



City of Fort Lauderdale

Frequently Asked Questions

Proposed Sea Wall Ordinance

The City of Fort Lauderdale is considering amending the Unified Land Development Regulations of the City of Fort Lauderdale Section 47-19.3 Boat Slips, Docks, Boat Davits, Hoists, and Similar Mooring Structures. This amendment is intended to improve coastal resilience and mitigate the effects of tidal flooding and sea level rise.

1. What are the major changes in the proposed seawall ordinance?

The existing ordinance sets a maximum elevation for all new seawalls at five and one-half (5½) feet above NGVD29, except when the adjacent property is higher than five and one-half (5½) feet above the NGVD29 (3.90 feet NAVD88).

The proposed ordinance:

- Adds definitions for seawall and for North American Vertical Datum (NAVD88);
- Sets a minimum seawall elevation at 4.6 feet NAVD88 (0.7 feet; 8.4 inches above the current maximum allowable elevation)
- Sets an allowable maximum height of the seawall based on a property's base flood elevation;
- Requires seawall reconstruction to the minimum elevation if the substantial repair threshold is triggered;
- Requires maintaining seawalls in good repair;
- Addresses fixed and floating docks; and
- Sets a date by which all seawalls must meet the minimum elevation requirement (March 1, 2035)

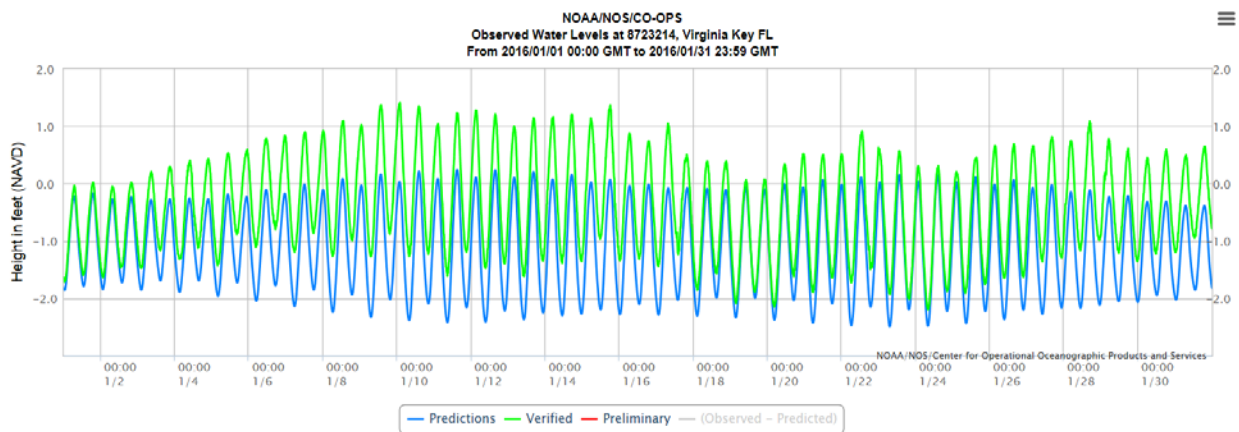
2. Why are we changing the ordinance at this time?

During September of 2015, the City of Fort Lauderdale experienced a King Tide that was predicted to be 8-10 inches above the average high tide but was observed to be 18-20 inches above the average high tide. The unprecedented flooding resulted in a presentation to the City Commission at the November 3, 2015 Commission Conference Meeting. At that time, the Commission requested that the City revise the seawall ordinance (ULDR Sec. 47-19.3) to set a minimum seawall elevation requirement.

3. Was the height of the September 2015 King Tide an anomaly? What causes the observed tide height to exceed the predicted tides?

As shown in the January 2016 graphic below from the Virginia Key Tide Gauge, the observed height of the tides continues to exceed the NOAA tide predictions (green line is higher than the blue line). While the difference between the predicted and observed tidal height varies, there is a continuing pattern that the observed heights are consistently higher by 6-12 inches. If this trend continues, King Tides this fall will again be in the 16-20 inches range above the average predicted high tide for the year.

