



Proposed Seawall/Waterfront Ordinance Revision

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Objectives

1. Explain Why Seawall Standards Must Change
2. Explanation of Recommended Seawall Elevation Requirement
3. Describe Scope of Issues Addressed in the Ordinance Modifications and Summary of Key Ordinance Modifications
4. Proposed Timeline of Public Meetings

Current Seawall Ordinance Language

Section 29, ARTICLE III. - BULKHEADS, SEAWALLS, PIERS, DOCKS, GROINS, MARINE RAILWAYS AND OTHER SIMILAR STRUCTURES

Sec. 29-89 (a)(4) For all waterfront properties east of US-1, except those fronting the Miami River, the top elevation of new seawalls shall be set at **+5.00 NGVD**, if located north of the Rickenbacker Causeway, and set at **+6.00 NGVD** if located south of the Rickenbacker Causeway. The top elevation of new seawalls for those waterfront properties fronting the Miami River shall be set in accordance with section 54-46 of the City Code.

Sec. 54-46 (2) The construction of permanent-type bulkheads along the shoreline or harbor line of any watercourse contiguous to the area platted, as follows:

- a. Permanent-type bulkheads shall be constructed to a minimum elevation of **+5.00 feet, NGVD** along all rivers and canals and along the shoreline or harbor line of Biscayne Bay north of the Rickenbacker Causeway.
- b. Permanent-type bulkheads shall be constructed to a minimum elevation of **+6.00 feet, NGVD**, along the shoreline or harbor line of Biscayne Bay south of the Rickenbacker Causeway, and around all new or future islands or enlarged existing islands in Biscayne Bay.
- c. Permanent type bulkheads for those waterfront properties fronting the Miami River shall be constructed to an elevation of **+5.50 feet NGVD**.

