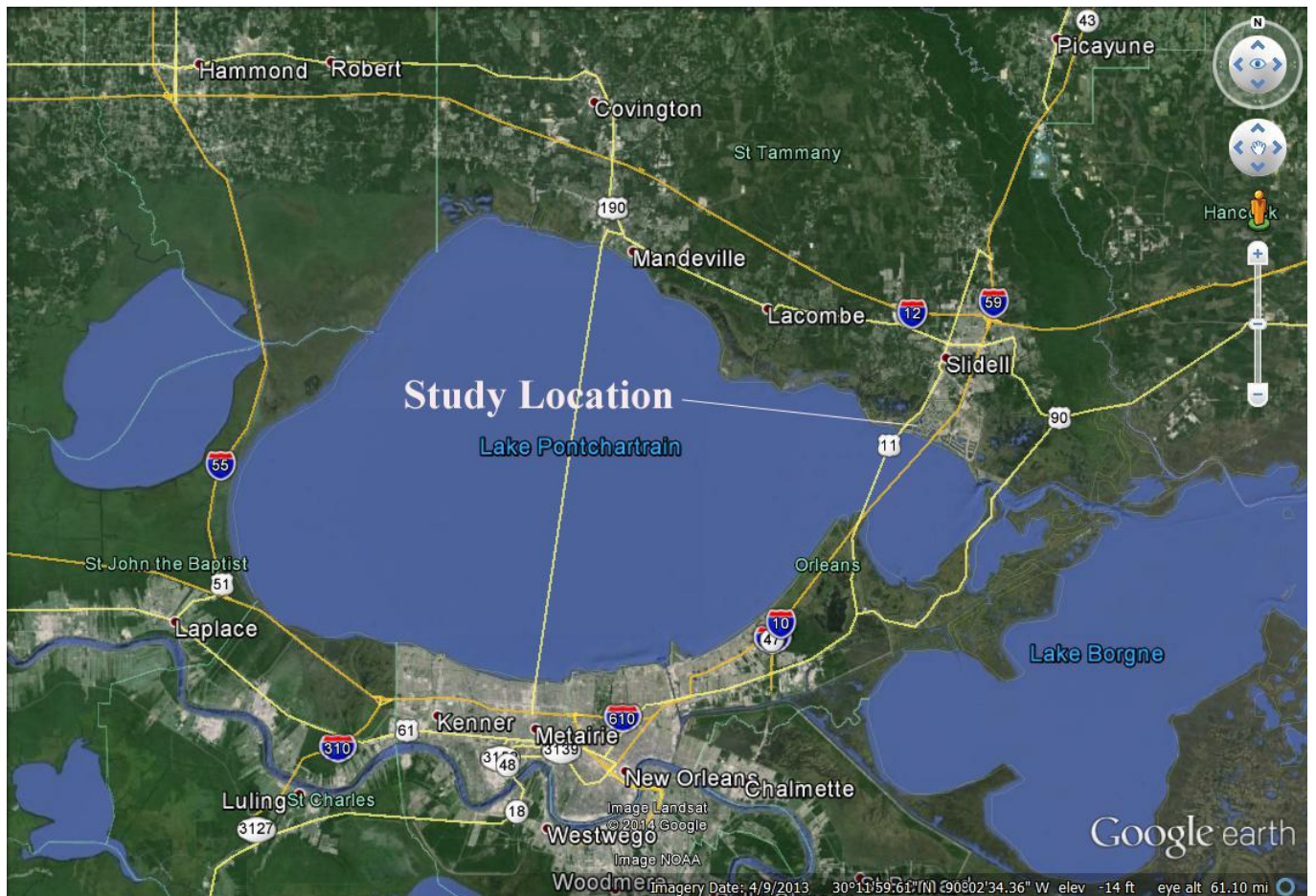


# *East St. Tammany Storm Surge Protection Project Request*

Submitted to

Coastal Protection & Restoration Authority of Louisiana  
(CPRA)



