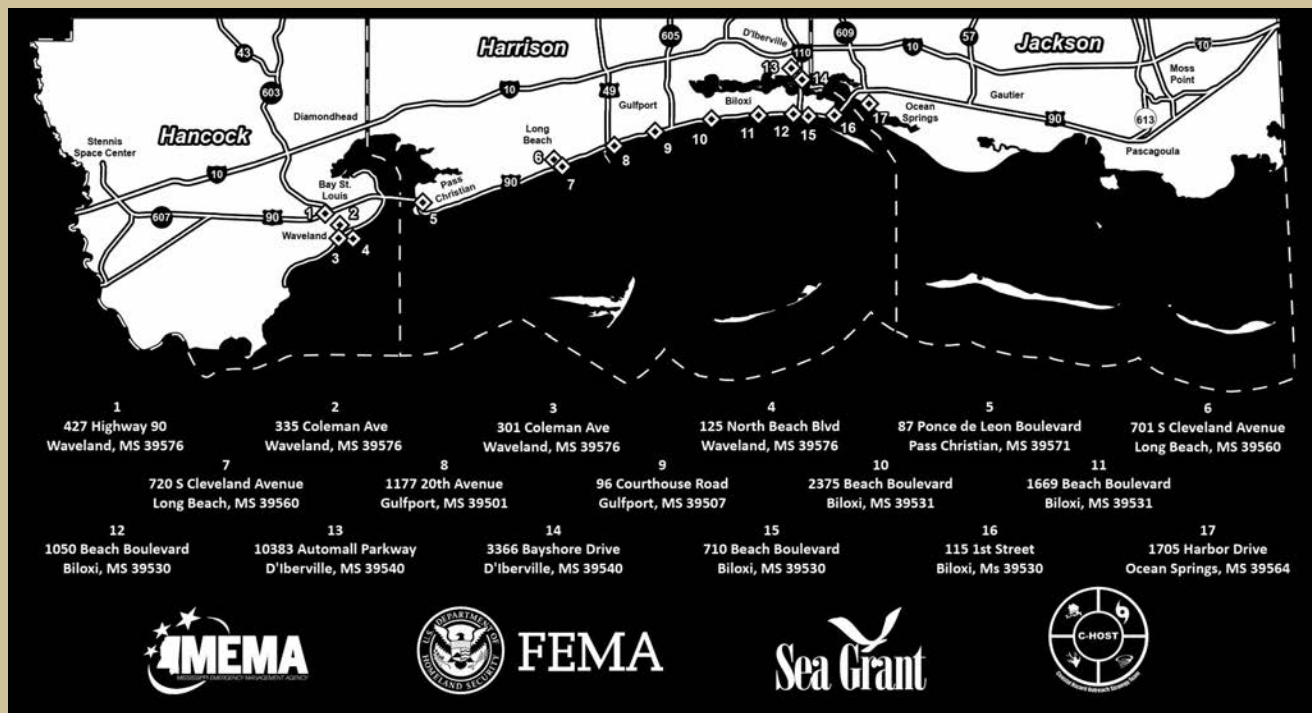


# Guide to Mississippi Community Markers – High Water Marks



**MISSISSIPPI STATE UNIVERSITY™**  
COASTAL RESEARCH & EXTENSION CENTER

The National Academies of

SCIENCES  
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NORTHERN GULF OF MEXICO

# Introduction

Flooding is a threat to buildings, property, and lives. Floods are the most common and widespread of all weather-related disasters. Storm surge is an abnormal rise in water level in coastal areas, over and above the regular tide, generated from a severe storm's wind, waves, and low atmospheric pressure. Along the Gulf coast, storm surge is often the greatest threat to life and property from a hurricane. The Gulf of Mexico coast is low-lying, and we are highly vulnerable to sea-level rise impacts.

The “Know Your Line: Be Flood Aware” High Water Mark initiative was created by FEMA (Federal Emergency Management Agency) and seven other federal agencies: the National Oceanic and Atmospheric Administration, National Park Service, U.S. Army Corps of Engineers, U.S. Department of Agriculture, Natural Resources Conservation Service, U.S. Department of Housing and Urban Development, U.S. Geological Survey and U.S. Small Business Administration. The goal of the High Water Mark Initiative is to raise flood risk awareness by posting high water markers in prominent places within a community to show where flood waters have risen in the past. The signs are meant to galvanize the community to take steps to reduce their risk to future flooding. In addition, the communities that participate in the program (as well as generate ongoing outreach around flood risk), are eligible for flood insurance premium discounts through an incentive program called the Community Rating System.

