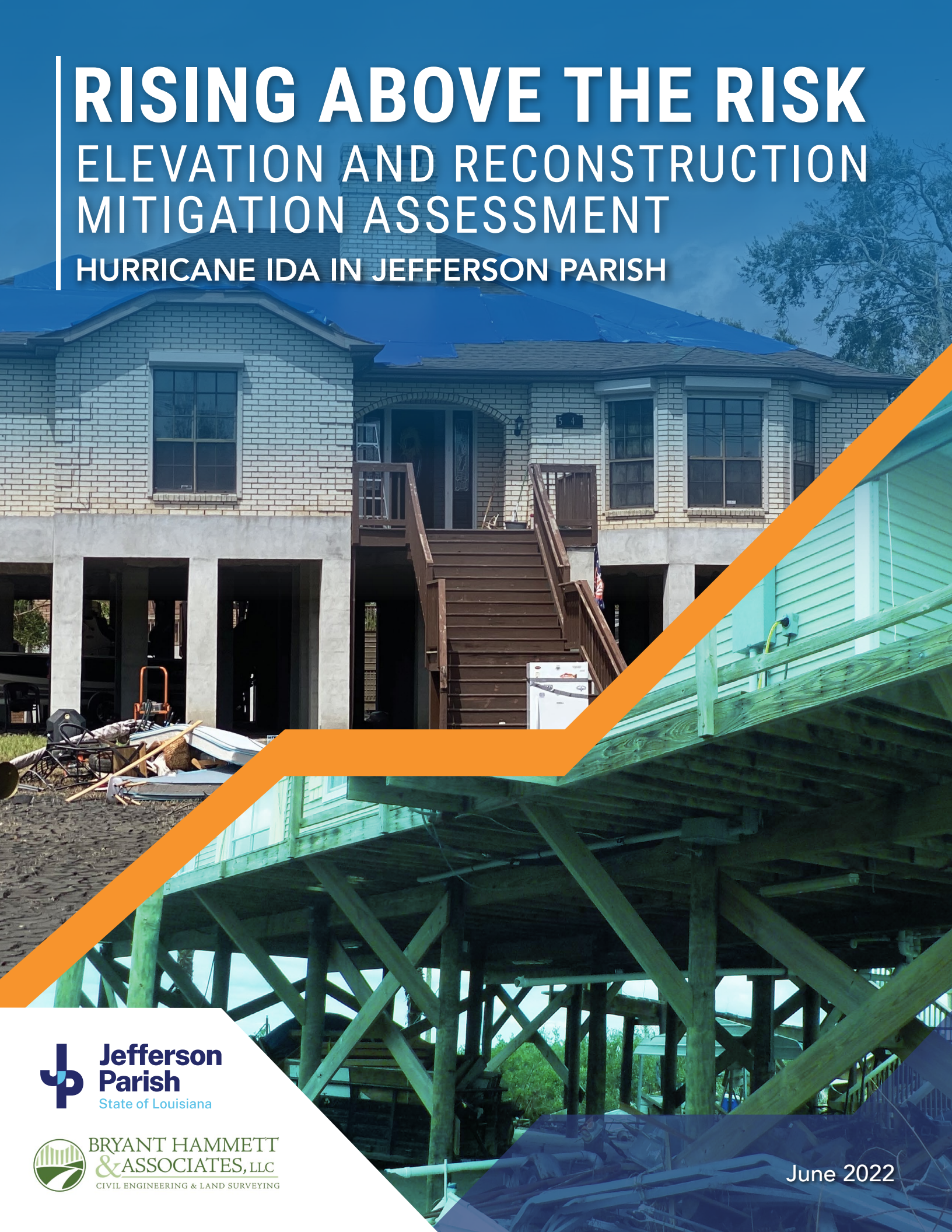
RISING ABOVE THE RISK

ELEVATION AND RECONSTRUCTION MITIGATION ASSESSMENT

HURRICANE IDA IN JEFFERSON PARISH



Jefferson Parish
State of Louisiana

BRYANT HAMMETT & ASSOCIATES, LLC
CIVIL ENGINEERING & LAND SURVEYING

June 2022

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MITIGATION ASSESSMENT TEAM REPORTS

In response to Hurricane Ida, Jefferson Parish deployed a team of mitigation practitioners to evaluate a group of structures outside of the Hurricane Storm Damage Risk Reduction System (HSDRRS). The team, which was comprised of mitigation professionals contracted from two departments, Ecosystem & Coastal Management and Floodplain Management & Hazard Mitigation, examined all structures outside of the levee protection that had been mitigated using FEMA funds with the activity type of elevation or mitigation reconstruction.

The Mitigation Assessment Team, which included parish department heads, staff, and contracted personnel, assessed each property for storm damage. Additionally, they documented the successes and failures of building components and drew conclusions based on the performance of the mitigation design/construction before making recommendations for additional protective measures that could be implemented to further reduce damage and loss in future disasters.

The purpose of this report is to provide floodplain and mitigation professionals with a detailed analysis that can be used to create a more resilient and sustainable housing stock.

> *"In the immediate aftermath of Hurricane Ida our team wanted to analyze successes and failures to reduce damage and loss in future disasters."*
>
> ~ Michelle Gonzales

OVERVIEW

The devastating effects of Hurricane Ida significantly impacted all communities across Jefferson Parish. Due to the impact on coastal areas of the parish, outside of the HSDRSS, the Department of Floodplain Management & Hazard Mitigation collaborated with the Department of Ecosystem & Coastal Management to assess the departments' previous mitigation efforts which were implemented prior to Hurricane Ida.

MITIGATION ASSESSMENT **TEAM DEPLOYMENT** AND **OBSERVATIONS**

The post-storm environment offered a unique opportunity for the departments to assess properties that were mitigated through structure elevation or mitigation reconstruction. These properties, located in low-lying areas of the parish outside of HSDRSS protection, were reviewed in a full-scale evaluation into how the vulnerable structures withstood Ida's unforgiving winds, driving rain, and storm surge. A Mitigation Assessment Team was deployed only two weeks after the storm due to the time-sensitive need to capture the data. The team visited 288 sites and cataloged all visible damage to structural components, and they specifically noted the mitigation features that had been implemented by the Department of Floodplain Management & Hazard Mitigation since 2008.

> ***"This assessment proved that flood mitigation works as the mitigated properties did not take on flood waters in Hurricane Ida."***
>
> ~ Maggie Talley

An overview of the data showed that structures mitigated to/above the 1-percent-annual chance flood event (or Base Flood Elevation) did not experience floodwater intrusion above the first floor. Properties that were assessed to have sustained damage from Ida were affected by hurricane force winds, water intrusion from vulnerabilities and/or damage to roofs, siding, soffit, and fascia, and airborne or water-driven debris that struck the structure.

Overall, the mitigated properties sustained minimal damage within the context of their scoped design against flood inundation and observed damages from hazards that were not mitigated against are discussed in more detail in the following sections of this report.

Our coastal communities are unfortunately pulling themselves out of the disruption caused by Hurricane Ida. Projects like elevation and mitigation reconstruction assist in getting lives back on track in these vulnerable coastal areas of Jefferson Parish.

