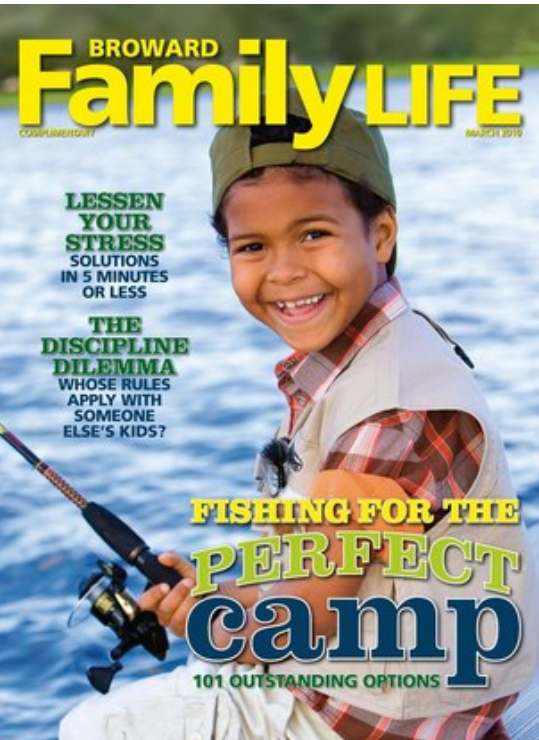


Climate and Infrastructure: The South Florida Example



Nancy J. Gassman, Ph.D.
Natural Resources Administrator
Broward County Natural Resources Planning and Management Division

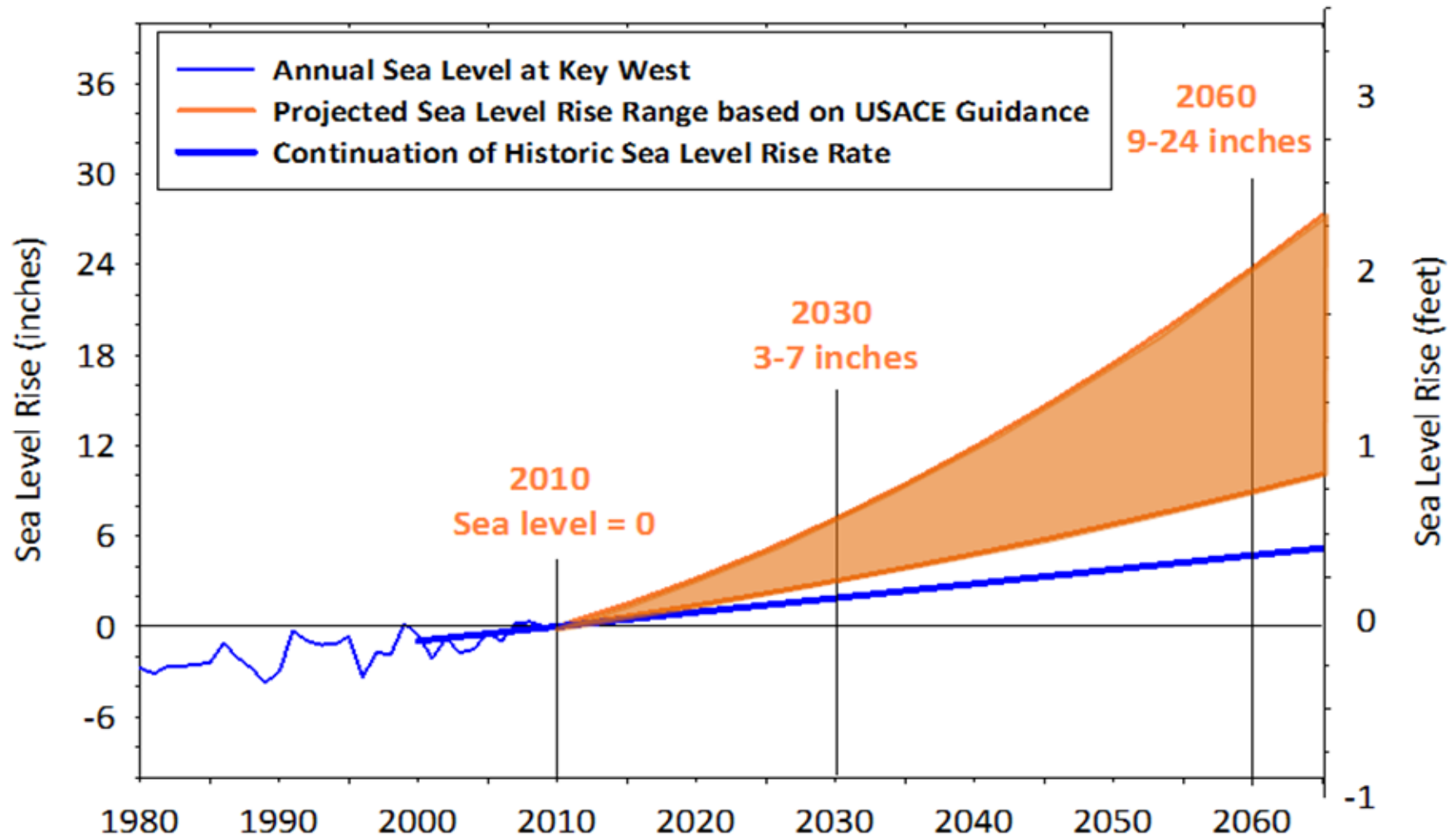




Overview

- Local Climate Challenges
- Local Impacts on Infrastructure
- Governance and Planning
 - Maximize infrastructure life
 - Build in climate resilience

