

RISING ABOVE

The graphic features the words 'RISING' and 'ABOVE' in large, bold, sans-serif capital letters. 'RISING' is white and positioned in the upper half of the image, which has a light teal background with stylized white clouds and two white birds in flight. 'ABOVE' is dark blue and positioned in the lower half, which has a darker blue background representing the ocean with small, dark blue fish swimming. The horizon line is a thin white line separating the sky and ocean.

Miami Beach Adaptation Planning

NOAA in the Caribbean (NOAA CARIB)

Partners Workshop

August 19-23, 2019



Agenda

1. Miami Beach Physical Typology
2. Public Property Adaptation Sunset Harbour Case Study
3. Private Property Adaptation
4. Parametric Insurance Case Study



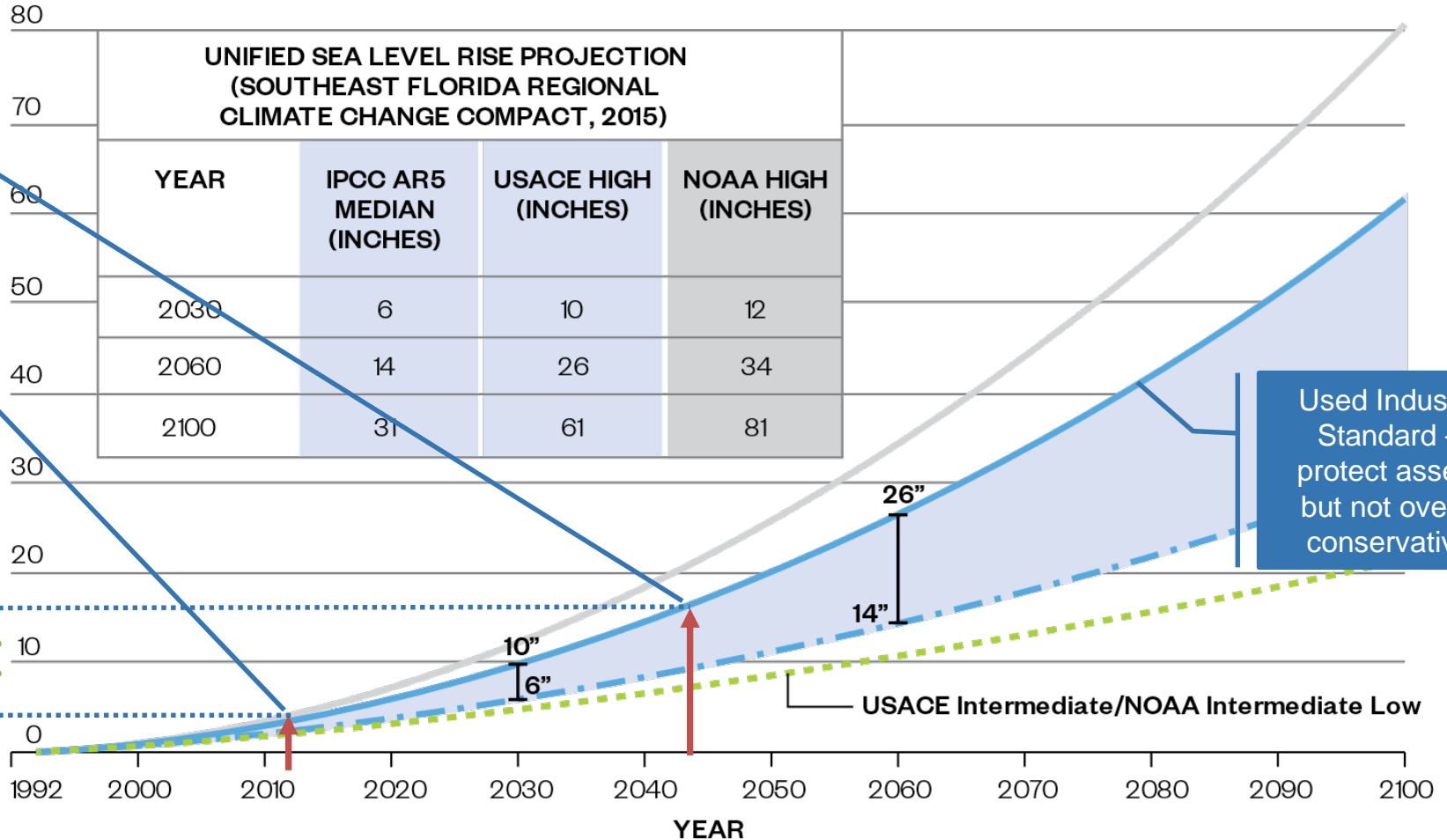
MIAMI BEACH SEA LEVEL RISE ADAPTATION CHALLENGES