MITIGATION ASSESSMENT **TEAM RECOMMENDATIONS**

The recommendations derived based on the Mitigation Assessment Team's field observations are intended to strengthen Jefferson Parish's mitigation best practices and allow project specialists, planning/code enforcement decision makers, contractors, emergency managers, government officials, and homeowners to better protect the Parish's assets and housing stock from future disasters.

The performance of specific features of the mitigated structures lying outside of HSDRSS protection was assessed by the Mitigation Assessment Team and the findings were catalogued to reach the recommendations detailed in the subsequent sections of this report. The potential impacts evaluated during the field visits were:

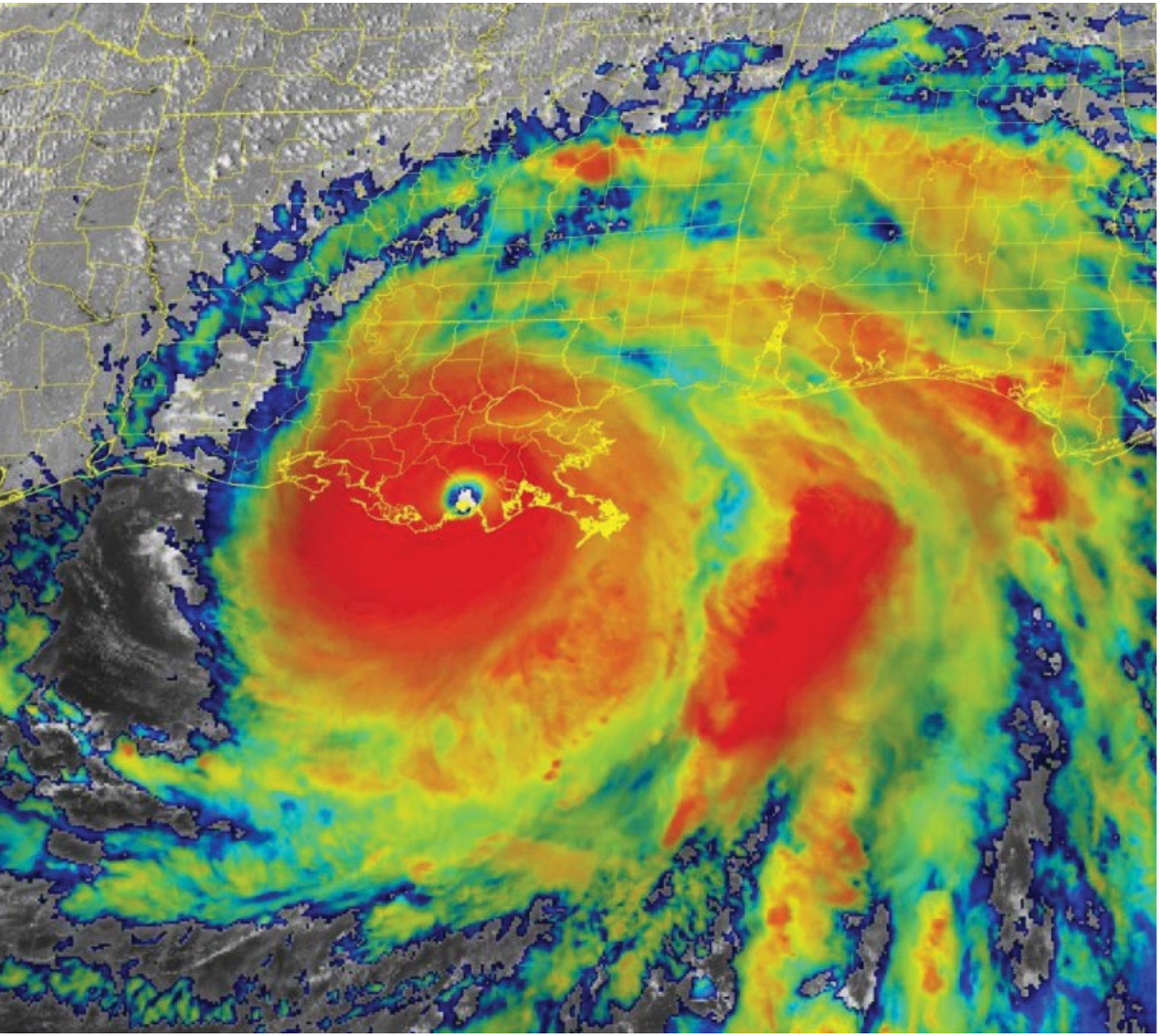
- Foundation Performance
- Utilities (Sewer, Water, Gas Connections)
- Air Conditioning Units
- Stairs, Landings, and Railings
- ADA Access
- Wind Damage to Roofs, Awnings/Overhangs, Soffit, and Fascia

Based on the data collected at each site, recommendations were made in the following areas:

- Construction
  - Utilities
  - Air Conditioning Units
  - Foundation Design
  - Landings, Stairs, and Railings
  - Awnings and Overhangs
  - Roofs
  - Foundations
- Education & Outreach
  - ADA Access
  - Exceeding Minimum Code
  - Homeowner Maintenance
- Further Research & Analysis
  - Benefits to Risk Rating 2.0
  - Threshold for Reconstruction over Elevation
  - Observed benefits of sea level rise elevation
  - Reconstruction in a V Zone

Chapter 2 of this report gives an in-depth look at the damages observed during the Mitigation Assessment Team's field visits, and Chapter 3 details the anticipated path forward for improving the Parish's mitigation program.

1: INTRODUCTION



Infrared satellite image of Hurricane Ida at 3:21 p.m. EDT August 29, 2021, after making landfall near Port Fourchon, Louisiana. (Image credit: NOAA)

CHAPTER 1

INTRODUCTION

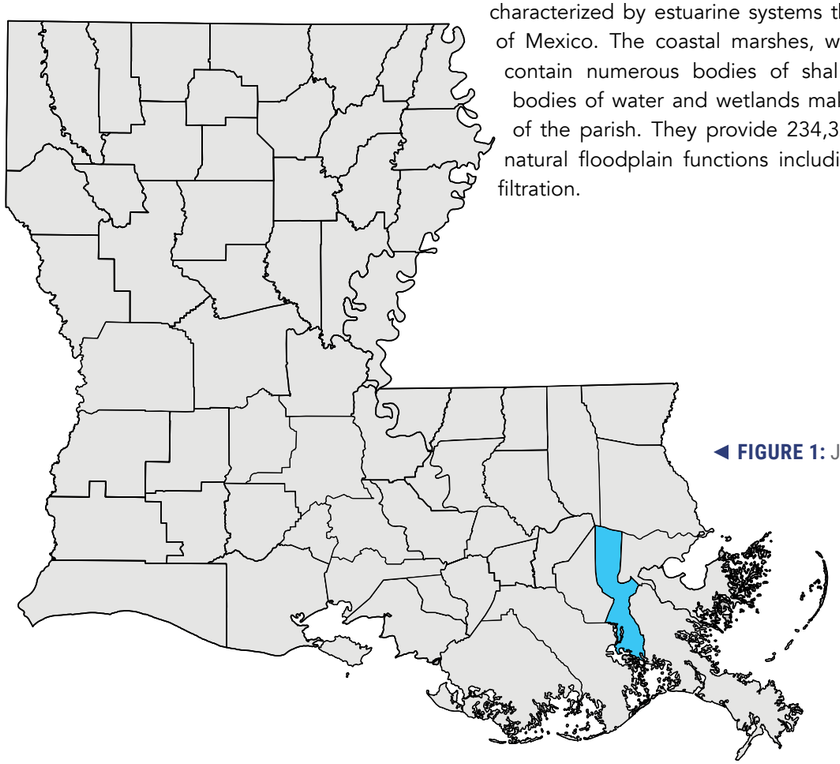
1.1 JEFFERSON PARISH

Jefferson Parish, which is located in Southeastern Louisiana, is bordered by Lake Pontchartrain on its north side and by Orleans Parish and Plaquemines Parish to the east. The southern part of the parish is surrounded by the Gulf of Mexico, Lafourche Parish, and St. Charles Parish to the west. Figure 1 identifies the Parish's location within the State of Louisiana.