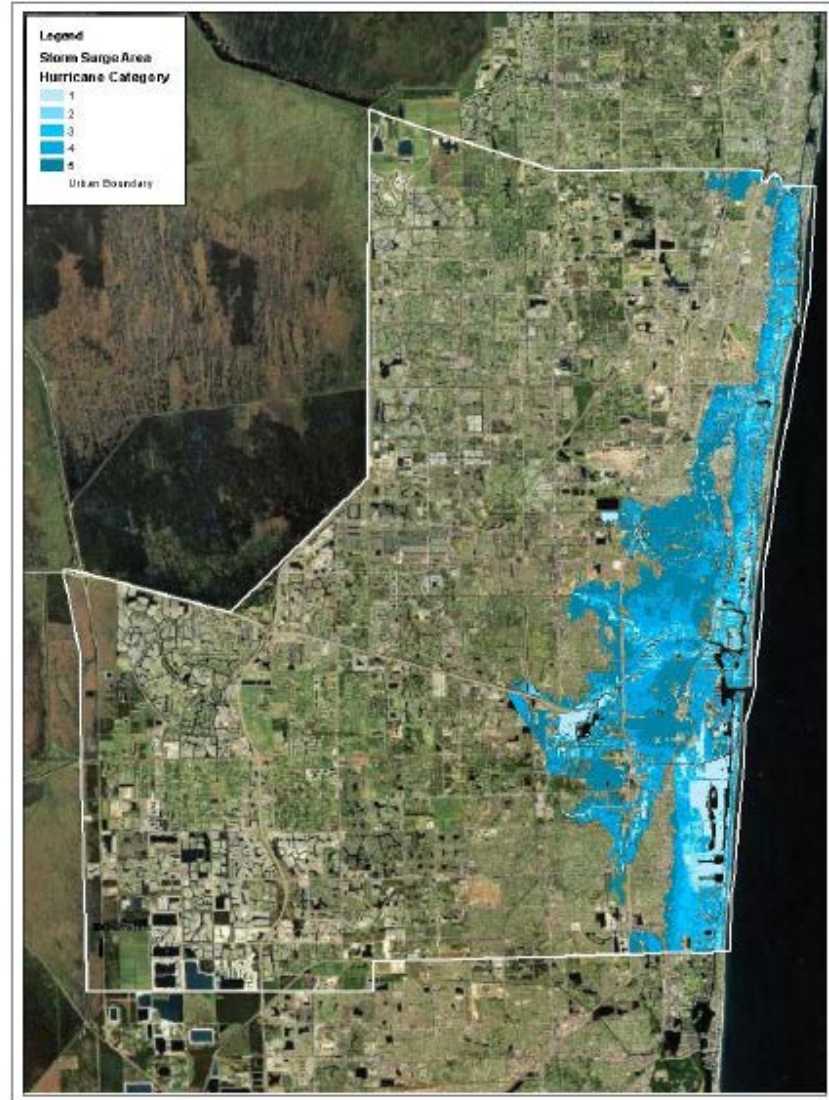
Local Climate Challenge - Sea Level Rise



Local Climate Challenges

- Warming Oceans and Sea Level Rise influence on
 - Extreme High Tides
 - Tropical Storms
 - Storm Surge

Map 4.10 – Aerial of Storm Surge Inundation (2011)



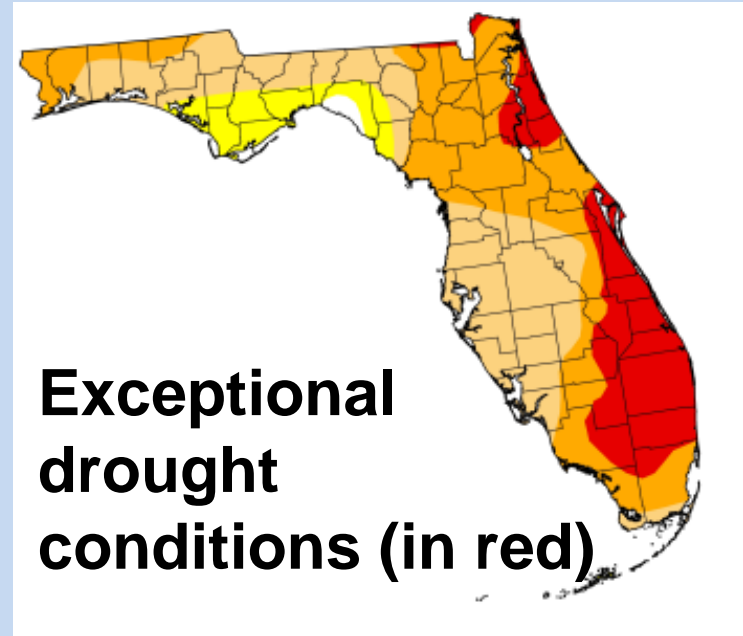
Local Climate Challenge – Extreme Weather



