

WHAT WE HEARD

Workshop: Coastal Defense and Ecology

FIDI-SEAPORT CLIMATE RESILIENCE MASTER PLAN | 1.27.2021

INTRODUCTION

NYCEDC and MOR (the City) hosted a workshop on Coastal Defense and Ecology on January 27th, 2021. This workshop drew marine ecology experts and advocates, along with members of the Climate Coalition of Lower Manhattan—a forum of individuals and groups who have expertise on Lower Manhattan’s complex context and are invested in the climate resilience of Lower Manhattan.

The City’s objectives for this meeting were that:

- Participants leave with an understanding of the overall project purpose and drivers, the relationship between flood defense and coastal ecology, the efforts being taken to understand the environmental, ecological, and regulatory landscape, and how this all influences design
- Provide a forum for participants to express their interests, concerns, and priorities related to the project and its potential environmental and ecological impacts or benefits
- Gain input on the priorities and concerns related to ecosystems, ecosystem services, and environmental benefits and impacts
- Engage stakeholders, both new and old, and build relationships to foster active partners in this project

The City and the consultant team led the first half of the meeting, which consisted of opening remarks, project background, and a deep dive into the technical aspects around coastal ecology. This information helped level set and fed into the second portion, which was spent in open discussion and Q&A moderated by the Mayor’s Office of Resiliency (MOR). In this forum participants asked questions about the project and the information shared, and voiced their priorities and concerns related to coastal ecology in this project.

Please note that the FiDi Seaport Master Plan represents just one portion of the Lower Manhattan Coastal Resiliency strategy. If you want to learn more about the other projects that comprise this strategy, please visit <https://www1.nyc.gov/site/lmcr/index.page>.

KEY QUESTIONS FROM PARTICIPANTS

How are you approaching analyzing the East River's ecology?

Our analysis is multi-pronged, using sampling to understand the specific ecosystems in this area (a 2-mile stretch along the East River), and computer-based models to understand broader/regional potential impacts from a coastal defense project. Our sampling study is the most robust study done to date in the East River and will tell us more about the existing ecosystems and species that live in this area. Our study is a yearlong process, and we are taking samples during different seasons to capture the full landscape of ecosystems. In addition to aquatic sampling, we are developing hydrodynamic models which look at the possible effects that a shoreline extension would have on water velocities in the surrounding East River, helping us understand potential project effects within a broader geography.

Is there a technical group that is helping evaluate the study findings?

Yes – our technical experts and Federal and State regulators are reviewing our findings. As a part of this process, we convened a group of Technical Advisors, who are experts from academic and research institutions in the New York City area. The Advisors provide consultations and third-party reviews of our technical analyses, including looking at the results from our ecological analysis and sampling study. Further, the Advisors bring expertise from a variety of fields including marine ecology, hydrology and water resources, urban infrastructure, and structural engineering and represent institutions including Columbia University, Cary Institute of Ecosystem Studies, and NYU Wagner. Additionally, we meet regularly with a group of Federal and State regulatory agencies, the Aquatic Resources Advisory Council (ARAC), which is coordinated by the U.S. Army Corps of Engineers. Much of our analysis is dictated by requirements set by the regulatory community, who mandate that any in-water project demonstrates that the project is necessary, that in-water work is minimized, and any potential impacts are mitigated. ARAC will be reviewing our findings with a specific lens of potential impacts and mitigations.

How are you analyzing the potential footprint of this project and the need for shoreline extension?

In our current phase of analysis, we are analyzing and developing a range project options which we will share with the public in Spring 2021. There are a number of constraints in this area that make it challenging to site the necessary coastal defense infrastructure on land, which is driving our analysis of a shoreline extension. As a part of this analysis, we are looking at the feasibility of an entirely on-land project, a minimal shoreline extension, and a larger shoreline extension. The regulators require this kind of analysis to demonstrate that going into the water is necessary. The project options will be informed by community conversations, technical analysis, and ensuring that we have a comprehensive coastal defense project that will protect this area into the 2100s, which could bring up to 20ft of storm surge and daily hightide flooding.