The principal physiographic features of the area include the Mississippi River channel, the natural levee ridges along its banks and the banks of abandoned distributary channels, and low marshlands situated between and bordering the channels. The vast majority of the Parish is surrounded by waterways with the highest land in the Parish lying along the natural levee that borders the Mississippi River. Lake Pontchartrain, the 17th Street Canal, the Harvey Canal, Gulf of Mexico, and the Intracoastal Waterway also all border or intersect Jefferson Parish.

Jefferson Parish consists of 305 square miles of land area or 195,793 acres while the water area is comprised of 336 miles or 215,358 acres. The Parish extends about 55 miles from north to south, from the southern shores of Lake Pontchartrain to the Gulf of Mexico.

In the southern part of the parish, outside of the Hurricane Storm Damage Risk Reduction System (HSDRRS), where Barataria, Crown Point, Lafitte and Grand Isle are located, communities are less populated, accounting for approximately 5,000 of the Parish's structures. Whereas those areas inside the HSDRRS system account for more than 140,000 structures parishwide. The area is characterized by estuarine systems that flow from the Gulf of Mexico. The coastal marshes, wetlands, and estuaries contain numerous bodies of shallow water, and these bodies of water and wetlands make up over 85 percent of the parish. They provide 234,320 acres of beneficial, natural floodplain functions including water storage and filtration.



◄ **FIGURE 1:** Jefferson Parish Location

1.1.1 MITIGATED STRUCTURES

For the purpose of the study outlined in this report, structures in the low-lying areas of Barataria, Crown Point, Lafitte, and Grand Isle, outside of the HSDRRS levee protection, were evaluated for mitigation performance. Properties mitigated by Jefferson Parish from 2008 to 2021 in these specific areas were visited by the Mitigation Assessment Team. The team evaluated storm impacts on the elevated/reconstructed structures and documented them using a field assessment checklist and photographic validation. In total, 288 mitigated properties were assessed without preference to project type and/or funding source. Geographically, the number of properties assessed in each of the low-lying areas outside of HSDRRS protection were as follows:

City/Area	# of Structures Assessed
Barataria	76
Crown Point	22
Town of Grand Isle	45
Town of Jean Lafitte	73
Lafitte	72

Assessing these structures immediately after Hurricane Ida helps to show the real benefits of these important elevated structures.

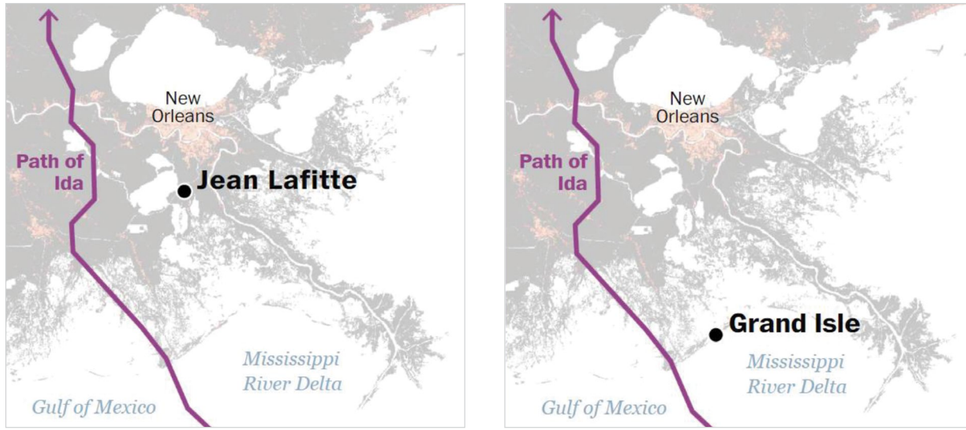
Jefferson Parish has actively sought funding for its mitigation needs since 2005, and they began the successful implementation of federally funded mitigation projects in 2008. Grant funding for the elevation and reconstruction of vulnerable properties has been procured from several different sources, and the 288 structures visited by the Mitigation Assessment Team were implemented through the following programs:

Program Type	# of Structures Assessed
Hazard Mitigation Grant Program	221
Flood Mitigation Assessment	41
Repetitive Flood Claims	18
Severe Repetative Loss	8

1.2 HURRICANE IDA – THE EVENT

Hurricane Ida was not only one of the most powerful storms to make landfall in Louisiana in recent history, it was one of the fastest-forming tropical systems the Parish has been impacted by as well. Ida formed just outside of the Gulf of Mexico on Thursday, August 26, 2021 and by Saturday, August 28th, Jefferson Parish, Louisiana was being impacted by storm winds.

Hurricane Ida made landfall on Sunday morning, August 29th, 2021, along the Louisiana Gulf Coast as a Category 4 Hurricane with maximum sustained wind speeds of 150 mph. The storm made landfall just 45 miles west of where Hurricane Katrina first struck land on the same day 16 years prior. After landfall, sustained winds were so powerful that they caused a portion of the Mississippi River to reverse its natural flow for three hours. By evening, maximum sustained winds of 125 miles per hour were reported, which reduced the storm to a Category 3 Hurricane. Though the storm continued to weaken as it made its way across Louisiana and into Mississippi, it remained powerful and destructive. The destructive path of Hurricane Ida through Jefferson Parish is depicted in Figure 2 below.



▲ **FIGURE 2:** Hurricane Ida Path

The rapid formation and accelerated speed of Hurricane Ida did not allow for a full-scale evacuation to be executed, but many of the Parish's coastal communities were placed under mandatory evacuation prior to landfall. While our focus in this report is on these coastal areas, it is worth noting that the inland communities of Jefferson Parish were also heavily impacted by hurricane force winds and substantial wind damage was seen in these areas as well.

The damage to Jefferson Parish's coastal communities from Category 4 hurricane force winds was detrimental and the evidence of such will be shown in this report, but a sizable impact to these areas was due to the water brought into Barataria, Crown Point, Lafitte, and Grand Isle by storm surge. This fast-moving wind-driven water destroyed utilities and infrastructure, and incapacitated roadways in the Parish's coastal communities. The storm surge was so high that it overtopped a levee designed to handle seven and a half feet of floodwaters.