Extreme rainfall



Increasing temperatures



Extreme cold



Local Climate Impact

- Beach erosion
- Impacts to public and private property



2000 ft of beach and
A1A reclaimed by sea
Thanksgiving 2012

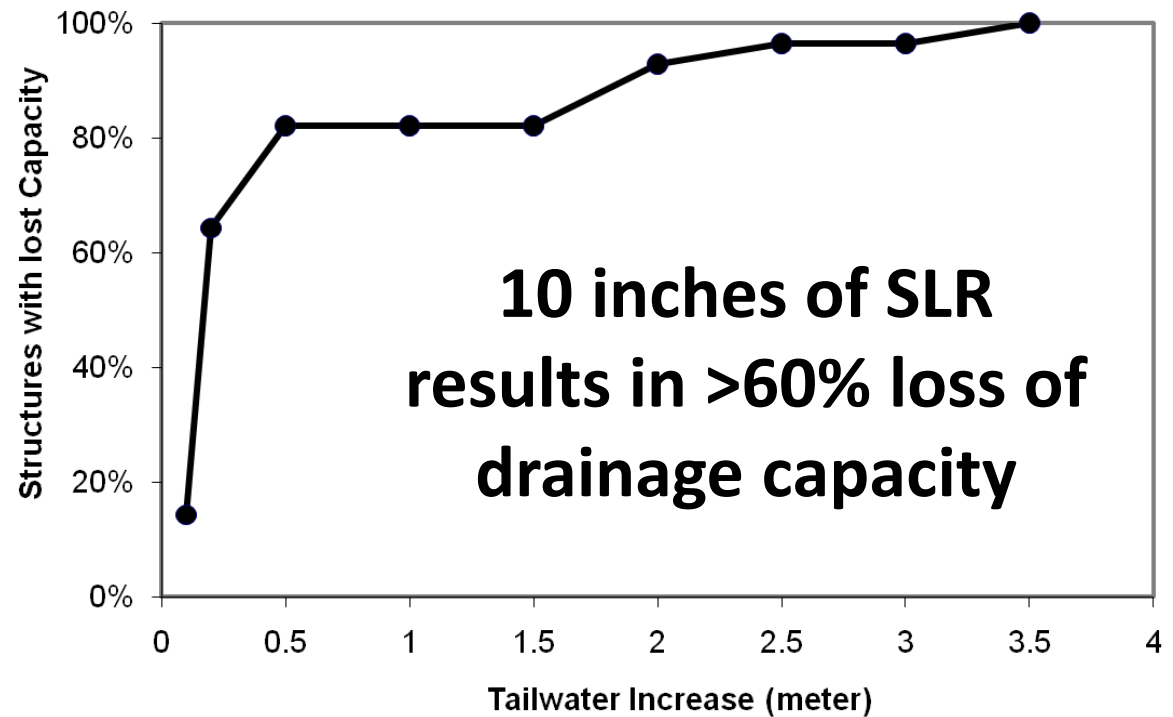


Local Climate Impact

- Drinking water aquifer threatened by salt water intrusion

Porous limestone prevents use of certain engineering solutions.