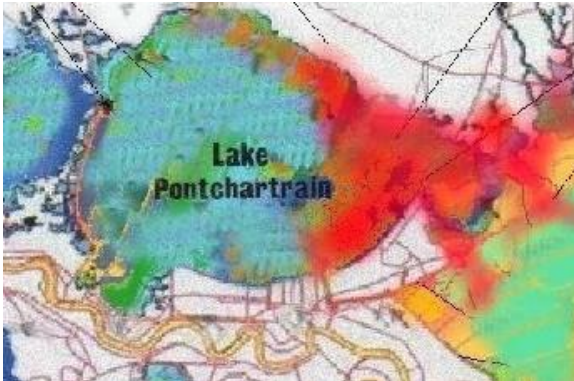
**August 2015**

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Latest Revision August 2015

**Project Request** - The East St. Tammany Storm Protection Committee<sup>1</sup> respectfully requests the CPRA to conduct a feasibility study to determine the most cost effective method of providing a storm surge reduction system for this community.

**Situational Assessment** - Until a comprehensive plan to restrict storm surge from entering the Lake Pontchartrain Basin is implemented, localized structural protection solutions are needed for the most populated and most vulnerable communities located within the Lake Pontchartrain basin, particularly along its northeastern shoreline of Lake Pontchartrain.



Once storm surge enters Lake Pontchartrain it is trapped and can not dissipate into the southern flood plains that once existed in Orleans and Jefferson parishes prior to the Corps' barrier projects. As the hurricane travels north the winds shift causing the lake's built-up surge to tilt to the east forcing a tsunami type surge to the east end of Lake Pontchartrain. Corps' barriers constructed along the south shore of Lake Pontchartrain have eliminated all surge escape routes except for the narrow Chef Menteur and Rigolets passes eliminating all other avenues of escape the built-up storm surge is funneled directly into the densely populated

unincorporated community south of Slidell.

While the CPRA recognizes the extreme storm surge risk within this area of the lake basin it has only provided assistance to the city of Slidell by participating in the construction of a ring levee around the city of Slidell. The ring levee protection provided to the city of Slidell has only increased the flood risk to the community of 7,000 residents located south of the city by creating a box consisting of the Schneider Canal Levee, Highway 11 and I-10 resulting in a surge back flow raising the flood elevations within the community located in this box.