At the southernmost point of Jefferson Parish, in Grand Isle, the levee was breeched in more than 10 places, which led to flooding across the island. The island sustained damage to over 50% of its structures

MAJOR HURRICANE IDA NHC LANDFALL STATS & ADVISORY STATUS

Landfall 11:55AM CDT, Sunday August 29, 2021

Landfall location: Port Fourchon, LA

Extent of hurricane force winds: 50 miles
Extent of TS force winds: 150 miles

Max sustained: 150 mph
Peak gust: 172 mph
Category: 4 mph

Minimum central pressure: 930mb

Forward speed: North at 9 mph

Peak storm surge: 150 mph
Where: Morgan City to Bay St. Louis, MS
Inland Extent: 4 mph

▲ **FIGURE 3:** Hurricane Ida Landfall Stats

and lost communication transmissions, electrical power, and running water. Additionally, in Jean Lafitte, power was lost shortly after the storm made its way through the town. The water there rose so rapidly that a marine vessel was dislodged before hitting the town's swing bridge with so much force that the bridge was destroyed. The destruction of the bridge left approximately 200 residents stranded and the area inaccessible to emergency and rescue services.

While the worst impacts were experienced in the lowest-lying areas of Jefferson Parish, the Associated Press reported that 100% of Jefferson Parish customers were without electrical power by mid-afternoon on August 30th, 2021.

Initial reports from Accuweather estimated the total economic losses from Hurricane Ida to be in excess of $70 billion, but the estimated loss was updated to over $95 billion by mid-September 2021.

Water-covered roadways in Grand Isle one week after Hurricane Ida.

1.3 STORM SURGE FLOODING

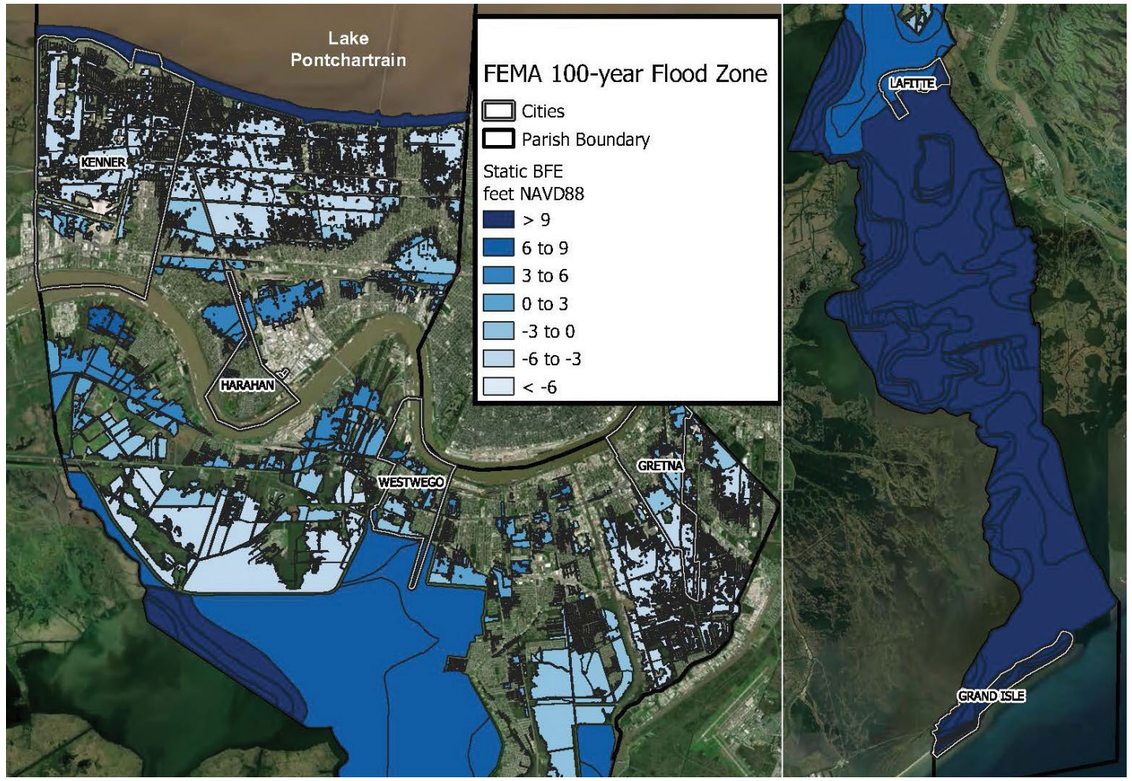
Hurricane Ida's path and intensity had a significant impact on Jefferson Parish in its entirety. Due to the large volume of water acreage, the majority of the Parish is already vulnerable to riverine and coastal flooding without factoring for a direct hit from a major hurricane. The HSDRRS that was implemented post-Hurricane Katrina was instrumental in defending the vulnerable areas in northern portions of Jefferson Parish, which reduced the full damage possibility from Hurricane Ida's strong storm surge.

The areas outside levee protection that were evaluated by the Mitigation Assessment Team were heavily impacted by the storm surge that is estimated to have been between 8 and 14 feet in the coastal areas of Jefferson Parish.

In the Town of Grand Isle, 13 ½ foot high sand dunes that are made with sand pumped from the Gulf of Mexico atop fabric-covered geotubes of sand are in place in an effort to protect the island from storm surge inundation. During Hurricane Ida the sand dune part of the levee system was almost completely wiped out, and the intense surge shredded the geotubes, causing the sand that was encased within to be spread inland covering streets and yards.

In the Lafitte areas, the 7 foot floodwall levee system designed to protect the inland area from storm surge was overtopped, leaving its residents sheltering in place in imminent danger as they became stranded in the high water while winds were still too strong for rescue crews to deploy in the area.

Roadway in Lower Lafitte 4 days after Hurricane Ida.



▲ **FIGURE 4:** Jefferson Parish 100-year Flood Zones

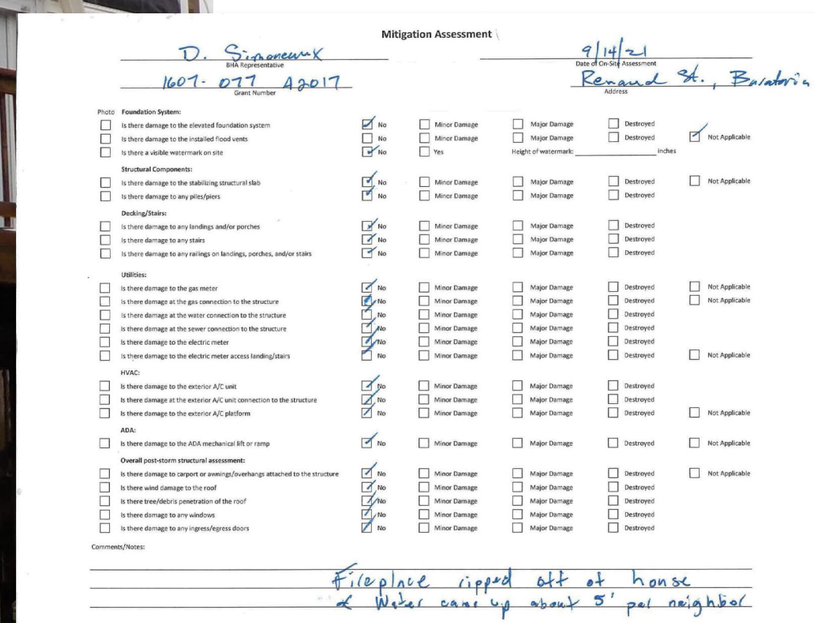
1.4 FLOOD MAPPING

FEMA is required to periodically update Flood Insurance Rate Maps (FIRMs) to accurately reflect flood hazards at the local level. Jefferson Parish underwent the map revision process from 2004-2017 with the adoption of the new effective FIRMs on February 2, 2018. Figure 4 above charts the flood zones approved in 2018. Prior to the adoption of these revised maps, Jefferson Parish used best available data from 1995 FIRMs, 2006 Advisory Base Flood Elevations (ABFEs), and 2012 preliminary FIRMs to implement their flood mitigation projects and require the new first floor elevation of homes in those hazard mitigation grant programs to be at/above the highest of the three mapped heights.

