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Public Comment

to the

U.S. Army Corps of Engineers, New Orleans District (CEMVN)
St. Tammany Parish Feasibility Study
July 2023 Revised Draft Integrated Feasibility Report and Environmental Impact Statement

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Submitted
By

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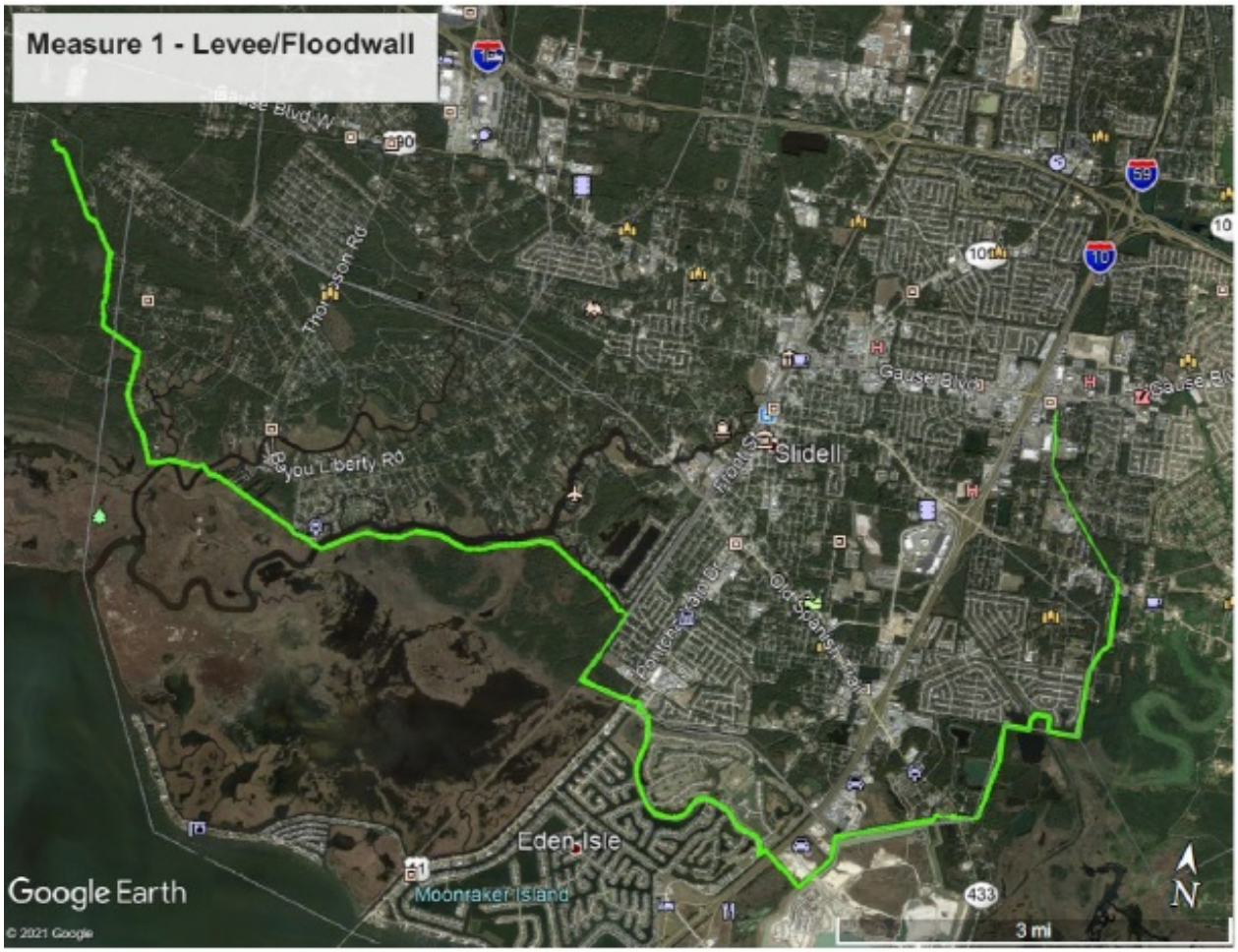
[redacted]



Request realigning proposed levees to provide structural protection for coastal communities south and east of Slidell

Executive Summary

The residents of St. Tammany Parish support USACE's effort to provide storm surge protection for St. Tammany Parish, but it must be equitable and comprehensive.