Q&A

1. *Who is part of the technical evaluation team? What groups are you engaging, and does it include independent scientists?*

Our analysis is being reviewed by two separate and independent bodies – a Technical Advisors group, and the Aquatic Resources Advisory Committee. Both these groups will review our findings and provide further guidance on how this data informs and influences project design.

At the outset of this work, the project team convened a Technical Advisors group, which is comprised of experts from academic and research institutions in the New York City area who provide consultations and third-party reviews of our technical analyses. The advisors have expertise in a variety of fields including Marine Ecology, Hydrology and Water Resources, Urban Infrastructure, and Structural Engineering, and represent institutions including Columbia University, Cary Institute of Ecosystem Studies, and NYU Wagner. This group will review findings from our ecological studies (sampling, models), and share their feedback. In addition to the technical advisors, we engage regularly with stakeholders and nonprofits advancing this kind of work, including the Billion Oyster Project and the Harbor School. We are excited to continue these partnerships.

Further, an Aquatic Resources Advisory Council (ARAC) was formed at the beginning of this project to bring in the regulatory perspective, and is coordinated by the Army Corps of Engineers and other regulatory agencies. This group advises on development of project alternatives and ensures that the process is compliant with the regulatory framework. In addition to the Technical Advisors, this group will also review the findings from our ecological studies, with a specific lens towards possible project impacts and mitigations that the project must include. Their feedback will inform our project design and next phase of work.

2. *Are you looking at the impacts of intense rainfall on combined sewer overflows (CSOs)?*

We have a team specifically looking at how climate change will impact precipitation and rain fall, as well as the impacts on existing drainage infrastructure. As part of our solutions development, we will be evaluating different drainage solutions to ensure that stormwater does not “pond” or collect behind the coastal defense and that the existing drainage system can provide the same level of service under future sea level rise conditions.

3. *How does this project intersect with Zoning for Coastal Resilience?*

Zoning for Coastal Resilience is more focused on providing guidelines for flood protections to buildings and existing structures, homing in on building-level protections. Our proposed Coastal Defense intervention is looking at systems that would provide comprehensive protection, which includes existing structures, while also looking at subsurface infrastructure, public spaces, and rights-of-way. Our project also has a longer time horizon and is looking at protections for up to the 2100s, which includes higher design flood elevations. This project works in parallel with Zoning for Coastal Resilience to ensure many levels of support against the impacts of climate change; with resiliency, we always want multiple lines of protection.

4. *How are you thinking about water quality? Will you monitor the impact that any green coastal defense treatments have on water quality, and how does upstream water quality from sewage treatment plants impact ecology?*

While the team is largely focused on managing water *quantity* --flooding due to climate change, change in flow patterns due to coastal defense system etc.-- it is critical that nothing proposed would negatively impact water *quality*. While the current sampling and testing underway is focused on aquatic habitat and benthic species, it is a great recommendation to consider monitoring the impact that green treatments have on water quality as part of future stages of work. This can include a closer look at how upstream water quality impacts ecology as well.