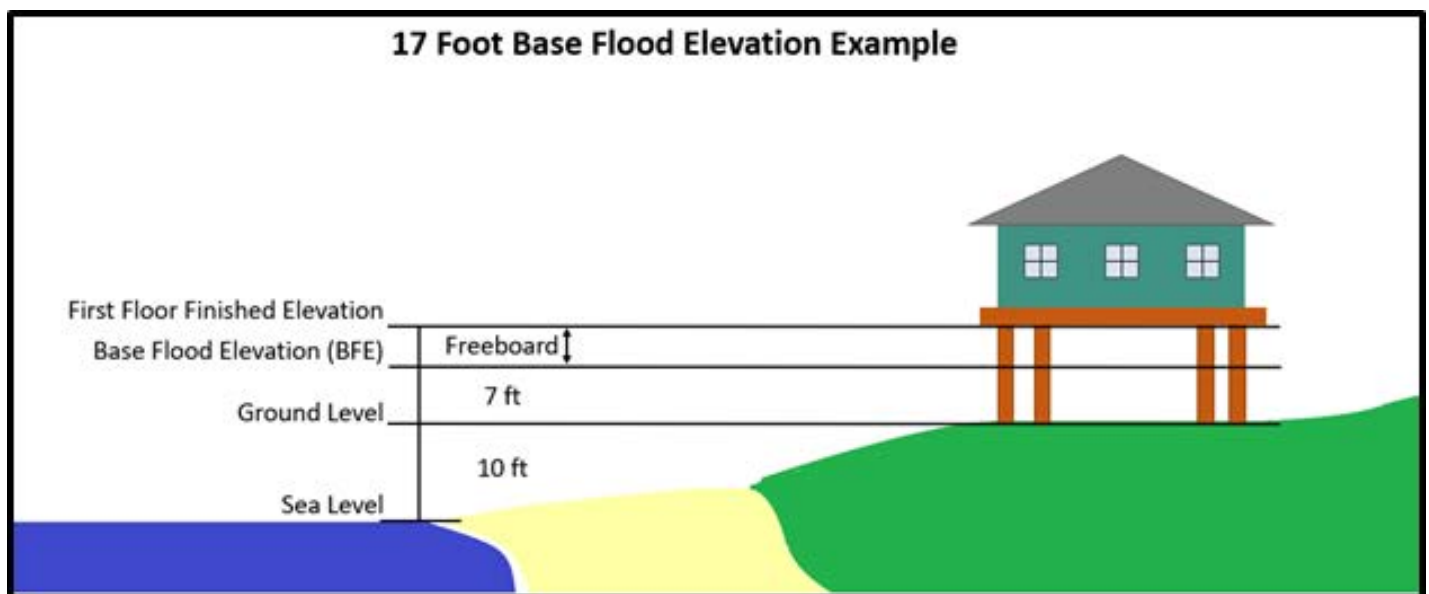
In Coastal Mississippi there are twelve visible markers in communities from Waveland to Ocean Springs. The Mississippi markers were organized by FEMA, the Mississippi Emergency Management Agency, Mississippi-Alabama Sea Grant and the Coastal Hazard Outreach Strategy Team (C-HOST), a regional outreach team that consists of representatives from 12 coastal Mississippi communities. All of the markers were revealed in ceremonies along the coast on the 10th anniversary of Hurricane Katrina. All of the original high-water marks cannot be found. Highlighting previous disasters can be contentious as many are concerned it could deter new businesses coming to the area. Others do not want to be reminded of the negative side of coastal living. How to discuss risk and conduct dialogue around flooding and flood risk can be tricky as there are many important factors to consider, such as maintaining a strong tax base to support provision of services and building to minimize damages.

These signs are a physical marker with the three colored lines (Fig 1). Red shows how high the water was from Hurricane Katrina, which made landfall as a category 3 hurricane on August 29, 2005 at 10:00am. Blue shows how high the water was from Hurricane Camille, which made landfall as a category 5 hurricane on August 17, 1969 at about 11:30pm. Black indicates the base flood elevation (BFE), which is how high water is expected to rise in a mid-sized flood event for that area. The BFE is a regulatory benchmark used by federal, state, and local governments to set standards for the elevation and floodproofing of structures. Base Flood Elevation is set by the expected water surface elevation resulting from a flood that has a 1% chance of occurring in any given year. Because 1% can also be termed as a 1 in 100 chance it is sometimes called the 100-year floodplain; however, it is important to remember that each year at a spot within the 1% annual chance floodplain has a 1 in 100 chance of flooding. For example, a house in the 1% annual chance floodplain has a 26% chance of seeing a flood as deep as the BFE over the life of a 30-year mortgage.