1. Topography & Geology
2. Aging Infrastructure
3. High groundwater
4. Limited Data



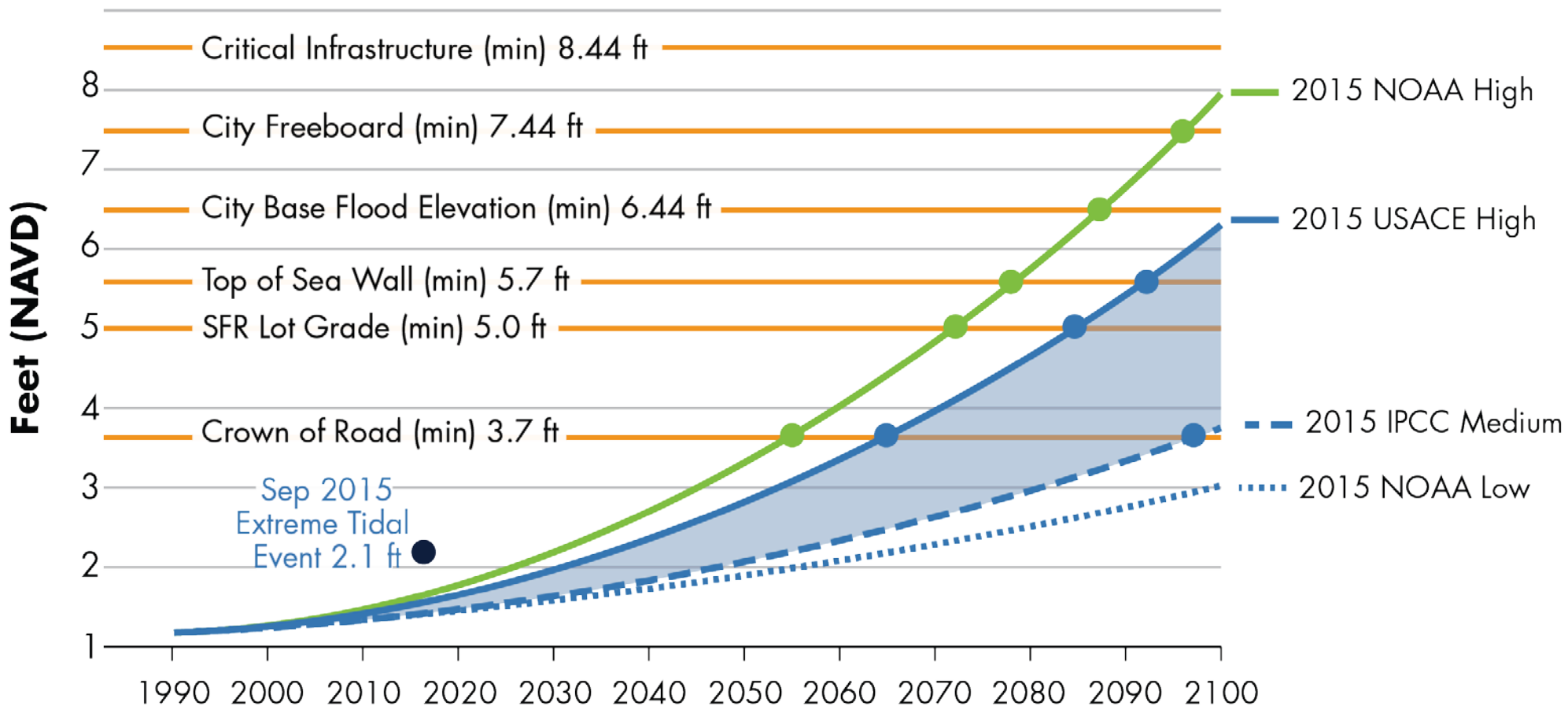
SEA LEVEL RISE Projections

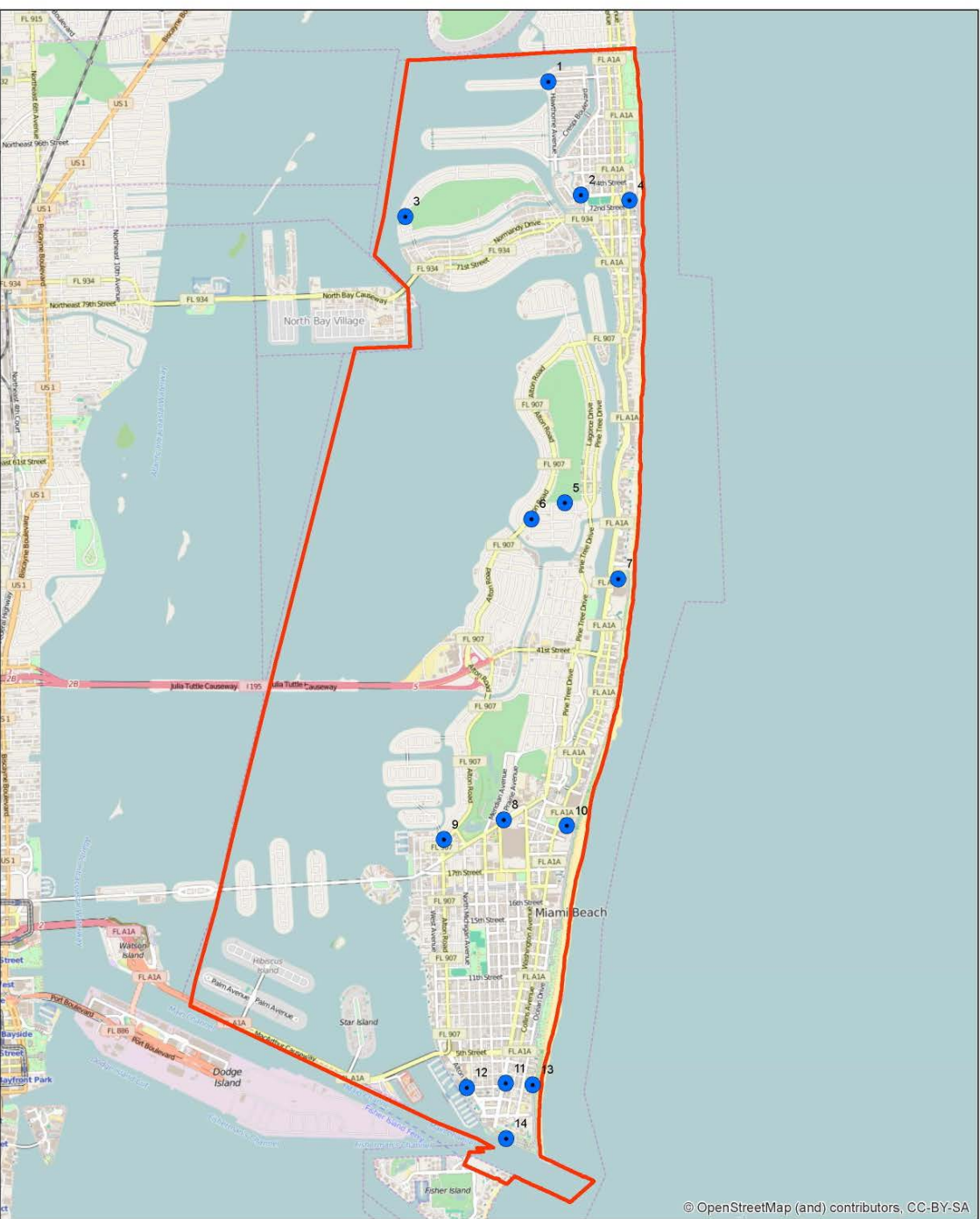
RELATIVE SEA LEVEL RISE NEAR KEY WEST, FL
(INCHES RELATIVE TO MEAN SEA LEVEL)