Today's Water Challenge

“Sunny day”
flooding in Miami



Hurricane Irma 2017

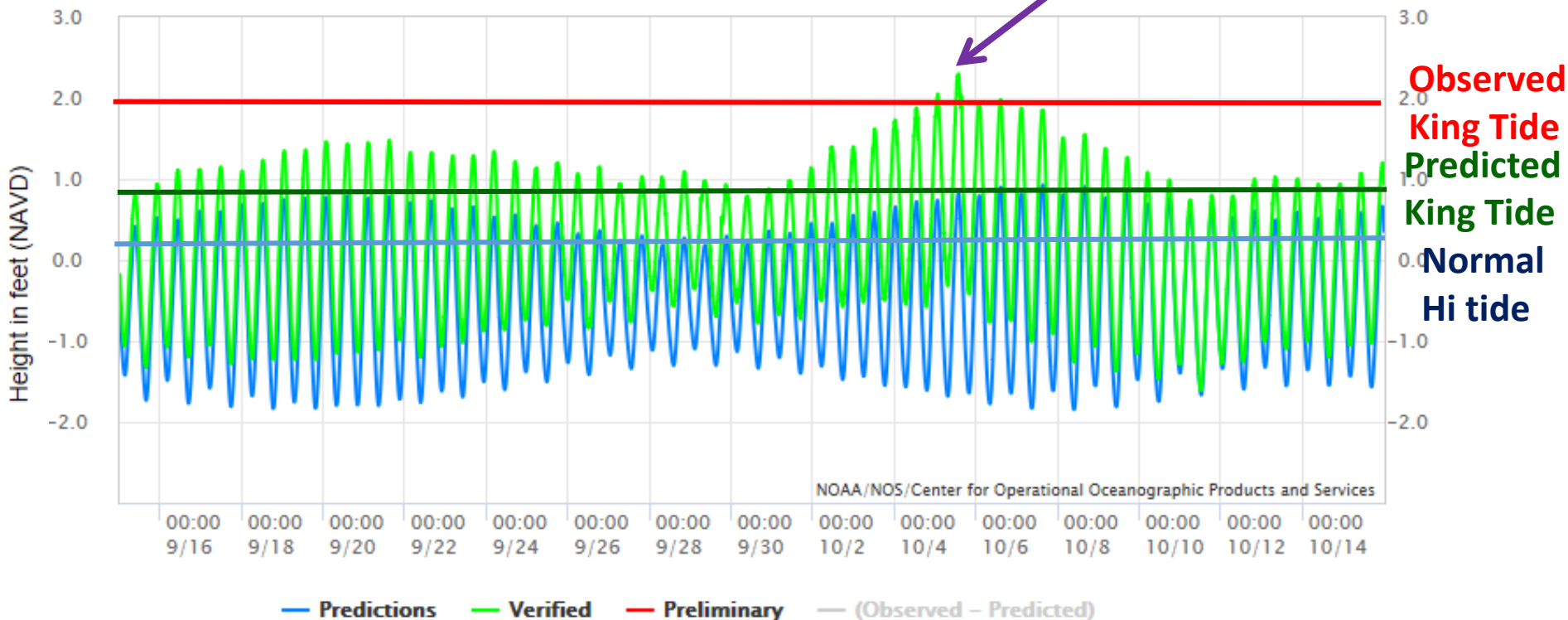


King Tide Events

October 2017

2.28 ft
NAVD88

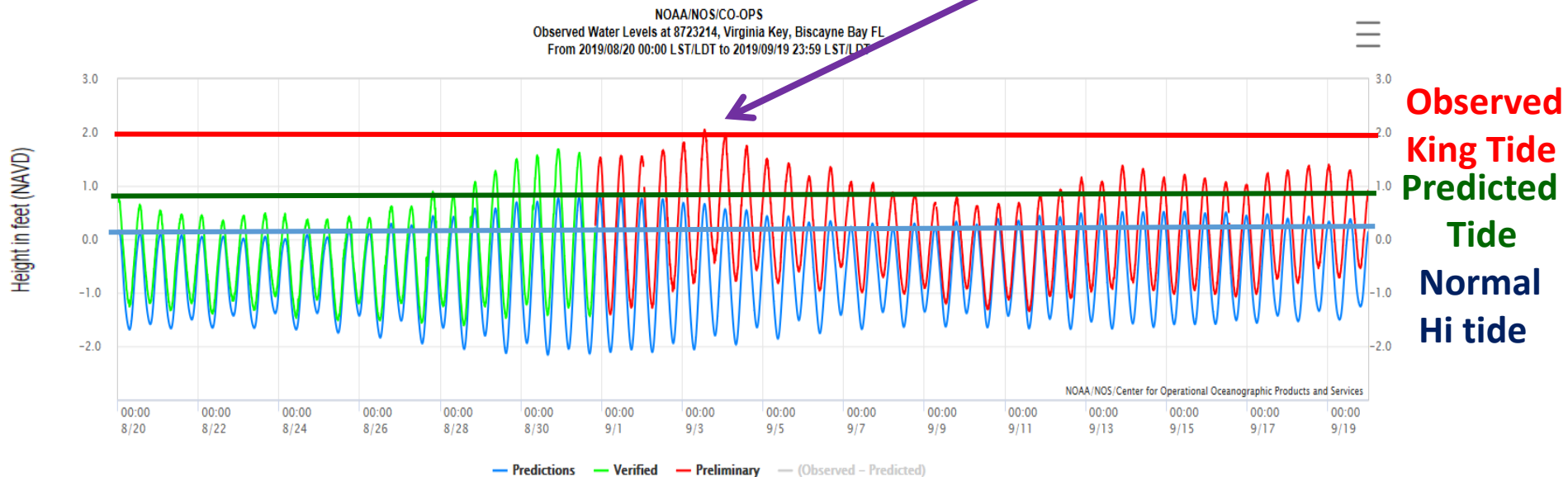
NOAA/NOS/CO-OPS
Observed Water Levels at 8723214, Virginia Key, Biscayne Bay FL
From 2017/09/15 00:00 GMT to 2017/10/15 23:59 GMT