**FIGURE 1:** High Water Marks at two locations showing the colored lines. Corresponding colored arrows point to the colored high water mark lines. Red indicates Hurricane Katrina, blue indicates Hurricane Camille, and black indicates the base flood elevation (BFE).

Figure 2 shows a coastal home in a 17-foot BFE zone. This home has freeboard, which means it was built higher than BFE. The term “freeboard” refers to the space between BFE and the first floor. With our changing climate and sea-level rise coupled with changes in land use and impervious surfaces, our historic flood patterns are changing. Overtime, the 1% annual chance floodplain has and will continue to include a larger area. By understanding our risk, we are able to prepare our communities, homes, and businesses for current and future flooding.



**FIGURE 2:** 7-foot base flood elevation example.

These markers are designed to bring awareness to how high the water levels were in past storms and remind residents about local flood risk. These visual reminders spark community engagement and illustrate how residents and communities can benefit by preparing for future storms. It is important to understand your community flood risk and changing conditions. For example, in some locations the base flood elevation is far below the Katrina storm surge because Hurricane Katrina was larger than a mid-sized flood.

# On Your Visit

## WHEN YOU VISIT

While at each location look around the surroundings and reflect with yourself or your group:

- What is the difference in heights between the high water marks for Base Flood Elevation, Hurricane Camille, and Hurricane Katrina?
- What would be under water if the water was that high right now?
- What would be the effect on the beach sand, grasses, plants?
- Would any buildings be partially or fully submerged? What is the function of those buildings and would water damage them beyond repair?
- What level of water would impact transportation? Are any buildings or roads completely cutoff?
- If the water is this high at this spot, how far inland do you think the water would be?
- Is there anything that would move with the water as it rises?
- What conditions change storm surge?
- Who is impacted by storm surge? Who uses this area for work, lives nearby, or recreates here?
- Are you prepared for future storm surge and flooding? Do you know where to find resources to prepare your home, your community?
- What actions can you, your family, and your community take to be resilient to future flooding?
- What does being resilient mean to you?



# Locations

High Water Marks are discussed in order of location along the coast from West to East.



- **87 PONCE DE LEON BLVD., PASS CHRISTIAN - HENDERSON POINT PARK**
- **701 S CLEVELAND AVE., - COMFORT STATION**
- **720 S CLEVELAND AVE., LONG BEACH - MARINA**
- **1177 20TH AVE., GULFPORT - BARKSDALE PAVILION**
- **96 COURTHOUSE ROAD, GULFPORT - COMFORT STATION**
- **2375 BEACH BLVD., BILOXI - COMFORT STATION**
- **1669 BEACH BLVD., BILOXI - COMFORT STATION**
- **1050 BEACH BLVD., BILOXI - BILOXI VISITORS CENTER**
- **10383 AUTOMALL PARKWAY, D'IBERVILLE - D'IBERVILLE CITY HALL**
- **3366 BAYSHORE DRIVE, D'IBERVILLE - BOAT RAMP**
- **710 BEACH BLVD., BILOXI - KATRINA MEMORIAL**
- **115 1ST ST., BILOXI - MARITIME AND SEAFOOD INDUSTRY MUSEUM**
- **1705 HARBOR DRIVE, OCEAN SPRINGS - OCEAN SPRINGS HARBOR AND BOAT RAMP**

# Henderson Point Park

87 Ponce de Leon Blvd., Pass Christian, MS 39571

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques located on a support on the underside of US-90 by the kids play structure in Henderson Point Park. To get to the HWM park in the west lot, to the left of Ponce de Leon Blvd. Walk towards the anchor statue and the large gazebo to see the play structure and HWMs to the left.

