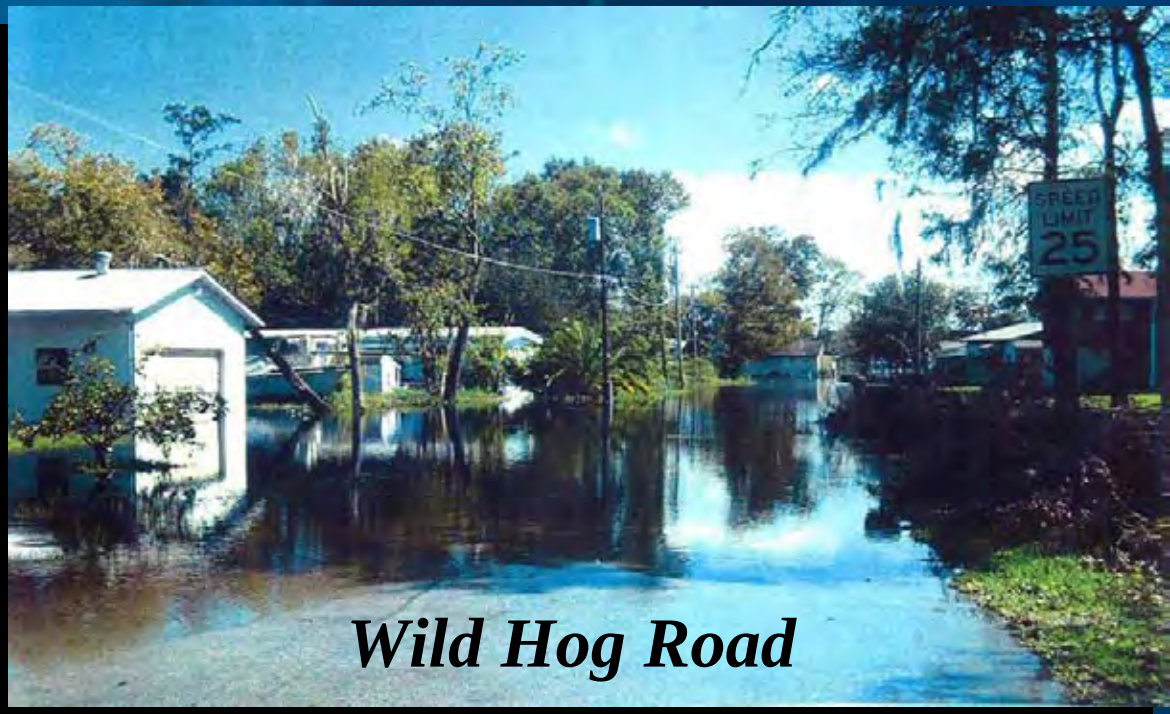
Flood Early Warning System

- Provide as much advance notice as possible of an impending flood
- Protects citizens in flood prone areas
- Warning enable residents and businesses to secure property and move to safety
- Crucial for public safety



Wild Hog Road

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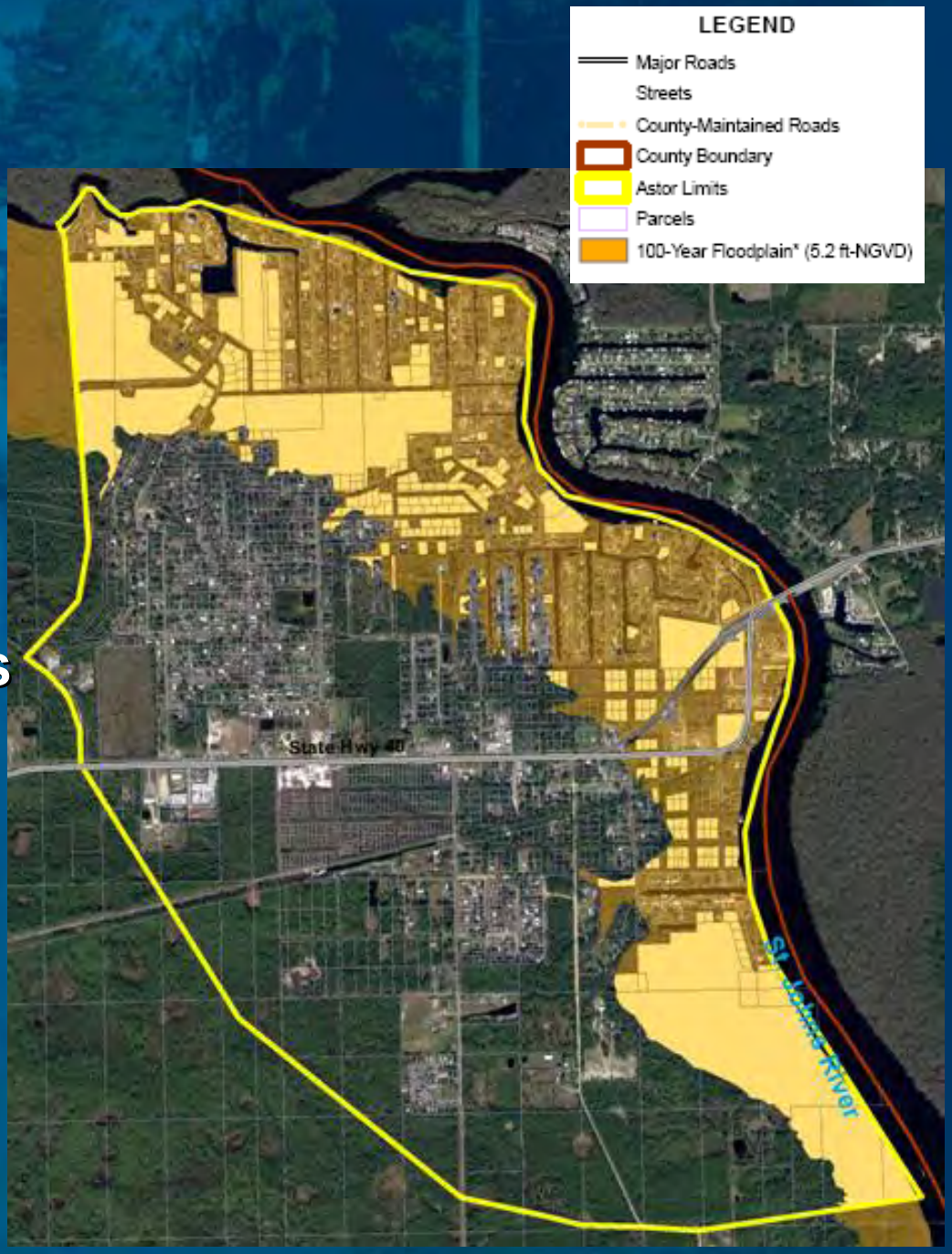
Floodplain Review