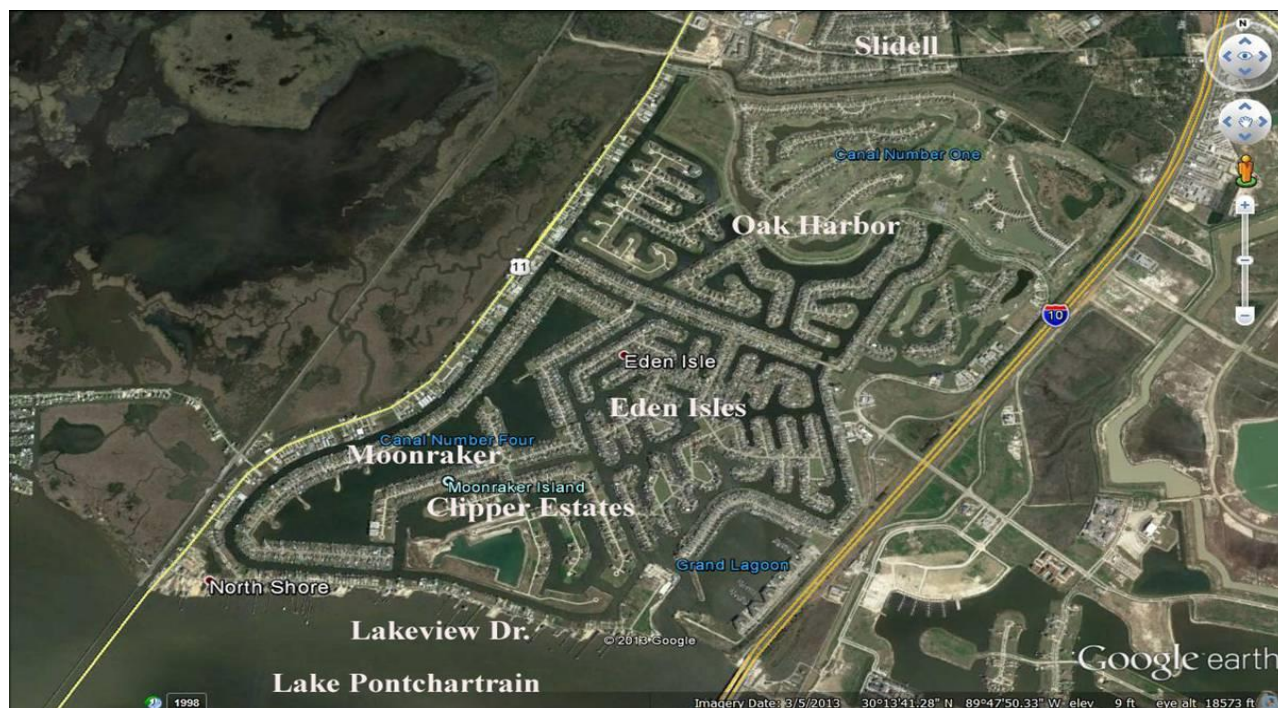


This project will help mitigate the damage caused by the south shore structures and the south Slidell levee.

## **Project Description**

**Location/Map** - The community's area is small (4.2 square miles), with only a mile of lake frontage, but it is **the most venerable, densely populated community within St. Tammany Parish** and possibly within the entire Lake Pontchartrain Basin not currently included in a storms surge protection plan.

St. Tammany Parish's Department of Homeland Security & Emergency Preparedness recognizes the vulnerability of this vital community and placed its need for protection into the St. Tammany's 2015 Parish Hazard Mitigation Plan Update.



**Goal** – Develop a feasible, noninvasive, logical, cost effective storm surge mitigation and reduction plan using existing boundaries, barriers and topographic features in order to reduce cost, increase feasibility and reduce environmental impact to surrounding areas.

This community, south of the City of Slidell, is vital to St. Tammany's social and economic wellbeing and consists of several well maintained gated subdivisions that contribute significantly to the parish's tax base, while utilizing few parish services such as streets, drainage and green area maintenance.

In addition to the 7,000 residents living in these single-family subdivisions, the proposed protection area also encompasses extensive commercial small business constituencies, essential to the commercial vitality of the entire region.

***Cost Benefit*** – If this extremely valuable, venerable, densely populated community does not receive storm surge protection it will no longer be able to sustain itself and survive due to fear of the next flood combined with never ending flood insurance premium increases. Signs of this downward spiral have already begun; new home construction and business development has stopped; families have left and converted their homes into rental property contributing to a decline in property values.



Such an event could cause the loss of:

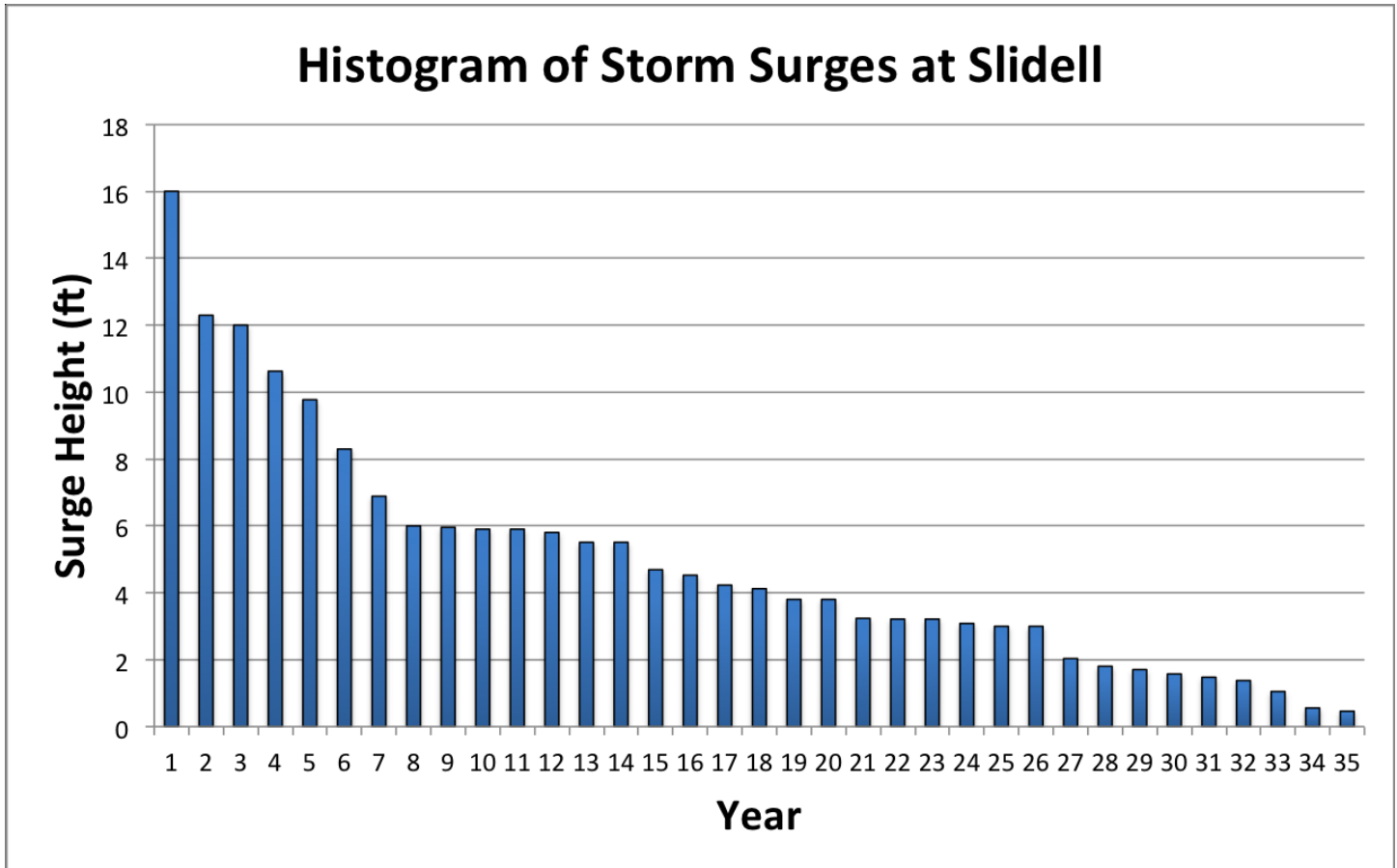
- 7,000 residents (2010 Census), which could double within 10 years if protection is provided and vacant property is developed
- Approximately 3,000 homes with a mean value of \$278,666 as of 2012 for a total value of over \$800 million (<http://www.city-data.com/city/Eden-Isle-Louisiana.html>)
- Average median household income of \$76,334 as of 2012 (<http://www.city-data.com/city/Eden-Isle-Louisiana.html>)
- \$67.4 million in assessed property values (St. Tammany Parish Assessor's Office, 2015)
- More than \$8.2 million in yearly parish property tax revenue (St. Tammany Parish Assessor's Office, 2015), which will increase as vacant property is developed
- St. Tammany Parish Fire District 1's Station 16 fire house valued at \$1.2 million
- The communities' water and sewerage treatment facilities
- 300 condo apartment units (Anchorage apartment complex)
- Dozens of multimillion dollar businesses
- Millions in sales tax revenue
- Millions in future property and sales tax revenue when prime undeveloped residential and commercial sights are left undeveloped due to storm surge risk
- The Parish's oldest, safest and more exclusive cost effective communities

The estimated cost of storm surge protection for this community is approximately \$35 million. Based upon the economic and social losses noted above, this localized storm surge protection project is extremely cost effective.