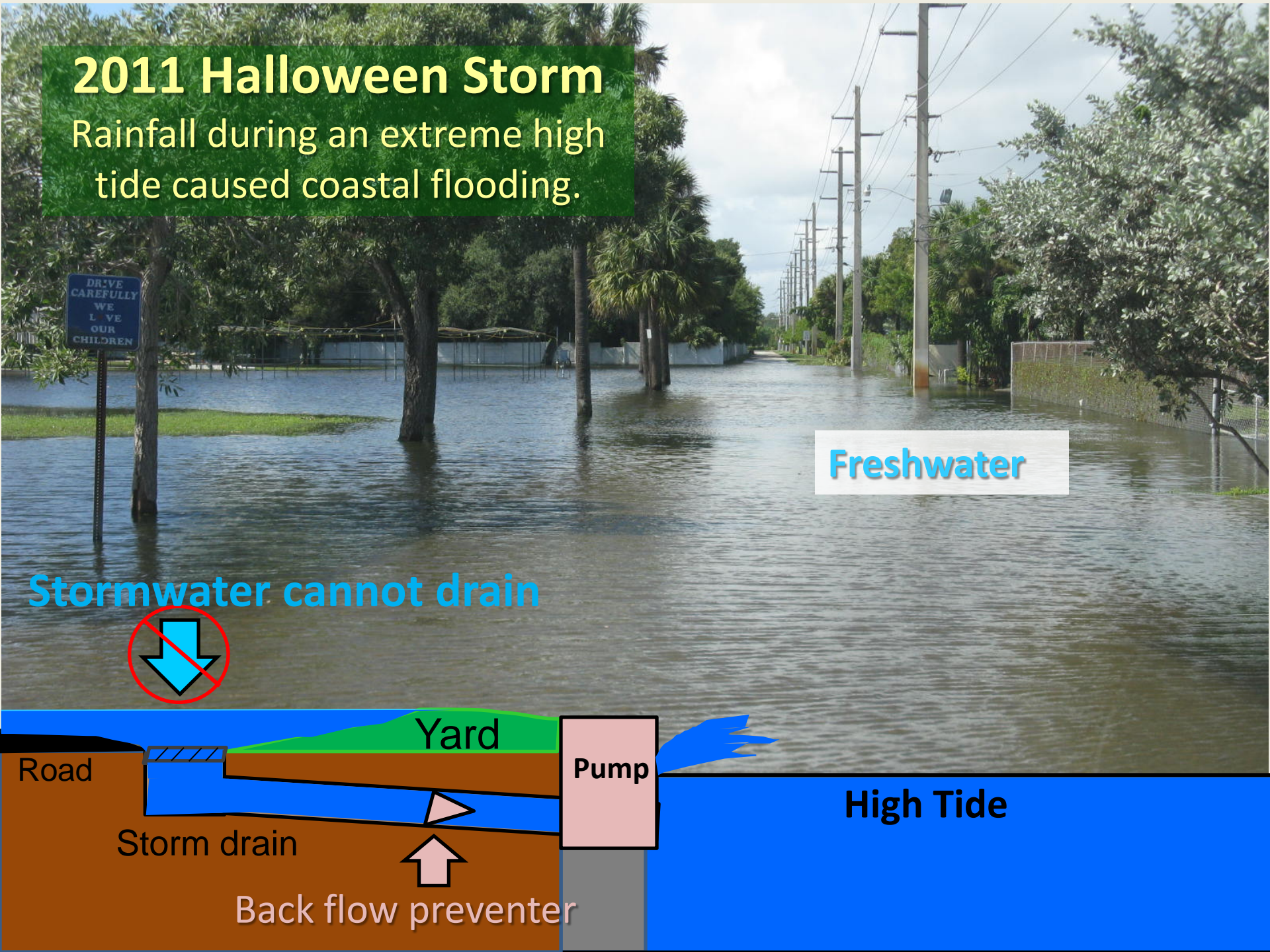


Local Climate Impact

- More flooding
- Compromised drainage infrastructure

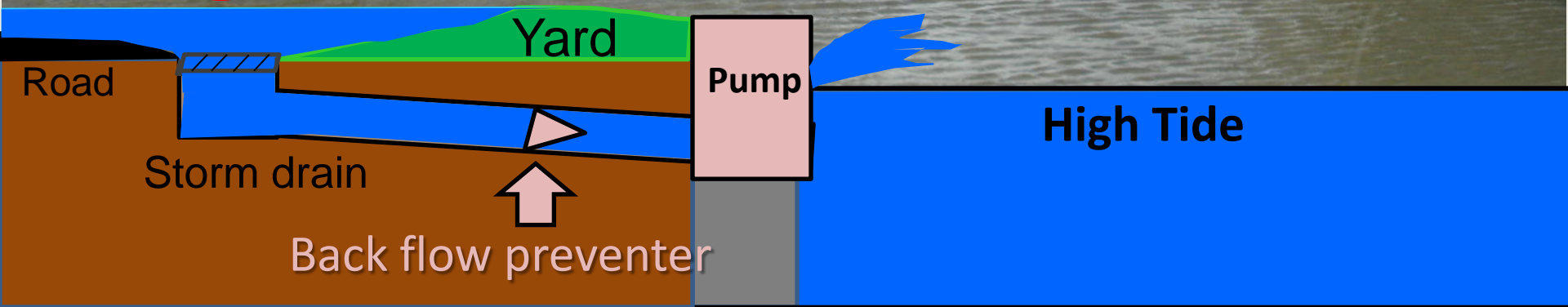
2011 Halloween Storm

Rainfall during an extreme high tide caused coastal flooding.