Higher than predicted tides can be the result of a number of phenomena including, but not limited to, easterly winds, the passage of tropic storms and the slowing of the Gulf Stream Current.



4. How did the City determine the minimum seawall elevation of 4.6 feet NAVD?

The proposed minimum elevation requirement (4.6 feet NAVD88) is derived from the observed peak elevation of the September 2015 King Tide at NOAA's Lake Worth Tide Gauge plus two (2) feet of additional elevation to address the maximum projected sea level rise expected to occur within the 30-50 year lifespan of a seawall constructed today.

5. What guidance for seawalls are other nearby municipalities using?

Lighthouse Point- sets a maximum cap elevation of 6.5 ft NGVD (4.9 NAVD88)

Sea Ranch Lakes – No height adjustment allowed

Lauderdale by the Sea – Does not address height

Pompano - Seawalls will be erected to be consistent with the elevation of adjacent seawalls. No seawall will exceed 5 feet 10 inches NAVD88.

Hallandale – Does not set criteria for height

Miami Beach - 5.7 feet NAVD88 for public seawalls

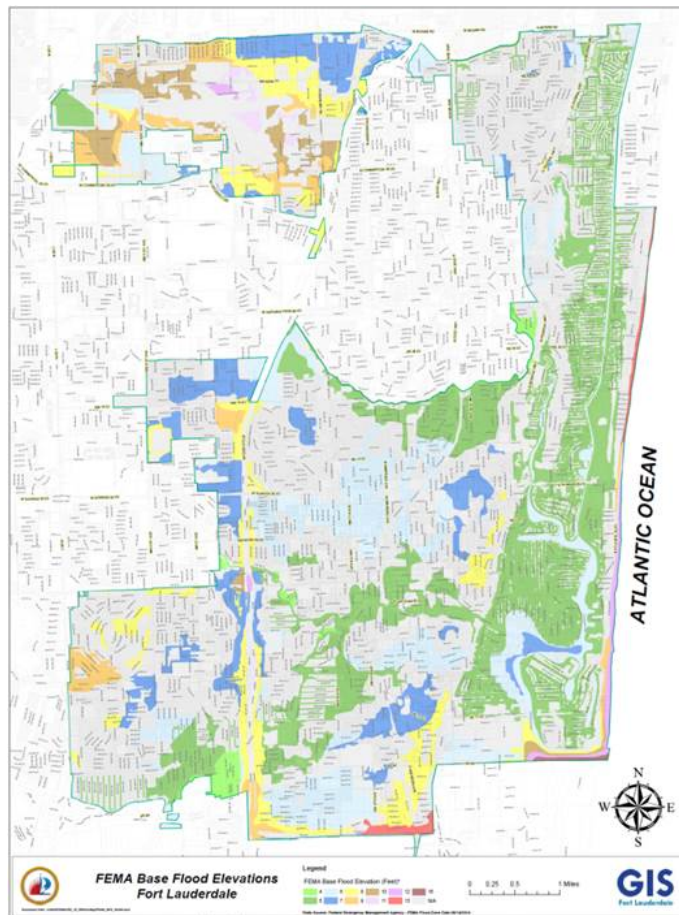
Hillsborough Beach - Does not set criteria for height

6. Why is the Base Flood Elevation used to set the maximum elevation of the seawall?

Base Flood Elevations are provided in the Federal Emergency Management Agency Flood Insurance Rate Maps (FEMA FIRM) as whole numbers (e.g. 4, 5, 6). This value was used to set a maximum to ensure that the new seawalls was lower than the finished flood elevation and would not result in grading of the property in a manner that would cause flooding into the home.