## **Historical Storm Surge Data**

A one-hundred-year event has a 1% probability of occurring in any given year.

The theoretical 100 year surge elevation at the Lakeview Dr. shoreline has yet to be determined by modeling, but According to USGS, State records, NOAA and private reports, in the past 164 years the Slidell region has only experienced 4 storm surges to exceed 10 feet: The 1915 storm - The 1947 storm - Hurricane Betsy in 1965 - Hurricane Katrina in 2005. All other storm surge reports from USGS, State records, NOAA and private reports state surges to be less than 10 feet.



Data from climatologist Dr. Hal Needham with the Southern Climate Impacts Planning Program

Using actual Lake Pontchartrain surge history readings taken along Slidell area shoreline, shows that a ten foot high ring system will provide significant storm surge reduction for the vast majority of storm surges. This is especially true when factoring in the reservoir capacity of the waterways located inside the levee system that will act as retention ponds absorbing large quantities of overtopping surge.

A low 10 foot high levee would be affordable, unobtrusive and reduce the FEMA Base Flood Elevation, reduce flood insurance rates to an affordable level and save this vital community from extinction even if it does not meet the definition of a theoretical 100 year surge system. This minimum surge reduction plan positions this community for greater protection once the CPRA's "Land Bridge" project is implemented.

The East St. Tammany Storm Protection Committee requests the CPRA to perform a feasibility study based upon this low level moderate surge reduction concept.

## **Storm Surge Reduction Concepts for Study**

**Project Features** – The proposed project seeks to make very modest enhancements to existing barriers that already surround the project on three sides. The proposed project area is densely populated, but only encompasses a small area of 2,688 acres (4.2 square miles), with only a mile of lake frontage; therefore, removing this small area from the flood plain should not adversely impact flooding in surrounding areas.

### **Storm Surge Reduction Options The CPRA May Consider In Their Feasibility Plan:**

- A breakwater in the lake as proposed by Senator Crowe in 2010
- An overtopping gate located at the mouth of the marina alone may provide 100 year protection when the reservoir capacities of the existing canals are added into the equation
- Use the multiple lines of defense principle by incorporating both a breakwater and over topping gate
- Elevate the 1.2 mile long Lakeview Dr. to provide both surge protection and evacuation capability
- Construct a retaining wall within the Lakeview Dr. right-of-way
- With both Highway 11 and I-10 alignment in parallel with the storms surge's direction, their existing elevations may be adequate without modifications. But if not, there is adequate right-of-way available to accommodate modifications if needed

There are many options available to provide storm surge reduction and the CPRA has the expertise and resources to perform a feasibility study to evaluate all the options and develop the most cost effective storm surge reduction plan for this vital community in addition to providing a second layer of protection for the City of Slidell.



2011 – Garrett Graves and A. G. Crowe provided surge prevention concepts to Storm Committee

## *Elements of One Proposed Mitigation Ring Levee Plan*

The East St. Tammany Storm Protection Committee has developed one possible plan that could be built for approximately \$35 million. This plan is simply a preliminary concept to show feasibility and cost effectiveness. The CPRA is free to use any or all of the concept or recommend a totally different concept.

### *North Boundary*

**Location:** Schneider Canal Levee south of Slidell

**Enhancements:** Needs no additional construction, study or funding and does not require any additional modifications. The existing levee provides limited surge protection for the city of Slidell. This proposed project south of Slidell would improve the current level of protection significantly.

