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Hurricane Force

Anatomy of a Flood: 3 Deadly Waves

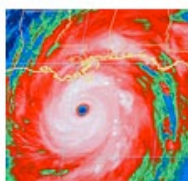
Canal, 2 Lakes Swamped Eastern New Orleans As Storm Tore Through

Mr. Mullet's Fight to Survive

By JEFF D. OPDYKE, EVAN PEREZ and ANN CARRNS Staff Reporters of THE WALL STREET JOURNAL September 7, 2005; Page A1

NEW ORLEANS -- On Aug. 29, as Hurricane Katrina brought chaos to this city, three massive waves of water poured largely unseen into the eastern section of town and neighboring St. Bernard Parish.

One surged west, off a churning Lake Borgne. Another came across from Lake Pontchartrain in the north. That sent a steel barge ramming through the Industrial Canal, a major shipping artery that cuts north to south through the city, possibly scything a breach that became 500 feet long, letting waters pour into nearby neighborhoods.



HURRICANE KATRINA Tracking the storm and its aftermath

- Interactive Map: Survivors' Stories
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President Bush meets with cabinet members and says, "This administration is not going to rest until every life can be saved." Plus, U.S. Labor Secretary Elaine Chao discusses the federal programs in place for Hurricane Katrina victims.

The waves inundated the mostly working-class eastern districts, home to 160,000 people. In some places, the water rose as fast as a foot per minute, survivors say.

Until now, the world's attention has focused on the levee system protecting the city's central districts, and on the near-anarchy in the storm's aftermath. But a complete reckoning of the damage and death toll will likely focus on an entirely different event, hitherto overlooked: the devastating swamping of the eastern sections of New Orleans, hours before the central flooding began. The final tallying of the dead across the city will be substantially dictated by how many residents of these neighborhoods got out alive.

For auto mechanic Roy Mullet, who lived on Meraux Lane, where the streets fade into the marshes stretching toward Lake Borgne, the flood kicked off a furious and lonely fight to survive. His struggle, and that of his extended family and neighbors, was capped by an unexpected and critical act of charity.

For the rest of the city, and the investigators piecing together the puzzle, the floods in eastern New Orleans suggest a more complicated explanation for the disaster, one that raises new questions about how it was devastated and what must be done to make it secure. In particular: Why were the levees lining the Industrial Canal and parts of Lake Pontchartrain to the east lower than in other parts of the city? Should residents near Lake Borgne have been more clearly warned that the lake could rise so furiously? Are the levees outside the city limits sufficient to protect parts of the city that few tourists ever visit? Should shipping companies be required to do a better job of securing barges and vessels?

Only 83 deaths have been confirmed in Louisiana, but the death toll will clearly be higher. "It's going to be awful, and

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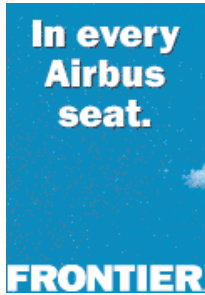
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it's going to wake the nation up again," New Orleans Mayor Ray Nagin said yesterday. Katrina is blamed for a total of nearly 260 deaths in Alabama, Florida, Georgia, Louisiana and Mississippi. The number unaccounted for is huge. As of yesterday, more than 23,000 messages had been posted on a "missing persons" Web site sponsored by the New Orleans Times-Picayune newspaper.



Roy Mullet

According to engineers, scientists, local officials and the accounts of nearly 90 survivors of Katrina interviewed in recent days, the first of the three waves swept from the north out of Lake Pontchartrain. How high the wave reached hasn't been determined, but the surge poured over 15-foot high levees along the Industrial Canal, which were several feet lower than others in the central areas of the city.

About the same time, a similar wave exploded without warning across Lake Borgne, which separates Lake Pontchartrain from the Gulf of Mexico. It filled the lake, engulfed its surrounding marshes, raced over levees and poured into eastern New Orleans.

As Lake Borgne swallowed those neighborhoods from the east, a separate catastrophic wave rose from the other side, possibly caused by the flying barge.

Trapped between three cascades of water were the neighborhoods of the Lower Ninth Ward, where nearly 14,000 African-Americans lived, a third of whom owned no vehicle and a third of whom had physical disabilities, according to U.S. Census data. Next door, just outside the city limits, were the virtually all-white areas of St. Bernard Parish -- Arabi, Chalmette and Meraux -- home to more than 50,000 people as well as oil refineries, docks and a fishing boat in what seemed like every other yard. Within a few hours of Katrina's arrival, those areas sat under as much as 15 feet of water, according to witnesses.