<u>Property's FEMA Flood Insurance Rate Map Location</u>	<u>Minimum Allowable Seawall Elevation</u>	<u>Maximum Allowable Seawall Elevation</u>
<u>In a floodplain with a base flood elevation greater than or equal to 5.0 feet NAVD88</u>	<u>4.6 feet NAVD88</u>	<u>Base Flood elevation of the property</u>
<u>In a floodplain with a base flood elevation equal to 4.0 feet NAVD88</u>	<u>4.6 feet NAVD88</u>	<u>Base Flood elevation of the property plus one foot (5 feet NAVD88)</u>
<u>In an X zone, not in a floodplain</u>	<u>4.6 feet NAVD88</u>	<u>Meet the definition of grade as determined by Section 47-2.2 (g)(1)(a)</u>

7. What is my Base Flood Elevation and what are the applicable minimum and maximum seawall elevation?



Seawall Elevation Based on Base Flood Elevation (BFE)

- **BFE = 4 or 5 ft NAVD88**
 - **Min 4.6 ft - Max 5.0 ft**
- **BFE= 6 ft NAVD88**
 - **Min 4.6 ft - Max 6 ft**
- **Not in a flood plain**
 - **Min 4.6 ft**
 - **Max Grade**

FEMA Base Flood Elevation (Feet)*

4	6	8	10	12	16
5	7	9	11	13	N/A

8. Why are we allowing a variety of seawall heights by setting a maximum and minimum?

The City previously set a maximum elevation which also allowed for varying heights. Properties at different elevation require seawalls at different elevation to prevent erosion and address drainage issues. Individuals with marine interests also consider seawall height in the context of access to their boats.

9. What counts as a seawall? Are rip rap and coral rock seawalls included in the ordinance?

The ordinance defines a seawall as a vertical or near vertical structures placed between an upland area and a waterway. The seawall may be made of any material as long as it is substantially impermeable. For the purposes of Section 47-19.3(f), rip rap is not consider a seawall but traditional coral rock seawalls (coral boulders cemented into a solid wall) meet the definition.

The intent of adding the phrase “substantially impermeable” is to convey that water should not be able to move unimpeded through a seawall. This would include features such as open scuppers, cracks, seams, expansion joints, and poor mortar joints. Water will find its own level and penetrate under and through features until it reaches equilibrium. Seawalls shall be constructed so that water should not “flow” inland through the above grade section of seawall.

10. Will raising the seawalls worsen flooding caused by stormwater events?

The elevated seawalls could prevent overland flow of stormwater. Generally speaking, the City’s stormwater management system (drainage infrastructure) is designed to prevent overland flow. One way valves incorporated into the seawall itself is one potential solution to concerns of water pooling on the upland side of a seawall.

Please note that this proposed seawall ordinance is one component of an overarching strategy to improve the resiliency of our community to stormwater and tidal flooding. Other efforts being implemented through the City’s Stormwater Master Plan, Seawall Master Plan, and Canal Dredging Master Plan will further reduce flooding and complement the seawall ordinance implementation. While elevation of the roadways is another potential tool to address flooding, it finished floor elevations for the existing buildings need to be considered which limits the locations where street elevations could be applied.

11. Will the City canal dredging project impact the soundness of existing seawalls? Should the ordinance indicate building seawalls deeper?

The City only dredges the center third of a canal, ensuring it does not dredge within 10 feet of a seawall to ensure it does not negatively impact seawalls. City canal dredging projects will not impact the foundation of existing seawalls. The City canal dredging criteria requires the contractor(s) to maintain all dredging operations 10 feet away from any seawall to prevent any impact to the soils surrounding the seawalls. Dredging activities would not warrant setting seawalls deeper.

12. Will the ordinance make permitting easier?

The ordinance does not change the current permitting process. However, the City is currently considering creating standard seawall designs that may be expedited through permitting.

13. Will every seawall (both private and public) have to be raised to the minimum elevation by 2035?

That is correct. This is consistent with the City's Fast Forward 2035 Vision goal to have a safe and resilient community.