DESIGNING for SEA LEVEL RISE

SE FL Regional Climate Compact - SLR Projections (2015)
+ 1.2 ft NAVD (High Astronomical Tide)

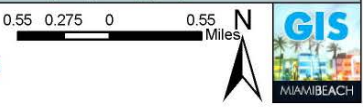




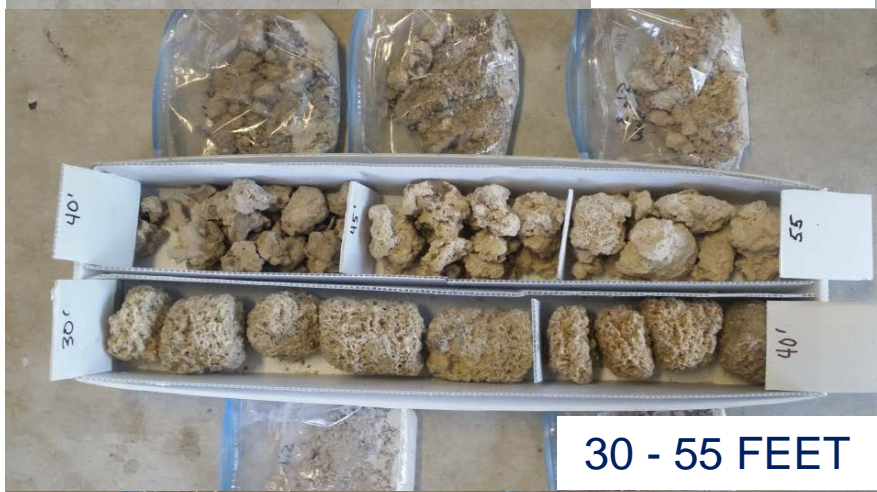
Path: M:\SCMB\GIS\Projects\16_GroundWater_Wells\ArcMap\GroundWater_Wells.mxd

