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JOHN SCHWARTZ | Patchwork City AUG. 17, 2007

One Billion Dollars Later, New Orleans Is Still at Risk

NEW ORLEANS — Six inches.

After two years and more than a billion dollars spent by the [Army Corps of Engineers](#) to rebuild New Orleans's hurricane protection system, that is how much the water level is likely to be reduced if a big 1-in-100 flood hits Leah Pratcher's Gentilly neighborhood.

Looking over the maps that showed other possible water levels around the city, Ms. Pratcher grew increasingly furious. Her house got four feet of water after Hurricane Katrina, and still stands to get almost as much from a 1-in-100 flood.

By comparison, the wealthier neighborhood to the west, Lakeview, had its flooding risk reduced by nearly five and a half feet.

"If I got my risk reduced by five feet five inches, I'd feel pretty safe," said Ms. Pratcher, who along with her husband, Henry, warily returned home from Baton Rouge, La. "Six inches is not going to help us out."

New Orleans was swamped by Hurricane Katrina; now it is awash in data, studied obsessively in homes all over town. And the simple message conveyed by that data is that while parts of the city are substantially safer, others have changed little. New Orleans remains a very risky place to live.

The entire flood system still provides much less protection than New Orleans needs, and the pre-Katrina patchwork of levees, floodwalls and gates that a Corps of Engineers investigation called "a system in name only" is still just that.

The corps has strengthened miles of floodwalls, but not always in places where people live. It has built up breached walls on the east side of one major canal, but left the west side, which stood up to Hurricane Katrina, lower and thus more vulnerable. It has not closed the canals that have often been described as funnels for floodwaters into the city.

And its most successful work, build-



Fred R. Conrad/The New York Times

The 17th Street Canal pumps and, at right, floodgates. The yellow diesel engines would power pumps to send floodwaters through the black pipes into Lake Pontchartrain.

ing enormous floodgates to cut off the fingerlike canals that brought so much flooding into the city, had a divisive effect. The gates now protect prosperous neighborhoods like Lakeview, and though corps officials say there has been no favoritism, the effect has been to draw out old resentments and conspiracy theories in a city that never lacked for them.

"We have spent a lot of money and gotten some very good patches, but we're putting them on this decayed old quilt," said Robert G. Bea, a professor of engineering at the [University of California](#), Berkeley, who is an author of an independent report on the levee failures. "We're still with this damned patchwork quilt."

As a result, the city still lacks a system that can stand up to that 1-in-100 storm, let alone one like Hurricane Katrina, which the corps calls a 1-in-396 storm. The work that could build the more robust system — originally estimated at \$7 billion, and now at least twice that — will not be completed until 2011 at the earliest, and experts agree that even that level of protection will be less than the city needs.

The corps is working on a two-year, \$20 million study to find ways of providing even more protection, but it will not even be released until December.

Without a strong rampart of protection against storms, New Orleans will have a hard time persuading its far-flung residents and businesses to return and rebuild. Matt McBride, an engineer who became an anti-corps gadfly on flood-protection issues, left the city along with his wife after deciding he simply did not trust the new system.

"There's too many things that can go wrong," Mr. McBride said.

Maggie Carver, a Gentilly resident now living in Woodstock, N.Y., but hoping to get back, said she thought that all the time and work would have resulted in more progress and a clearer sense of safety than she had seen.

"If I sell my house and put everything into rebuilding and living in New Orleans and it happens again, then where am I?" Ms. Carver asked. "I'm in a boat somewhere with four Jack Russell terriers and my grandson. I won't have anything."

Patching the System

The corps has hardly been idle in the

two years since the flooding. It quickly mobilized a force that grew to as many as 3,300 workers in the New Orleans area, and its cranes and bulldozers belch exhaust at waterways all over town, installing walls of concrete, massive pumps and mounds of earth-work.