With the adoption of the 2018 FIRMs, the coastal communities of Barataria, Crown Point, and Lafitte adopted a freeboard ordinance that requires all structures being constructed or elevated to exceed the base flood elevation by 2 feet. This requirement is enforced for all structure in the program after that adopted date.

Ida's storm surge in Grand Isle damaged hundreds of homes and businesses. Jefferson Parish is committed to upholding building codes and creating a stronger community.

2: EVALUATION OF MITIGATION PERFORMANCE



Mitigation Assessment

D. Simoneaux — BHA Representative
9/14/21 — Date of On-Site Assessment
1607-077 A2017 — Grant Number
Renaud St., Baratria — Address

Photo						
	Foundation System:					
☐	Is there damage to the elevated foundation system	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to the installed flood vents	☐ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☑ Not Applicable
☐	Is there a visible watermark on site	☑ No	☐ Yes	Height of watermark: ____ inches		
	Structural Components:					
☐	Is there damage to the stabilizing structural slab	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
☐	Is there damage to any piles/piers	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
	Decking/Stairs:					
☐	Is there damage to any landings and/or porches	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to any stairs	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to any railings on landings, porches, and/or stairs	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
	Utilities:					
☐	Is there damage to the gas meter	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
☐	Is there damage at the gas connection to the structure	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
☐	Is there damage at the water connection to the structure	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage at the sewer connection to the structure	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to the electric meter	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to the electric meter access landing/stairs	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
	HVAC:					
☐	Is there damage to the exterior A/C unit	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage at the exterior A/C unit connection to the structure	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to the exterior A/C platform	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
	ADA:					
☐	Is there damage to the ADA mechanical lift or ramp	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
	Overall post-storm structural assessment:					
☐	Is there damage to carport or awnings/overhangs attached to the structure	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	☐ Not Applicable
☐	Is there wind damage to the roof	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there tree/debris penetration of the roof	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to any windows	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	
☐	Is there damage to any ingress/egress doors	☑ No	☐ Minor Damage	☐ Major Damage	☐ Destroyed	

Comments/Notes:

Fireplace ripped off of house & Water came up about 5' per neighbor

CHAPTER 2

EVALUATION OF **MITIGATION PERFORMANCE**

The Mitigation Assessment Team's primary goal was to evaluate the performance of the structural and building envelope components of buildings that have been mitigated through elevation and mitigation reconstruction in the areas of Jefferson Parish outside of the HSDRRS. Specifically, the team aimed to catalogue what mitigation components consistently performed well, or commonly failed in a way that is indicative of a possible programmatic enforcement area for improvement.

The impacts that are documented in this section were observed by the Mitigation Assessment Team during field visits and further reviewed/assessed by team members post-visit utilizing the photos and checklist completed by the team member performing the field assessment.

Jefferson Parish as advocated for home elevation for more than 10 years and in this one event we have exceeded the federal investment in benefits.

Utilizing FEMA's depth damage functions embedded within the benefit-cost analysis software, the Mitigation Assessment Team was able to calculate the anticipated damages from Hurricane Ida had the assessed structures not been mitigated from the flood hazard. Using applied factors of first floor elevations from pre-mitigation elevation certificates, program-verified square footage of structures, and RS Means estimates for building replacement values, the estimated damages to these structures would have exceeded $47 million. The total cost to perform the mitigation activities to protect these properties from flooding was just over $41 million, which means that in one disaster event the benefits of the projects already exceed the potential for future flood losses.

Total Cost of Mitigation Activites	Total Ida Avoided Flood Damages	1 Event Cost to Benefits Ratio
$41,003,898	$47,551,305.56	1.16

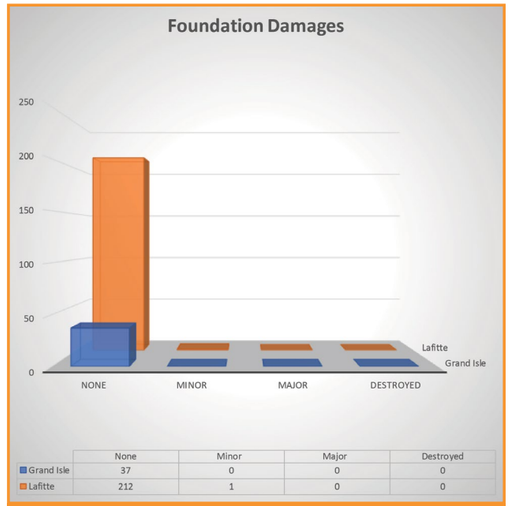
Components Evaluated
ADA Access Ramp
ADA Mechanical Lift
Awnings/Overhangs
Doors
Electric Meter
Electric Meter Access Landing
Elevated Foundation System
Exterior A/C Unit
Exterior A/C Unit Connection
Exterior A/C Unit Landing
Gas Connection
Gas Meter
Installed Flood Vents
Landings/Porches
Piles/Piers
Railings
Roofs
Sewer Connection
Stairs
Structural Slab
Visible Watermarks
Water Connection
Windows

2.1 FOUNDATION PERFORMANCE

The primary and core component of all mitigation projects implemented in Jefferson Parish is the structurally sound design that is developed and stamped by a licensed/certified engineer. In accordance with FEMA's Hazard Mitigation Assistance (HMA) Guidance Addendum, elevation projects must be designed and adequately anchored to prevent flotation, collapse, and lateral movement of the structure due to hydrodynamic and hydrostatic loads, including the effects of buoyancy, and must also comply with ASCE24-14.

Flood elevations for Hurricane Ida met or exceeded the effective base flood elevation for Barataria, Crown Point, Lafitte, and some areas of Grand Isle. Flood damage to the assessed structures that had been mitigated at/above the Base Flood Elevation (BFE) was limited to areas beneath the structure that are used for parking and limited storage. Visible watermarks were documented ranging from twelve inches to as high as ten feet, but water inundation was not found inside the properly elevated living space of these mitigated properties.

As such, foundation damage was not observed on-site during the team's field assessments and only one structure was noted to have had an impact to the foundation per conversation with the homeowner. It was made evident during evaluation that the elevated structures mitigated through Jefferson Parish and evaluated during this assessment were successful in this element, as none of the 288 structures assessed had any visible damage to the foundation system and/or foundation components.