- Floodplain Boundary Redelineation
  - Historical return period data for Mean-annual, 10-, 25-, & 100-year flood elevations for Astor area
  - Detailed 1-foot contours (LiDAR)
- In total, 1225 total parcels in 100 year floodplain
- 45% floodplain area is vacant
- 622 acres of floodplain area (40% of Astor)



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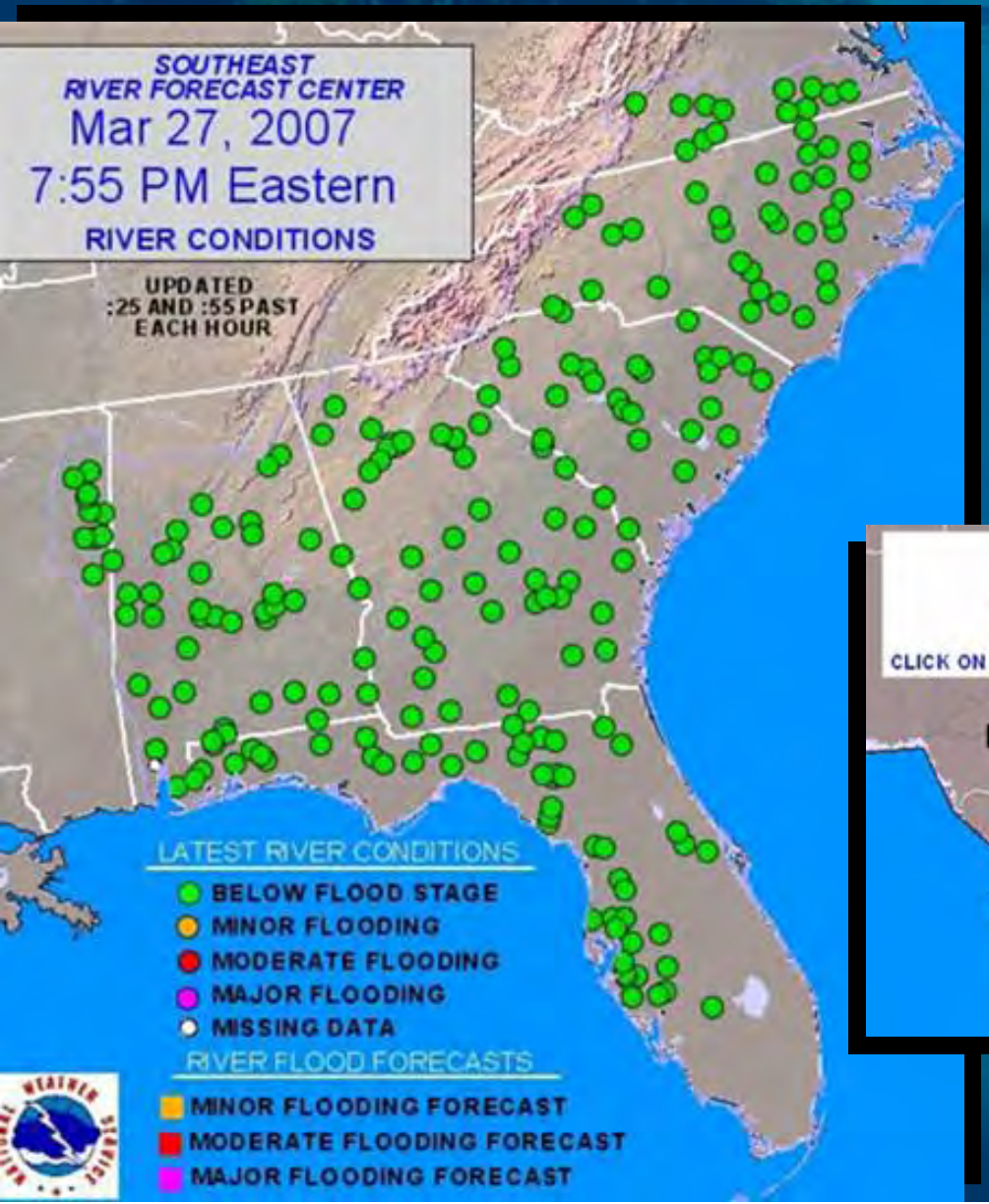
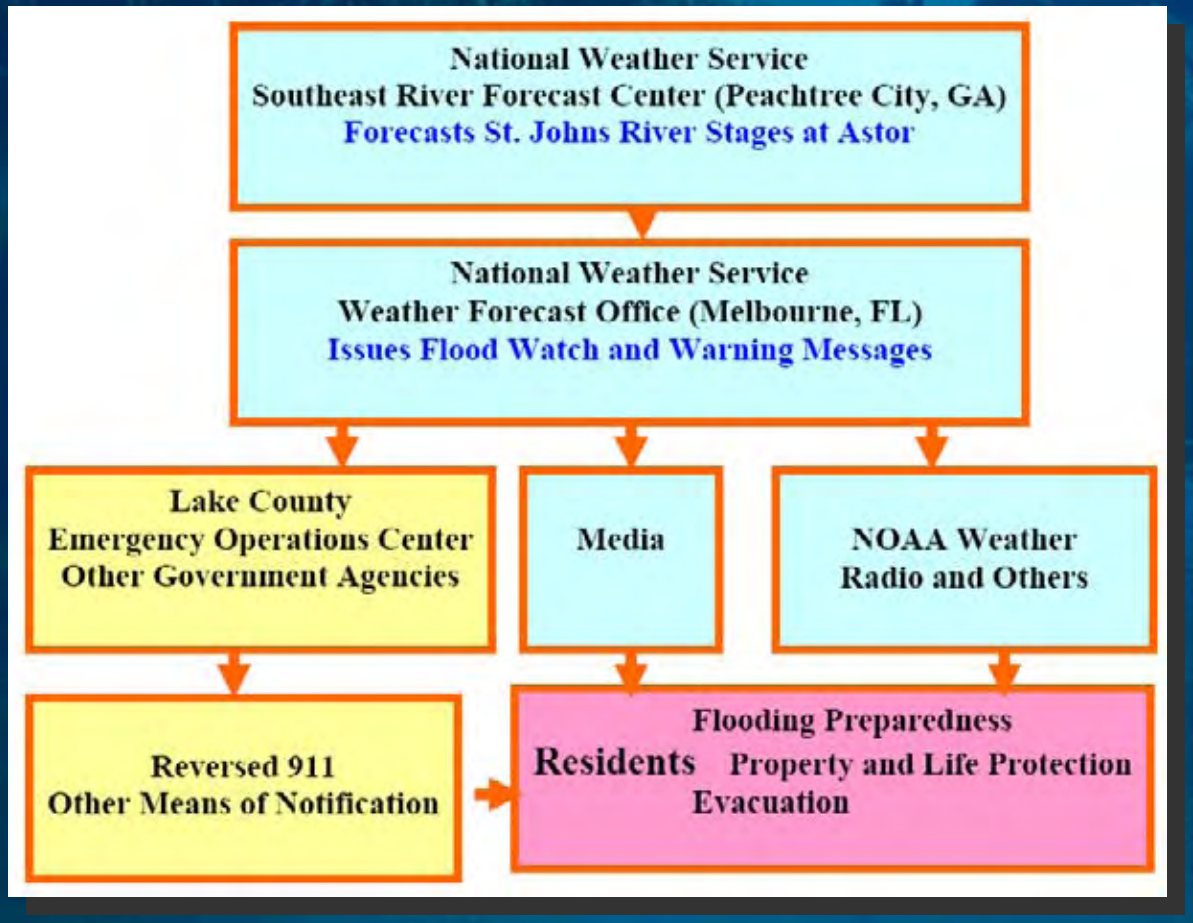
Forecast Points by Southeast River Forecast Center (SERFC)



- Currently, the closest forecast point to Astor is Deland
- NOAA is currently working to add a forecast point at Astor

http://www.srh.noaa.gov/serfc/

Flood Early Warning System



- Alert residents living within St. Johns River floodplain
- Effective means to reduce threat to public safety and flood damages

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Conclusions & Recommendations

- Flood Early Warning System
  - Little to no cost to the County
  - Improves public safety
- Localized Flooding Problems
  - Can be addressed through structural improvements
- Water Quality
  - Structural Improvements (i.e., ponds) can help improve water quality and quantity issues
- Regardless of maintenance jurisdiction, stormwater issues in all areas of Astor should be addressed

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Questions

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