

Could the Disaster in Seagate Have Been Avoided?

Preparing for the Next One

- Shimon Rosenberg -

Ideas That New York City Is Considering To Mitigate the Disaster Next Time a Hurricane Approaches

Hurricane Sandy was one of the greatest natural disasters ever to visit the New York/New Jersey area. With damages estimated at \$50 billion, it is second only to Hurricane Katrina as the costliest storm in American history. For the Jewish community in particular, the destruction of Seagate and other locales with significant Jewish populations took a heavy toll.

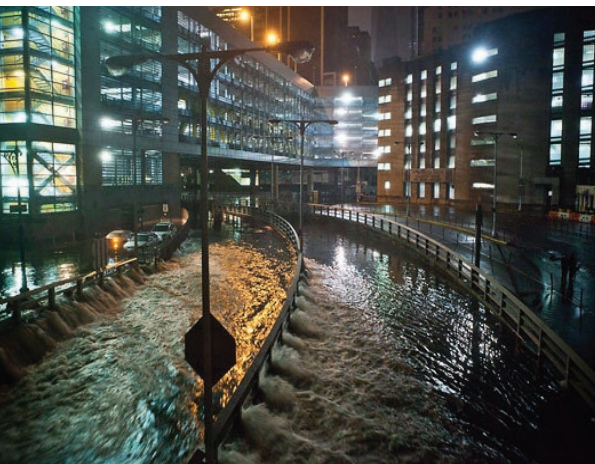
Of course for us any such occurrence is a powerful reminder of the presence of the ה' ה', the hand of Hashem. David Hamelech tells us (Tehillim 127:1) "If Hashem does not protect a city, the efforts of the watchman are in vain." Nevertheless, we are expected to exert effort to protect ourselves. From the standpoint of natural cause-and-effect, there are a number of steps the city could have taken that have the potential to drastically reduce the number of fatalities and the extent of the damage. Many of these measures are already being employed in other cities around the world.

Read about the interesting ideas New York City may employ in an effort to protect itself the next time a massive hurricane threatens to strike.

When I stood outside that Monday night, everything around me was pitch dark. The electricity had already been off for several hours. The blackness of the night was relieved only by the occasional flash in the distance as electric transformers exploded, creating brief but dazzling displays of brilliant color. The powerful storm winds created a frightening background noise. Thick trees that had withstood the tests of time were now upturned irreverently.

The scene was one I will never forget. Despite the danger, I was mesmerized by the amazing display of raw power. And this storm wasn't even a Category 1 hurricane by the time it made landfall! It wasn't until I showed up in shul the next morning, however, that I realized how fortunate I was. Granted, I had no electricity—and it would be another few days before the power came back on—but I had not suffered any costly damage.

Others, such as many residents of Seagate, Bayswater and Far Rockaway, had not been so lucky. Some of these people were left with literally nothing more than the clothes on their backs. The mighty storm surges had flooded their neighborhoods and washed away their homes and cars. One fire that broke out in Queens spread rapidly until it destroyed 110 homes. The firefighters



Entrance to the Battery Tunnel is submerged in water.



A parking lot near Wall Street is inundated during Hurricane Sandy.

were forced to wade through several feet of water to battle it.

Some of those areas worst hit still do not have electricity as of this writing. Journalists who covered Hurricane Katrina in 2005 report that entire sections of Brooklyn, Queens and Staten Island look precisely like New Orleans did after that storm.

A record-breaking storm surge as high as 14 feet inundated the Manhattan shore, flooding the subway system and tunnels. The water also destroyed the below-ground power facilities, resulting in thousands of homeless and millions without power.

Hurricane Sandy was the worst storm to hit New York in recorded history. It was the largest and most powerful tropical storm ever to make landfall in New York, despite the fact that it was no longer a hurricane when it arrived. Conservative estimates put the costs in the ballpark of \$50 billion. That would make it second only to Hurricane Katrina (\$125 billion) as the costliest storm in US history.

The violent storm awoke the authorities to the fact that the New York metropolis is defenseless against major storms. People simply assumed—or hoped—that no hurricanes would reach so far north. And if any did arrive, hopefully they wouldn't be too powerful and the damage would be limited. In fact, experts have long warned that the



Overturned trees crushed this home.

tri-state area has no safeguards against the very real danger of tropical storms.

In the aftermath of Sandy, a number of fascinating proposals have been raised about how to protect New York from future hurricanes. This article presents some of the more noteworthy ideas along with images to help you visualize how these concepts might work.

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Seawalls Around the World

First, let's take a look at what has not been done until now. There are 40 countries around the world that guard their harbors and docks with mighty dikes and canals. These are intended to break the force of a storm and assist with drainage in case flooding does occur.

Nearly half of The Netherlands actually lies below sea level. This country had traditionally been at the forefront of efforts to reclaim land from the sea, using extensive levees and seawalls to hold the ocean at bay. A disastrous flood in 1953 left 1,835 dead and 300,000 homeless. Since then the government has taken the issue of flood safety even more seriously. Engineers spent decades and \$11 billion to develop a massive

system known as Delta Works. This project includes seawalls, dams and canals and costs \$2 billion annually just to maintain.

To begin with, a massive roadway, known as the Afsluitdijk, was built to keep out the sea. This road is 20 miles long, 269 feet wide and 25 feet high, and it is strong enough to hold back the ocean during a storm. In southwest Holland a large waterway leads to Rotterdam, the busiest port city in Europe. A similar wall there would completely disrupt the flow of commercial traffic between the city and the sea. Instead engineers created a massive gate, the heaviest movable structure on earth, at a cost of \$500 million. Each of the gate's two arms is as long as the Eiffel Tower is tall (1,024 feet). Most of the time the gate remains open to allow marine traffic through. As soon as a storm approaches, though, the gates are closed. This seals out the ocean waves and prevents them from flooding the city.

The second largest moving water-defense system is found in London. The Thames River is given to flooding during a storm, endangering the low-lying areas of central London. The Thames Barrier, built at a cost of \$850 million, has already been closed 119 times since it was completed in 1983. That fact underscores the critical importance the barrier plays in keeping Londoners safe from storm surges.



Deluge in Queens.