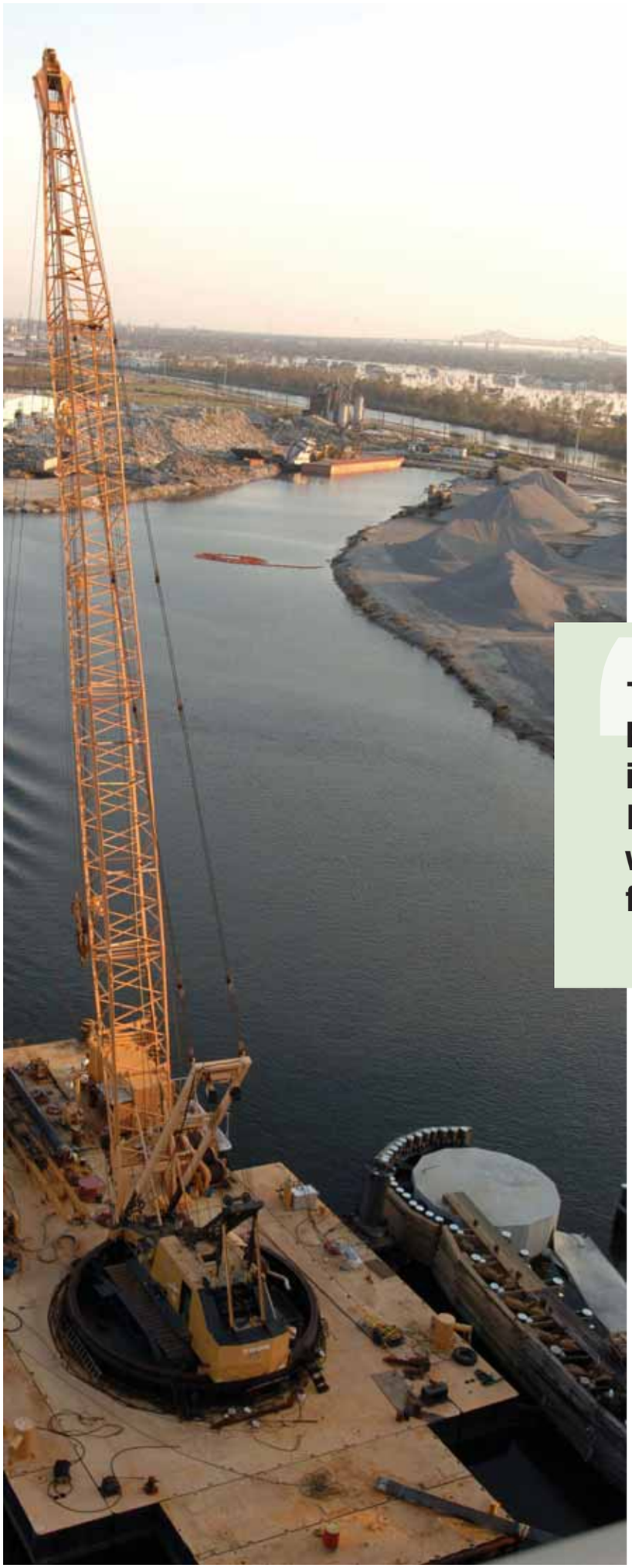
After the Flood

Rebuilding New Orleans Begins in the Wake of Hurricane Katrina

By Jenny Price

As the Big Easy dries out, officials will struggle with the task of cleaning up and rebuilding New Orleans after what some have called the worst natural disaster in the nation's history.

At least 80 percent of the city spent weeks submerged by the flooding that followed Hurricane Katrina and now it must deal with the environmental and health risks the toxic waters leave behind. Leaders also face tough decisions about what to tear down, what to restore and where to build as competing ideas surface from the local, state and federal level.



"There's not going to be support for putting back everything the way it was," said Kenneth Potter, a professor of civil and environmental engineering who researches the design of flood-management strategies at the University of Wisconsin in Madison and also grew up in New Orleans.

"There's so few examples that we can draw on in this country, I don't know that anybody knows exactly what the steps are," Potter said.

Health Risks Loom Short- and Long-term

Restoring the city's infrastructure, including sewer and water, is critical to avoiding a public health disaster. Early tests on the floodwater showed high levels of bacteria, according to the Louisiana Department of Environmental Quality.

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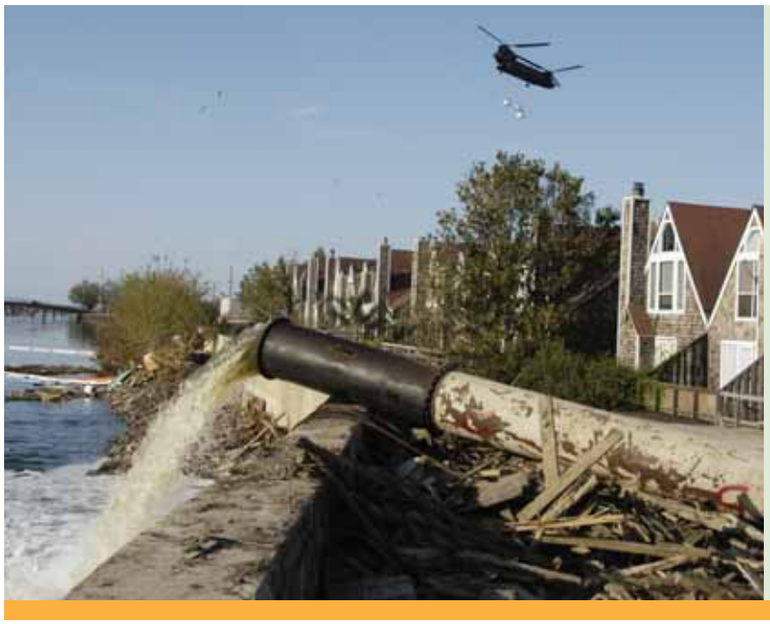
The top health threat facing the city is the spread of disease from contaminated water, said Dr. Dennis Maki, a national expert on infectious diseases who teaches at the University of Wisconsin Medical School.

