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The Big Barrier Question

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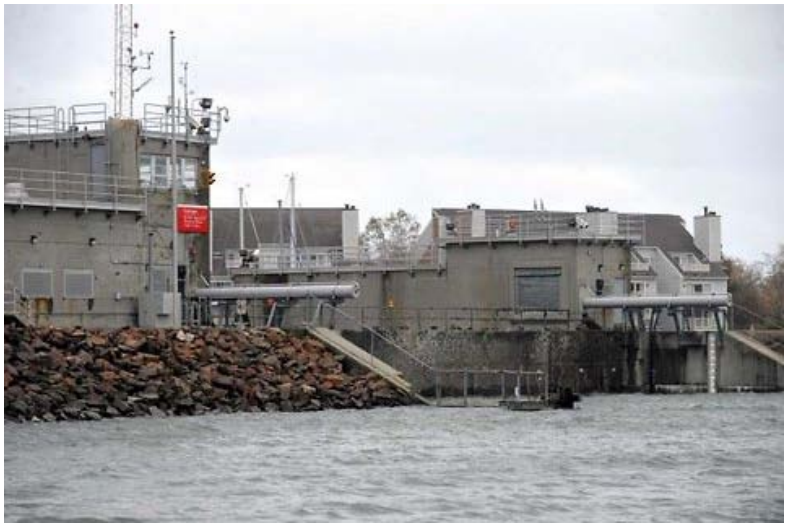

Lindsay Niegelberg/The Stamford Advocate

A hurricane barrier in Stamford, Conn., shielded much of the city last week.

Politics & Policy

As the storm chugged toward the Eastern Seaboard at 3 p.m. on Oct. 27, an engineering crew in Stamford, Conn., was at the ready. It was time.

With the click of a computer mouse, machinery on the seafloor groaned into action and a gate swung up from the deep, snapping into place high above the waves in Long Island Sound.

Two days later, when stormwaters from Hurricane Sandy ripped through the coast of the tristate area, much of Stamford, a city of 124,000, sat secure behind a 17-foot-high barrier that easily blocked an 11-foot surge.

The Army Corps of Engineers estimates that the barrier system, completed in 1969, helped prevent an estimated $25 million in damage to factories, businesses and homes.

“It was extremely effective in protecting areas that would have been flooded completely by this storm,” Mayor Michael Pavia said. “It made all the difference in the world.”

The technology of movable sea barriers, from Stamford’s modest flap gate to London’s mighty 10-gate system in the Thames, has long intrigued engineers and planners contemplating a solution for low-lying areas of New York City.

The hope is that such a system could someday block surges from Long Island Sound and the Atlantic Ocean into the East River and New York Harbor.

Now, in the aftermath of a devastating storm, the question is front and center: should New York armor itself with steel and concrete at a cost of billions of dollars?

Experts whose barrier designs and studies from a 2009 conference were issued on Monday in book form argue that anything short of sea gates is a Band-Aid approach.

Mayor Michael R. Bloomberg has expressed wariness about the barrier proposal, saying he is not sure the gates would work well enough to justify the cost. Yet it is clear that his administration's view is evolving.

Jeroen Aerts, a researcher from the University of Amsterdam in the Netherlands who was hired by the city in 2009 to assess flood risks and protections, said that New York officials initially preferred to focus on cheaper and less intrusive options like flood-proofing buildings and expanding wetlands to absorb more water.

The assumption, he said, was that unlike New Orleans, New York is far enough above sea level and skilled enough at evacuations that it could prevent a major loss of life.

The turning point was Tropical Storm Irene in August 2011, which mostly skirted the city but pummeled other coastal areas of the state.

After the storm, the mayor's Office of Long-Term Planning and Sustainability asked Dr. Aerts, a geographer and expert on water risk management and climate, to compare the costs and benefits of barriers with those of smaller-scale changes like building levees around sewage treatment plants and elevating subway stations.

Dr. Aerts, who is to present a draft of his findings at the end of January, estimates that any barrier system would cost $10 billion to $17 billion depending on the model used. The city would need another $10 billion to $12 billion to shore up the areas on the sides of the barriers, he added.

Still, he said, the city should still consider building them.

Brian Colle, a professor of atmospheric science who is part of the Storm Surge Research Group at Stony Brook University, contends that barriers would have made a big difference when the storm pounded the area last week.

If gates had been placed in strategic spots like the mouth of the Arthur Kill between Staten Island and New Jersey, he said, they would have protected some of the areas that were swamped by floodwaters, including the edges of Lower Manhattan, low-lying areas of Brooklyn and Queens and the western part of Staten Island as well as Jersey City and Hoboken.

"The idea is that you raise these barriers, and anywhere inside of that you're basically protected," Dr. Colle said, adding, "With a solid barrier, we basically can have business as usual in Lower Manhattan."

But vexing questions remain. Would industries tolerate immense disruption from barrier construction in the city's busy waterways? Would residents object to the marring of historic vistas? With climate change advancing, can scientists accurately predict the size of hurricanes that the sea gates will one day have to withstand? (London officials already deem the Thames Barrier inadequate for future risks.)

And where would the $10 billion-plus in construction money come from? Even a study itself – taking into account the complexity of New York waterways, sea level rise projections and other factors — would take years and millions of dollars.

City officials have pressed for a feasibility study by the Army Corps of Engineers but that would require Congressional authorization and funding.

The scientists and engineers who have worked on conceptual designs for the city say that a comprehensive study is needed on the most effective locations and the most practical type — whether barriers that swing close like a driveway gate or pivot up from the ocean floor, for example.

“A lot of things need to be taken into consideration before we throw up a giant wall,” said Chris Gardner, a spokesman for the Army Corps.

Beyond the enormous potential cost, there is no question that there are drawbacks to sea barriers. A barrier that blocks the surge on one side will cause water levels to rise close to a foot on the other, potentially worsening flooding in other areas, depending on wind and currents.

“You could have about 20 percent more water on the other side of the barrier,” Dr. Colle cautioned.

What is more, pollution from the runoff of stormwater mixed with sewage would be trapped behind a barrier, with nowhere to go while the sea gate is closed.

There is also considerable concern about the environmental costs of disrupting tidal flows and salinity for fish and other aquatic life by building a permanent infrastructure at the mouth of New York Harbor and in the metropolitan area’s rivers.

> ““With a solid barrier, we basically can have business as usual in Lower Manhattan.”
>
> — *Brian Colle, Storm Surge Research Group*

“The harbor, the Hudson, the Hackensack and Raritan Rivers, Arthur Kill all have thriving ecosystems that benefit us economically and in terms of recreation,” said Paul Gallay, president of the environmental group Riverkeeper. “We understand everything needs to be on the table dealing with the new normal, but storm surge barriers may end up doing more harm than good.”

In Stamford, where a hurricane barrier was built at a cost of $14.5 million, it took experience with deadly storms — most notably, devastating hurricanes in 1944, 1954 and 1955 — to make the investment. It has been used hundreds of times for both storms and high tides.

Sandy, some skeptics argue, was not bad enough for barriers to become part of the preventive mix in New York.

“People won’t accept these dramatic changes to the environment,” said Philip Orton, a storm surge research scientist with the Stevens Institute of Technology in Hoboken. “I don’t think we’ve had our big disaster where hundreds of people die to make this palatable. But it certainly will change the debate.”

Oceans, Politics and Policy, Rivers, Weather Extremes, Conn., Hurricane Sandy, New Yorjk