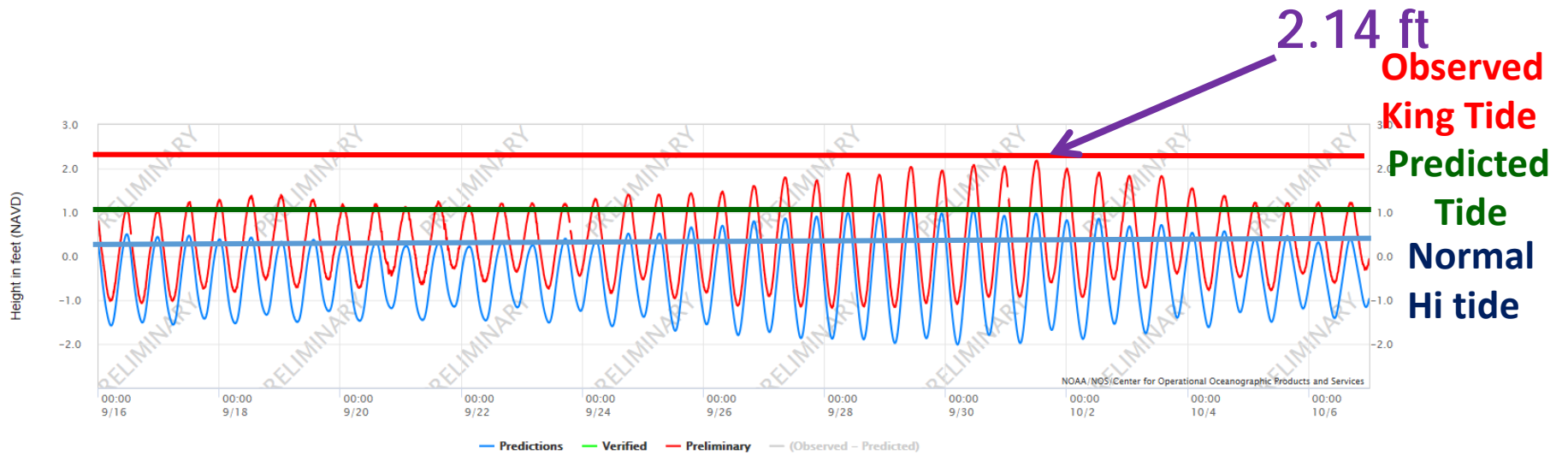
Extreme Tidal Events

September 1-7, 2019

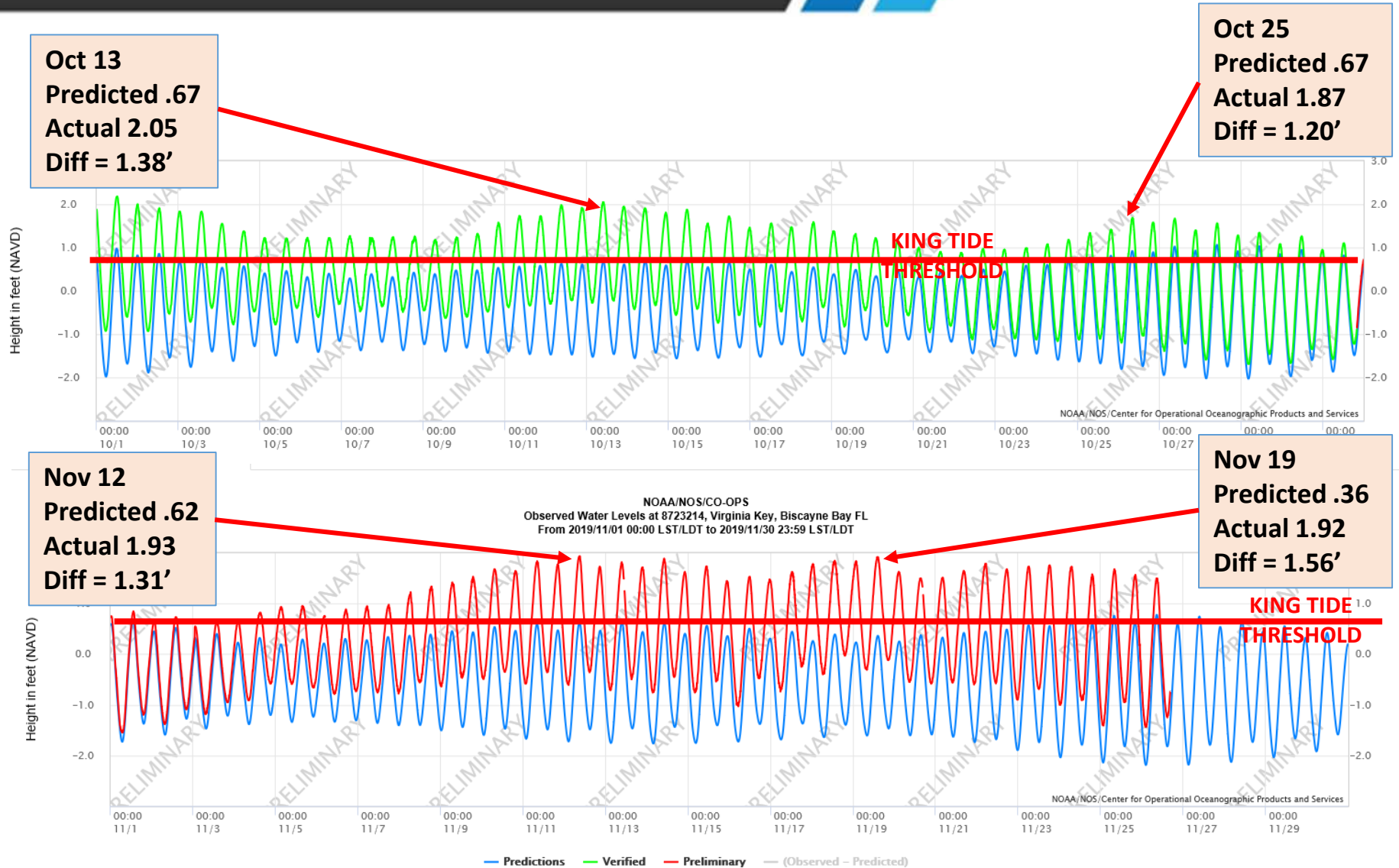
2.03 ft
NAVD88



Sept 16 – Oct 5 King Tide