**Cost:** No additional improvements or cost to the existing Schneider Canal Levee needed.

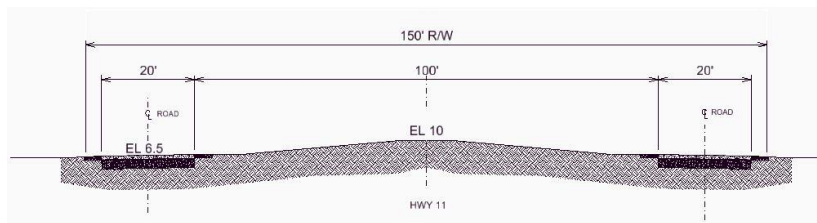
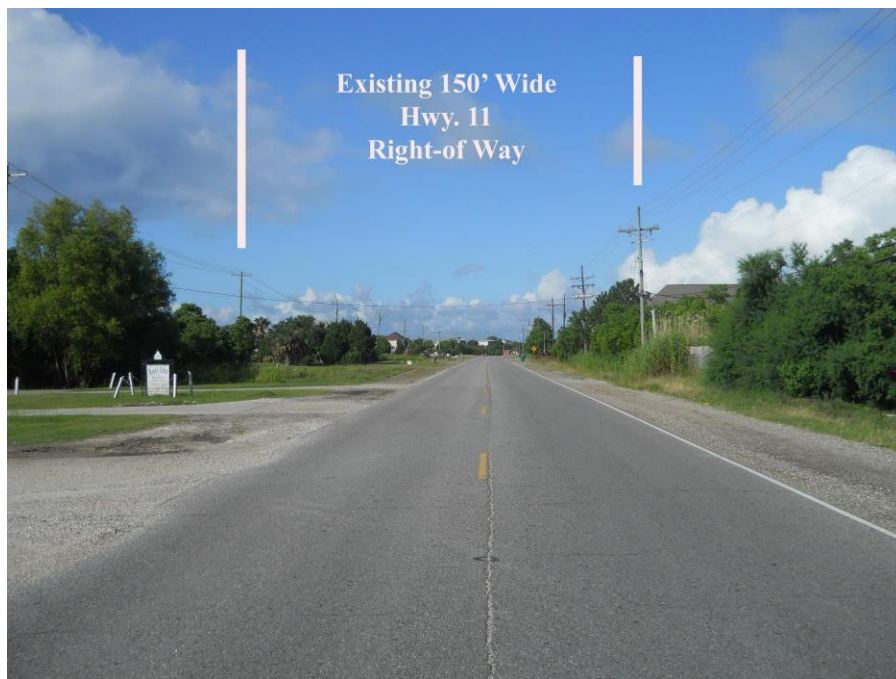
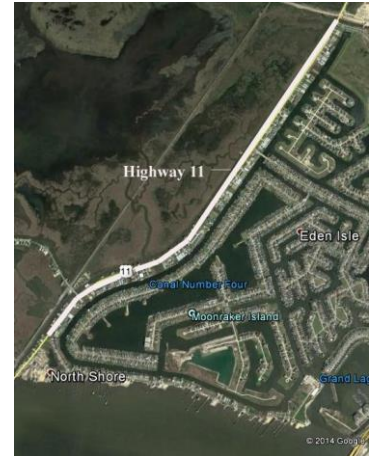


## West Boundary

**Location:** State Highway 11

**Enhancements:** Highway 11 is currently in the preliminary design process of constructing major widening improvements by the Regional Planning Commission (RPC) in conjunction with the Louisiana Department of Transportation and Development (DOTD). Improvements include removal and replacement of the existing roadway with a revised profile to enhance development along this major St. Tammany artery. Incorporating storm surge enhancements into the design at this preliminary stage is both feasible and cost neutral. The neutral ground area between the two travel lanes can easily serve as the western levee boundary without any adverse traffic issues.

**Cost:** With an existing 150-foot wide highway right-of-way, the RPC and DOTD can incorporate additional surge protection, if needed, at little or no additional cost.