## ADDITIONAL DETAILS:

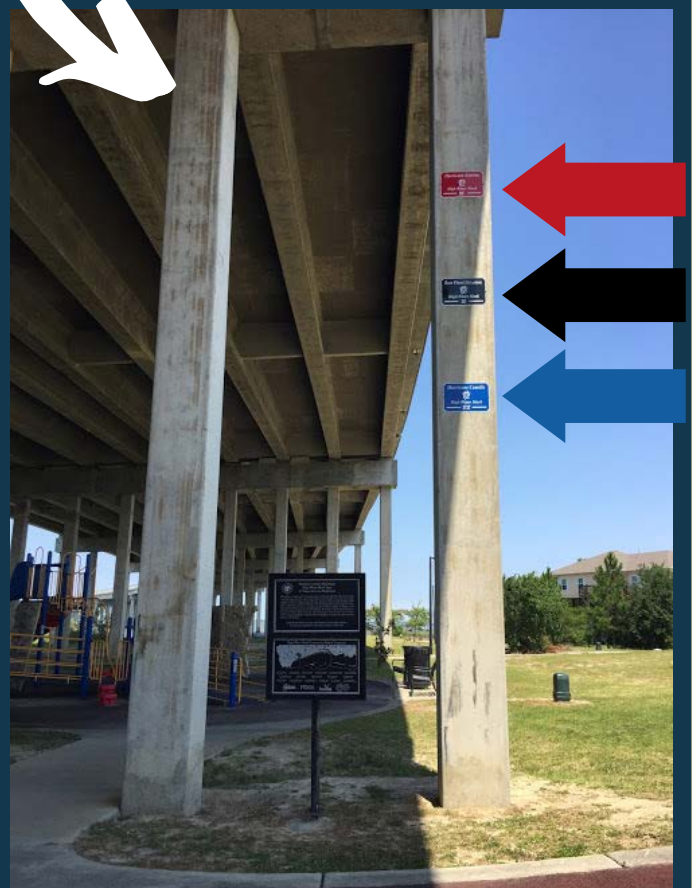
This location is in a park with a play structure and water access for fishing, making it a good location to go to with family members and children.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE

# Comfort Station #1

701 S Cleveland Ave., Long Beach, MS 39560

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques on the comfort station. This is located south of US-90 and is on the east side of S Cleveland Ave. The address may direct you incorrectly across the intersection. You can walk up the stairs to be level with the markers, to look out on the surrounding area. There is a parking lot that includes large spaces for boats/busses. Public restrooms are available.

## ADDITIONAL DETAILS:

This location is on the beach and on the same road as the following HWM at Long Beach Marina. It is a good location to go with groups, beach goers, and boaters.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE



# Long Beach Marina

720 S Cleveland Ave., Long Beach, MS 39560

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are lines on a support post for the Harbor Master building in the marina. This is right next to Willie's Fuel & Bait. There is a parking lot by the marina.

## ADDITIONAL DETAILS:

This location is in a marina nearby the beach. It has water access for fishing and swimming, making it a good location to go to with boaters and beach goers.

## PARKING:

Parking lot & street parking



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUES

# Barksdale Pavilion

1177 20th Ave., Gulfport, MS 39501

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques on the southwest corner of the Barksdale Pavilion in Jones Park. This is next to the Gulfport Harbor Masters Office. There are parking lots nearby.

## ADDITIONAL DETAILS:

This location is in a park with pavilion coverage, water features, bike/walking paths, and a marina. This is a good location to go with large groups, families, and boaters.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



PLAQUE



HIGH WATER MARK

# Comfort Station #2

96 Courthouse Road, Gulfport, MS 39507

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques on the comfort station. This is located south of US-90 and is on the east side of Courthouse Rd. You can walk up the stairs to be level with the markers, to look out on the surrounding area. There is a parking lot that includes large spaces for boats/busses. Public restrooms are available.

## ADDITIONAL DETAILS:

This location is on the beach and near a boat ramp. It is a good location to go with groups and families.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE



# Comfort Station #3

2375 Beach Blvd., Biloxi, MS 39531

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques on the comfort station. You can walk up the stairs to be level with the markers, to look out on the surrounding area. This is located south of US-90 along the beach. It is across from the Mississippi Coast Coliseum. Street parking is available approaching from the west of the building. Public restrooms are available.

## ADDITIONAL DETAILS:

This location is on the beach and is a good location to go with groups and families.

## PARKING:

Street parking



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE



# Comfort Station #4

1669 Beach Blvd., Biloxi, MS 39531

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are plaques on the comfort station. You can walk up the stairs to be level with the markers, to look out on the surrounding area. Parking is available in a parking lot in front of the building. To access, approach from the west and pull into the lot before the building. It is next to Snapper's Seafood Restaurant. Public restrooms are available.