To the north, water poured through black and Vietnamese neighborhoods closer to Lake Pontchartrain, where another 96,000 people lived. Like Mr. Mullet and his family, large numbers of people in these areas had not evacuated.

Some families didn't think it was necessary to heed an order from Mayor Nagin to leave before Katrina arrived. Many others, particularly older people or the poorest residents without transportation or cash for hotels, say they couldn't comply. Other residents here adamantly refused to take shelter in the Louisiana Superdome, where crowds had become unruly during previous hurricanes.

"There was going to be thousands of people in there, and I knew that was going to be a problem," said Ernest DeJean, a 52-year-old carpenter who hunkered down in his brother's house on the western side of the Industrial Canal. They locked the wooden shutters tight and filled the bathtub and bathroom sink with water for drinking.

'A Few Inches'

Sometime after 7 a.m. that Monday, Mr. Mullet, 55 years old, was on the phone with a friend. A steady rain fell on Meraux Lane as Katrina whipped across the city's eastern districts and suburbs. The eye of the storm had hit the coast about an hour earlier.

How much water had collected on the street, the caller asked. Mr. Mullet looked out the window and replied: "A few inches."

Less than 10 miles northwest of Mr. Mullet's house, Stanley P. Stewart, a 49-year-old mechanic living on Tricou Street in the Lower Ninth Ward, also watched the rain come down. His house sat close to the Mississippi River, on higher ground, and he had lived through floods such as the legendary Hurricanes Betsy and Camille in the 1960s.

With him were 13 family members ranging in age from 4 to 71. "Where was I going to go?" Mr. Stewart said later. "I'd like to ask the mayor how you take 14 people with no finances and book them in a hotel. It's not that we didn't leave. It's that we couldn't leave."

Many Lower Ninth Ward residents say that about 7 a.m., as the storm neared its peak, they heard a loud noise, possibly a transformer blowing, possibly the generators failing at the nearby Florida Avenue pumping station, a key element of the system keeping water out of that part of town. Whatever happened, residents noticed the water rising dramatically.

"You didn't have five minutes to get anything," Mr. Stewart says. "My brother was outside in about two feet of water, and he was about 25 to 30 feet from me. By the time he got back to the house, we have seven or 10 feet of water, and I'm trying to get everyone up to the second floor. This was not from the rain. I knew there had to be a breakage in the

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canal."

In the back of the Lower Ninth Ward lived Cheryl Denise Thomas, a substitute teacher for St. Bernard Parish schools. She opened the front door of her second-floor apartment on Delery Street just after 7:30 a.m. and saw water about to top a 13-foot-high iron gate. Her mother had come to the house the day before, begging Ms. Thomas to leave with her. She refused because she didn't think the storm would be a big deal. Her mother waited in the car for 45 minutes before giving up.

Now she knew her mother had been right. In the time it took to grab a towel, toothbrush and cellphone, water was coming through the closet in her bedroom. "I thought the roof was leaking," says Ms. Thomas. Instead, she found water surging up from the flooded apartment below. Ms. Thomas, a heavysset 41-year-old, climbed on top of the dresser in her bedroom, praying the waters would stop rising.

In Meraux, Mr. Mullet looked out the window again, about an hour after telling his friend that a few inches of water had collected. He saw his Jeep floating down the street. Mr. Mullet, a large man with a bulky frame, opened the front door. Four feet of water rushed into the home. He turned to his son John, 25, and yelled: "Get out!"

The two men rushed out the side door and hurried to John's small skiff parked beside the house. Within five minutes, water was at the eaves of the house, Mr. Mullet recalls. They struggled to control the boat as powerful currents driven by winds over 100 miles per hour threatened to carry them down the street.

Meraux Lane, the closest street to the marsh leading to Lake Borgne, had become a sea with 6-foot waves. Unable to control the boat, the Mullets grabbed on to a neighbor's roof and held on. The rain felt like tiny bullets. Roy Mullet gripped the roof so tightly that he began to bleed from a long abrasion on one finger. "All I kept thinking about was my son. Several times I looked at him and thought we were goners," Mr. Mullet said later.