Ultimately, though, the corps was trying to patch up a 350-mile system that was unfinished and vulnerable long before Hurricane Katrina, and the haphazard results are clear. It has repaired breaches on the east bank of a waterway called the Industrial Canal with 4,000 feet of stolid, well-armored floodwall to protect the still-devastated Lower Ninth Ward, even though few people are living there and there is little sign of the neighborhood's return.

Across the canal from that floodwall, however, the walls that stood up to the storm have not yet been raised, even though they protect an inhabited neighborhood. That means they remain at their pre-Katrina height, lower than the new wall and vulnerable to being overtopped. They have been strengthened against catastrophic failure if water flows over the top, but floodwaters would nonetheless flow into Gentilly.

Meanwhile, the Mississippi River Gulf Outlet, an old navigation channel that many scientists say destroyed wetlands and contributed to a funnel effect



Lee Celano for The New York Times

Leah Pratcher had four feet of water in her house after Hurricane Katrina. "Six inches is not going to help us out."

that increased the damage to the city, has yet to be sealed off. The corps has said that proposals from contractors for doing so are on their way, but that work, too, may not be complete before 2011.

Then there are the new pumps at the mouths of the city's main drainage canals, which will be turned on if the huge new floodgates have to be closed to keep out lake water in a storm. Two reports said that the pumps, ordered in a rush of planning before the 2006 storm

season, were a troubled operation from the start, and that if a storm had hit in the first year after Hurricane Katrina, severe flooding could have occurred.

Experts who have looked at the situation in the year since then say that things have improved, and the pumps are working as planned. But community activists say they suspect that the corps has not yet fully fixed the problems.

"I was led by the Lord to come back." ORA M. SINGLETON is still working on repairs to her Ninth Ward home.



Lee Celano for The New York Times

Ora M. Singleton is still working on repairs to her Ninth Ward home. "I was led by the Lord to come back."

On a broader scale, the essential but daunting work of restoring the wetlands along the Gulf Coast, which can reduce the effect of storm surges, has yet to get under way in earnest.

Analyzing the Risk

Col. Jeffrey A. Bedey, commander of the corps' Hurricane Protection Office, acknowledged that the work so far has been piecemeal, because the scale of project is so enormous. The drive to provide protection against that 1-in-100 storm by 2011, Colonel Bedey said, is more thorough.

He said the maps that will predict the impact of that work, which could be published before the end of August, "should

show Upper Gentilly looking very good,” and much of the rest of the city besides.

And so, he said, the analysis that many people will have to make is, “Am I really willing to take the risk between 2007 and 2011” that no big storm will overpower the work done so far?”

That requires more than an analysis of risk; it requires a calculus of hope. And it is not a question that needs to be asked only in New Orleans. It is the same question that comes up when a steam pipe in New York City explodes or a bridge 1,200 miles up the [Mississippi](#) from New Orleans collapses. Getting infrastructure right is hard, and keeping it strong takes vigilance. And that means safety, uncomfortably, is a relative thing.

“If people were looking for a quick and easy answer — is it safe? — there is no easy answer,” said David E. Daniel, the president of the University of Texas at Dallas and the head of a panel that monitors the corps’ investigation of the Katrina disaster.

Some can live with thoughtful uncertainty more comfortably than others. Marion LaNasa, a homeowner in Lake-

view, said he loves New Orleans and cannot imagine being happy anywhere else. “If you were really smart, would you stay?” he asked. “Probably not. But there’s more to life than assured comfort and no risk.”

Ms. Pratcher said she would continue to demand change — and to pray. “I do believe in God,” she said. “He’s the person I’m calling on now to help us, because man isn’t doing it.”

Going on Instinct

The corps has repeatedly urged local residents to come to its community briefings or to look over the flood risk data, available on its Web site at nola.risk.usace.army.mil, that provides possible water levels by street address.

Mr. LaNasa, who works for Lockheed Martin at the Michoud Assembly Facility east of town, said that when the risk maps were unveiled in June, he and his wife sat at the computer and looked at the likely flooding in their home in Lakeview. He saw it as evidence that the family should stay, but his wife, who is not from New Orleans, was less certain.