Additional alternative alignments are needed to meet the plan's stated objectives and requirements to reduce risk to public health and safety requirements by reducing flood impacts to structures, evacuation routes, and critical infrastructure. Also, the plan, as written, does not Increase resiliency (to sustain a community's available resources before, during, and after coastal storm events).

Issues:

- Coastal communities south and east of Slidell have the greatest storm surge risk while receiving the plan's lowest level of coastal protection
- A non-structural elevation plan may be appropriate for low-density flood plain areas, but not for high-density, non-flood plain communities with vital infrastructure and evacuation routes at risk
- 50-year structural protection for Eden Isles is preferable to 50-year nonstructural protection; it provides greater protection with a high cost benefit ratio, and must be added as an approved alternative plan
- The decision not to study a 50-year structural plan for Eden Isles is a major flaw in the St. Tammany feasibility study
- Coastal Slidell community's surge risk has increased significantly as a result of HSDRRS' ongoing construction. USACE policy requires mitigation when their projects harm communities. The St. Tammany Parish Feasibility Study is the ideal venue to take corrective action to compensate coastal Slidell communities impacted by HSDRRS

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50-Year Elevation Plan Does Not Provide St. Tammany Parish Adequate, Equitable or Comprehensive Protection

The residents of St. Tammany Parish support USACE's effort to provide comprehensive storm surge protection for St. Tammany Parish. This plan provides significant protection for much of the parish. However, the plan is not comprehensive and creates additional problems for coastal communities south and east of Slidell that must be addressed.

The plan provides communities west of Slidell 100-year levee protection, and the coastal communities of Lacombe, Mandeville, and Madisonville, 100-year nonstructural elevation protection. In contrast, the coastal communities south and east of Slidell only receive 50-year nonstructural elevation protection and no infrastructure protection.

This is not adequate, equitable or comprehensive protection.

It is requested that the south Slidell levee system be realigned to include coastal communities south and east of Slidell.

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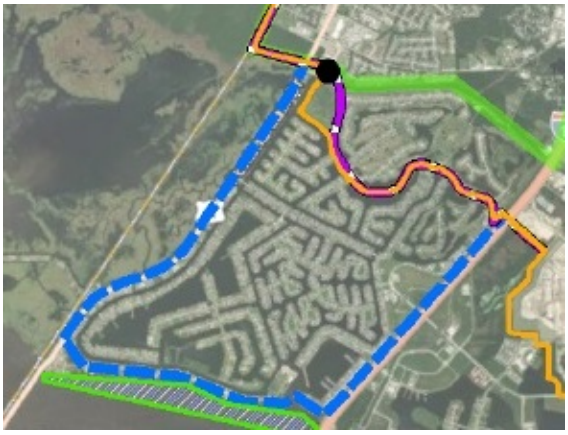
USACE Only Studied Two Equally Unacceptable Eden Isles Alternatives

1. A 100-year structural levee surrounding Eden Isles was studied and rejected:



Local and state agencies studied and rejected 100-year structural protection around Eden Isles (Alternant 6b) years ago. Local and state agencies determined a 100-year structural plan too costly and unacceptable to local residents.

USACE had access to the local and state's 100-year structural plan findings, and knew a 100-year structural plan was not feasible before their study began. USACE was asked to study a lower and less expensive 50-year structural alternative, that has the support of the Eden Isles community, the St. Tammany Parish levee board, parish government and the Louisiana Coastal Protection and Restoration Authority (CPRA).

The feasibility study states:

"Eden Isles levee is cost effective, but the cost benefit is not high enough?"*

However, the only levee USACE studied was the $700,000,000, 100-year levee not the $32,000,000, locally preferred 50-year structural alternative plan for Eden Isles (See page 14).