Nearby, Mr. Mullet's cousin Louis was giving refuge to Louis's mother and two aunts. The water rushed into the house so quickly that there was no time to reach the attic. They began swimming frantically for high ground. When the group pulled themselves out of the water into a cluster of trees, they realized one aunt, 65-year-old Peewee Minock had disappeared.

A few houses away, Yockey Patcheco, 60, a retired ship-boiler maker, and four family members were startled by the sound of a loud crash outside. They looked out to see that a neighbor's car had just slammed into their home, carried by the force of the wave rising from Lake Borgne. Suddenly, water was gushing through gaps in the door.

They pushed a few items, including a chain saw, into the attic of the one-story house and clambered up one by one: his 81-year-old mother, two sisters and Steven Battaglia, Mr. Patcheco's nephew. The water kept rising. The clan tried to saw through the roof in case the attic began to flood but the saw's chain broke on nails. They turned to a small ax and finally chopped through.

By 9 a.m., less than an hour after the storm had peaked, tens of thousands of homes across the eastern areas and suburbs of New Orleans had been filled with water, trapping anyone unable to escape. Witnesses said houses lifted from their foundations skidded around town, turning orderly neighborhoods into an unrecognizable jumble of rooftops and chimneys.

A Crucial Waterway

On normal days, the 5½-mile-long Industrial Canal hums with barge and ship traffic, moving between a lock at the Mississippi River on the southern end of New Orleans and Lake Pontchartrain in the north. It is a crucial waterway for vessels carrying petroleum products, industrial chemicals and oil-field pipes because it connects the river to the Gulf Intracoastal Waterway, which in turn leads to the Gulf of Mexico.

Beside the canal is the Lower Ninth Ward, which was originally a cypress swamp prone to flooding. In recent decades, its white residents largely left for neighboring St. Bernard Parish and other suburbs. A third of those who remain live below the poverty line.

The Industrial Canal has been the area's defining presence since it was built in the 1920s. Time and heavy use have taken a toll on the canal, now operated and maintained mostly by the federal government. Barges and ships were routinely delayed because of growing traffic levels and the lock was "literally falling apart at the hinges" in 1998, according to a U.S. Army Corps of Engineers report, which called it an "antique" and recommended replacing it.

A \$600 million lock-replacement project didn't get very far. Lower Ninth Ward residents complained about noise and

launched a legal fight that bogged down the work.

The levees along the Industrial Canal's eastern side are supposed to stand at a height of 15 feet, according to the New Orleans district of the U.S. Army Corps of Engineers. Joseph Suhayda, a retired Louisiana State University coastal oceanographer, suspects the levees aren't actually that tall, partly due to sinking of the land beneath them. Mr. Suhayda now consults for a maker of flood-protection barriers. If he's right, that would mean the levees weren't high enough to handle even a Category 2 or 3 hurricane. Katrina was a Category 4.

The Corps of Engineers concedes some of its levees in the area "have settled and need to be raised to provide" the level of protection for which they were designed, according to a fact sheet on the Corps's Web site dated May 23, 2005. But federal budget shortfalls in fiscal 2005 and 2006 "will prevent the Corps from addressing these pressing needs."

Hurricane Katrina's storm surge -- the wave of water pushed ahead of a hurricane by its furious winds -- raced across Lake Pontchartrain. As it did so, the canal became the delivery vehicle for the first wave that would destroy the Lower Ninth Ward. Just before the water began rising, a surge hit the mouth of the Industrial Canal. The Corps of Engineers says a lock operator reported seeing water from the lake pouring over 15-foot walls on each side of the canal. Corps officials believe the flood scoured away a portion of the flood wall near the northern end of the Lower Ninth Ward.

Much worse was also to come.

As storms approach New Orleans, owners of ships, tugboats and freight barges that populate the city's port and waterways attempt to secure their craft. Barges -- typically about 200 feet long, 35 feet wide and capable of hauling three million pounds of cargo -- are lashed with cables and kept in position with tug boats, according to Edward Peterson, executive director of the Louisiana River Pilots Association. Removing the barges from the area entirely is impossible. "There is nowhere to go," Mr. Peterson says.

As the hurricane rolled into New Orleans, scores of boats broke free or sank. In the Industrial Canal, the gush of water broke a barge from its moorings. It isn't known whose barge it was. The huge steel hull became a water-borne missile. It hurtled into the canal's eastern flood wall just north of the major street passing through the Lower Ninth Ward, leading officials to theorize that the errant barge triggered the 500-foot breach. Water poured into the neighborhood.

