CITY COUNCIL
CITY OF NEW YORK

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TRANSCRIPT OF THE MINUTES

Of the

COMMITTEE ON RESILIENCY AND WATERFRONTS

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December 1, 2022
Start: 1:13 p.m.
Recess: 2:43 p.m.

HELD AT: COMMITTEE ROOM – CITY HALL

B E F O R E: Ari Kagan, Chairperson

COUNCIL MEMBERS:

Joann Ariola
James F. Gennaro
Christopher Marte
Sandy Nurse
Vickie Paladino

A P P E A R A N C E S

Peter Malinowski, Co-Founder Billion Oyster Project

Shinara Sunderlal, Education Outreach Coordinator at the Billion Oyster Project

Jeffrey Chetirko, Principal at New York Harbor School

Vincent Sapienza, Chief Operating Officer at New York City Department of Environmental Protection

Connor Perry, New York Harbor School student

Ciara Lyver, New York Harbor School student

Sommer Stevenson, New York Harbor School student

Sam Jackson, Metro Flood Defense

Paul Gallay, Columbia University Resilient Coastal Communities Project

SERGEANT-AT-ARMS 1: Good afternoon. Sound check for the Committee on Resiliency and Waterfronts. Today's date is December 1, 2022. Located in the Committee Room. Recorded by Walter Louis (phonetic).

SERGEANT-AT-ARMS 2: We hear you on the Zoom.

SERGEANT-AT-ARMS LOUIS: Starting recording. Good afternoon, and welcome to the New York City Council hearing of the Committee on Resiliency and Waterfronts.

At this time, can everyone please silence your cell phones.

If you wish to testify today, please come up to the Sergeant's desk and fill out a testimony slip. Written testimony can be emailed to testimony@council.nyc.gov. Again, that is testimony@council.nyc.gov.

Thank you for your cooperation. Chair, we are ready to begin.

CHAIRPERSON KAGAN: [GAVEL] Good afternoon. My name is Ari Kagan, and I have the privilege of Chairing the Committee on Resiliency and Waterfronts. I want to welcome you to today's hearing

on the Billion Oysters Project and Nature-Based Solutions.

The New York Harbor was once considered the oyster capital of the world. Oysters naturally filter (INAUDIBLE) pollutants in the water. An adult oyster can filter up to 50 gallons of water each day, removing organic and inorganic particles from the water. They also act as natural buffers to storms by reducing the impact of wave energy, but, because of overharvesting and pollution, by the early 1900s, the New York Harbor was no longer the oyster capital. In fact, there were very few oysters left. People know all about restaurants, but we're not talking about restaurants. We're talking about live oysters.

In 2014, the Billion Oyster Project was founded at the Urban Assembly New York Harbor School, a high school focused on marine science and technology located on Governors Island. Their goal is to restore 1 billion live oysters to the Harbor by 2035. Working with middle school students and high school students across the city as well as restaurants and thousands of volunteers, the Billion Oyster Project has restored oysters at the 15 reef sites throughout New York City. We look forward to

hearing more about this amazing project during today's hearing. Of course, I'm particularly interested in what is being done in Coney Island Creek. Oyster reefs are just one of many natural and nature-based features that minimize flood risk and increase coastal resiliency. Wetlands, artificial reefs along the shoreline, dunes, and marshes all provide important ecosystem services of wave attenuation, reducing shoreline erosion and flooding and increasing shoreline protection. Waterfront neighborhoods throughout the City of New York including Coney Island would benefit from living shoreline techniques because they serve many purposes. They improve water quality, create habitats for fish, birds, and marina sources, control erosion, provide attractive and natural public access opportunities, and are often less expensive than traditional stabilization measures like bulkheads and (INAUDIBLE).

Living shoreline techniques are not appropriate in every location, but, where they're appropriate, we should be using them. I look forward to hearing from the Department of Environmental Protection on what nature-based solutions are

currently in place and what measures are planned to help the City become more resilient to storms and floodings. I also look forward to hearing from representatives from the Billion Oysters Project and the New York Harbor School.

Before we begin, I would like to thank my great Committee staff, Senior Committee Counsel Jessica Steinberg Albin, Senior Policy Analyst Patrick Mulvihill, Finance Analyst Andrew Lane-Lawless, and my Chief-of-Staff Jeanine Cherichetti, and my Legislative Director Alex Tymkiv for all their hard work putting this hearing together.

I also would like to recognize Council Members present, Council Member Marte and Council Member Nurse. Thank you for joining us.

Now, I would like to give a chance to speak to Committee Counsel.