2. USACE selected a 50-year nonstructural elevation plan for Eden Isles:

The 50-year elevation plan for Eden Isles assumes only 300 of the 3,000+ homes in Eden Isles will qualify for elevation. The plan does not protect the underground electrical grid, water, sewer, fire protection, infrastructure and 320 miles of roads from storm surge.

Eden Isles residents, along with local and state government submitted their concerns with the 50-year elevation plan. Although, USACE agreed to an 18-month feasibility study extension to address concerns, no additional consideration was given to replace the 50-year nonstructural elevation plan, with a 50-year structural plan as requested.

The only revision USACE made to the Eden Isles elevation plan was to reduce the number of homes eligible for elevation from 400 to 300.

The decision not to study a 50-year structural plan for Eden Isles is a major flaw in the feasibility study.

USACE's study states:

> *"Although the Eden Isles measures were not selected as part of the NED plan under this study authorization, State or local government entities may consider Eden Isles risk reduction features for implementation under other Non-Federal authorizations or programs."*

After USACE chose not to evaluate the locally preferred 50-year structural plan, local and state entities conducted a Gap Study to identify locations where USACE's plan did not provide adequate surge protection.

The Gap Study determined the densely populated community of Eden Isles as "protection priority one", and the CPRA has authorized a scoping study of the 50-year structural plan for Eden isles. (See locally preferred 50-year structural plan - page 14)

The Eden Isles community is grateful for CPRA's recognition that the USACE's elevation plan for Eden Isles does not provide adequate protection and the CPRA has taken action to correct this gap in protection.

However, the Eden Isles community and the USACE cannot rely entirely on Louisiana to fill-in protection gaps contained within the USACE's plan. It is necessary for USACE to include an alternate Eden Isles 50-year structural plan that will:

1. Give the USACE a cost effective alternative to the 50-year elevation when it fails to meet the cost benefit ratio during the Pre-construction Engineering and Design (PED) phase of the project.

2. Give additional support to CPRA's structural plan, increasing its ability to remain a top CPRA priority and obtain funding.

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50-Year Elevation Plan for Eden Isles Puts Lives and Infrastructure at Risk

As stated on page 6 of the USACE Review Plan for St. Tammany, dated Aril 26, 2020, there is limited gauge data needed to provide a warning system necessary to evacuate vulnerable populations. This was evident when Ida changed from a tropical storm into a category 4 hurricane as it came on shore. This rapid intensification did not allow for advance evacuation notices, trapping thousands in flood conditions, including Eden Isles residents.

USACE's 50-year nonstructural elevation plan, with an estimate elevation of 8.5', puts Eden Isles streets under 4 ½' of water, preventing evacuation, trapping 7,000 residents, and restricting emergency response agencies access to Eden Isles. This certainly raises life safety concerns and does not comply with USACE plan requirements.

The USACE Plan for St. Tammany also requires evaluating water velocity and the increased damage it may cause. As demonstrated during hurricane Katrina, when wind and surge velocity caused significant debris damage, along with dead animals, marsh grass and mud that polluted properties and waterways, creating a health risk that lasted for weeks.

The USACE planning objectives, as stated on page 3 of the Main Report, list the following plan "requirements":

- *Reduce the risk to public health and safety by reducing flood impacts to structures, evacuation routes, and critical infrastructure.*
- *Increase community resiliency, which is the sustained ability of a community to use available resources before, during, and after significant rainfall and/or coastal storm events.*

The 50-year nonstructural elevation plan for Eden Isles fails to meet the plan's stated objectives and requirements.

In contrast, the locally preferred 50-year structural plan would satisfy life safety concerns by:

- Keeping roads open, allowing time to evacuate and save lives
- Reducing surge velocity and destructive debris that damage structures
- Protecting vital evacuation roads and infrastructure including all the underground utilities (electrical grid, internet, phone, water, and sewer system), thereby increasing community resiliency and ability to use community resources before, during, and after coastal storm events.

