



THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
SCOTT M. STRINGER

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Colonel Thomas D. Asbery
U.S. Army Corps of Engineers
New York District
24 Federal Plaza
New York, NY 10278

Joseph Seebode
Deputy District Engineer for Programs and Project Management
U.S. Army Corps of Engineers
New York District
24 Federal Plaza
New York, NY 10278

**Re: New York-New Jersey Harbor and Tributaries Coastal Storm Risk Management
Feasibility Study Interim Report**

Dear Colonel Asbery and Mr. Seebode,

I am writing today to relay my perspective on the U.S. Army Corps of Engineers' (Corps) proposed plans to protect New York Harbor and surrounding areas from coastal storms. While I am deeply appreciative of the Corps' commitment to enhancing our region's resiliency, I want to register my opposition to any plan that relies on the construction of offshore storm surge barriers. Offshore storm barriers simply cannot protect all of our coastal communities from the myriad challenges posed by climate change and are incompatible with a healthy, thriving New York Harbor. I urge the Corps to instead focus on the many benefits associated with developing a more integrated and holistic system of onshore resiliency projects like localized floodwalls, dune and wetland restoration, living shorelines, reefs, and levees.

As Comptroller, I recognize that New York City's survival depends on addressing climate risks and immediately investing in more resilient infrastructure. Our region sits at the front lines of climate change. Current estimates published by the New York Panel on Climate Change caution that sea levels surrounding the City can be expected to rise by as much as 21 inches by the 2050s and by as much as 39 inches by the 2080s. Scientists also project that the likelihood of a Sandy-type storm hitting New York City has increased in the past 200 years from a one-in-500 year event to a one-in-25 year event today. As temperatures warm and Antarctic ice mass shrinks, storms similar in impact to Sandy could become one-in-five year events as soon as 2030.

At stake is an enormous amount of economic value. A report published by my office in May estimated the cumulative value of property located within New York City's current 100-year floodplain to be a staggering \$101.5 billion. That marks a more than 70 percent increase in property value since 2010, as new development and appreciating property values have further concentrated

value near the city's shorefronts. Of course, the true value of our climate-vulnerable neighborhoods cannot be reduced to dollars and cents. These are our homes, hospitals, schools, and businesses. Protecting these communities will require massive investment in resilient infrastructure that can protect our shorelines and our environment. While I am sure that our region would enthusiastically welcome further federal investment in the region's coastal resiliency, I urge the Corps to concentrate its attention on the type of feasible, cost-effective, onshore resiliency projects that will best shield our shores.

Unfortunately, I believe that the focus on offshore storm barriers in the Corps' Interim Feasibility Study is the result of a myopic perspective on the challenges climate change will pose to our region. Four of the six options outlined in the Corps' report (Alternatives 2, 3A, 3B, and 4) center on the construction of offshore storm surge barriers. The Corps' storm barrier proposals are intended to protect the region from storm surges emanating from extreme weather events. By design, the barriers will not do anything to ameliorate risk from sea level rise or flooding from non-catastrophic storms. While the barrier-centric proposals do include some reference to undefined "complementary measures" to address non-storm flooding, the centerpiece of alternatives 2, 3A, 3B, and 4 will not spare the City from a future where high tides pour into increasingly large swaths of our waterfront communities.

The failure to address tidal or nuisance flooding is a crucial omission in the Corps' barrier-centric proposals. New York is expected to experience more than three times more tidal flooding events by 2030 and as many as 59 tidal flooding events per year by 2045, according to the Union of Concerned Scientists. Indeed, the New York Panel on Climate Change estimates that under certain extreme but conceivable scenarios "sea level rise by the end of this century could raise daily tidal flooding to levels even more severe than that which occurred during Hurricane Sandy." Unlike onshore resiliency measures, the sea barriers will be unable to alleviate risk from sea level rise. The Corps has intimated that a separate study would be required to address vulnerabilities from sea-level rise. I encourage the Corps to conduct this study and fully integrate its analysis of high-tide inundation into the current feasibility study before it selects an option.

I am also concerned that the Corps has not fully accounted for the magnitude of the threat posed by the interaction of coastal storms and heightened sea level rise if global carbon emissions go unchecked and more severe scenarios are realized. The Corps' analysis relies on its own projection of sea level rise, which it pegs at 1.8 feet by 2100, to estimate the strength of future storms. That sea level estimate is significantly below the middle range projections of 1.83 to 4.17 feet of sea level rise by 2100 published by the New York City Panel on Climate Change. Indeed, an estimate of 1.8 feet measures far below the admittedly low probability but still conceivable projection of a worst-case-scenario of 6.75 feet of sea level rise in the 2080s and 9.5 feet by 2100. By not accounting for these higher range estimates, the Corps risks spending billions to construct a barrier which could be overtopped by more powerful storms in the decades ahead.

Additionally, the various barrier-centric options outlined in the study also raise a number of questions about the costs and feasibility of relying on these relatively untested solutions. The estimated cost for Alternative 2 is \$118.8 billion, more than eight times the estimated cost of Alternative 5 which centers on onshore resiliency projects. While I have no objection to aggressive spending that matches the urgency of the climate crisis, we must ask if the funding necessary for these barriers could be better deployed elsewhere, such as in an expanded proposal for onshore options. I also am concerned that the long timeline associated with the construction of these barriers – amounting to 25 years –

will leave our City all too vulnerable to storms in the decades ahead. Venice's MOSE barriers have been in construction since 2003, and since the start of construction escalating estimates of sea level rises have put into question whether the barriers will be able to match the challenges of sea rise.