COMMITTEE COUNSEL STEINBERG ALBIN: The first panel that we will be hearing from today will be representatives from the Billion Oyster Project and the New York Harbor School, Peter Malinowski.

CHAIRPERSON KAGAN: Peter Malinowski, Founder of Billion Oysters Project, the main topic of our hearing.

PETER MALINOWSKI: Co-Founder.

CHAIRPERSON KAGAN: Co-Founder, okay.

PETER MALINOWSKI: I just want to say first thank you so much for having this hearing, for your support, and that wonderful introduction and for all the support that we've gotten from City Council over the years. There are thousands of public school students throughout New York City who have been able to learn about New York Harbor, nature-based solutions, and how they can help restore it from the support of City Council so we're incredibly grateful to that.

We are working towards a New York Harbor that is ecologically restored, well-known, well-used, and well-cared-for by all New Yorkers. We believe that every single person in New York City has a right to access nature here in New York and that our best chance to do that is with our largest open space. New York Harbor is bigger than Shenandoah National Park. It's an enormous space. The vast majority of the Harbor does not have competing uses outside the shipping channels, and it's already, despite the centuries of overharvesting and pollution, it's already bouncing back in such an amazing way thanks

to our colleagues at DEP and all the work that they've done to improve water quality. We now regularly find seahorses in New York Harbor, we can find seals, dolphins, whales, dozens of species of wading birds, ospreys, bald eagles, all coming back to the Harbor, and this is an incredibly exciting time to be doing this type of work, but most New Yorkers don't think about New York Harbor as a resource that they have the right to access, and, as New Yorkers, we think about leaving New York City to find nature. What if we could all just walk down to Brooklyn Bridge Park or walk down to the Battery and look out and witness a great abundance of wild animals, and what if all of us and our children played a role in making that a reality? At Billion Oyster Project, we restore oyster reefs through public education initiatives. We restore oyster reefs because that's the dominant habitat type that used to fill New York Harbor. Just like if we were restoring a forest that was predominantly oak trees, we would be using oak trees. Those oyster reefs, as you said, provide all of these ecosystem services that allow all these other animals to flourish and for tens of thousands of years protected the land in New York

City from storm damage. We do it through public education initiatives because we believe that the best way to ensure long-term positive outcomes for the natural environment and for public school students is to train students to restore the environment and that we can rely on students to hold the responsibility of restoring and protecting the natural world and we can count on students to produce work products in school that have real value. The students at the Harbor School that you'll hear from later today, I was a Harbor School teacher for five years, this is a small group of students but they represent a group of 550 students who are driving boats, designing and building underwater reef structures, scuba diving, conducting meaningful, long-term research projects, growing oysters, learning all of these industry skills but practicing those skills through a real world applied project. At Billion Oyster Project, we've taken that style of teaching and learning and broadcast it throughout the city. We work with about 100 middle schools. We would like to be in all 1,700 public schools in New York City. We think that every young person in New York City has a right to know about New York Harbor and to

be engaged directly in the work of restoring it. We've made great progress over the last 10 years. We've restored 100 million oysters, so we only have 900 million to go in the next 13 years, and we're working on scaling our work up to meet that goal. We have an opportunity if we all work together to have a natural resource in the middle of New York City that we could all brag about. That is a future that I want to see. I want to be going over the Q train in 20 years and looking down and just seeing birds and fish and whales swimming by. That's something that there's a realistic chance that we can achieve that if we all work together, continue the good work to improve water quality in New York Harbor, elevate the standards, what we expect of clean water in New York Harbor, and all work together to train students to restore oysters here at home.

Thank you so much for having us here today. I really appreciate the opportunity to testify.

CHAIRPERSON KAGAN: Thank you so much for your testimony. You described a very important goal, a billion oysters. We have already 100 million you said so 900 million to go.

PETER MALINOWSKI: We have a little ways to go yet.

CHAIRPERSON KAGAN: Okay. Thank you so much. Thank you.

PETER MALINOWSKI: Thank you.

CHAIRPERSON KAGAN: So now I would like to invite Shinara Sunderlal. She's the Education Outreach Coordinator for the Billion Oyster Project.