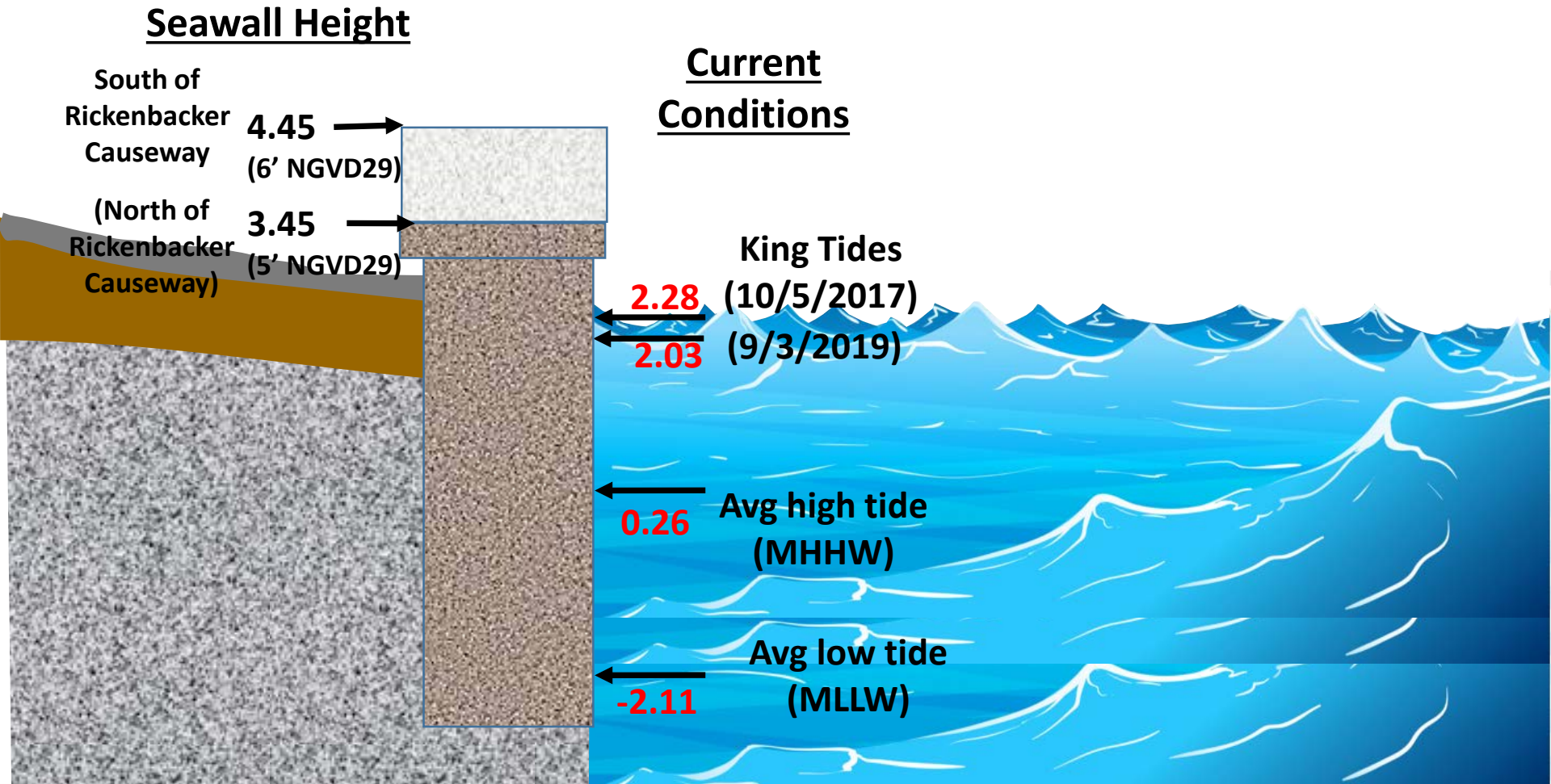


October & November 2019

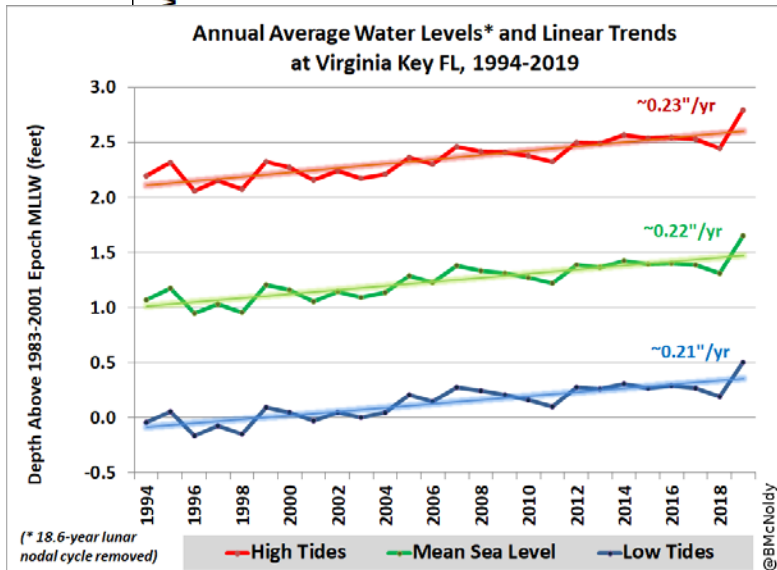
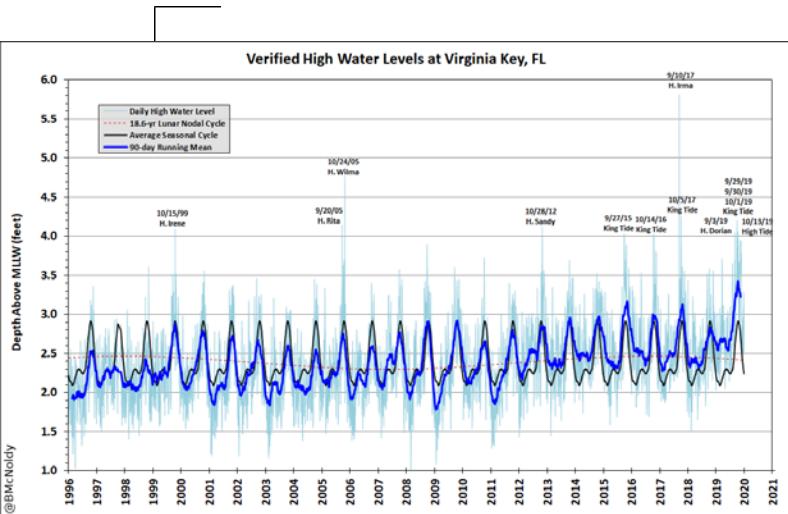