The feasibility report offers relatively little information about how the barriers will operate and under what thresholds the barriers will rise. Though the Corps suggests the barriers will only be deployed for serious storms, rising sea levels are expected to amplify the flooding risks posed by smaller and smaller weather events. An as-of-yet undesignated government entity will be charged with making decisions that will either permit flooding to go unchecked or spare thousands of homeowners from a storm's onslaught. It is unclear how those decisions will be reached and how any supervising entity will balance the costs in operations and maintenance associated with use of the gates with the potential risk of flooding.

Indeed, there has been some suggestion that the proposed barriers, when raised, could displace significant amounts of water that could threaten unprotected coastal communities. The Natural Resources Defense Council has cautioned that several communities in the region could become "sacrifice zones" and be forced to contend with significantly higher levels of flooding from water repelled by offshore barriers. The Corps must exhaustively study these possible consequences and appropriately weigh these risks as it considers its options.

Significantly, the barrier-centric options put forward by the Corps also promise to have an adverse and irredeemable effect on the health of our harbor ecosystem. Today, New York Harbor is as healthy as it has been for the past century. Thanks to the tireless advocacy of environmental groups and local partners, ecosystems across the Harbor region are thriving. Instead of protecting these hard-won gains, I believe that the construction of massive offshore barriers would upset the delicate balance of the Harbor and fundamentally alter this precious ecosystem. Riverkeeper, a group with deep expertise in the ecology of the area, has highlighted the impacts that offshore barriers could have on circulation patterns, the migration of underwater wildlife, changes in tidal energy, the oxygenation of the water, and the health of coastal ecosystems like wetlands. I echo these concerns and ask that the Corps do much more to appropriately account for the environmental impacts posed by these barriers.

Of special concern for me is the effect that the barriers might have on shorefront habitats like wetlands. Evidence suggests that reduced tidal flow associated with the barriers could choke wetlands of the oxygen and nutrients they need to survive. This is not an idle concern. Wetlands serve as a crucial line of defense against storm surge and flooding. Across the northeast, it is estimated that coastal wetlands prevented more than \$625 million in direct property damages that might have been caused by the storm – including \$138 million in potential damages to New York. Areas behind existing salt marshes are likely to have on average 20 percent fewer property damages than areas where salt marshes have been lost to development or mismanagement of natural resources. We cannot afford to forfeit any more of our wetlands. Indeed, an estimated 85 percent of New York-New Jersey Harbor's estuary wetlands have already been lost in the last century. If decreased tidal circulation harms wetlands, the tidal barriers will potentially further rob the region of a crucial defense against sea level rise. Similarly, I am concerned that the barriers might have an adverse effect on the restoration of aquatic habitats. Recently, Governor Cuomo announced his plan for an extensive shellfish restoration plan. Natural reefs, like New York's oyster reef, can do an enormous amount to blunt the threat of storm surge and prevent erosion. I urge the Corps to further study how the barriers might interact with resurgent marine life and how the Corp proposes to protect the region's habitats.

Having outlined my objections to barrier-centric approaches, I do want to emphasize my support for the Corps' consideration of non-barrier approaches, mostly encapsulated in Alternative 5 in the tentative report. I believe the Corps could play a transformative role in enhancing the region's resiliency by putting its expertise, clout, and resources behind a compressive proposal of shore-based measures. Unfortunately, the feasibility study's treatment of Alternative 5 does not include the expanded scope and specificity of detail that should be attached to the most attractive of options. Indeed, Alternative 5 only seems to include approximately fourteen projects across the more than 2,000 square-mile study area. The Corps has not committed to studying a comprehensive version of Alternative 5 unless it is selected for further consideration. I urge the Corps to further flesh out Alternative 5, including attaching an expanded explanation of how Alternative 5 could address both storm surge and tidal flooding.

I recognize that Alternative 5's vision of a network of linked shorefront resiliency projects presents certain challenges and will require hard decisions. However, I know that almost seven years removed from Superstorm Sandy, leaders from around our region will rally around proposals that can truly protect their communities from harm. I've endorsed several proposals which could be incorporated into a vision for Alternative 5, including a more extensive program of home buyouts in at-risk areas and conversion of that shorefront into naturally resilient wetlands and parks. I also support a drastic increase in resiliency spending at the City, State, and Federal levels to fund shorefront resiliency projects ranging from seawalls, to elevations, berms, and levees. I believe these alternatives are more sustainable, more versatile to changing climate conditions, more tested, and more shovel-ready. One option we must unequivocally reject is to stand by and do nothing as climate change threatens millions of lives and the heart of our nation's economy.

I want to thank you for considering these comments, your work on other critical regional projects, and for your commitment to enhancing our region's resiliency to storms. I believe that by carefully selecting the plan that is best for our region and our environment, the Army Corps could be an invaluable partner in protecting our communities against climate change.

Sincerely,



Scott Stringer
New York City Comptroller

c: Bryce Wisemiller, Lead of the NYNJHAT Study Team