- Legend**
- Proposed monitoring wells
 - ▭ City Limits

**City of Miami Beach:
Groundwater Monitoring Wells**



2 - 30 FEET

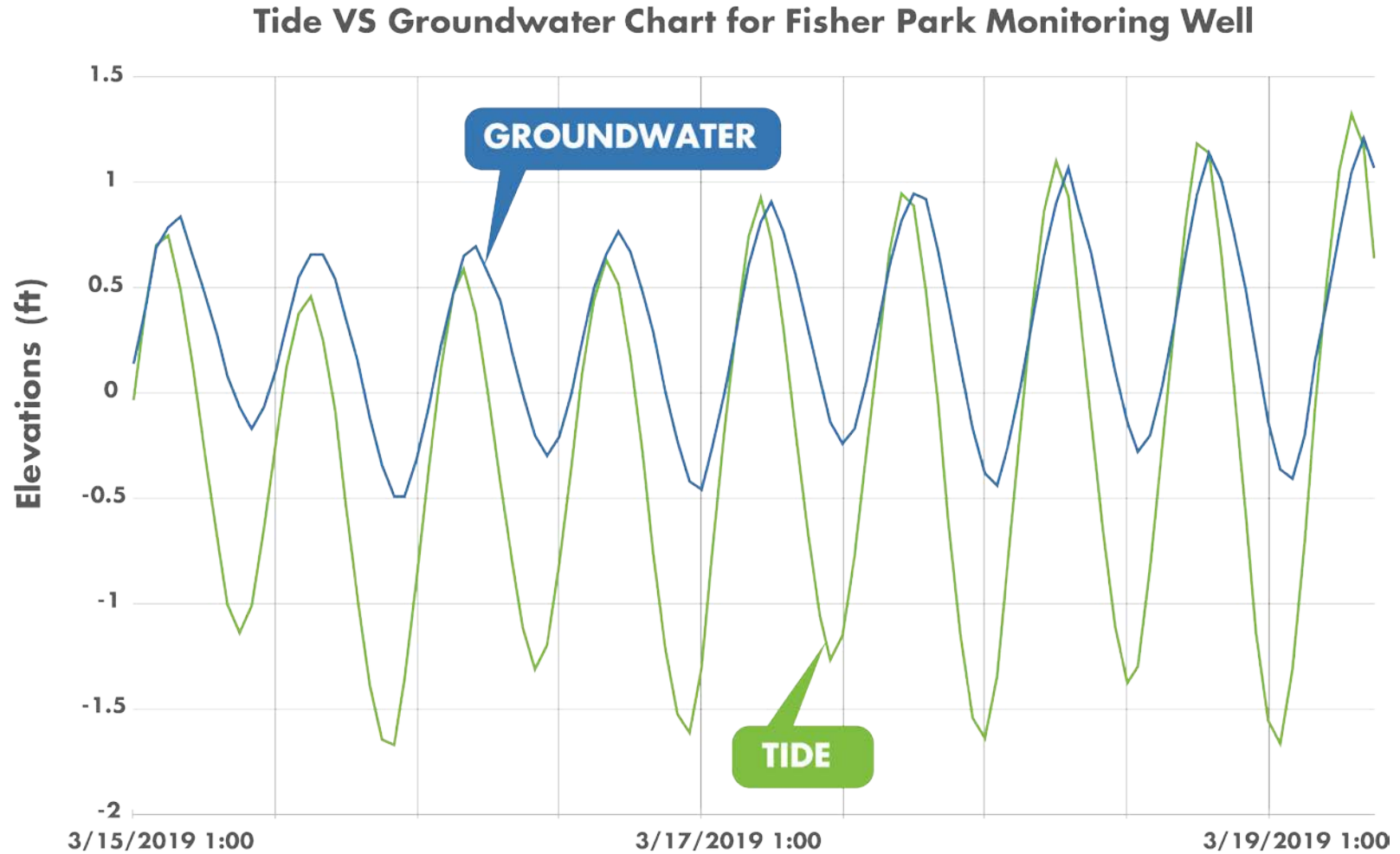


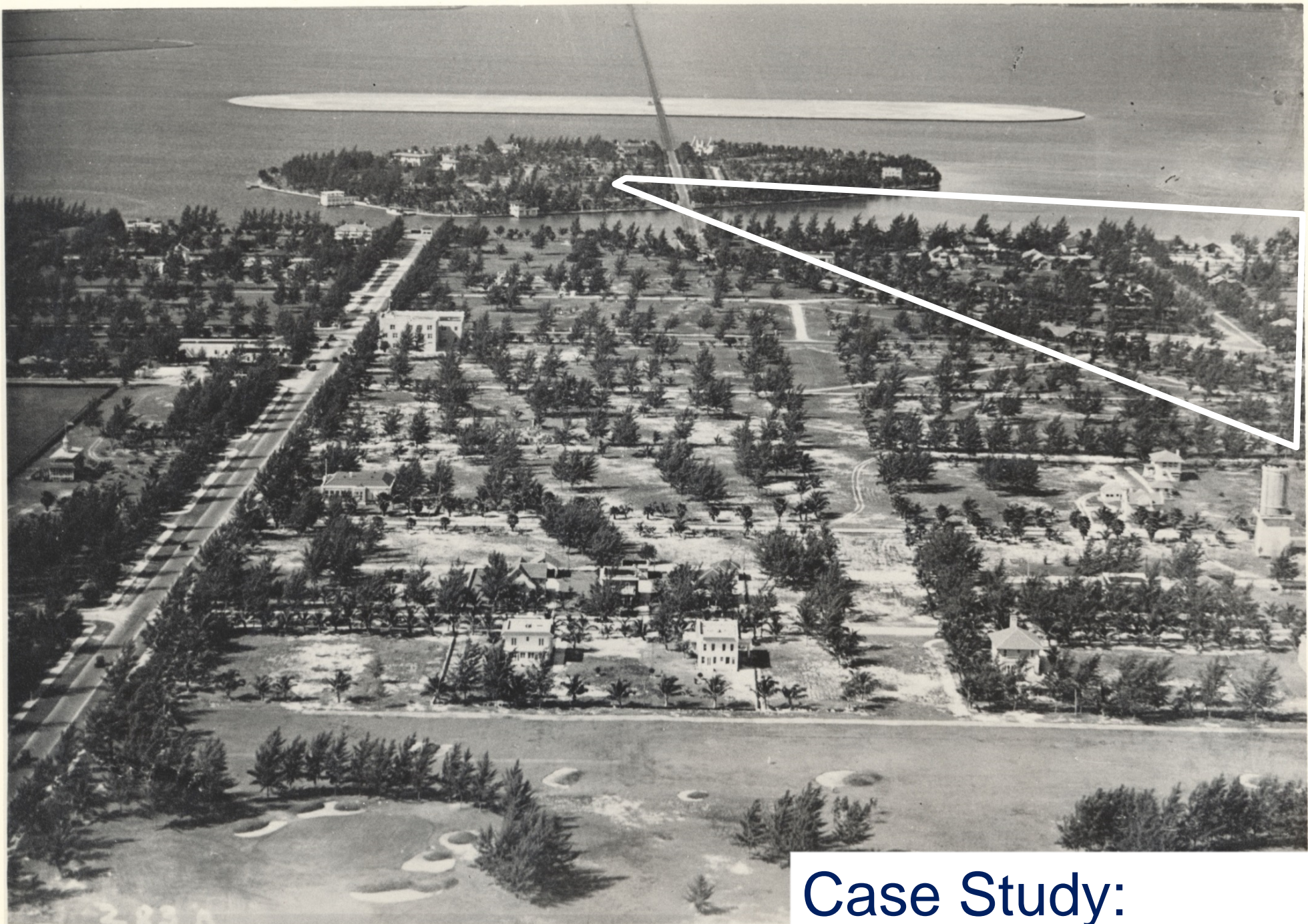
30 - 55 FEET



55 - 80 FEET

Groundwater / Tidal Connection

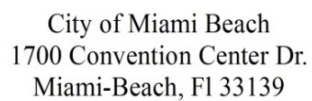
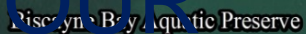




283-A. 1923—Golf course in the foreground; Lincoln Road at the left, Belle Isle and the Collins Bridge.