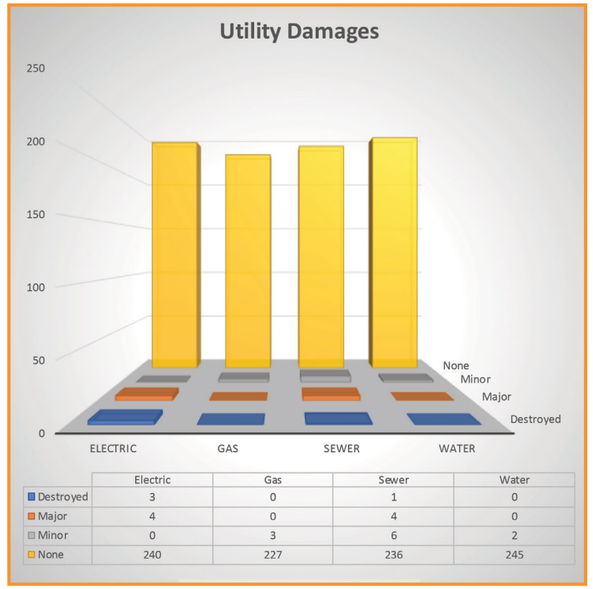
NOTE: ***Inundation was not found inside the properly elevated living space of these mitigated properties.***

Although not evaluated in this assessment, it should be noted that property owners that self-mitigated to the 1995 base flood elevation sustained flood damage within the first floor of their elevated structures.

2.2 UTILITIES

All Jefferson Parish Hazard Mitigation Assistance (HMA)-funded elevation and mitigation reconstruction projects are designed in accordance with FEMA's HMA Guidance as well as all State and Local codes/ordinances. As such, these mitigation projects are implemented with all electrical and mechanical equipment being raised at/above the required base flood elevation to the same height requirement of the first floor of the structure.

In order to meet the height requirements of the mitigation project, utility services to the structure are disconnected, extended to the appropriate length, and reconnected to the structure. While this is a necessary means to attain the overall goal of the project, it leaves gas, sewer, and water lines that were once protected within the foundation of the building more vulnerable and exposed as they traverse the path to reach the elevated structure.



	Electric	Gas	Sewer	Water
Destroyed	3	0	1	0
Major	4	0	4	0
Minor	0	3	6	2
None	240	227	236	245

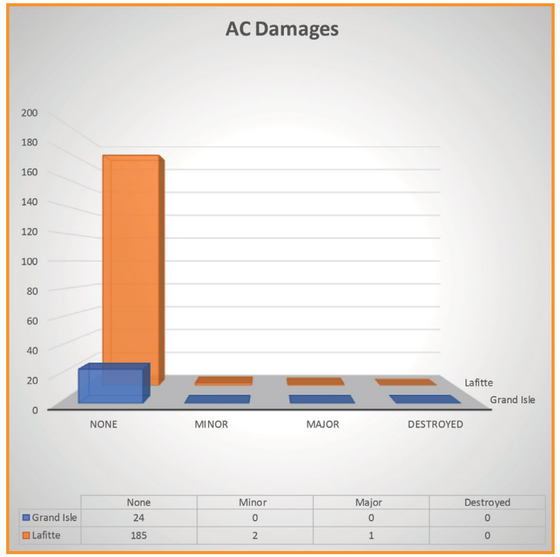
Taking into account this added vulnerability of these utility components, the impacts to the structures' mechanical elements still resulted in a very low impact to utilities and utility connections at the assessed sites. The majority of damages observed were a result of storm debris.

2.2 AIR CONDITIONING UNITS

A main mechanical equipment component of these elevation and mitigation reconstruction projects is the air conditioning unit that services the raised structure. In order for the structure to be considered fully mitigated and compliant with local floodplain ordinances, that machinery must meet the same height requirements as the first floor of the structure.

You will notice in the photos below that the air conditioning units are raised on platforms, either as a stand-alone structure, a platform tied into the foundation of the structure itself, or on a deck that also serves as a point of ingress/egress. All methods are feasible, and the majority of the units assessed were unaffected by Hurricane Ida.

In the very few cases that impacts were noted, it was observed that the units had shifted on their elevated platforms, and it was determined that this could potentially be prevented in future events by securing the units once elevated. This is already being implemented in Jefferson Parish mitigation projects as a result of this mitigation assessment.



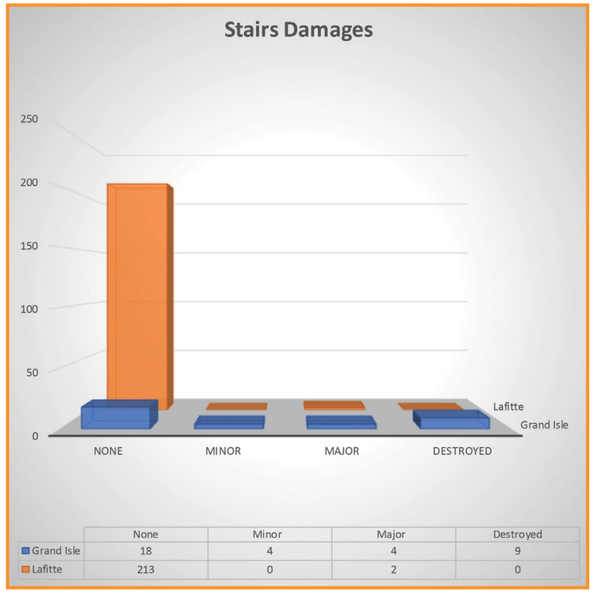
	None	Minor	Major	Destroyed
Grand Isle	24	0	0	0
Lafitte	185	2	1	0

TIP: ***Securing the units to platforms once elevated can prevent future damage.***

2.4 STAIRS, LANDINGS, AND RAILINGS

As depicted in the photos, the homes assessed in these coastal areas have been elevated to a substantially high level – eight to twelve feet in most cases – so these stairs and landings being observed play a major role in these mitigation projects. As such, damage to these fairly vulnerable components were to be expected and the volume of the impacts were relatively minor in relation to the number of homes evaluated.

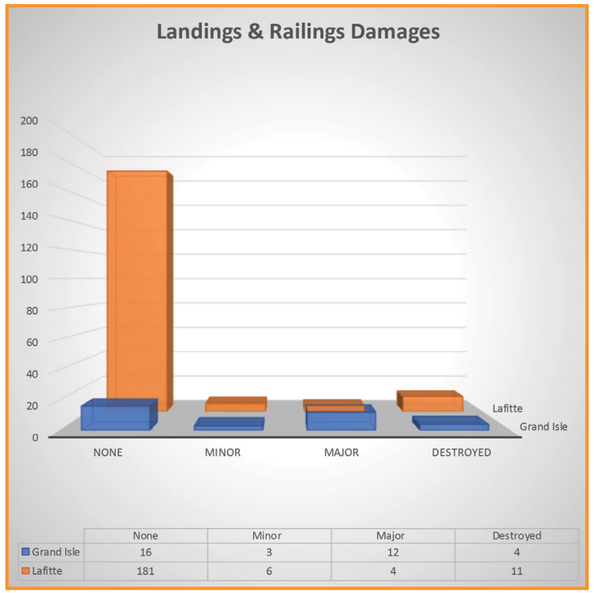
The majority of damage to stairs was from water and wind-driven debris. In the areas of Barataria, Crown Point, and Lafitte the storm surge brought in swift-moving water with mud and marsh grass that impacted the stairs. In Grant Isle the storm surge brought in a rapid influx of water and sand that caused items stored under homes to become projectiles that damaged stairs.