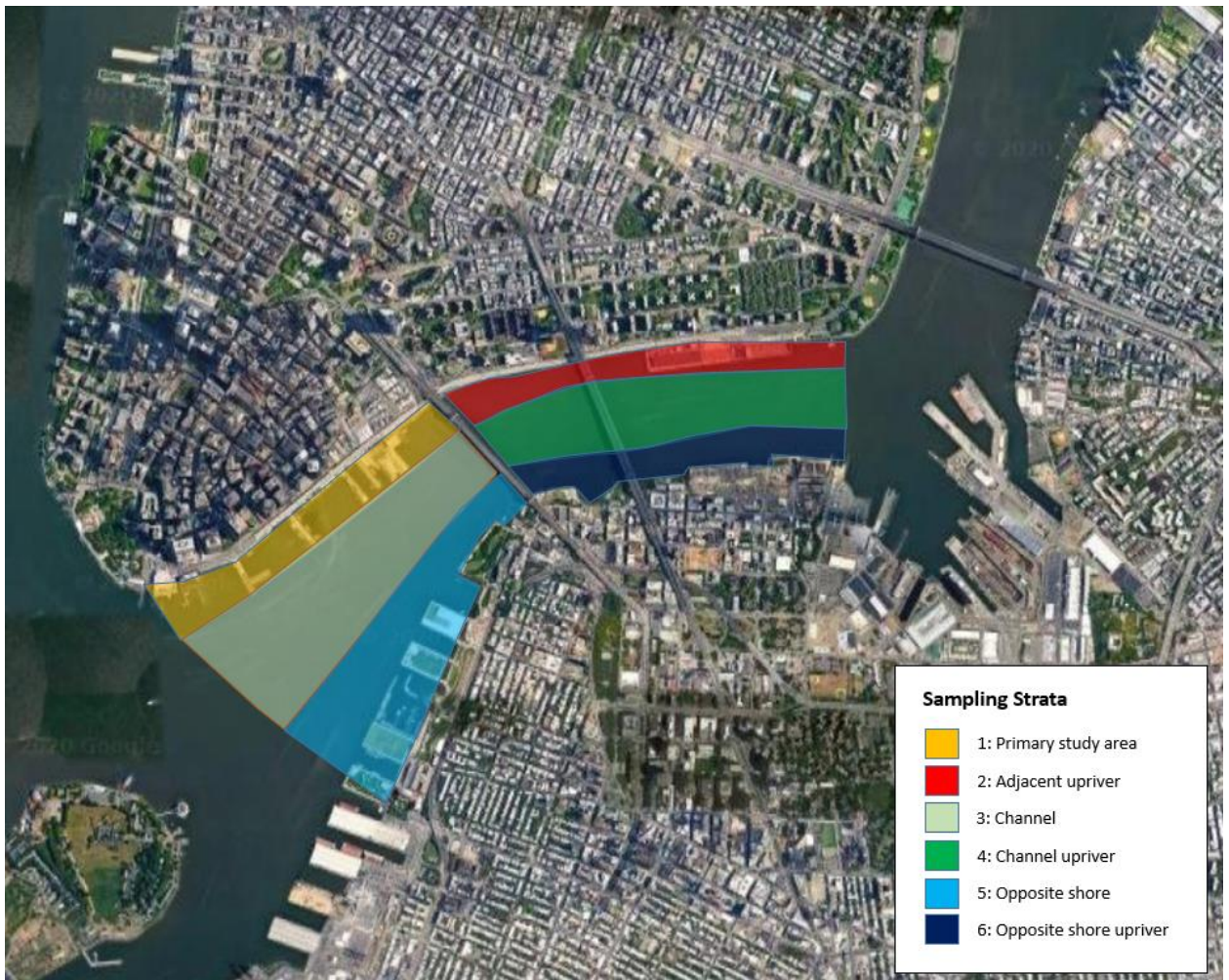
5. *What is the scale and scope of your aquatic monitoring?*

In embarking on this study, we realized how little is currently known about the East River. We are excited that this sampling study will fill critical gaps in existing knowledge about the aquatic ecosystems in this area! Our specific sampling study area is a 2 mile stretch along the East River, though we recognize that this is an interconnected system with the harbor, Hudson, etc. See below for a map that identifies the specific sampling geographies and zones. To better understand the existing ecosystem, we are conducting biological sampling now to assess what is happening in the river at this moment, and in the spring we will deploy mid-water troughs to monitor for migratory species that may show up then. This is a yearlong study, so that we capture the full landscape of ecologies in every season.