Seawall Elevations and King Tides – Current Conditions

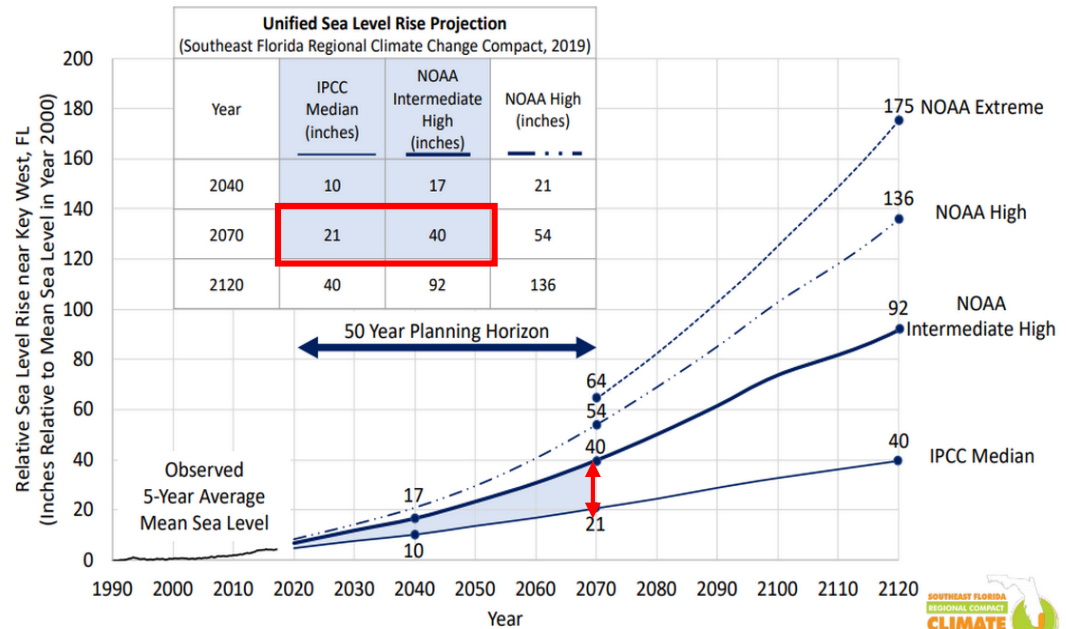
DATA IN NAVD88



South Florida SLR projections



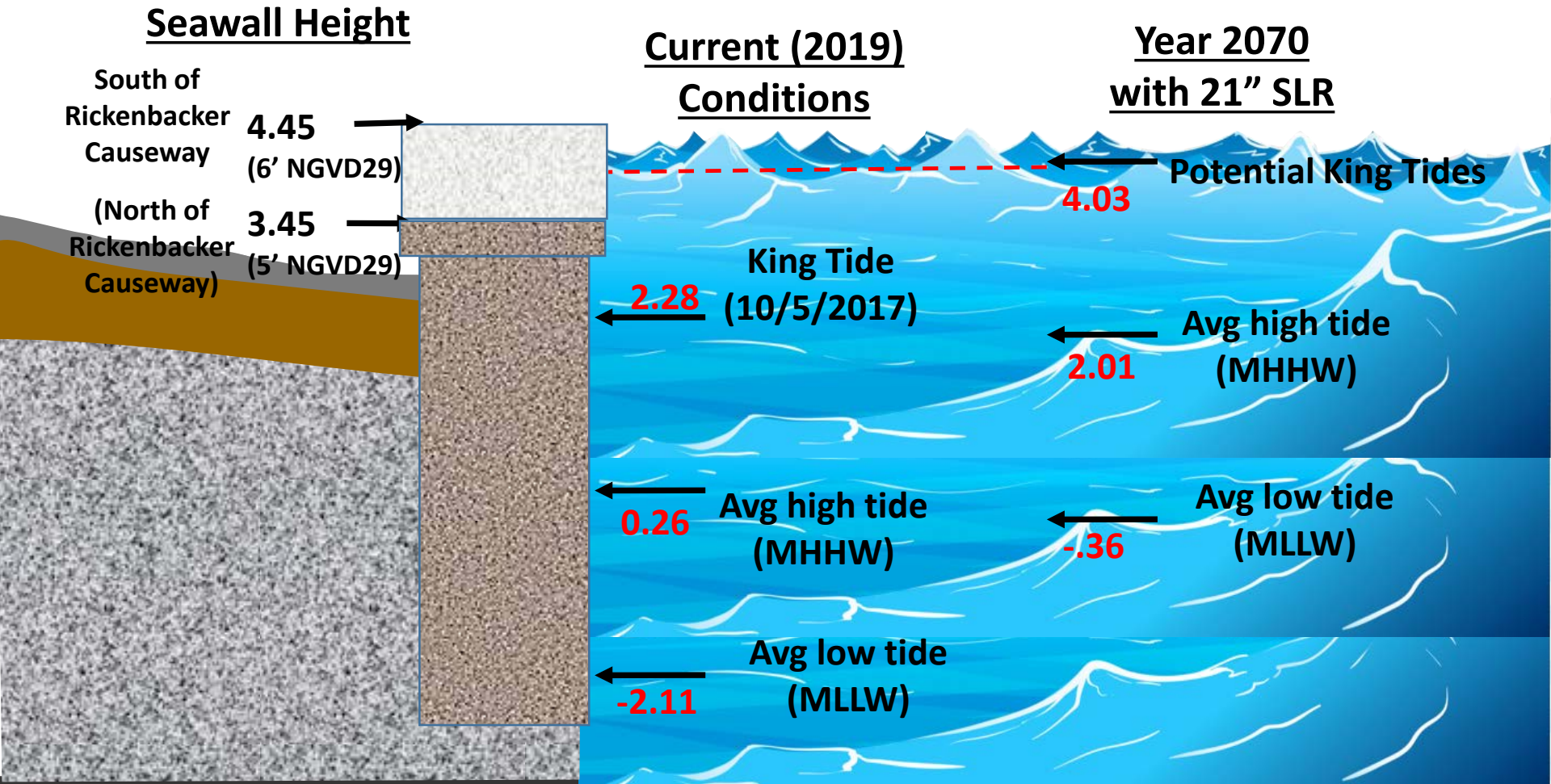
- 5.7 inches of Sea Level Rise measured at NOAA Virginia Key Tidal Gauge since 1994
- Average of 0.22 inches per year
- South Florida Climate Compact released updated SLR projections of 21" – 40" by 2070



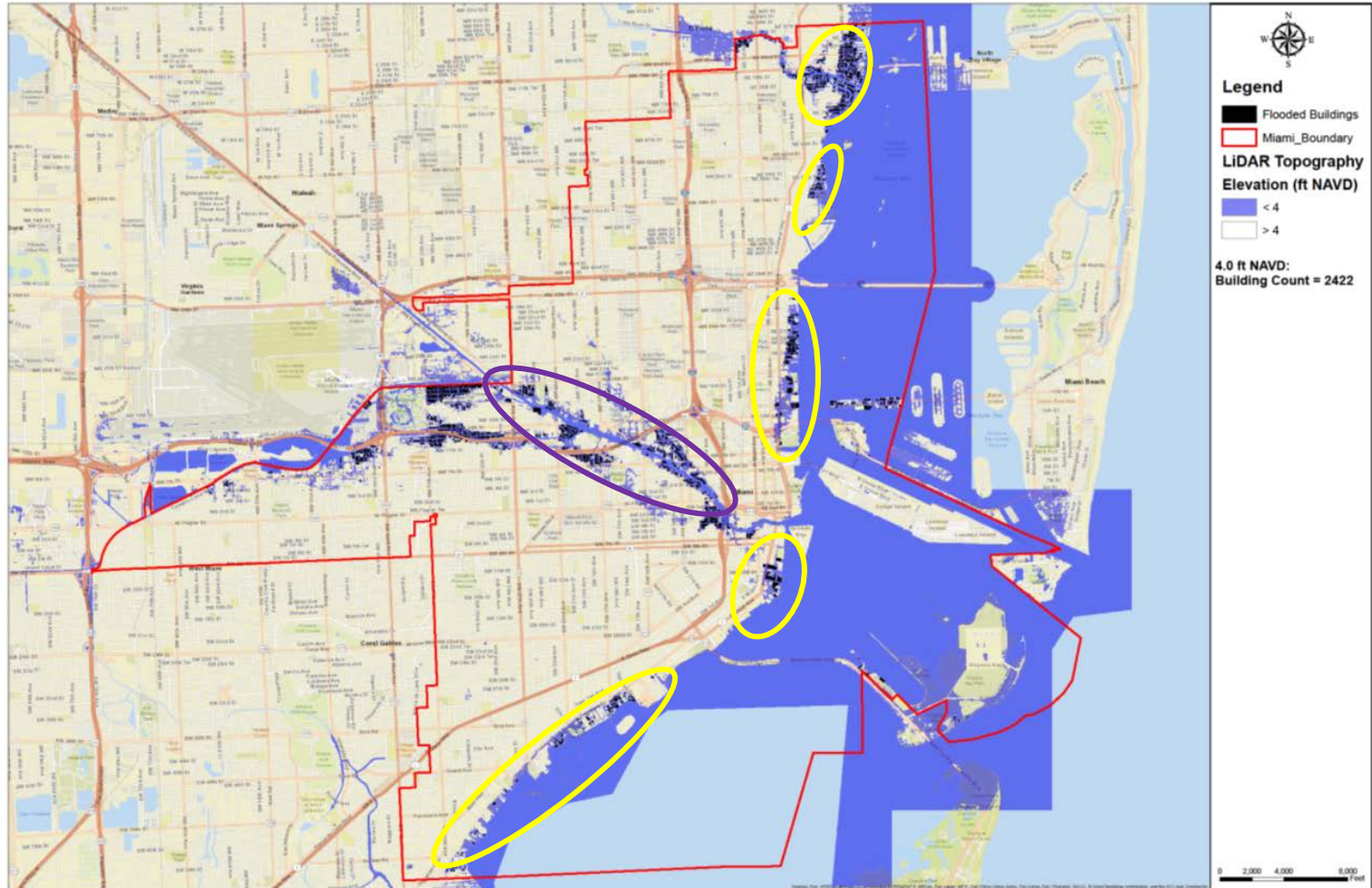
Seawall Elevations and King Tides – 2070 with 24" SLR