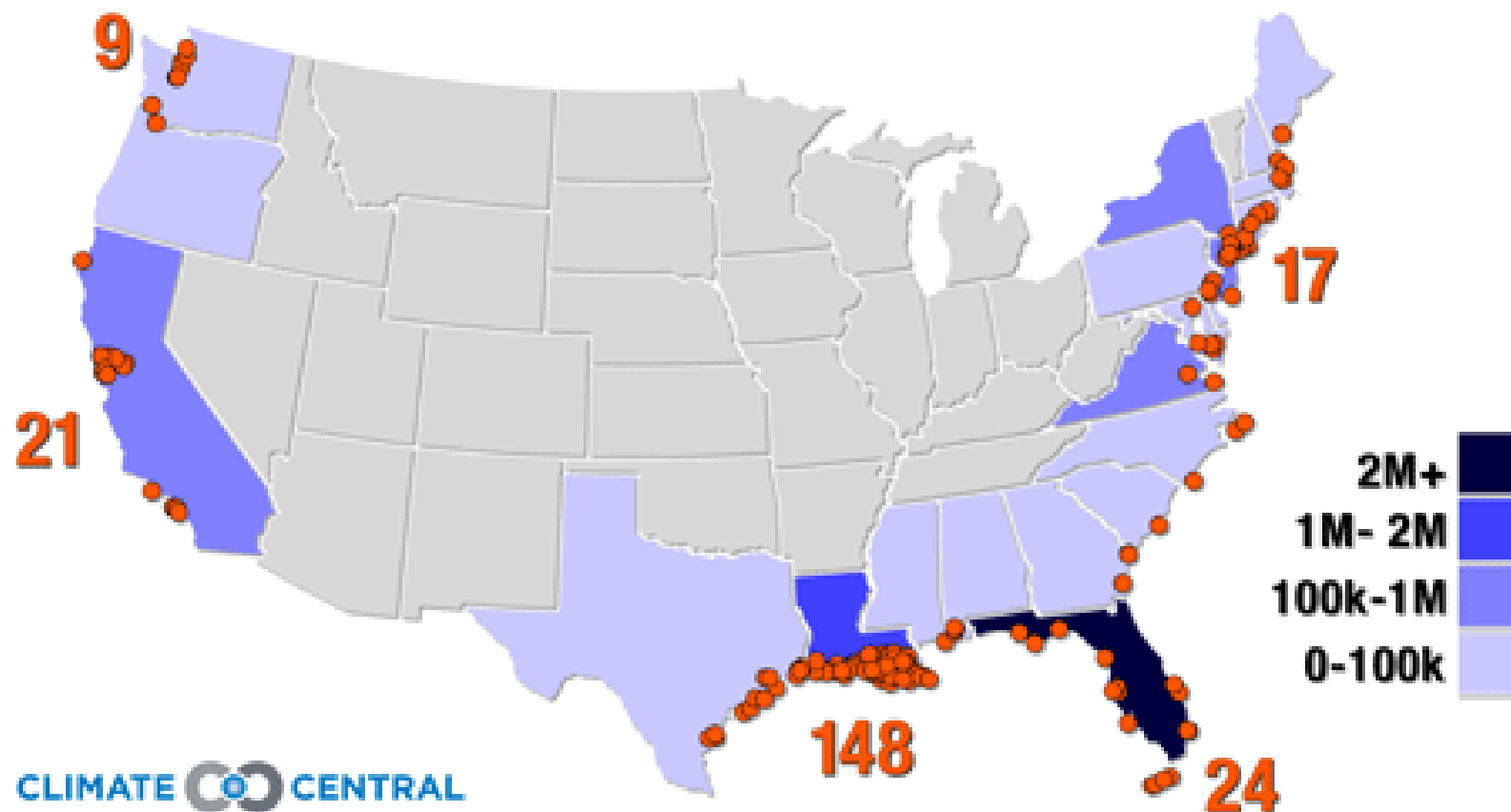
Freshwater

Stormwater cannot drain



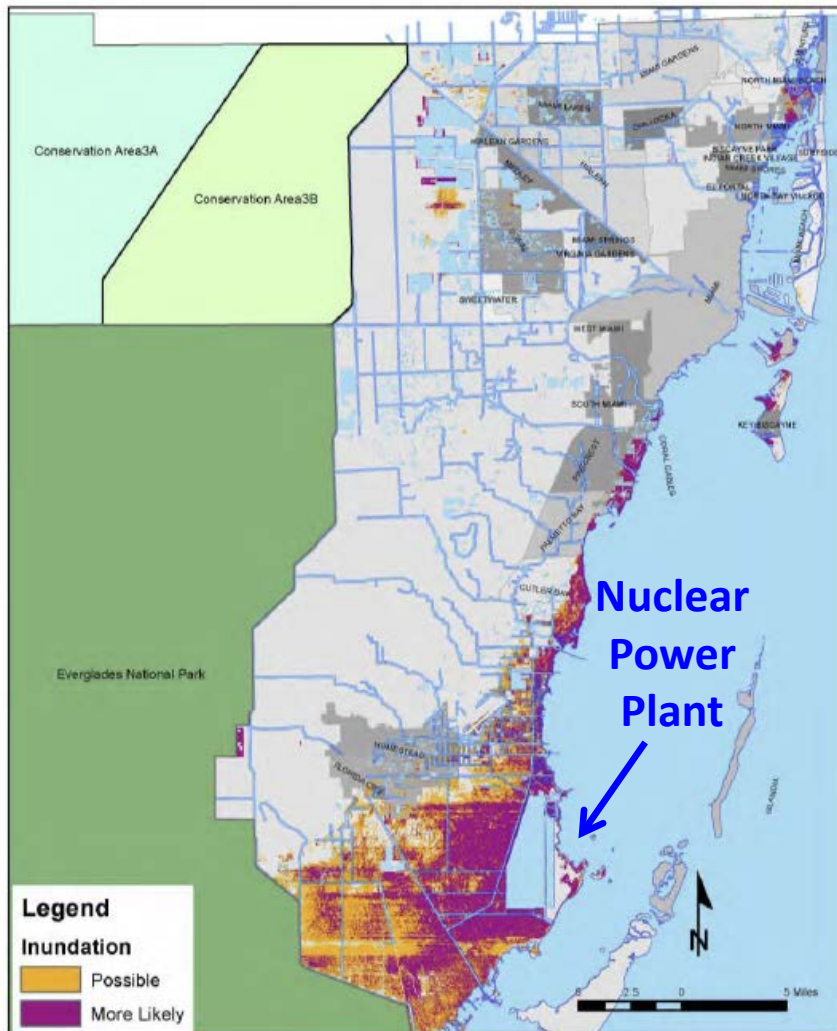
Population below 4 ft: 4.9M

Energy facilities below 4 ft: 287

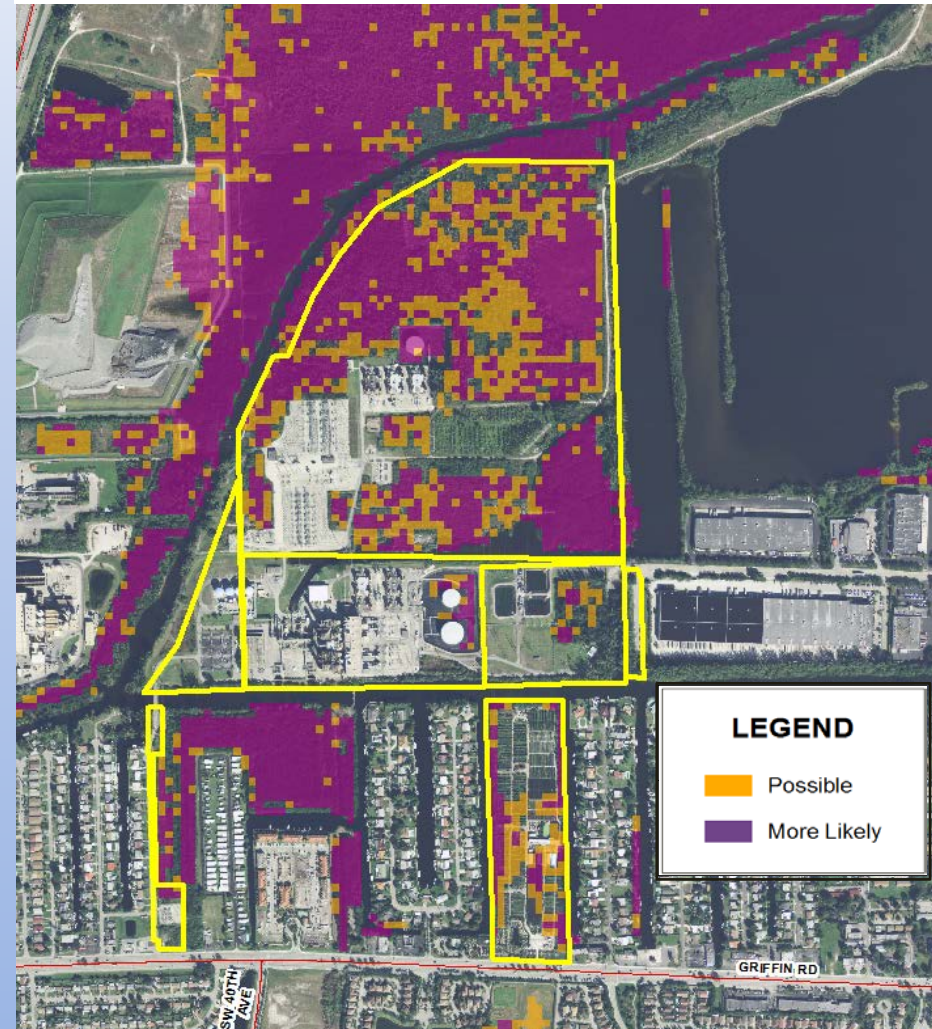


Infrastructure at Risk – Power Plants

1-foot Sea Level Rise In Miami-Dade County



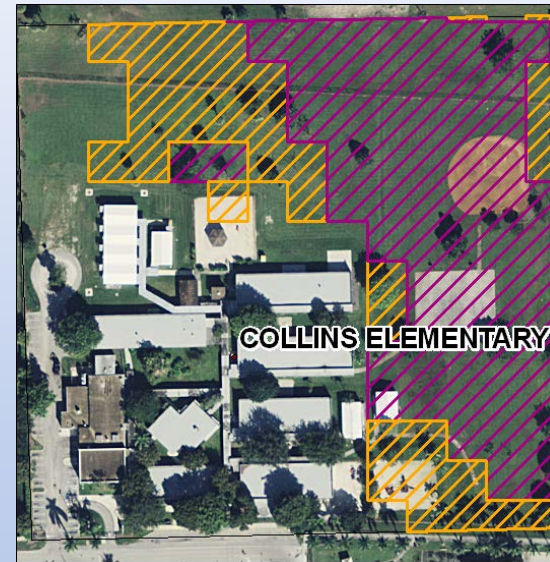
1 foot Sea Level Rise in Broward County
– Local Power Plant



