COASTAL STRATEGIES FOR DRAINAGE RESILIENCE

FDOT’S APPROACH AND VISION
TODAY’S DISCUSSION

✓ Current Concerns and Sea Level Rise

✓ Risk Tolerance and Design Considerations

✓ Long-Term Coastal Strategies
✓ Indian Creek Drive serves as the Southbound Lanes for S.R. A1A
✓ Between 24th Street and 39th Street
✓ Existing Intra-Coastal Area is connected to Biscayne Bay
✓ Existing channel is lined with seawall and mangroves
✓ Existing roadway elevation for Indian Creek Drive varies between 1 and 3-feet, NAVD
KING TIDE FLOODING

✓ INFRA-STRUCTURE IMPACTS
✓ TRAFFIC IMPACTS
✓ FIRST RESPONDER COORDINATION
✓ MAINTENANCE & CLEANUP
✓ DAMAGE ASSESSMENT

Indian Creek Drive at 34th Street, September 2015

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Three regions can be observed:
• 1914-1954 – 0.8 ft/100 yr
• 1954-1994 – 0.05 ft/100 yr
• 1994-2014 – 1.5 ft/100 yr

In the last 10 years there is acceleration
• 2004-2014 – 3.3 ft/100 year

If only 2013-2014 year is considered the trend is 4 ft/100 years
Next 10 years will be critical to determine if the increase continues to be exponential or linear.

- FHWA Guidance – HEC-25 for Coastal Roadways, 2.0-feet by the Year 2100
- FHWA Guidance – HEC-17 for Riverine Roadways


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RISK ALLOWANCE

✓ Site Specific
✓ Extent of Inundation
✓ Temporary Utility Impacts
✓ Importance of Protection versus Environmental Impacts
✓ Business/Tourism Impacts
✓ Agricultural Impacts
DESIGN CONSIDERATIONS

☑ Desired Service Life, i.e. 25, 50 or 100-Year
☑ Appropriate Design Frequency, i.e. 3, 5, 10, or 25-Year LOS for Shared Outfalls
☑ Tailwater Considerations, i.e. MHHW, MHW
☑ Tropical Systems and Storm Surge
☑ Coastal FEMA Floodplain Map Updates
☑ Criteria for Pressurized Storm Sewer Systems

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U.S. 98 along the Gulf of Mexico in Franklin County

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LONG-TERM STRATEGIES

✓ Collaborative Planning to Address Protection Areas, Vulnerable Areas and Mitigation
✓ Planning for Registered Estuaries
✓ Type of Protection
✓ Back-flow Prevention Devices
✓ Dikes/Levees/Dunes
LONG-TERM DESIGN STRATEGIES

✓ Stormwater Management Designs to Protect Against Landward Saltwater Intrusion
✓ Multi-purpose designs, i.e. Parks and Recreation Areas
✓ Phased Designs to allow for adjustments in response to the localized Sea Level Rise
✓ Restore Coastal Inlets and Relief Passes

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LONG-TERM SHORELINE REGRESSION – CAPE SAN BLAS (1970's)

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LONG-TERM STRATEGIES FOR FDOT’s INVOLVEMENT

- Utility Relocations
- Infra-Structure Improvements
- Flexibility Amongst the Regulatory Agencies
- Early Project Identification
- Greater Stakeholder Engagement

Wastewater Plant on Virginia Key, Miami

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FURTHER CONSIDERATION FOR COASTAL RESILIENCY???

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