ALL DATA IN NAVD88

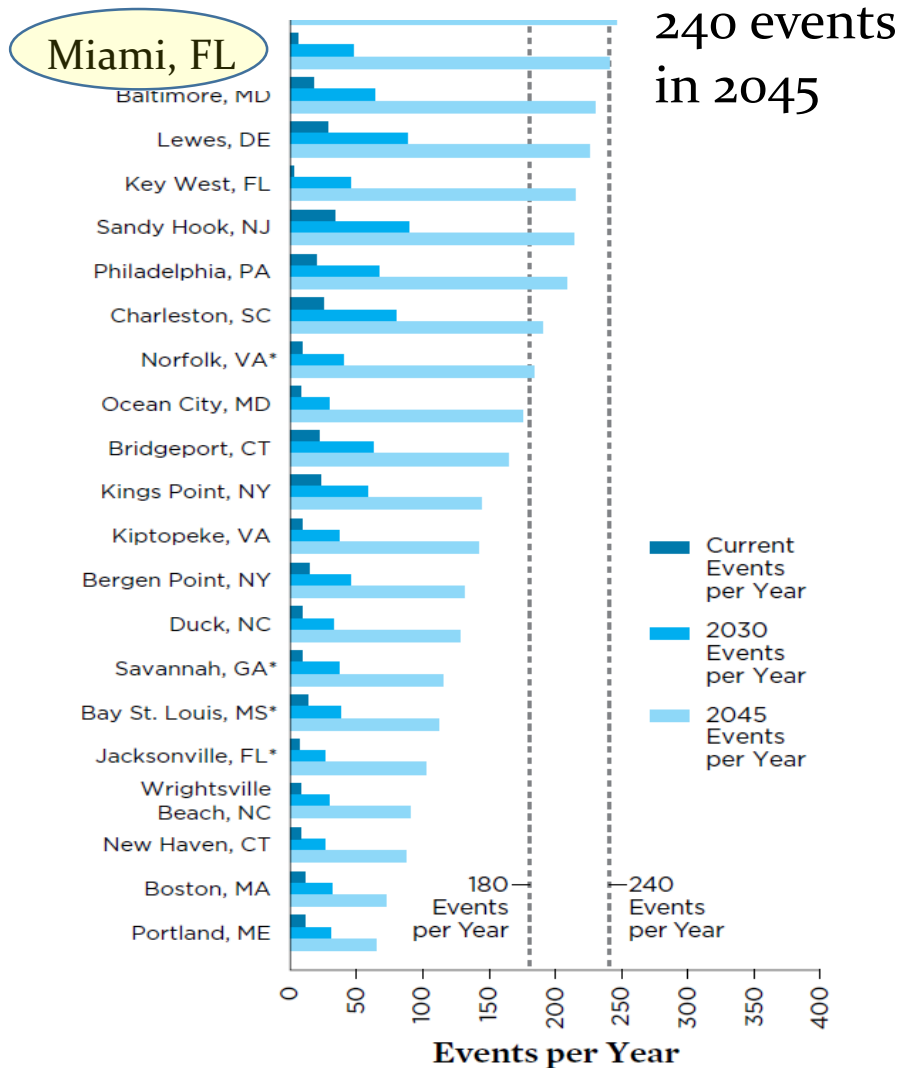
Planning Assumption: 21" – 40" of SLR by 2070