Case Study:
SUNSET

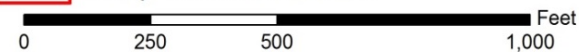
Discayne Bay Aquatic Preserve



**Sea Level Rise Projects
Flood Prevention & Relief
City of Miami Beach, FL**

Legend

 Pump Station Locations



Case Study: SUNSET

ARBOUR

SEPTEMBER 2011



BEFORE

OCTOBER 2017



AFTER

Case Study: SUNSET HARBOUR



Case Study: SUNSET HARBOUR

2013



2017



Case Study: SUNSET HARBOUR

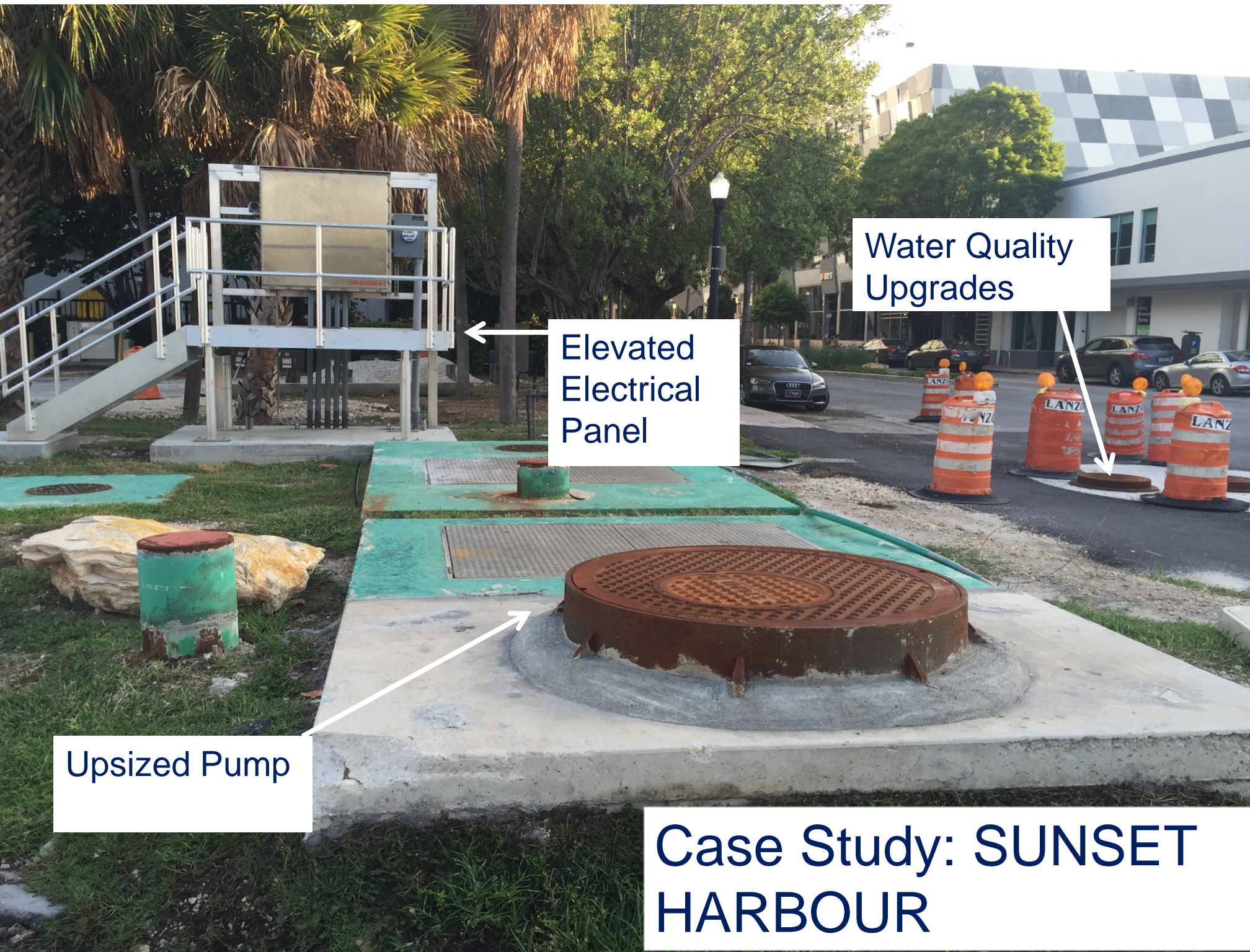
Hurricane Irma 2.8ft Sept 10

2017 KING TIDES
2.3ft Oct 5

7 Tides over old road

1.7ft Old Crown Road





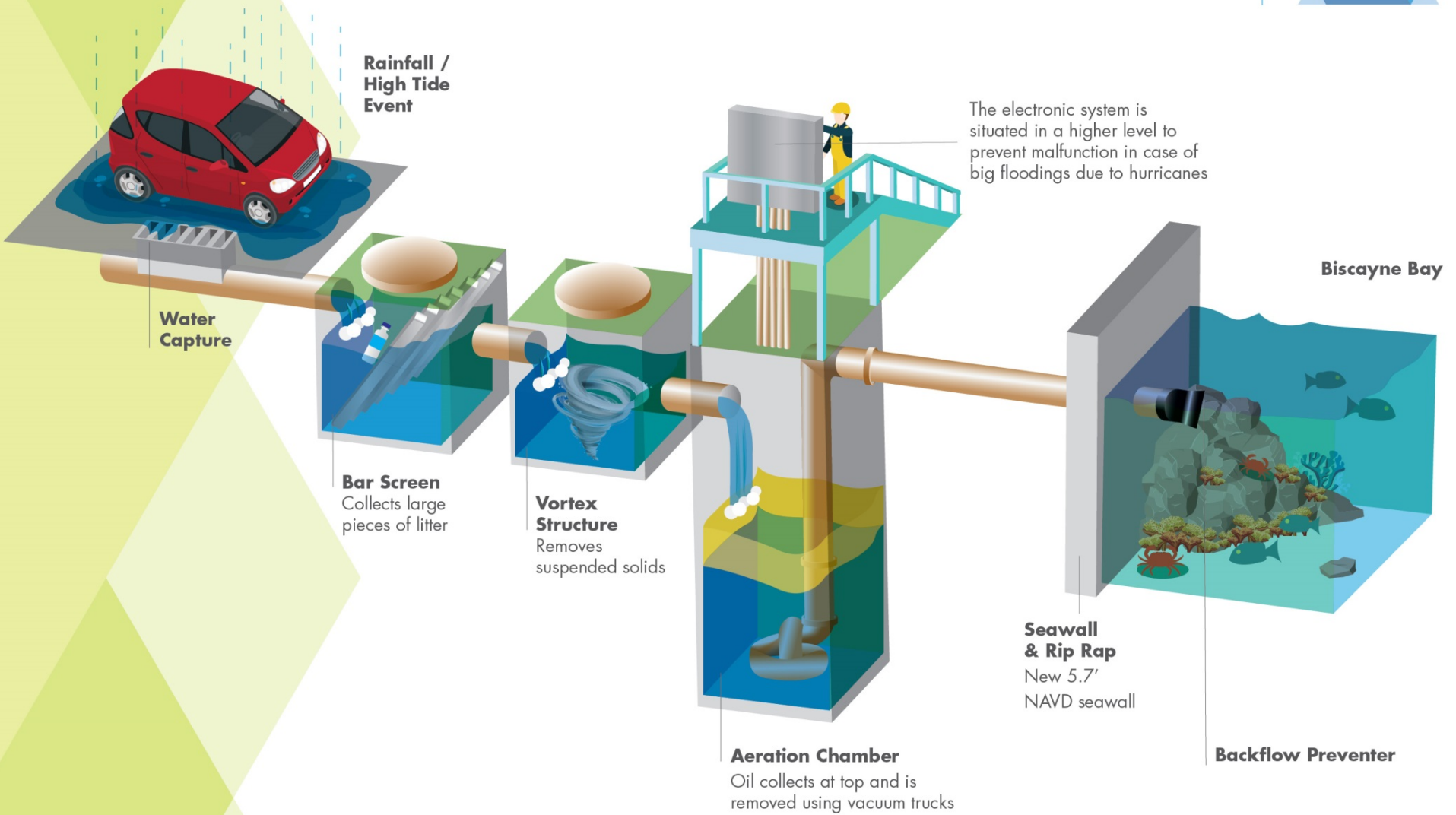