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Eden Isles 50-Year Flood Plain Elevation Is Not Correct; Therefore, the Cost Benefit Analysis Is Not Correct

The estimated still-water elevation of 8.5', used for the Eden Isles 50-year flood plain nonstructural cost benefit analysis is not correct, therefore, the cost benefit analysis based upon the flood plain elevation is not correct.

USACE stated, it would reevaluate and correct the 50-year flood plain elevation by adding wave run-up, adjacent projects and projected 50-year climate change impacts to revised site-specific modeling elevations during the PED phase of the project.

In 2022, the Louisiana Coastal Protection and Restoration Authority (CPRA), using site-specific models, determined the Eden Isles average existing 50-year flood plain is +10.89', this average increased to +13.29' factoring in sea level rise in 50-years.

Eden Isles Flood stage (ft NAVD88)

		Existing Conditions (2022)		Projected flood levels in 50 years, Lower Scenario FWOA	
Location	**Grid Cell**	**100-yr. flood**	**50-yr. flood**	**100-yr. flood**	**50-yr. flood**
A	91627	14.33	12.35	16.64	14.69
B	105723	12.99	11.05	15.23	13.43
C	73585	12.19	10.23	14.31	12.63
D	74234	12.04	9.94	14.2	12.42

Eden Isles residents, along with local and state government, submitted their concerns with the flood plain elevation used in the cost benefit analysis. Although USACE agreed to an 18-month feasibility study extension to address concerns, the cost benefit analysis did not use corrected flood plain elevations with wave run-up and projected 50-year climate change impacts.

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Eden Isles Elevation Cost Estimates

Eden Isles residents, along with local and state government submitted their concerns with the initial estimated elevation cost used in the cost benefit analysis. A Flood Risk Management Economics Overview was conducted during the USACE 18-month feasibility extension to address concerns. Subsequently, the estimated unit cost to elevate homes was increased, and the estimated number of homes qualifying for elevation was reduced from 400 to 300.

Using USACE's Flood Risk Management Economics Overview, dated January 24, 2023, and using its elevation example cost tables to estimate the cost of elevating 300 on slab homes in Eden Isles at today's cost provided the following results:

> Assuming all the homes selected for elevation are at the maximum estimated qualification elevation of 8.5', and will be elevated 9.5' to meet the 18' 100-year requirement.
>
> Assuming 200 of the 300 homes are single-story and average 2200 sf,

To elevate a single-story, 2200 sf home on slab, 9.5 ft @ $125/sf, will cost <u>$398,500/home</u>.

To elevate 200 single-story homes in Eden Isles will cost <u>$79,700,000:</u>

> $125 x 2200 = $275,000
> + a 34% contingency = $368,500
> + $30,000 real estate cost = <u>$398,500</u> to elevate one single-story home in Eden Isles
> x 200 homes = <u>$79,700,000</u> to elevate 200 single-story homes in Eden Isles

Assuming 100 of the homes are two-story and average 2600 sf

To elevate a two-story 2600 sf home on slab, 9.5 ft @ $142/sf, will cost $524,728/home.

To elevate 100 two-story homes in Eden Isles will cost $5,2472,800:

$142 x 2600 = $369,200
+ a 34% contingency = $494,728
+ $30,000 real estate cost = $524,728 to elevate one two-story home in Eden Isles
x 100 homes = $52,472,800 to elevate 100 two-story homes in Eden Isles

The combined estimated cost to elevate 300 homes in Eden Isles = $132,172,800*, at today's cost.

*Elevation cost will increase significantly after PED's reevaluation includes wave run-up and projected 50-year climate change, which increases the number of qualifying homes. The elevation cost benefit analysis will decrease accordingly.

The locally preferred 50-year structural plan on page 12, has an estimated cost estimate of $132,000,000.

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Logistics of Raising and Flood Proofing 6,410 Structures

Tens of thousands of homes in Louisiana are qualifying for elevation plus tens of thousands more throughout the United States. This project alone has identified an additional 5,583 residential structures for elevation.