Impacted Areas 2060



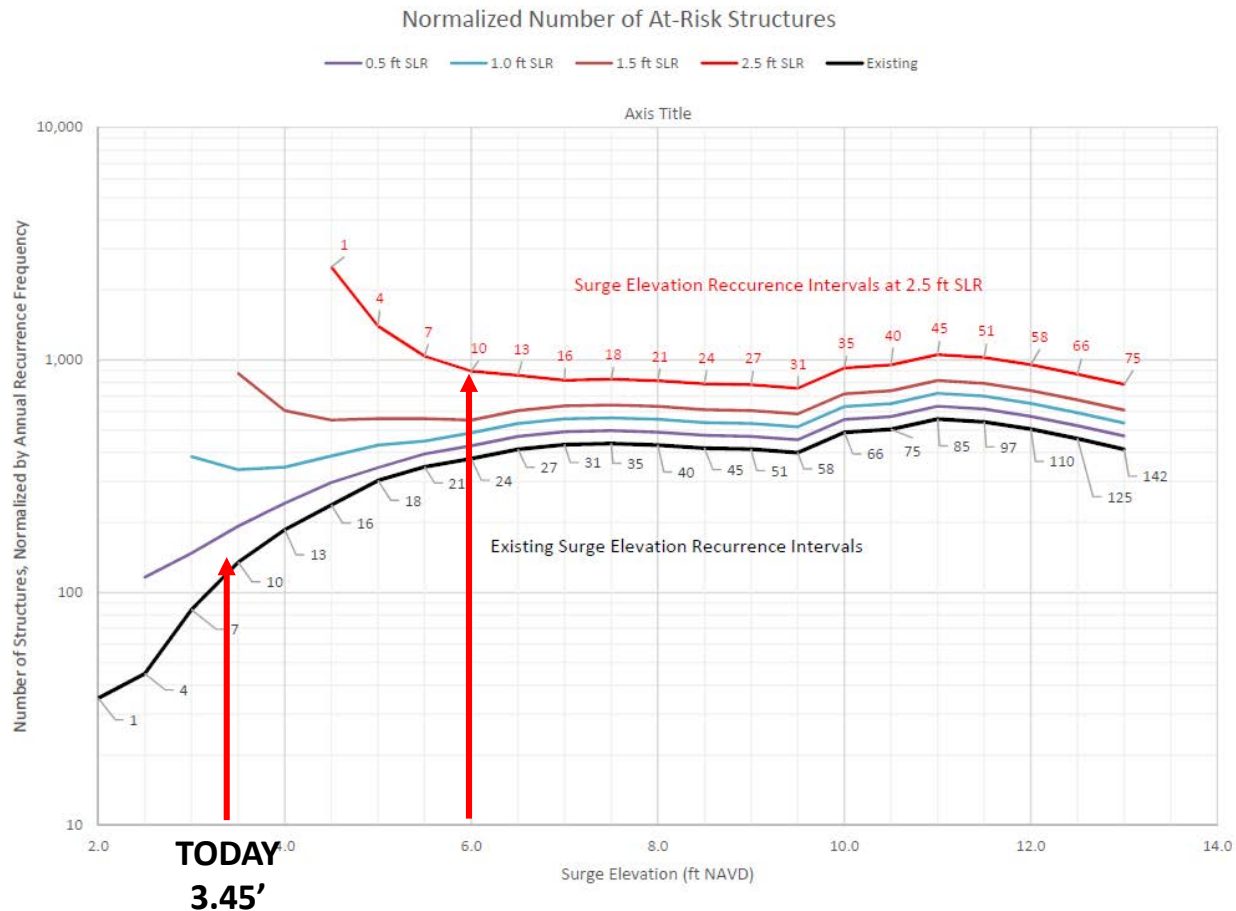
Frequency of King Tides



Tidal Flooding today,
in 2030 and in 2045

Southeast Florida will
advance from
<10 events today
to
240 events in 2045

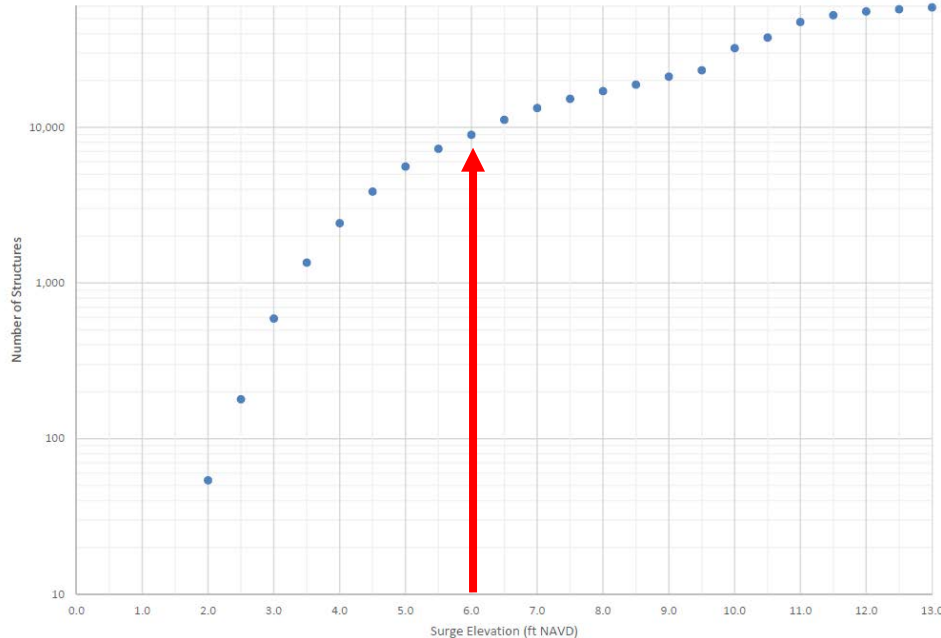
Number of Structures Protected with Projected SLR levels



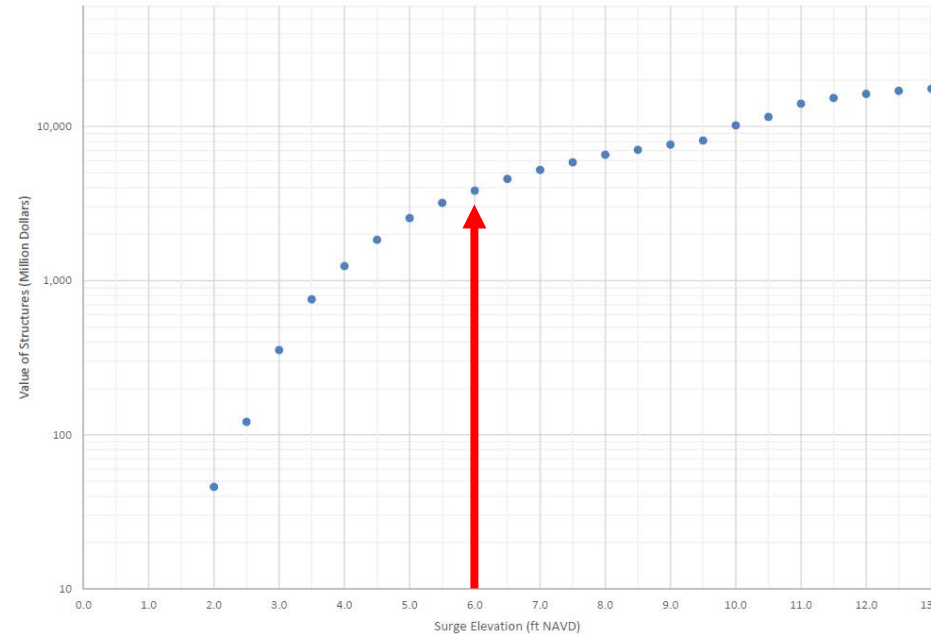
With SLR more structures are at risk - Seawall elevation critical factor to provide protection
 Beyond 6FT (NAVD) there are marginal benefits in number of structures protected
 Remaining structures require other means to protect against flooding impacts

Value of Structures Protected by Seawall Elevations

Number of At-Risk Structures By Surge Elevation



Value of At-Risk Structures By Surge Elevation



With SLR more structures are at risk - Seawall elevation critical factor to provide protection
Beyond 6FT (NAVD) there are marginal benefits in value of structures protected
Remaining structures require other means to protect against flooding impacts