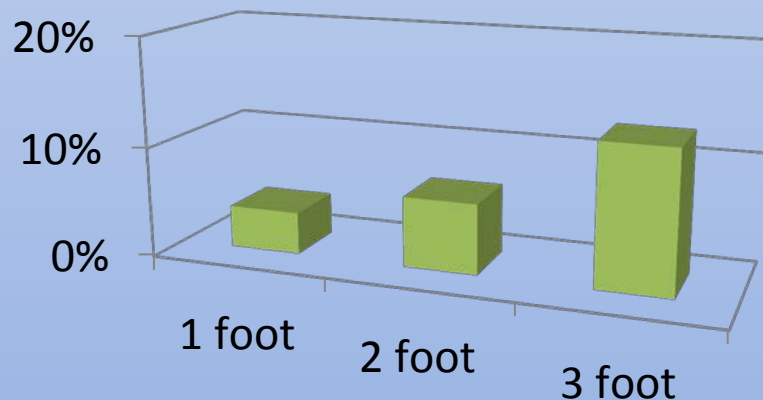
Regionally Vulnerable Infrastructure

Schools Vulnerable at 3 ft

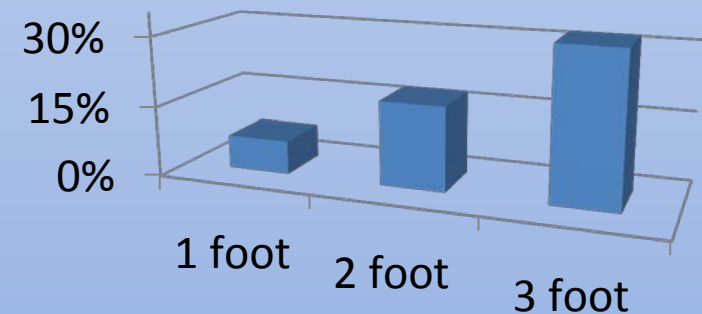
- 1.5% of total in SE FL region
- 82% of schools in FL Keys



**SE FL Hospitals with
Property below Sea Level**



**SE FL Airports with >20% Property
below Sea Level**



Governance

Same Challenges, Different Scales

- Internal: County Infrastructure
- Countywide Concerns
- 4 County Compact
- 7 County Climate Resilience Planning



Planning at Each Scale

❖ Technical tools

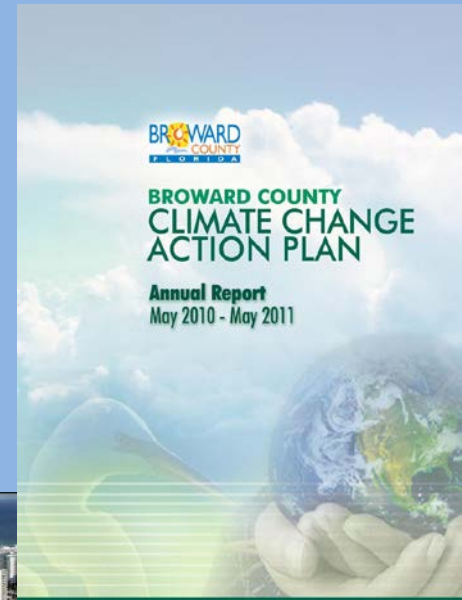
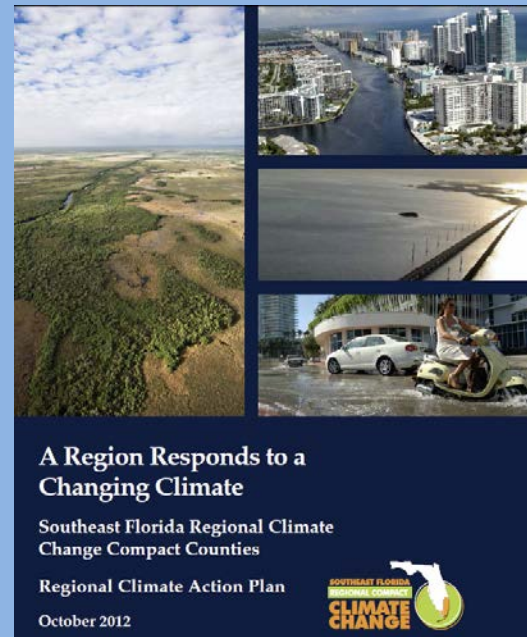
- GHG Inventories
- SLR Vulnerability Analysis