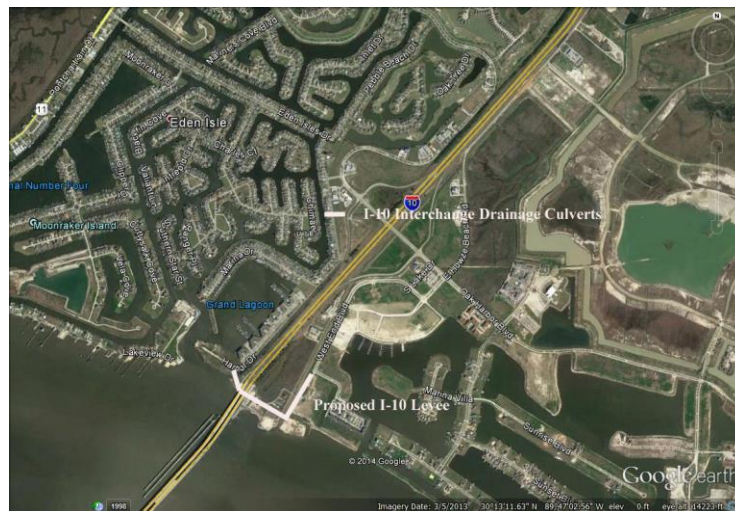
## *East Boundary*

**Location:** Interstate 10 (I-10)

**Enhancements:** Interstate 10 meets proposed elevation requirements and may need only a small levee section to protect the study community as well as the Federal Highway hurricane evacuation route. Although the I-10 travel lanes did not flood during Hurricane Isaac in 2012, the off ramps did flood as a result of back flow through drainage culverts servicing the interstate's ramps. The interstate interchange flooding directly led to the death of an individual attempting to flee the rising surge waters of Hurricane Isaac.

Blocking storm surge from entering the proposed project area would not only protect the residents and business located within the area, but also prevent back flow flooding of the interstate's access ramps and save the lives of those attempting to evacuate hurricane storm surges. A small levee section, parallel to Lake Pontchartrain's shoreline under the I-10 Bridge and along the eastern interchange right-of-way boundary would complete the eastern section of the levee protection system.

**Cost:** Federal funding can and should be made available to provide this cost effective solution to interstate travel of a major hurricane evacuation route.

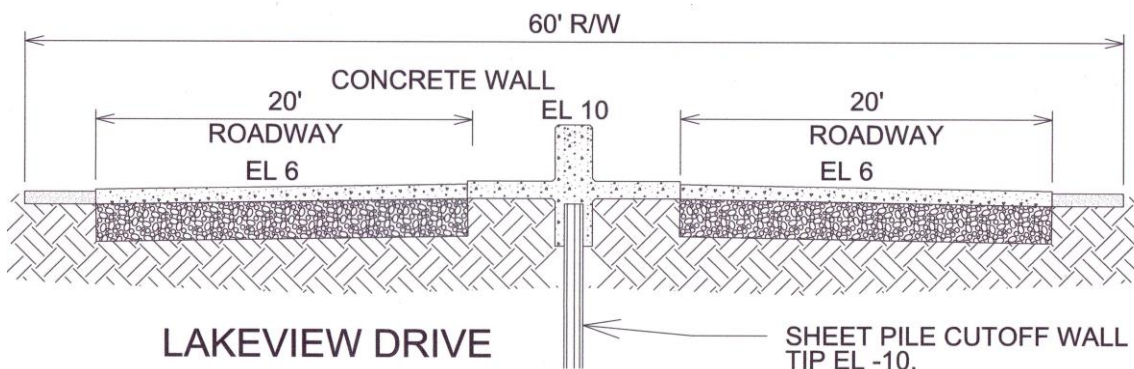
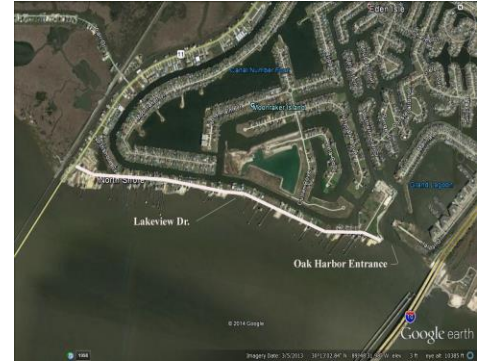