“She certainly saw a lot of dark colors, which indicates a lot of water, which is

distressing to her,” Mr. LaNasa said.

What he saw, though, was that the area around their house, close to Lake Pontchartrain, was relatively higher and, potentially, drier. “We’re pressing ahead — I’m not dwelling on the risk,” he said. “My wife is pressing ahead with me, but a little more skeptically.”

After climbing the learning curve, he said, “the decision is going to be an emotional decision,” just a more educated one. “Ultimately, you have to go with your gut.”

Others seem to be trusting data from a higher authority. On St. Ferdinand Street in the Desire section of the Ninth Ward, Ora M. Singleton, 70, was standing in her still-ruined front yard pulling grass out by the roots. It costs too much to have it mowed, she explained.

Ms. Singleton wanted to get rid of the grass until she can move back into the house — a process that looks, from the appearance of the place, as if it may still be a while. She has put on the new roof and installed new windows, but there is still much to be done after the house took on 7.5 feet of water.

She is close to the west wall of the navigation canal that the corps acknowledges is lower than the new one on the other side. But she has not been able to go online to look for information. “I don’t have the Internet,” she said.

If she had, she might have seen that her home still stands in a spot where waters from a 1-in-100 flood would reach six feet. Other nearby areas could expect to take on eight feet of water.

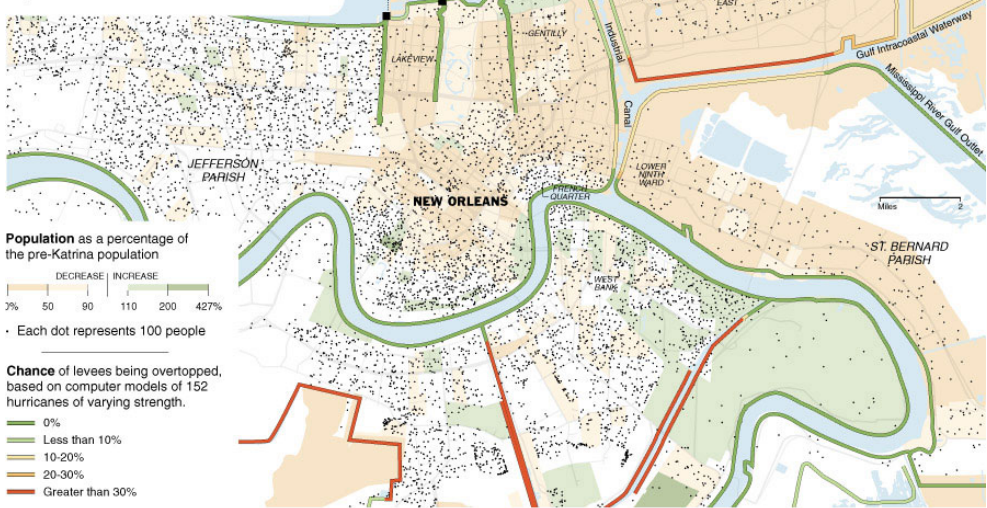
“I love my city,” she said. “I was led by the Lord to come back.”

Will she do anything different, then?

“This time we’ll not furnish our home with all that nice antique furniture,” she said. Her mailbox was swept away, but she has precariously wired a new one to the rusted fence. The mailbox is white with delicate letters: “Home Sweet Home.” ■

Protecting New Orleans

The hurricane protection system has been reinforced in many places around New Orleans since Hurricane Katrina, but large parts of the region remain vulnerable to big storms. The levees and floodwalls shown in red represent the greatest risk of flooding, particularly to the east and south of central New Orleans.



Stopping the surge. Floodgates have been built at the ends of three canals, but the Industrial Canal to the east of downtown does not have similar protection. The Mississippi River Gulf Outlet, which many blame for funneling water from the gulf into the city, has yet to be sealed off.

Predicted flood depths. Some areas, like Lakeview, have seen the amount of flooding from a 1-in-100 year flood reduced significantly, while others, like Gentilly, have not, according to computer models.