## ADDITIONAL DETAILS:

This location is on the beach and is a good location to go with groups and families.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE

# Biloxi Visitors Center

1050 Beach Blvd., Biloxi, MS 39530

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are lines on the flagpole on the southwest side of the building next to the statue of Pierre Le Moyne d'Iberville. Turn into the parking lot from Porter Ave. The Biloxi Visitors Center is a museum with exhibits telling the story of Biloxi, its people, its connection to the water, and its cultural diversity. The building is built to resemble the Dantzler House with two-story porches, a grand staircase, and floor-to-ceiling windows. The Dantzler House was a two-story city-owned structure that stood on the site until Aug. 29, 2005, when it was destroyed by Hurricane Katrina.

## ADDITIONAL DETAILS:

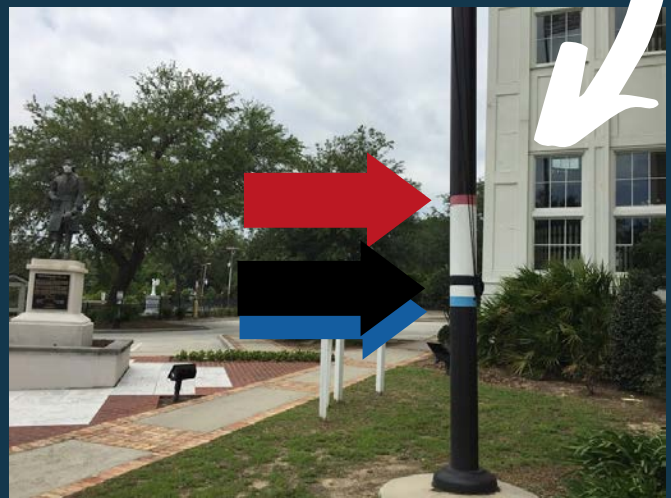
This location is across the street from the beach and is a good location to go with groups and families.

## PARKING:

Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE



# D'Iberville City Hall

10383 Automall Parkway, D'Iberville, MS 39540

## LOCATION:

The HWM plaques are on the side of the building next to the door to the D'Iberville Water & Sewer Department on the south side of the main building. There is a parking lot.

The sign indicates Katrina HWM but no lines are visible.

## ADDITIONAL DETAILS:

This location is by the City Hall and a good location to go with groups and families, and anyone using D'Iberville Water & Sewer, visiting City Hall, the Civic Center, or the Post Office.

## PARKING:

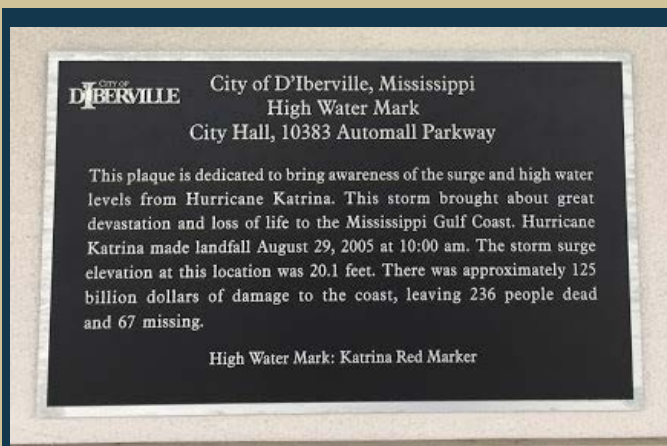
Parking lot



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE

# I-110 Boat Ramp

3366 Bayshore Drive, D'Iberville, MS 39532

## LOCATION:

The HWM for Hurricane Katrina (Red) is marked as a line on a support post for I-110. The plaque and line is located on the south side of Bayshore Dr. The location is under the overpass for the highway. The plaque indicates that BFE is also marked but it is not visible.

## ADDITIONAL DETAILS:

This location is by the picnic tables and boat ramp and is a good location to go to with boaters.

## PARKING:

Parking lot



**HIGH WATER MARK**



**PLAQUES**



# Katrina Memorial

710 Beach Blvd., Biloxi, MS 39530

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are lines on the flagpole in the Biloxi Town Green by the Hurricane Katrina Memorial. Street parking and parking lots are available on Main St or off Lameuse St. Across the street from this location are many casinos along the beach.