Water Quality
Upgrades

Elevated
Electrical
Panel

Upsized Pump

Case Study: SUNSET
HARBOUR

Stormwater Pump Station UPGRADES



**Rainfall /
High Tide
Event**

**Water
Capture**

Bar Screen
Collects large
pieces of litter

**Vortex
Structure**
Removes
suspended solids

Aeration Chamber
Oil collects at top and is
removed using vacuum trucks

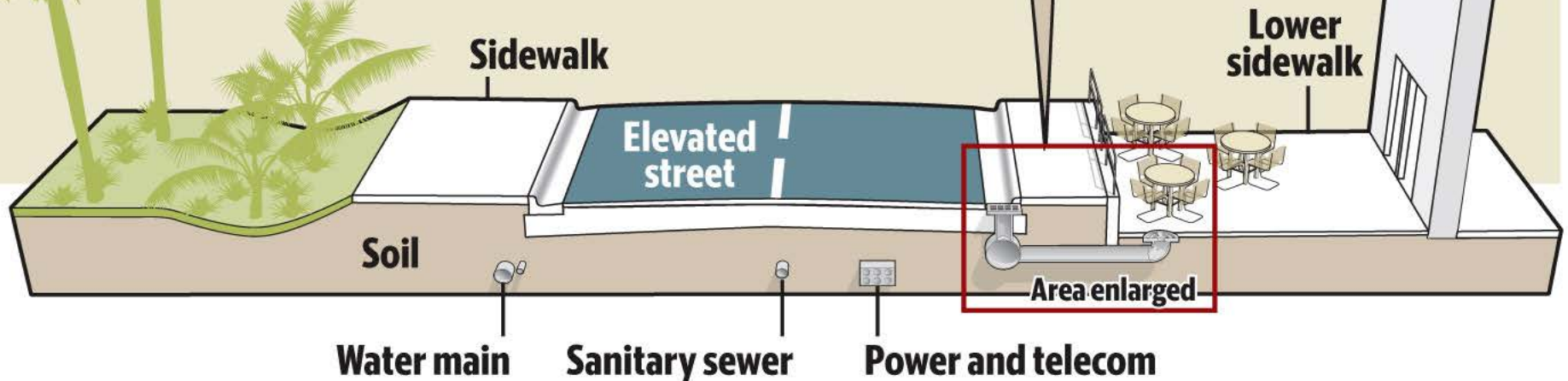
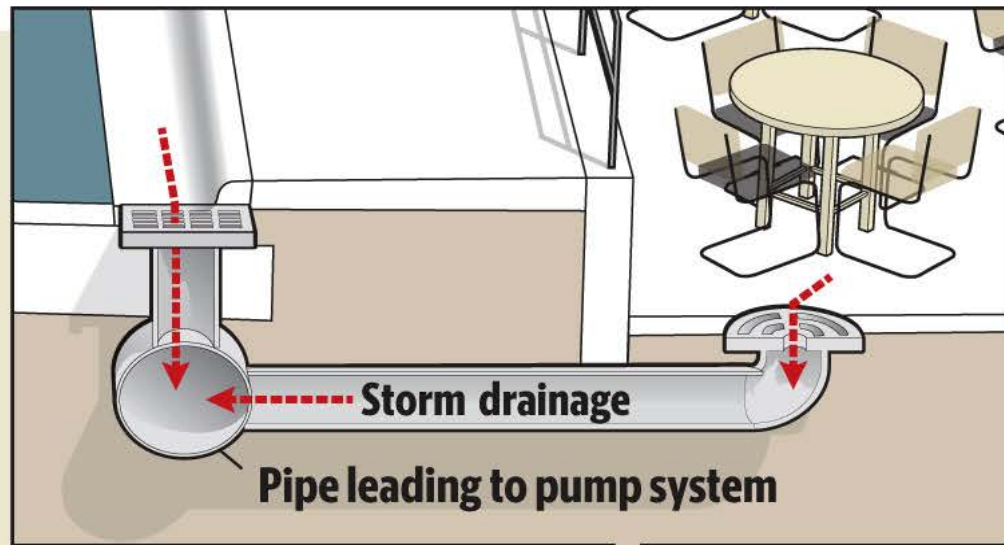
The electronic system is
situated in a higher level to
prevent malfunction in case of
big floodings due to hurricanes