## South Boundary- 2 Components

**1st South Boundary Component Location:** Lakeview Drive (only a mile long).

**Enhancements:** The short mile long southern boundary is the only boundary not currently providing existing surge protection. The existing 60' wide Lakeview Drive right-of-way allows for a variety of design concepts to block surge by elevating the roadway within this right-of-way or installing permanent or removable walls or by combining two or more surge protection techniques. Each method provides its own unique benefits and can be finalized during the preliminary design process. Elevating the roadway will not only restrict storm surge, but also provide Lakeview Dr. residents hurricane evacuation access and relieve the parish of repetitive repair and maintenance cost associated with clearing the roadway of storm related debris.

**Cost:** To raise/modify existing 1.2 mile roadway to an elevation of 10 feet would cost approximately \$3,000,000. The cost should be shared between parish road funds and levee district funds.



**2nd South Boundary Component Location:** Entrance to the Oak Harbor Marina at the end of Lakeview Drive.

**Enhancements:** Construction of a Gate System at the entrance to Oak Harbor Marina is the most costly component of the proposed storm surge protection system. A 50 foot opening would be more than adequate to allow safe recreational boat traffic and the occasional waterway maintenance boat access. There are various proven gate systems that may be used to effectively block storm surge.

**Cost:** 25 million based on existing Corp of Engineer gate design. This cost could be potentially reduced by incorporating a less complicated manually-driven gate design.



Existing

Proposed



### *Estimated Cost of Project*

<b>Item</b>	<b>Estimated Cost</b>
Engineering	\$ 2,750,000
Raise/modify Lakeview Dr. 10-12 feet	\$ 3,000,000
Gate System at Oak Harbor entrance	\$25,000,000
Miscellaneous contingencies	\$ 4,250,000
<b>TOTAL</b>	<b>\$35,000,000</b>

**Community Involvement and Support** - The East St. Tammany Storm Protection Committee has presented this proposed localized storm surge protection plan to:

- St. Tammany Parish President Pat Brister
- St. Tammany Parish State Senator A. G. Crowe
- St. Tammany Parish State Representative Gregory Cromer
- East St. Tammany Chamber of Commerce
- The Homeowners Associations located within the project's boundaries

The plan has been well received by all the above-mentioned governmental agencies and community groups.

### ***Conclusion***

**This community is most venerable, densely populated, community within St. Tammany Parish** and possibly within the entire Lake Pontchartrain Basin not currently included in a storms surge protection plan.

This structural protection project proposed would mitigate the additional storm surge risk created by the south shore barriers of Lake Pontchartrain and the south Slidell levee. This project could also significantly enhance storm surge protection for the city of Slidell.

A low 10 foot high levee would be affordable, unobtrusive and reduce the FEMA Base Flood Elevation, reduce flood insurance rates to an affordable levee and save this vital community from extinction even if it does not meet the definition of a theoretical 100 year surge system. This minimum surge reduction plan will position this community for greater protection once the CPRA's "Land Bridge" project is implemented.

It is critical that the CPRA recognize the critical need to study surge reduction options for this most venerable, densely populated, community and develop a feasible, noninvasive, logical, cost effective storm surge mitigation and reduction plan.

<sup>1</sup> *Members of the East St. Tammany Storm Protection Committee have been appointed by the board of directors of the various homeowners associations located within the study area bounded by Highway 11, Schneider Canal Levee, Lakeshore Drive and Interstate 10 representing all 7,000 residents living within the study area.*