14. If the stated life of a seawall is 30-50 years, how can we ask homeowners who recently installed a seawall to rebuild it in just 20 years?

The majority of seawalls in the City of Fort Lauderdale is currently past their 30-50 year life span or will be past their useful life by 2035. Property owners with seawalls constructed in the near term (e.g. the last five years) are likely to be able to add a cap in the future to meet the minimum height requirements. Adding a cap is about 1/10th the cost of rebuilding a seawall.

15. Where are the funds going to come from to rebuild the City owned seawalls? How many linear feet of seawall does the City own?

Should the proposed ordinance be adopted, the City will have 19 years to incrementally address funding, design and construction of publically-owned seawalls. A variety of funding options could be considered including existing community investment plan funding, special assessments, a seawall utility, future FEMA mitigation funds, a bond measure or increased millage rate on ad valorem property tax.

We estimate that the City owns four (4) miles of seawall (~21,000 linear feet). Depending on whether the seawall needs to be raised or replaced the cost in today's dollars could range from \$2M-\$26M.

16. What is the cost of seawall replacement or repair?

Costs will vary by a number of factors including, but not limited to, the depths of the adjacent waterway, the elevation of the property, and construction materials used. The following are estimates only to understand the general magnitude of the costs.

Replacement: The cost per linear foot (LF) for a new concrete panel type seawall is approximately \$1,230/LF.

Repair: e.g. broken/spalled concrete areas in the cap \$60 per cubic foot of epoxy mortar

Extension: Add a 12" cap to an existing seawall \$95 per linear foot

17. I just put in a new seawall at the current maximum elevation of 3.9 NAVD88 (5.5 NGVD29). Will I have to put in a new one by 2035?

The proposed elevation requirement applies to all seawalls regardless of age or height. Seawalls constructed to the current code may be able to be capped with an additional 8 inches of concrete or other appropriate material to meet the height requirement for 2035.

18. Does the city, county, state or federal government offer funding for private property owners to raise their seawalls?

Not currently. The Federal Emergency Management Agency is considering funding raising seawalls as a form of hazard mitigation.

19. How will the city code officers enforce the requirement to keep seawalls in good repair?

The proposed ordinance requires that seawalls are maintained in good repair. A seawall is presumed to be in disrepair if it allows for upland erosion, transfer of material through the seawall or allows tidal waters to flow unimpeded through the seawall, above ground to adjacent properties or public Right-of-Ways such as roads. The “good repair” criterion does not apply to the height of existing seawalls.

Most of the City’s code enforcement is complaint driven, a direct result of the observation of one of our code enforcement officers, or associated with targeted sweeps for specific concerns. Areas known for tidal flooding are likely locations for initial enforcement of the “maintained in good repair” criterion.

20. Can I just add a cap to my existing seawall to meet the elevation requirement when the time comes?

That will depend on if the seawall is structurally sound and can bare the additional weight of the cap.

21. What is the substantial repair threshold?

If more than percent (50%) of a seawall or more than fifty percent (50%) of its replacement value is damaged, destroyed or removed for any reason, the entire seawall shall be required to meet the new elevation requirement.

22. How are fixed and floating docks impacted by the ordinance?

The proposed ordinance allows fixed docks to be built lower than the adjacent seawall. There is no minimum height for a dock. Docks tied to a seawall have a maximum height of no more than seven (7) inches higher than the seawall to which they are attached.

Floating docks must be permitted and must be permanently attached to a marginal dock, finger pier, mooring pilings, or seawall.

23. When are the scheduled public meetings on the proposed ordinance?

April 7	Marine Advisory Board
April 25	Council of Civic Association Executive Board
May 3	Commission Conference
May 10	Council of Civic Association Regular Meeting
May 18	Planning and Zoning Board – Public Hearing
May 23	Sustainability Advisory Board
June 7	First Public Reading – City Commission
June 21	Second Public Reading – City Commission