Maki said unsafe drinking water puts people at risk for diarrheal disease, including cryptosporidium and E. coli, which can be fatal to those whose immune systems are compromised, like the elderly or small infants. Residents also face an increased risk of contracting Hepatitis A from contaminated food and water, he said.

And Maki said the longer the water stays in the city, the greater the danger for mosquito-borne diseases such as encephalitis and tropical illnesses like dengue and malaria due to New Orleans' steamy climate.

Long term, a lack of primary care for flood victims could present a major danger to public health, if children don't get the necessary vaccinations to protect them from diseases such as measles, mumps and rubella.



"The longer things are chaotic, the more we're going to start to see collateral disease and infections that are preventable by vaccine simply because people aren't getting maintenance health care," Maki said.

And even after the water is gone, the city may have to grapple with other health and public safety issues.

The 1997 Red River Valley flood put both Grand Forks, N.D., and neighboring East Grand Forks, Minn., under water for two weeks and forced 50,000 people to evacuate. A long-term study found mental illness, particularly depression, increased 45 percent, and drunken driving increased 129 percent in the three years following the flood, according to Grand Forks Public Health Director Don Shields.

"It compounded problems people already had," Shields said.

And Shields, who just last year paid off a flood loan to rebuild his home, said the city is still about two years away from complete recovery as it awaits completion of some levies and a dike system to protect it from future flooding.

Assessing the Damage

Officials with the U.S. Army Corps of Engineers expect to pump the water out of the city by the end of October, but what remains poses a major challenge. Hurricane Katrina and the flooding that followed damaged as many as 160,000 homes beyond repair and the water contains a mix of everything from household chemicals and oil spills to debris from landfills.

Some experts have suggested certain parts of the city will be too contaminated to rebuild.

"Everywhere we look there's a spill," said Mike McDaniel, secretary of Louisiana's Department of Environmental Quality, in the days following the flood.

And the water being pumped out of the city is going into Lake Pontchartrain, which could kill fish, birds and other animals as well as damage nearby wetlands, environmental experts have warned.

While some parts of the city located on higher ground escaped flooding and remained relatively dry, many homes and buildings were structurally compromised or could be overrun with mold, said Kristina Ford, who served as New Orleans' director of city planning for seven years.

"In New Orleans, the water table is about six feet and so nothing's down very far and it's just created what seems to be a big toxic soup," she said. "I think when they pump out the water what's left behind is going to be astonishing in environmental terms."

Ford, who is now a professor of environmental studies at Bowdoin College in Brunswick, Maine, said the city will have to determine what's left, what can be salvaged and what should be demolished.

"Some of them, it probably would be best simply to bulldoze them," Ford said. "If there is one thing a Formosa termite likes better than wet wood, I don't know what it is."

And while some leaders have gone so far as to suggest it's not worth rebuilding the city at all, Ford said the only way the process for redeveloping the city will work is for a strong, centralized authority to be appointed that understands the city is more than a place to party and values what made it unique in the first place.

"The economic importance of New Orleans to the whole country is huge," she said. "And I think that's the reason that it is important that it be some authority which is higher than just the local jurisdiction to take a hand."

Ford said whoever leads the effort should ask the best architects, engineers and planners in the country for their help in figuring out how to rebuild the city, with no idea considered too farfetched.

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"What's happened in some parts of New Orleans is that nature has given us a tabula rasa," she said.

Raising a City

After a hurricane leveled one-third of Galveston and killed 6,000 people in 1900, the city pumped more sand onto the island off mainland Texas to raise its elevation and built a 17-foot concrete sea wall. Before the storm, the city had no protection and its highest grade was eight feet above sea level, said historian David G. McComb, author of *Galveston: A History.*

"There seems to be a human desire to rebuild in western civilization," he said. "If nature does this to us were going to shake our fists and survive. The people we're determined to rebuild their city and they did."

Before getting to work on the rebuilding and raising the grade, Galvestonians dealt with the grisly task of disposing of the dead. Unable to dig graves in the saturated sand, residents initially tried to weigh the bodies down and dump them at sea. When they washed back up on shore, large funeral pyres were built instead using debris from the hurricane.

McComb said raising the elevation is something engineers could consider for New Orleans going forward since it sits below sea level. Another option is restricting suburban expansion or new development to prevent the city from growing much larger.

"They've got a great opportunity to build something different and historically this has been done. Cities have been destroyed before," he said. "People have taken that as an opportunity to build in a different way."

—Jenny Price is a freelance writer for The Council of State Governments.