According to the Flood Mitigation Industry Association, there are only six licensed elevation contractors in Louisiana with a large backlog to elevate the current number of qualified homes. The association also stated the number of elevation contractors may not increase without a significant investment in technical training programs to provide the next generation of elevation contractors.

It is not reasonable to consider home elevation as a viable surge protection plan that:

- May take decades to complete
- Requires multiple qualification requirements
- Requires thousands of dollars in uncovered cost
- Protects a fraction of the structures
- Does not reduce the risk to public health and safety by reducing flood impacts to structures, evacuation routes, and critical infrastructure
- Does not protect from surge debris damage
- That puts elevated homes at higher risk to wind loads
- Does not provide sustainability of community resources before, during, and after significant coastal storm events

The Eden Isles elevation plan is not practical.

This is especially true when 50-year structural protection takes a fraction of the time, for less cost, and provides comprehensive protection to all residents and infrastructure.

Eden Isles residents, along with local and state government submitted their concerns with the time it takes to elevate and flood proof 6,410 structures. During the 18-month feasibility study extension, USACE, acknowledged the concern and would explore ways to help increase the number of contractors qualified to elevate and flood proof structures.

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USACE Policy Obligates Inclusion of Structural Protection Alternatives for Coastal Slidell Communities

The feasibility study states:

> *"St. Tammany Parish is...part of the New Orleans Metropolitan area. Levees in St. Tammany Parish were proposed as part of the New Orleans levee system...as far back as the 1960s in Lake Pontchartrain and Vicinity."*

The purpose of the Greater New Orleans Storm Damage Risk Reduction System (HSDRRS) is to protect the entire New Orleans metropolitan area, not just the south shore of the Lake Pontchartrain Basin. USACE cannot not separate HSDRRS components when evaluating its collective impact on the Lake Pontchartrain Basin.

The feasibility study states:

> *"Human Environment is part of the environmental impact"*

USACE policy:

> *"If it is determined that structures outside of the proposed levee and floodwall alignment are impacted, a Takings Analysis would be prepared to assess the impacts and a plan would be developed to mitigate the potential impacts."*

The USACE policy was verified on November 14, 2012, when Colonel Fleming, Commander of the Corps' New Orleans District Office stated USACE policy requires mitigation for communities impacted by their projects.

2007, Association of State Floodplain Managers, (ASFPM)
White Paper recommendations:

> *"The cumulative impacts of levees within a system or watershed should be evaluated before any levees are permitted, so those impacts are considered and mitigated, including increasing the design height to account for increased flood levels."*

The St. Tammany Parish Feasibility Study is the ideal venue to take corrective action to compensate coastal Slidell communities impacted by HSDRRS. A request was made to adjust the cost benefit ratio requirements, if necessary, to provide structural protection to compensate coastal Slidell communities impacted by HSDRRS.

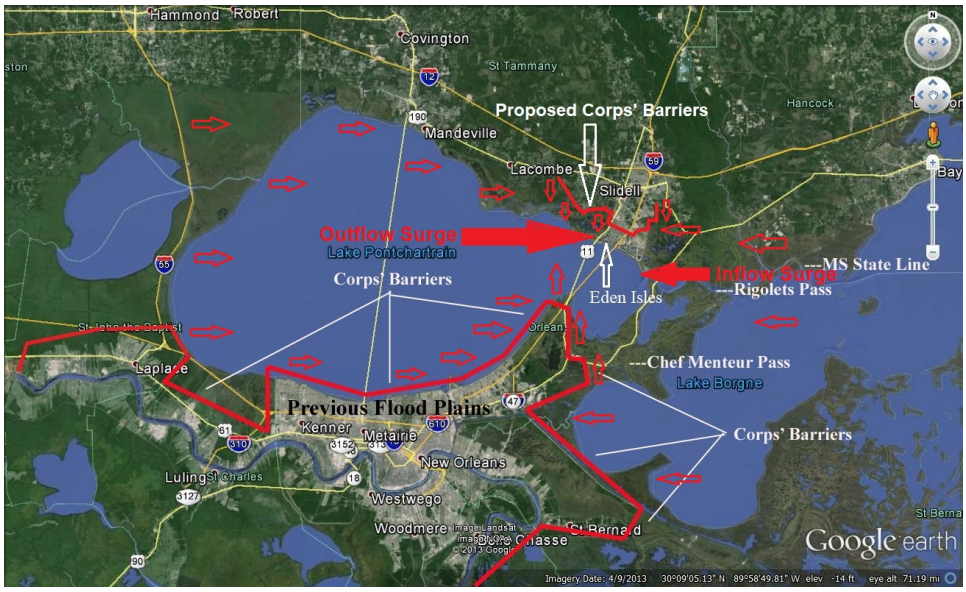
USACE's response was:

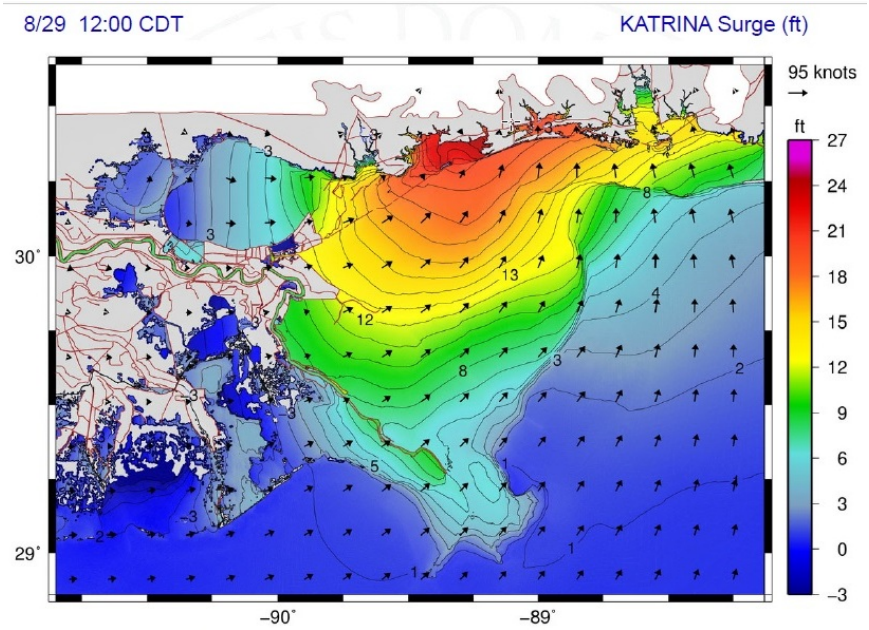
> *"... potential inducement of flooding in Eden Isles from levees elsewhere around the greater Lake Pontchartrain ecosystem, including the Westshore Lake Pontchartrain Project in Laplace, Louisiana. These comments were assessed by leadership and Project Delivery Team members as falling outside the area of this feasibility study."*

USACE's response reflects poorly on the culture, integrity and professionalism of the USACE.

USACE models show HSDRRS has significantly increased surge risk to coastal Slidell. USACE policy requires corrective action to resolve the damage HSDRRS created.

HSDRRS impact to coastal Slidell communities





HSDRRS' impact on surrounding communities:

- In 2012, in response to hurricane Isaac's damage, Senator Dave Vitter's requested a study to determine HSDRRS' impact on surrounding communities. In 2013, USACE released their Isaac specific evaluation finding; HSDRRS had little impact on surrounding communities. The findings were challenged when USACE admitted only 40% of the HSDRRS was evaluated for impact.

- In 2013, USACE agreed to study an array of storms (not just Isaac), to determine the entire "comprehensive" HSDRRS impact to surrounding communities. The HSDRRS comprehensive impact report showed a surge increase of approximately 2" for Eden Isles. However, USACE refused to release their report for public evaluation, despite multiple requests, including a FOIA request.
- In 2018, after an FOIA appeal, USACE released their study for review, and significant errors were found in the pre-HSDRSS topography used in the modeling. USACE acknowledged the errors and agreed to make corrections.
- In 2019, USACE released their corrected study; however, the revision did not correct all the errors found in the pre-HSDRSS topography. USACE acknowledged the additional errors and agreed to make additional corrections.
- In 2020, USACE released their third study revision showing HSDRRS increased surge by approximately 5" at Eden Isles and roughly 8 to 10" for Slidell's coastal communities east of Eden Isles.