When the storm was over, the barge was resting inside the hole. "Based on what I know and what I saw, the Lower Ninth Ward, Chalmette, St. Bernard, their flooding was instantaneous," said Col. Rich Wagenaar of the Army Corps.

It didn't help that the Mississippi River, which runs along the southern border of these neighborhoods, rose 11 feet between Sunday and Monday mornings. Coastal experts say that could have worsened flooding by limiting the water's escape route.

As the water roaring out of the Industrial Canal turned the streets of eastern New Orleans into rivers, the same areas were hit from the other side by the storm surge coming off Lake Borgne. Engineers say the estimated 20-foot surge also appeared to overflow levees just north of St. Bernard Parish. Shrimp boats were dumped in a marshy section between Lake Borgne and the city.

After Survival, What?

As the wind slowed, shortly after noon, Steven Battaglia, 19, poked his head through the hole in the Patcheco roof to take a look at Meraux. He saw a flash of brilliant blue sky during a pause between the leading edge of the storm and its tailing end. The neighborhood was awash in water, debris and, fortuitously for those still alive, boats.

Mr. Battaglia could see a neighbor named Bobby Newman coming down the street with several friends in a tiny boat. They climbed on board, altogether packing 11 people and three dogs into a 16-foot boat, and then continued moving down the street to check on friends. Struggled to manage the current, the group tied the boat to a clump of trees and waited for the storm to pass.

Mr. Mullet and his son took advantage of the lull in the wind to bail out several inches of water from their sinking 21-foot skiff and break into a neighbor's attic.

It was nearly two hours later, more than four hours after the flood had hit, that the storm finally died down, and the residents of Meraux Lane sat dazed and exhausted. They didn't know surviving Katrina's landfall was the easy part of their ordeal.

Roy Mullet and his son John, a deckhand, set out in their boat through a stand of pine trees choked with debris to check on their cousin and aunts not far away. They picked up Louis Mullet, Roy's cousin, who was jumping from roof to roof. A short distance away, they found Aunt Peewee Minock's body trapped, caught in the trash on the water's surface. She wore a life jacket. As the men tried to pull her body free, water moccasin snakes slithered out of her clothes and all over her body.

"We left her on a neighbor's roof," Roy Mullet said later, pausing to compose himself. "We tied her to the roof."

Three miles to the west, the Lower Ninth Ward was an otherworldly scene of suffering and despair. In every direction, soaked families clung to roof tops. Wails and screams emanated from the vents under attic eaves. Animal carcasses and storm debris floated between houses. There was water to the horizon in each direction and no way to be certain how far it might extend. Sirens sounded in the distance.

In the middle of the afternoon, Ms. Thomas, the substitute teacher, began to hear boats pass through the neighborhood, probably Louisiana Department of Wildlife and Fisheries agents who had set sail in an armada of flat-bottomed boats late Monday afternoon. But she was terrified to walk to the window. Water had filled the first floor and risen to a height of 3 feet in her second-floor bedroom. Floorboards had buckled. She was concerned she might fall through. Ms. Thomas can't swim.

As a calm night sky thrust a devastated city into total darkness, the sound of boat motors died, replaced by pleas for help. Ms. Thomas was left atop her dresser, with no food or water.

The next morning, wildlife agents put more than 130 boats in the water from a staging area near a bridge across the Industrial Canal. Over the next day, rescuers pulled more than 1,000 people out of the Lower Ninth Ward, picking up the 14 people in Mr. Stewart's house after pulling up to a second-floor bedroom.

They coaxed Ms. Thomas off her dresser at 3:30 p.m. Tuesday. "They told me to jump, but I'm too heavy." She made a stretch toward the boat but nearly capsized it, sending herself and an agent into the water. A hand pulled her into the boat. Her glasses were still on but the right lens had popped free.

Though they were safe, the ordeal for the residents wasn't over. Mr. Stewart says they were left on St. Claude Avenue, at the impromptu boat launch, unsure how to reach food, water or shelter. They feared going to the Superdome because of the mayhem they were starting to hear about.