Biscayne Bay

**Seawall
& Rip Rap**
New 5.7'
NAVD seawall

Backflow Preventer

20th St. and Purdy Ave. Pubbelly's patio



PRIVATE PROPERTY ADAPTATION: Land Development Regulations Updates

	Old Requirements	New Requirements	
Base Flood Elevation (BFE)	5.44 Feet NAVD (7 Feet NGVD)	6.44 Feet NAVD (8 Feet NGVD)	
Freeboard	0 feet above BFE	+1 to +5 feet above BFE	
Seawall Elevation (Private)	3.2 FT NAVD 4.76 FT NGVD	4 to 5.7 FT NAVD 5.56 to 7.26 FT NGVD	
Seawall Elevation (Public)	3.2 FT NAVD 4.76 FT NGVD	5.7 FT NAVD 7.26 FT NGVD	
Minimum required yard elevation	No minimum required	5.0 Feet NAVD (6.56 Feet NGVD)	

PRIVATE PROPERTY ADAPTATION: Land Use Board Review Criteria



The photo shows the front of the property elevated 5 feet above BFE (13 feet NGVD and 11.44 feet NAVD).

Red line shows the lowest living floor elevation of the house.



ADAPTATION CALCULATOR

← → ↺

Not secure | gis.miamibeachfl.gov/Html5Viewer/Public/index.html?viewer=EC

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MIAMIBEACH

GEOGRAPHIC
INFORMATION
SYSTEM

Search...

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Miami Beach Adaptation Calculator

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The below information contains available data for this parcel. Note that all elevations are in feet (NAVD88)

Verify that this is the correct property:

Address: 500 17 ST

Folio: 0232270000090

Existing Crown Of Road: 3.9
(Point of the highest elevation of current road)

Future Crown Of Road: 3.7
(Estimate of minimum elevation of future road)

Existing Edge Of Pavement: 2.9
(Elevation of the point where the current edge of the roadway meets parcel driveway)

Future Edge Of Pavement: 3.5
(Elevation of the point where the future edge of the roadway meets parcel driveway, based on a 10 foot road. Note that the new elevation will be gradually harmonized to the private property)

Average Ground Elevation: 2.6
(Average of thousands of LIDAR ground points for the parcel)

Finished Floor Elevation: No Data
(Top of the lowest livable floor)

Elevation Certificate Recorded: No

(An Elevation Certificate is an important tool that documents your building's elevation, is also provides proper elevation information used by the FEMA National Flood Insurance Program (NFIP) for the purpose of estimating risk premium rates necessary to provide flood insurance for new POST-FIRM Constructions that are built after 1972 or substantially improved structures in designated Special Flood Hazard Areas.)