	None	Minor	Major	Destroyed
Grand Isle	18	4	4	9
Lafitte	213	0	2	0

In relation to the other components evaluated, landing & railings statistically show more damage. The Mitigation Assessment Team observed a number of railings that came detached from stairs and landings without any apparent impact from debris. After taking a more in-depth look at what could have led to these failures, and more importantly, what could possibly be done to prevent them in the future, it was noted that a large number of impacted railings appeared to be extremely weather-worn. There are a number of factors that could lead to this condition, including: failure to property seal/treat wood at the time of installation; deferred maintenance to re-apply sealants periodically; and accelerated deterioration of wood from installation in a marine environment.

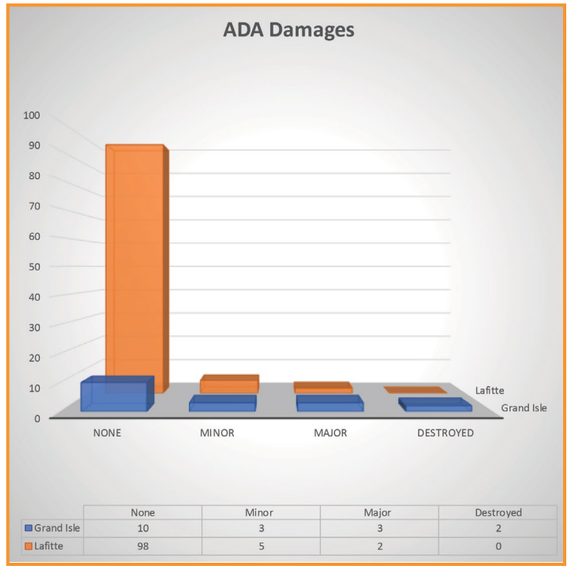
NOTE: ***A number of impacted railings appeared to be attributed to deferred maintenance.***



	None	Minor	Major	Destroyed
Grand Isle	16	3	12	4
Lafitte	181	6	4	11

2.5 ADA ACCESS

For homes where a permanent resident of the household requires ADA access to enter and exit the structure (and for commercial structures where required) the HMA grant programs provide a ramp or mechanical lift at a single point of ingress/egress. While similar to an elevator, a mechanical lift is installed on the exterior of the building and is not enclosed. Both of these ADA options are adequate for providing handicap access to the building and are eligible for reimbursement through the grant programs.



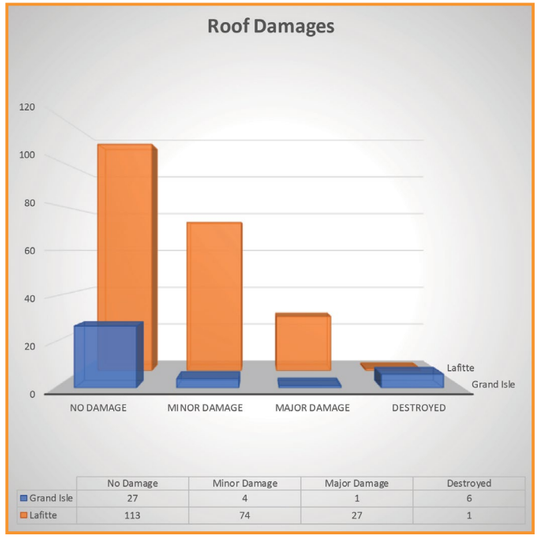
	None	Minor	Major	Destroyed
Grand Isle	10	3	3	2
Lafitte	98	5	2	0

The Mitigation Assessment Team did observe a number of damaged ADA mechanical lifts during field observations. Most of those component failures were due to the bucket portion of the lift being left at grade causing them to be submerged in water, as well as being impacted by the fast-moving storm surge influx. A few units were impacted by wind, but the damage was minor and did not cause the lift to be out of service.

No damages were noted to any ADA ramps – all ramp structures evaluated were intact and unaffected by water, wind, and debris.

2.6 WIND DAMAGE TO ROOFS, AWNINGS / OVERHANGS, SOFFIT, AND FASCIA

The largest volume of damage observed in the mitigation assessment was to roofs, including awnings & overhangs, and components related to the roof like soffit & fascia. This type of destruction can be expected with a major hurricane, and it is worth noting that these structures were all mitigated from the flood hazard, not wind, so avoided wind damage to these components was not anticipated.



	No Damage	Minor Damage	Major Damage	Destroyed
Grand Isle	27	4	1	6
Lafitte	113	74	27	1

Hurricane Ida made landfall in Jefferson Parish as a Category 4 hurricane and remained a Category 3 hurricane as it traversed Jefferson Parish, with sustained winds in excess of 100 mph for hours in the areas evaluated by the Mitigation Assessment Team. As expected in a storm of this magnitude, wind damage to structures was visible throughout the Parish.

The Town of Grand Isle is classified as a Zone VE, which is considered a high risk coastal area prone to additional hazards associated with storm waves. In order to protect these structures from the threat of flood hazards, they are elevated 8-10 feet on average in order to be at/above BFE. This drastic change in vertical positioning unfortunately makes these mitigated structures more vulnerable to the threat of wind and less likely to survive a major hurricane without sustaining wind damage. Evidence of this was certainly seen during this assessment. Six of the structures assessed in the Town of Grand Isle suffered complete destruction of their roof and five others sustained roof damage.

In the areas of Lafitte, Barataria, and Crown Point, mitigated structures have also been raised as high as 12 feet and are more vulnerable to wind damage post-elevation/reconstruction. In the Town of Lafitte and lower Lafitte, only one home was documented as the roof having been destroyed, but twenty-seven others suffered major damage to their roof covering.

5: CONCLUSIONS & RECOMMENDATIONS

CHAPTER 3

CONCLUSIONS & RECOMMENDATIONS

The broad-scale goal of this assessment was to determine if the mitigation of structures through elevation and reconstruction was effective in the vulnerable Jefferson Parish areas that lie outside of HSDRRS levee protection. The overwhelming analytical response presented from the findings is that the program is successful and provided flood protection to all mitigated structures during Hurricane Ida.

However, it is documented that additional hazards associated with a major hurricane were not protected against during the implementation of these mitigation projects, and this chapter will identify areas of improvement, needs for educational resources, and potential measures that need further research & analysis to develop projects that protect from additional hazards.

The lessons learned through this Hurricane Ida mitigation assessment will strengthen Jefferson Parish's mitigation programs for generations to come.

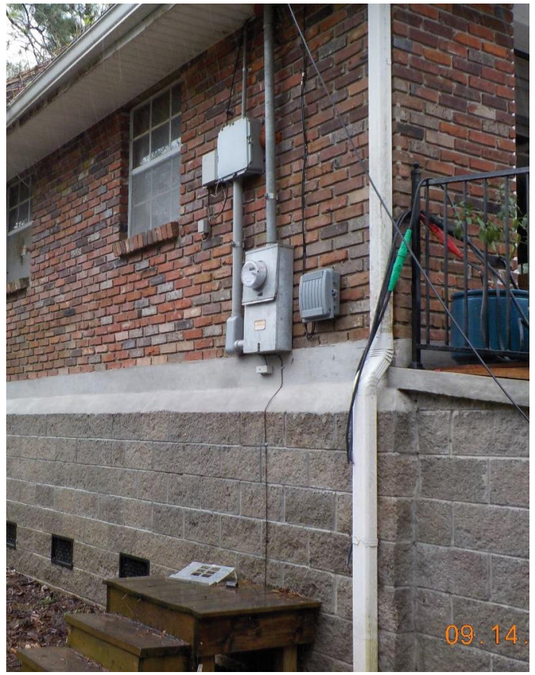
3.1 CONSTRUCTION

Upon completion of field observations and analyzation, a group of mitigation practitioners was assembled to discuss potential measures for reducing damages from future disaster events. Parish department heads, mitigation grant program specialists, local building officials, and representatives from the mitigation construction firms that directly performed most of the projects evaluated met together in an open discussion format to brainstorm ideas and flesh out those that could be implemented in future mitigation projects in Jefferson Parish.