As Tuesday progressed, the buses stopped coming. Late that night, an unexpected deliverance arrived. Someone had stolen a city bus and driven it through the only dry approach to the St. Claude Avenue bridge. Roughly 40 people jumped on as it made its way to the New Orleans Convention Center. There, however, they found a hellish, fetid scene and opted to camp outside on nearby Julia Street. By the end of the week, the Lower Ninth Ward bus passengers had made it to refugee centers outside the city.

Three Boats, 19 People

As Katrina faded, Mr. Newman gathered his relatives and the Patcheco clan into the boat they grabbed during the storm, unsure if anything nearby was above water.

They floated to a nearby home, broke in and took clothing. As darkness fell, they navigated by the memory of the rooflines of buildings along Judge Perez Drive.

They heard people trying to break out of their attics and took in several stranded victims, including one man who was floating in a refrigerator with his dog. About noon on Tuesday, they met up with other neighbors in boats and formed a small convoy. A total of 19 people and six dogs in three boats, they caravanned down a bayou heading for a dock where a friend of Mr. Mullet's kept an oyster boat. He knew it would be big enough to hold them all.

Along the way, people begged to be taken from their rooftops. "It was a horrible thing, but we couldn't help," Mr. Newman says. "We were packed on our boats already."

Some of the men in the group foraged for food and water and gas. "We survived on chips, tuna and sardines," Mr. Newman recalls. They siphoned fuel from adrift boats.

The refugees heard stories about how New Orleans was becoming a combat zone. They didn't know whether the other side of Lake Pontchartrain would be any better, so they drifted. Near dark on Tuesday, they found a 42-foot oyster boat, the "Lady Alicia," and climbed aboard. At a nearby fish camp, they took over a small house built on stilts and

waited for three days.

Cut off from the world, they didn't know whether other parts of Louisiana were similarly destroyed. Some members of the extended group broke off to try to find a way out. But the core group of nine from Meraux Lane clung to each other.

"Our neighborhood is so tightly knit, it's like we're living in the old days," Mr. Newman says. "The only way we'd make it was if we stayed together." The next day, they came across a stranger in a boat, carrying piles of shirts that read: "Elect Wayne Landry. State Senator," leftovers from an unsuccessful local campaign. Six members of the weary crew donned a shirt.

An Act of Charity

Across Lake Pontchartrain in Lacombe, La., Frank Mistretta III and his wife Kim watched TV coverage of the disaster on a generator-powered television set. Their home, several miles inland, wasn't damaged, but hundreds of homes near the lake were wiped out by the same surge of water that ravaged eastern New Orleans.



Frank Mistretta

On Tuesday, with word coming from TV reports that there were huge numbers of people still in New Orleans, where the Mistrettas had once lived, Mr. Mistretta began to feel helpless. He had a boat but it wasn't working right. Radio reports said private rescuers were being turned back.

"That's when I began to get frustrated," he said later. "How can we save the world if we can't save our own people?"

Mr. Mistretta, a deeply religious man who owns a contracting business, went looking for fuel. An oil contracting company called Lard Oil in Hammond, La., sold him a 330-gallon tank. He waited at one gas station but the pump went dry. He found a second, an hour from home, that was selling fuel for \$3.25 a gallon while other stations had been charging \$2.49. The tank, fuel and a pump cost about \$2,000.

On Thursday morning, the group from Meraux Lane considered a risky plan to follow a caravan of shrimp fishermen 150 miles across Lake Borgne and along the edge of the Gulf of Mexico. The group decided not to risk it. They still weren't sure what was happening beyond the flood.

As water began to recede, Mr. Mullet despaired over what he perceived as a lack of help from authorities. They could see officers on a road not far away and helicopters in the air. "I couldn't believe they couldn't just set up a place...with fuel and water," Mr. Mullet says.

By Saturday, Mr. Mistretta was ready to move. About noon, he, his brother and two family friends, left in two boats to look for victims in St. Bernard Parish. They entered a canal near Lacombe and made their way to the submerged subdivisions, a journey that took less than an hour across the glassy-smooth lake.

They stumbled across the Lady Alicia at about 3:30 p.m. "Man was I happy to see them," Roy Mullet recalls, his severely wounded hand wrapped in a towel. When Frank Mistretta told the Mullets the other side of the lake was dry, they knew it was time to go. Half an hour later, they crossed Lake Pontchartrain to safety. "It was the best 30 minutes ever," Mr. Battaglia said.