❖ Action Plans

- Broward Gov Ops
- Broward CCAP
- Compact RCAP
- 7 County Climate Resilience Planning

❖ BC Climate Element in Comprehensive Plan

❖ State Legislation – Adaptation Action Areas



Review of Vulnerable Infrastructure

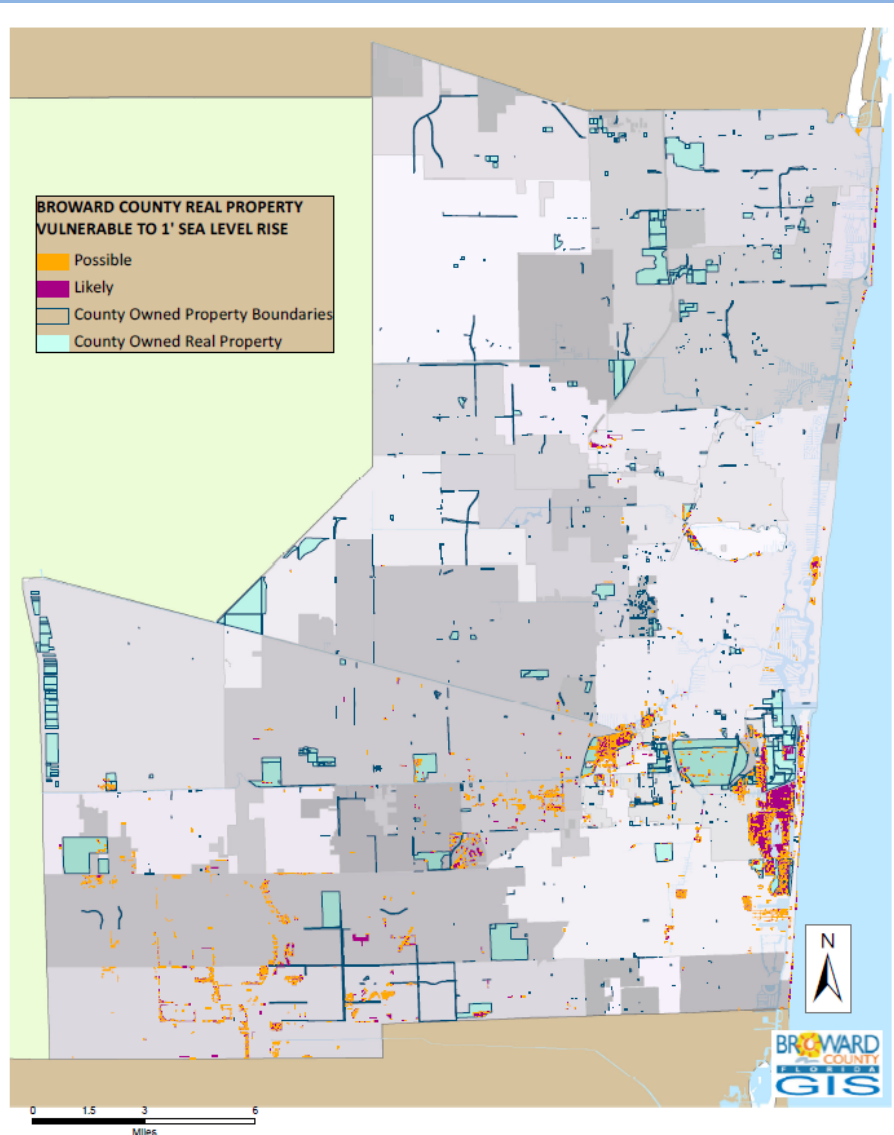
ACTION IP 1.3 Inventory the county-owned infrastructure at risk and assess climate change impacts

Over the past year:

- Port and Airport
- Parks and Natural Areas
- Unincorporated Areas
- Cultural Resources
- Human Services Facilities
- Libraries
- Power Plants
- Subsidized Housing
- Police and Fire Stations
- Hospital Trafficways

In the future:

- Roads scheduled for Improvements
- Transit Facilities



LEED Bldgs – Jan 2012

ACTION ZB 1.2 Encourage green and climate impact resistance construction practices



Environmental
Monitoring
Laboratory



Paul DeMaio
Branch
Library

South
Regional
Library



Edgar Mills
Health
Center

ACTION IP 1.2 Adopt adaptation standards for all new public buildings by considering climate change and sea level rise in their design

Master Planning

Over the past year:

- Port Master Plan
- Airport Runway Construction Sustainability Plan

Coming soon:

- Port Stormwater Master Plan
- Airport Stormwater Master Plan
- Construction Management Design Standards
- Capital Improvement Planning
- Budget Justification Forms
- Parks Management Plan



Conclusions

- Climate impacts are unique to a given location.
- SE FL is working at every level of government to address climate issues.
- Plan to maximize the useful life of existing infrastructure in the short term
- Incorporate climate considerations into longer term master planning and land use decisions