## ADDITIONAL DETAILS:

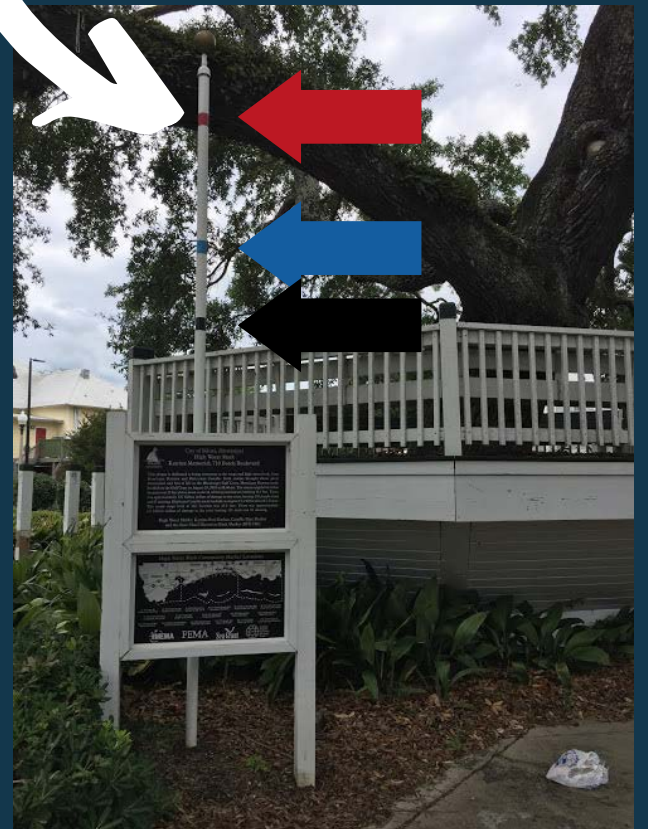
This location is in a park with green space. It is a good location to go with groups and families.

## PARKING:

Parking lot & street parking



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE

# Maritime and Seafood Industry Museum

115 1st St., Biloxi, MS 39530

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are lines on a column at the northeast corner of the Museum. There is a parking lot on the south side of the building off Cadet Alley, or some parking on the street of 1st Street. The Maritime & Seafood Industry Museum works to preserve and interpret the maritime history and heritage of Biloxi and the Mississippi Gulf Coast.

## ADDITIONAL DETAILS:

This location is a museum and nearby to a park with green space. It is a good location to go with groups and families.

## PARKING:

Parking lot & street parking



LOCATION FROM A DISTANCE



HIGH WATER MARK



PLAQUE



# Ocean Springs Harbor and Boat Ramp

1705 Harbor Drive, Ocean Springs, MS 39564

## LOCATION:

The HWMs for Base Flood Elevation (Black), Hurricane Camille (Blue), and Hurricane Katrina (Red) are lines on the flagpole in the gravel parking lot across from Ocean Springs Marine Mart. Next to Dr. Thomas D. McIlwain Harbor Green. The street address may not take you directly to the location.

## ADDITIONAL DETAILS:

This location is in a parking lot near a boat ramp and the beach. It is a good location to go with families and boaters.

## PARKING:

Parking lot



HIGH WATER MARK



PLAQUES

# Resources

To continue the conversation after visiting the high water marks, please check out the following resources:

## **FUTURE STORM SURGE MAPS**

The impact of past storm surge is visible by visiting the high water marks, but there is an online tool to help visualize the effect of future flooding. To see how storm surge will change with sea-level rise visit [www.GOMsurge.org](http://www.GOMsurge.org). Created as part of the Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico (EESLR-NGOM), project, these storm surge projections incorporate sea-level rise by assessing how waves and surge, land use changes, habitat changes, and shoreline, dune and barrier island morphology will change. The dynamic EESLR-NGOM model integrates interactions between physical and ecological environments and provides a high resolution look at what hurricane storm surge may look like under elevated sea level conditions in 2100. We can plan now for future conditions by using modeled changes due to sea-level rise.

## **HOMEOWNERS HANDBOOK:**

The Gulf of Mexico Alliance Coastal Community Resilience Team released the Homeowners Handbook. This helps homeowners prepare for natural hazards to reduce risks to family and property. Homeowners Handbooks are available for all Gulf states, and Mississippi's is directly linked:

[https://gulfofmexicoalliance.org/wp-content/uploads/2020/03/MS\\_Homeowner\\_Handbook\\_2020.pdf](https://gulfofmexicoalliance.org/wp-content/uploads/2020/03/MS_Homeowner_Handbook_2020.pdf).

## **SEA-LEVEL RISE RESOURCES:**

The Northern Gulf of Mexico Sentinel Site Cooperative (NGOM SSC) also has many resources for planning for sea-level rise. Check out our website:

[www.ngomssc.org](http://www.ngomssc.org)



**RECOMMENDED CITATION:**

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