Next

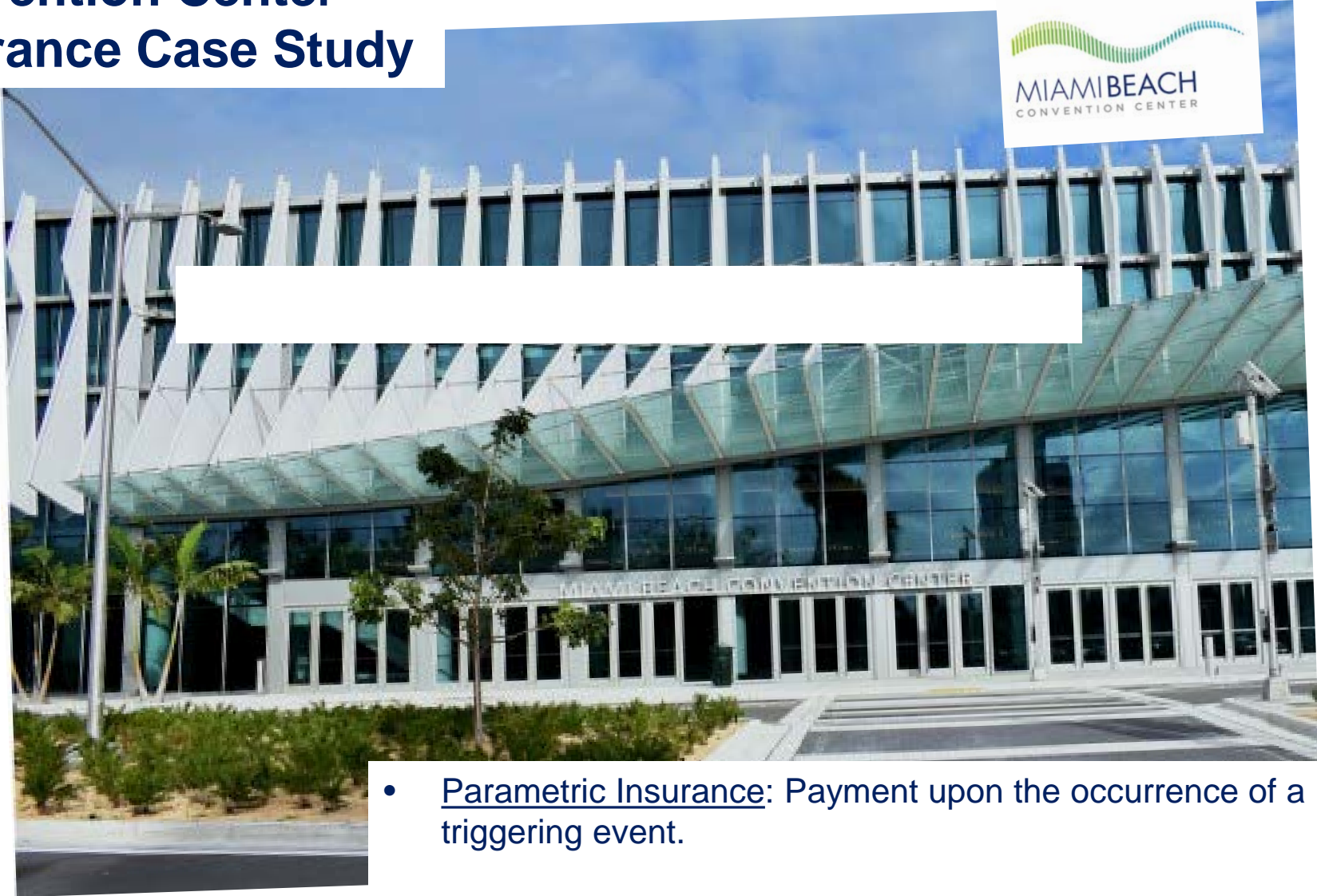
Back

🏠 Miami Beach A...

🗨 Layers

🗺 Miami Beach A...

Miami Beach Convention Center Insurance Case Study



- Parametric Insurance: Payment upon the occurrence of a triggering event.
- Benefits: provides coverage for losses excluded under traditional property policies, rapid claims payout, uses a threshold deductible wherein once the threshold is met, losses are covered up the limit triggered.

Miami Beach Convention Center Insurance Case Study



Premium Indication

STRUCTURE:

96-129 MPH Escalating or CAT-IN-A-CIRCLE

WINDSPEED QUALIFYING EVENT:

Coverage is Triggered if the 60-Second Sustained Wind Speed meets or exceeds the MPH Thresholds, at any anemometer.

CAT-IN-A-CIRCLE QUALIFYING EVENT:

Coverage is Triggered if an Event Track Point falls on or within the boundaries of the Circle, or intersects the Circle, as reported by the National Hurricane Center's Public Advisory Reports; at any of the three circles.

QUALIFYING EVENT MAXIMUM PAYOUT:

The highest Payout of either the Wind Trigger or the Cat-In-A-Circle Triggers. The Cumulative Payouts are not additive within the same Named Storm, however, the payouts can be added over multiple Named Storms, not to exceed the Limit during the Contract Period.

Rates are INDICATIVE, non-binding, and subject to change.

Limit	Rate	Premium*
20,000,000	5.15%	\$ 1,030,434
25,000,000	5.15%	\$ 1,288,033
30,000,000	5.15%	\$ 1,545,631
35,000,000	5.15%	\$ 1,803,237

Indications include applicable taxes and fees

Anemometer	Latitude	Longitude	Circle Radius
BBH	25.76690	-80.14534	10 Miles
MSP	25.8228	-80.1783	

Wind Speed Payout						Hurricane Intensity	10 Mile Radius
96	1.0%	111	18.0%	126	70.0%	Category 1	0.00%
97	1.5%	112	20.0%	127	80.0%	Category 2	0.00%
98	2.0%	113	22.0%	128	90.0%	Category 3	25.00%
99	2.5%	114	24.0%	129	100.0%	Category 4	60.00%
100	3.0%	115	26.0%			Category 5	100.00%
101	4.0%	116	28.0%				
102	5.0%	117	30.0%				
103	6.0%	118	32.0%				
104	7.0%	119	34.0%				
105	8.0%	120	36.0%				
106	9.0%	121	38.0%				
107	10.0%	122	30.0%				
108	12.0%	123	40.0%				
109	14.0%	124	50.0%				
110	16.0%	125	60.0%				



We cover what others exclude.

5/28/2019

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An aerial photograph of Miami Beach, Florida, showing a dense urban landscape with numerous high-rise buildings, a winding river or canal on the left, and a sandy beach with turquoise water on the right. The text "THANK YOU!" is overlaid in the top right corner.

THANK YOU!

MIAMI BEACH
RISING
ABOVE

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Environment & Sustainability
City of Miami Beach
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