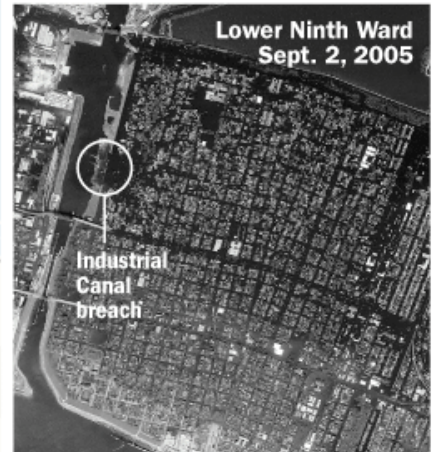
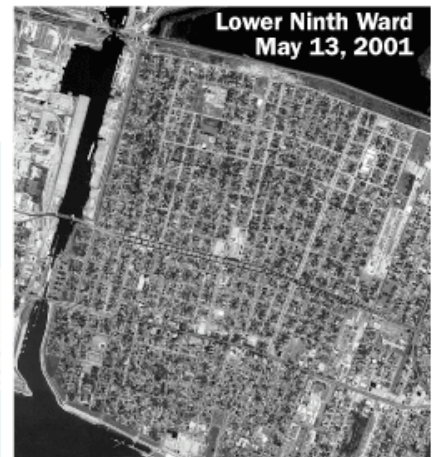
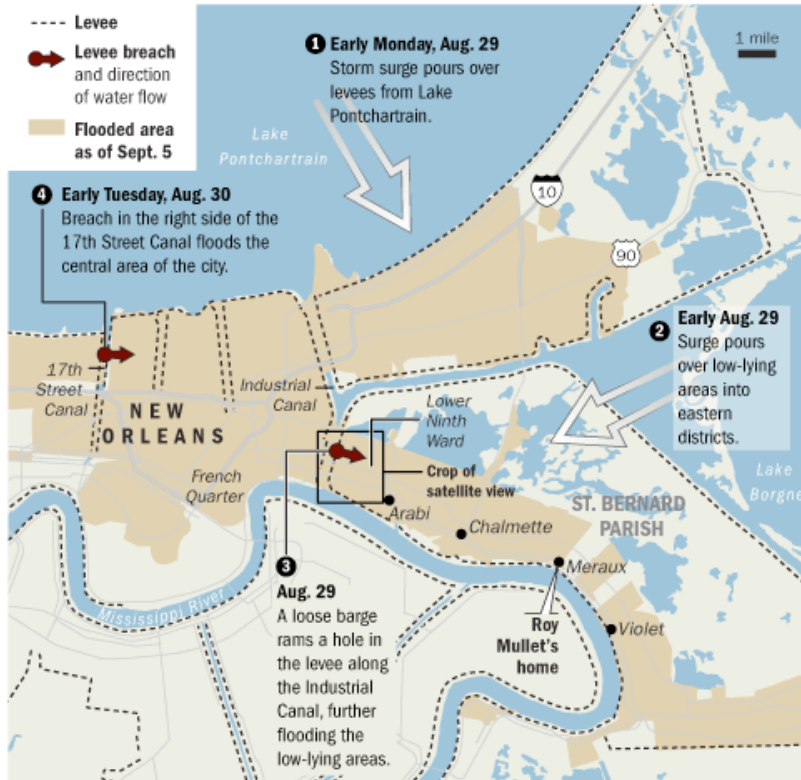
Kim Mistretta fed the survivors red beans and rice with crawfish and sausage. Outside in the darkness, Roy Mullet sat quietly on the steps. He says he kept going over the ordeal in his mind, replaying how he might have lost his son in the waters. "I will never stay even for a Category 1 hurricane," Mr. Mullet says. "Never again."

--James Bandler, Valerie Bauerlein, Ilan Brat, Rick Brooks, Christopher Cooper, Jose de Cordoba, Steven Gray, Diya Gullapalli, Kris Hudson, Aaron Lucchetti, Daniel Machalaba, Betsy McKay, Gary McWilliams, Sarah Rubenstein, Dionne Searcey, Steven Sloan, Roger Thurow, Melanie Trotman, Susan Warren, Ken Wells and Ann Zimmerman contributed to this article.

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The Biggest Breach

Waves inundated the eastern districts of New Orleans and the neighboring county of St. Bernard Parish.



Sources: Board of Levee Commissioners Orleans Levee District; U.S. Army Corps of Engineers; Federal Emergency Management Agency; Space Imaging

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