Other Considerations



Existing
Seawall and
dock
inundated



Seawalls in
significant
disrepair



Other Considerations



**Upland eroding
through the seawall**

Other Considerations



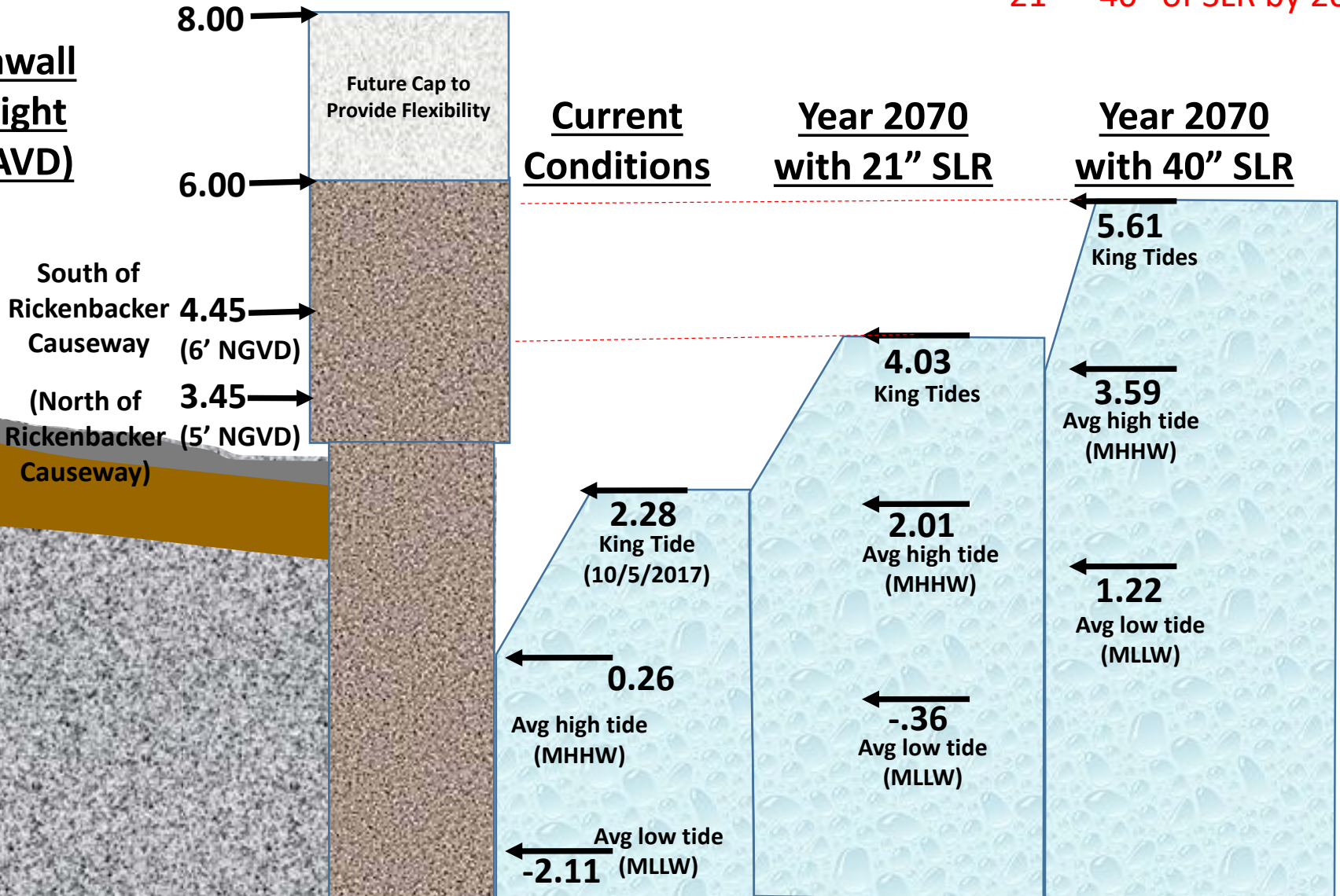
Seawalls of differing heights offer different level of protection to the upland property.

Recommended Elevations

ALL DATA IN NAVD88

Planning Assumption:
21" – 40" of SLR by 2070

Seawall Height (NAVD)



Options for Implementation

- 1. Establish mandatory date for all seawalls and natural shorelines to come into compliance with new standards**
 - Pro: Ensures all waterfronts comply with new standards by established date
 - Con: Residents/City will incur cost for reconstruction/replacement of infrastructure that otherwise is in good condition and does not have negative impacts at this time
- 2. Phase in new standards by requiring seawalls and natural shorelines to come into compliance to new standards as they are repaired or replaced**
 - Pro: Allows phasing in of new standards over time as seawalls and natural shorelines are replaced or repaired in due course; minimal additional cost impact to achieve
 - Con: Does not ensure all waterfronts comply with new standards as some owners may never initiate improvements to seawalls or natural shorelines; lack of harmonization between properties
- 3. Establish triggers to mandate seawalls and natural shorelines come into compliance with new standards when certain conditions are met**
 - Pro: Phases in new standards over time as improvements are needed to seawalls and natural shorelines; reduces number of properties immediately impacted with costs
 - Con: Lack of harmonization between properties, improvements may not be initiated until after negative impacts are observed, resulting expedited work at a higher cost

Recommended Ordinance Modifications

- Revise definitions for seawall and require North American Vertical Datum (NAVD88) as standard for all elevation data
- Establish standards for permeable erosion barriers such as rip rap, or a land/water interface of another nature
- Sets minimum seawall elevations at 6 FT (NAVD88) uniformly throughout Miami with ability to increase (cap) another 2 ft
- Requires seawall reconstruction to the minimum elevation if the substantial repair threshold is triggered
- Requires maintaining seawalls in good repair
- Address transitions with fixed and floating docks
- Requires improvements should a property allow tidal waters entering their property to impact adjacent properties or public Rights-of-Way to be initiated within 180 days, with repairs commencing within 365 days, and repairs being completed within 18 months of owner receiving citation

Timeline & Coordination

Stakeholders

Climate Resilience Committee, HOA/Assn reps, Developers, Seawall Contractors, Miami River Commission, DDA, Marine Advisory Board

Timeline

Oct 2019	Internal meetings
Dec 2019	Stakeholder Meetings
Feb 2020	Commission update
Mar 2020	Planning and Zoning
April 2020	First Reading
June 2020	Second Reading

Questions?



2/10/2020