In addition to aquatic sampling, we are using hydrodynamic modeling monitor a broader geography for potential effects from the project, including the Long Island Sound and

New York Bay. We are using a nested model approach that allows us to efficiently model the immediate project area using a smaller, high-detail model while simultaneously monitoring the entire western North Atlantic in a larger, low-detail model for potential impacts. If the larger model shows potential impacts outside of the immediate study area, we will model them in greater detail and develop a mitigation strategy.

Modeling effectively acts as a guard rail for the project in that it allows us to understand the regional and local impacts of different protection alignments, ensuring that achieving the flood protection goals of the project does not come at the expense of causing adverse impacts to water flow patterns or ecology.



Map of the sampling study geographies

6. *Will you be comparing your sampling study results to other parts of the harbor and East River?*

Our one-year biological sampling effort is looking at six different zones in the East River, with a specific focus our primary study area -- the portion of the Manhattan Shoreline where the proposed project would be located (see map above). The other five zones are adjacent to the primary study area: in the navigation channel and along the Brooklyn shoreline of the East River. We are sampling these five zones to provide information about biological habitat, which we will compare to the findings from the primary study area. In particular, the two shoreline zones on the Brooklyn side have piers that serve as a reference site, which we are using for comparison with areas within the pierhead line in the primary study area. We are further comparing our study's findings to the biological and habitat data collected during previous studies in the NY/NJ Harbor.

7. *Will the project team be providing impacts based on the type of water edge (e.g., bulkhead vs. sloping)*

Yes, the project team is using two different methods to evaluate how different shoreline configurations and typologies at the water's edge might affect the East River. First, as part of the hydrodynamic and wave modeling, we will study how different shoreline configuration and edge treatments (e.g., vertical wall versus a sloped edge) impact velocities in the East River and how waves interact with the water's edge. In addition, as part of our ecological design workstream, we will be looking for opportunities to integrate shoreline configurations and typologies that either minimize potential project impacts or create a positive environment for the ecosystem.

8. *How is the project team considering the scale and design for a possible shoreline extension? How are on-land constraining factors, such as the FDR, being considered?*

In our current phase of analysis, we are analyzing and developing project options which we will share with the community in March / April. We are developing a range of different project options so that we can have a conversation with the community and stakeholders about the advantages and tradeoffs associated with each project option before narrowing in. Conversations like this workshop, meetings with the community board, and continuing technical and engineering analysis are all key pieces of developing these project options.

It is important to note that the regulatory framework of *avoid, minimize, and mitigate* guides this analysis. The regulators require that any shoreline extension project first demonstrates that extending into the water is necessary, and that any in-water work is minimized. As a part of this, our analysis includes examining what an entirely on-land scenario might look like and determining feasibility. However, there are many constraints in the area, including the FDR, that make it challenging to site the necessary coastal defense infrastructure on land. To that end, we are also undergoing a thorough technical analysis of potential infrastructural constraints and considerations, utilizing the best available information, and in consultation with relevant operating agencies such as New York City and New York State Departments of Transportation, New York City Department of Environmental Protection, etc. As a part of our analysis, we are considering the future for these pieces of infrastructure, and how that might impact the eventual project footprint.

9. *How is the project team thinking about the human scale parts of this project – how people will interact with it, how it may change behaviors, etc.*

While the primary focus of this project is coastal defense, NYCEDC, MOR, and Arcadis are working with landscape architecture firm SCAPE Studio and architecture firm One Architecture & Urbanism for their design expertise. At minimum, the Climate Resilience Plan will identify design opportunities that replace the quantity and quality of open space along the FiDi-Seaport waterfront today. To accomplish this, we are considering multiple options to ensure that our proposed flood protection infrastructure (likely built to at least a 20-foot design flood elevation) is comfortable, enjoyable, and accessible to a wide variety of users. Additionally, we are looking for opportunities to enhance the quality of the FiDi-Seaport waterfront's public realm, especially opportunities to improve connections between the upland neighborhood and the waterfront. We plan to share more detailed design options with the public beginning in Spring 2021.