SHINARA SUNDERLAL: Hello, everybody. Thank you so much for having me and for letting me testify in front of all of you today. I am the Education Outreach Coordinator with the Billion Oyster Project, and I primarily work with students and teacher audiences within the city trying to get to our second hidden mission of getting to a million New Yorkers connected to our New York Harbor. We are building this community around the waterfront by here, as you see, in Brooklyn Bridge Park where students are in the water really connecting and seeing the species firsthand to be able to feel connected and also know and protect this environment moving forward. We want this work to continue through the generations to come. Through teaching about the Harbor like when we're on the ground, like here, and

you can go to the next slide. We are really changing attitudes, and we are shifting the way that people are relating to our Harbor. We're not thinking hey, it's too dirty for us to enter to day but really when is it safe to go in and when are we able to get our hands dirty and be part of this large resource that we're all talking about today which is our New York Harbor. We are hoping to engage about 3,000 students more this year and train 900 more teachers to join this larger community that we've started forming since 2014, and here's actually a group of us out there monitoring our oysters and looking at their growth to be able to say okay, we are part of this work, we're part of this community science program, and maybe these students will be inspired enough to pursue a career within marine education or marine advocacy and stay in New York and contribute towards the future of New York City's sustainability. I love my work connecting with these students and teachers within this huge urban city. It's a great privilege to work with these oysters that we call our ecosystem engineers just because of how much biodiversity they're bringing back, changing our landscape not just physically but also culturally. Being brought up

in New Delhi, India, I did not have the access to our local environment, and, as well, our waters were also as polluted and I did not go on as many field trips, and it was really that deficit that motivated me to pursue this as a career in connecting people with their local environments to have the impact that they have the potential to be able to create this larger carbon footprint within their own environment so I am really excited to continue this work and stay inspired by meeting thousands of New York City students and teachers across all five boroughs in the City, and I want to continue shaping our next generation of stewards of our environment and innovators that are to come in shaping what the environment in New York City can look like and also to shape creative solutions to our climate crisis.

Thank you for listening, and I think we can end on this beautiful image with all these generations of different people coming together doing the work, rain or shine, and to be able to make those connections to hopefully talk to their families and take this work even further. Thank you so much for listening and having me today.

COMMITTEE COUNSEL STEINBERG ALBIN: Shinara, if you could please just go back through each photograph, we'll start at the beginning, and if you could describe what we are seeing, where it is located for accessibility purposes? Thank you.

SHINARA SUNDERLAL: Of course. We can start at this one. We have students evaluating what species are living at Brooklyn Bridge Park which is Pier 4 right here. We are using large nets or this method of seining and collecting whatever animals we might find to identify. We can go to the next one.

Here, we are measuring our oysters that are growing in Sunset Park. When the tide goes down, we can wade into the water and see some of these structures that are sitting on the bottom of the harbor so these are structures that live on the floor of our harbor. You can go to the next one.

Right here, we have a mix of students, BOP staff, and volunteers that are measuring our oysters down in Canarsie Brooklyn, and we measure our oysters at least twice a year, probably more than that, to just assess oyster growth and biodiversity around the area. You can go to the next photo slide.

Here, we have efforts of volunteer activities at our shell pile where we collect oyster shells and other bivalve shells from 60 restaurants across the city, and this is a shell pile that's located on Governors Island. If you haven't had the chance to visit, please do. It is a really interesting space to be a part of, that many shells at one time, it's a couple million at all times. We can go to the next slide.

Right here, we are in Brooklyn, and we are facing Governors Island, and this is at our remote shipping facility in Red Hook Brooklyn, and here we are loading oyster-filled gabions which are basically the structures that we see in the bottom, those mesh structures, larger structures that have to be lifted up in these cranes using these boats that are usually operated by students and then moved to one of the sites that they're permitted to be across the New York Harbor so they might be going to the Bronx, Queens, it really just depends on what the project is that day, but this is kind of where we take the oysters out from.

In the end, hopefully we all recognize this species, our lined seahorse that you can find in

the New York Harbor, and this was found at East 92nd Street, the Ferry Dock in Manhattan and (INAUDIBLE) couple of years so it's always really exciting when we find one.

I think that's everything. Thank you.

CHAIRPERSON KAGAN: Thank you so much for this great presentation. Very educational. I would like to invite Jeffrey Chetirko, Principal of New York Harbor School, to testify.

JEFFREY CHETIRKO: Hi. How are you? Thank you so much for this opportunity. Thank you. I'm glad to be here today to speak on behalf of the students, teachers, staff, and families of the Urban Assembly New York Harbor School. My name is Jeffrey Chetirko, and I am the proud principal of this amazing high school located on Governors Island in partnership with the Billion Oyster Project.