It should be noted: the latest revised impact study of 2020, only evaluated impact through 2012, it still contains errors and is not a true study of the entire "comprehensive" HSDRRS impact.

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Integrating Unsanctioned South Slidell and Oak Harbor Levees into Project Requires a Cumulative 533(d) Study

The USACE Review Plan for St. Tammany dated Aril 26, 2020, states:

> *"Additional investigations are underway to acquire additional data on uncertified Slidell levee to assess the incremental risks. This study is likely to propose alternatives that build upon these existing features and will need to assess the risk for these already existing features."*

The south Slidell levee (AKA Schneider Canal levee) and the Oak Harbor Levee were built and elevated without models or studies to evaluate impact on the Eden Isles community. There is no doubt that the south Slidell and Oak Harbor Levees increase surge risk. Before the levees are incorporated into USACE's plan, their "existing elevation", not simply the proposed elevation lift, must be assessed to determine their cumulative flood risk to the Eden Isles community.

2010, email from Ms. Donna Urban, USACE's SELA Project Manager for St. Tammany Parish:

> *"The Schneider Canal project has not been approved for construction by the Corps of Engineers; in fact, it has not yet entered upon the detailed study phase."*
>
> *"We are presently working to develop an acceptable project management plan for a 533(d) study for the project. The study would have to demonstrate that the Schneider Canal project is technically sound, environmentally acceptable, and economically viable in order for the project to be approved for construction. As part of the study effort, we would determine what effects the work would have on surrounding areas."*
>
> *"We anticipate that the 533(d) study would take at least three years to complete; however, funding for the study is not currently available. Initiation of the study is dependent on completion of the project management plan and on appropriation by Congress of the necessary funds. The only information we have for the Schneider Canal project is the twenty-year-old reconnaissance report."*
>
> *Donna M. Urban*
> *Protection and Restoration Office*
> *Regional Projects Branch*
> *Project Manager, SELA, St. Tammany Parish*
> *504-862-1249*
> *FAX: 504-862-2108*

A 533(d) study must be completed to determine the additional surge risk created by the existing, unsanctioned, Slidell and Oak Harbor levees before the CPRA or the St. Tammany levee board assumes responsibility and liability of this segment of the USACE project.

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Locally Preferred 50-Year Structural Protection Plan for Eden Isles

In response to major protection gaps in USACE's plan, the CPRA is evaluating the locally preferred 50-year structural protection plan for Eden Isles.

The locally preferred 50-year structural plan for Eden Isles has been in existence since 2013, and has the support of the St. Tammany Levee, Drainage and Conservation District, St. Tammany Parish Government and the CPRA.

The CPRA's evaluation incorporates a low-level, multilayer protection concept; utilizing the existing railroad embankment, a lake breakwater, roadway elevation, a gate with pump station, and a 900 acre retention/reservoir to provide maximum comprehensive structural protection with a high cost benefit ratio.

Southside (facing Lake Pontchartrain):

- A lake breakwater, to reduce wave action and debris (now in design as a parish project)
- Elevating Lakeview Dr. (now in the state's Master Plan scope of work)
- A marine floodgate & pump station (now in the state's Master Plan scope of work)
- Construct an earthen berm/levee from Marina Dr. to Interstate 10, with a bridge shoulder elevation of 15'

Westside:

- Utilize the existing railroad embankment west of Highway 11, (elevation 7 feet) as a breakwater
- Elevating Highway 11 (now in the state's Master Plan scope of work). The Regional Planning Commission completed its environmental study in 2016, for widening & elevating Highway 11

East side:

- Utilize the existing lanes of Interstate 10, with an elevation from 10 to 15 feet

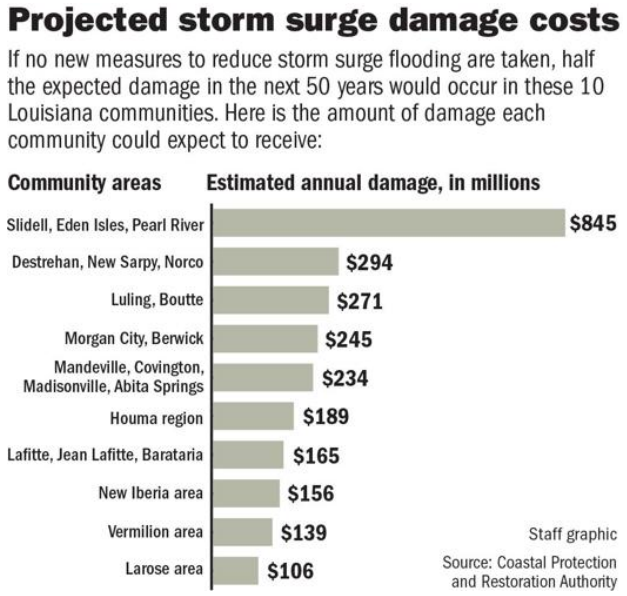
Interior line of defense:

- Eden Isles has 900 acres of interior waterways with a retention/reservoir capacity of 39 million cubic feet of water for every one foot of depth. By pumping the waterways down to mean sea level, in advance of a surge, the waterways can store over 200 million cubic feet of water before streets flood.

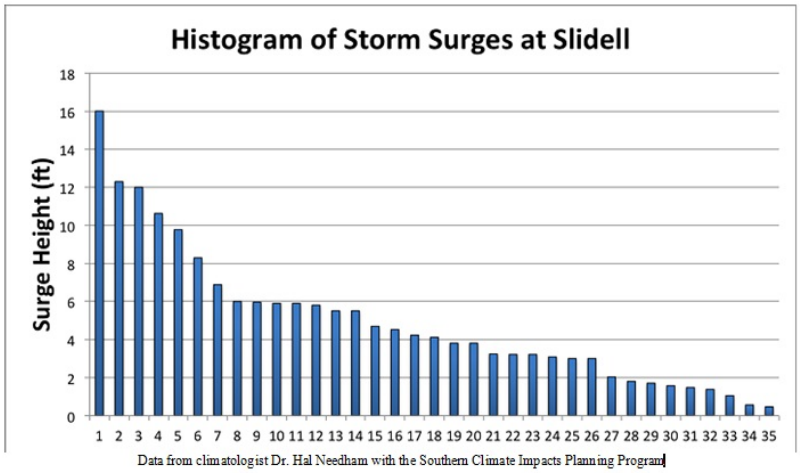
Advantages of the locally preferred 50-year structural plan for Eden Isles

- The locally preferred 50-year structural plan keeps evacuation roads from flooding and accessible for emergency response agencies to service all 7,782, residents
- The locally preferred 50-year structural plan increases resiliency by protecting all structures and infrastructure, keeping underground utilities operational, reducing recovery cost, and expediting recovery time during most storm surge events

- The locally preferred 50-year structural plan provides greater protection with a shorter construction timeframe than the proposed elevation plan
- The locally preferred 50-year structural plan alternative for Eden Isles has a cost estimate of $132 million, providing greater protection, with a high cost benefit ratios than USACE's elevation plan
- The locally preferred 50-year structural plan alternative for Eden Isles protects the economic interest of the state's highest at risk community



- Storm surge history verifies the rational for low-level structural protection



- The locally preferred 50-year structural plan alternative for Eden satisfies the USACE's policy to compensate communities damaged by HSDRRS and fulfills USACE's commitment to provide comprehensive flood risk reduction to St. Tammany Parish

Therefore, the locally preferred 50-year structural plan for Eden Isles must be added as an approved alternate to the USACE's elevation plan.