From these meetings, several elements of a mitigation construction project that were determined to need improvement in order to be more resilient, and several recommendations have prompted the following changes to the Jefferson Parish mitigation program.

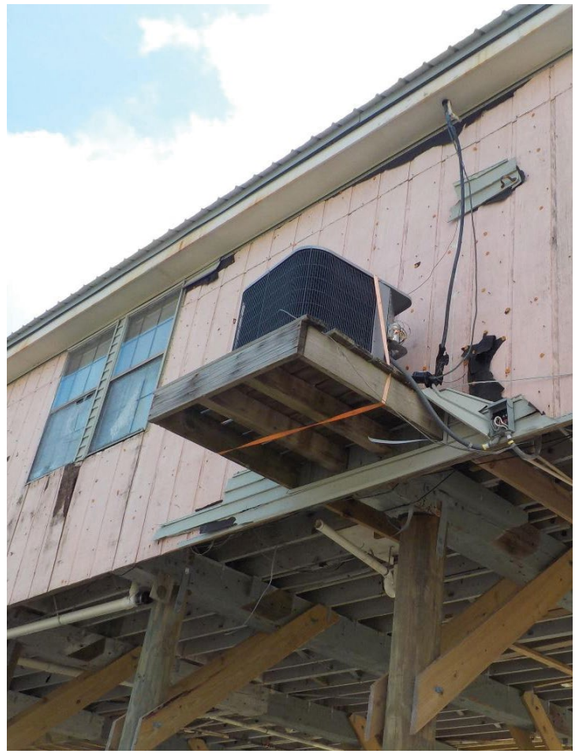
3.1.2 UTILITIES

- When feasible gas meters should be relocated to a less vulnerable area
- When feasible water and sewer lines should be installed in-line with or next to piles, piers, or horizontal cross beams for added protection
- All electric meters should be raised at/above the base flood elevation



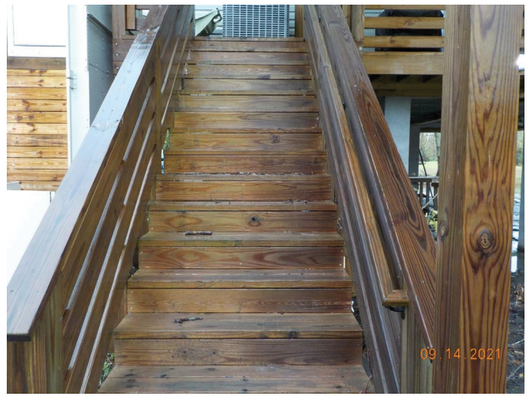
3.1.3 AIR CONDITIONING UNITS

- All air conditioning units should be secured/anchored to their platform
- Air conditioning unit platforms should have added supports when anchored to the side of a structure



3.1.4 LANDINGS, STAIRS, AND RAILINGS

- When feasible screws should be used instead of nails
- Pre-existing second story railings should be reinforced at the time of mitigation



3.1.5 AWNINGS AND OVERHANGS

- Non-code compliant awnings and overhangs should be removed at the time of mitigation

3.1.6 ROOFS

- Wind mitigation measures must be included at the time of elevation if structure is being raised more than eight feet above grade

3.1.7 FOUNDATIONS

- No CMU block wall enclosures below the first floor if structure is being raised more than six feet above grade

3.2 EDUCATION & OUTREACH

Education & outreach efforts are an integral part of Jefferson Parish's departments of Ecosystem & Coastal Management and Floodplain Management & Hazard Mitigation. During the analysis of the mitigation assessment data, the team recognized several areas where additional educational programming could benefit and strengthen the Parish's mitigation program.

3.2.1 ADA ACCESS

» Provide a clear and concise breakdown of the benefits in each ADA access option (mechanical lift and ramp) and ways that they differ so that property owners can make an informed decision as to which option best suits their needs

ADA MECHANICAL LIFT OR RAMP...WHICH IS RIGHT FOR YOU?

FEATURES	ADA Mechanical Lift	ADA Ramp
SPACIAL CAPACITY	Can be installed in an area as small as 5' x 5'	Typically requires a minimum of 36 linear feet of ramp which increases the higher your home is elevated
MAINTENANCE	Requires scheduled maintenance at least once annually	Maintenance required as needed for routine wear
	Maintenance must be performed by a qualified service professional	Maintenance can typically be performed by the property owner or family member/friend
FLOOD INSURANCE COVERAGE	Per the NFIP claims manual flood insurance will only cover repairs for flood damage if the lift is attached directly to the building, or attached directly to the 16 square foot landing area immediately in front of a door into the building	There are no restrictions on coverage for ramps listed in the NFIP claims manual
MECHANICAL FEATURES	Power failure events will result in loss of function/use	Requires no mechanical features to function
WARRANTY	Mechanical lift is typically provided with a limited warranty from the manufacturer - any issues for warrantied items would have to be addressed to the manufacturer directly	Not warrantied

3.2.2 HIGHER STANDARDS

» Create educational materials that demonstrate the benefits of installing items that exceed the minimum code requirements

3.2.3 MAINTENANCE

» Educate property owners about how proper maintenance of installed decks, landings, stairs, ramps, and ADA mechanical lifts can aid in the prevention of damage and/or failure in future flood and wind events

3.2 FURTHER RESEARCH & ANALYSIS

There are several potential mitigation improvement measures that the assessment team felt could strengthen the program and make mitigated structure more resilient in a flood and/or wind event, but additional analysis is needed before making a final determination on implementing them. Although the scope of the mitigation assessment is complete, Jefferson Parish will continue to pursue and seek strategies to reduce the risk to its population.

3.3.1 RISK RATING 2.0

» Many unknown variables surrounding Risk Rating 2.0 and its methods for valuating policies have prompted a need for further research to determine what changes to mitigation implementation are needed to maximize the benefits for property owners and provide a level of protection that will lower flood insurance premiums

3.2.2 MITIGATION RECONSTRUCTION

» Mitigation reconstruction projects produce a structure that is in compliance with all current building codes and floodplain management ordinances, therefore generating a more complete resilient product – what metrics can be applied to determine what the threshold is for requiring a dated structure to reconstruct rather than elevate

3.3.3 SEA LEVEL RISE

» For structures that were raised to an elevation that exceeds floodplain management requirements based on an applied sea level rise factor, what was the added benefit and level of protection to those buildings when impacted by Hurricane Ida

3.3.4 V ZONE CONSTRUCTION

» New construction is currently not allowed in a V zone through FEMA HMA grant programs – how can Jefferson Parish advocate for a change in this policy based on evidence of damage to elevated structures captured through this assessment

Jefferson Parish
State of Louisiana

BRYANT HAMMETT & ASSOCIATES, LLC
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