Our school of 550 students is proud to provide a maritime industry pipeline, allowing New York City teenagers opportunities and real-life experiences to engage in education through restoration with Billion Oyster Project. The New York Harbor School provides a college and career preparatory education built upon New York City's

maritime experience that instills in students the ethics of environmental stewardship and the skills associated with careers on the water. New York Harbor School's traditional academics, career and technical training programs, work-based learning, and college preparation ensure that our graduates are prepared for exciting careers in the maritime industry. Our seven State-approved career and technical education pathways are aquaculture, marine biology research, marine system technology, vessel operations, ocean engineering, professional scuba diving, and marine affairs and policy. Our School's unique career and technical education program cannot and does not happen without the overwhelming support of the Billion Oyster Project. The work of Harbor School and BOP helps in breaking down the barriers for New York City students entering into the maritime industry by providing New York City students the opportunity to engage in the mission of planting 1 billion oysters in the New York Harbor by year 2035. Our partnership with the Billion Oyster Project with our own School's mission in educating our city citizens about climate change. Billion Oyster Project provides financial support as well as numerous paid staff whose sole

responsibility is to work alongside teachers and administrators in providing support to working with our city's youth. Additionally, BOP works with over 75 elementary and middle schools around New York City, creating awareness and appreciation for climate research. These schools are located in all five boroughs and are ever increasing. Similar to BOP, our own school receives students from all five boroughs, where students commute on average one hour each way, yet we still maintain an attendance rate of 92 percent which is over the city average. This is because our students are challenged by a curriculum and real-life experiences that do not happen without BOP's engagement with our school and their support. We are proud of the work that we do with Billion Oyster Project. I see the work that BOP staff do each day and their commitment to making our city and waterways a better place to live each and every day. Through the leadership of Pete Malinowski, the staff and executive board are fully committed to making New York City sustainable and at the forefront of climate research and restoration. I particularly appreciate Billion Oyster Project and their partnership with us around internship opportunities. Last we checked,

over 80 percent of our students before they graduate have an internship opportunity, and a large portion of those students are working with Billion Oyster Project before they graduate our school.

Thank you so much for giving me this opportunity to speak on behalf of the Billion Oyster Project today.

CHAIRPERSON KAGAN: Thank you so much for your presentation and thank you for your great work educating students and our future New York City and national leaders, especially in environment and wildlife. Thank you very much.

JEFFREY CHETIRKO: Thank you.

CHAIRPERSON KAGAN: I believe now it's time to ask questions. I would like to ask a few questions to Billion Oyster Project if you don't mind.

Can you give the Committee some background of Billion Oyster Project? When did you start? Do you have any staff? How big is the project itself?

PETER MALINOWSKI: We started restoring oysters out of a high school classroom on Governors Island when the school moved to Governors Island in

2010, and that's when the first oysters went in the water, and that was Harbor School's Oyster Restoration Program. Then when that grew and we received funding to build oyster reefs, we were able to expand the project, and we actually started calling it Billion Oysters NYC originally because we thought it would be a great public/private partnership similar to Million Trees NYC, and we spent several years pitching that to the Mayor's Office and then we decided to launch Billion Oyster Project in 2014 as a private initiative of the non-profit so it was born out of Harbor School. We launched our website and hired our first staff in 2014, and that's actually when I went from being a public school teacher to a non-profit employee. At that time, we had a handful of staff. We are now 43 full-time staff based on Governors Island, and I think that answers your questions.

CHAIRPERSON KAGAN: Yes. I also would like to acknowledge we are joined by Council Member Ariola and Council Member Paladino. Thank you for joining us.

Second question which is primarily the main reason of this hearing is like what are some of

the benefits of oysters to our city's waterways? List them all.

PETER MALINOWSKI: You can think of an oyster reef system just like a forest so a forest is a three-dimensional complex ecosystem that performs a variety of benefits, and we all know those, better air quality, more animals, hold the land together, carbon sequestration, all of that. Oysters do the same thing, but they're in the water. You can't see them as well, but an oyster reef stabilizes the bottom, provides food and habitat for hundreds of species of animals. Large oyster reefs and oyster reefs historically in New York Harbor protect the shores from wave events, and, of course, they filter the water and can improve water quality, but the most important thing that our oysters do for New York Harbor is they get people excited about the Harbor, and that is far more powerful. The will of New Yorkers to take care of and preserve, protect, and improve the water quality of New York City will have a much more dramatic impact on water quality than all the oysters in the world. Through our educational programs, the oysters, they don't do a whole a lot, they don't seem like exciting animals, but they

capture public enthusiasm in a way that is really dramatic and exciting and allow us to get all different types of people excited about New York Harbor in a new way.

CHAIRPERSON KAGAN: Thank you. Already, it made us all excited. You already harvested or used 100 million oysters, but when are you planning to reach the goal of 1 billion oysters? Your target is 2035 or earlier?

PETER MALINOWSKI: Our target is 2035, and it's an ambitious target. We think we can reach it, but we're going to have to keep scaling up in order to get there. It's not supposed to be easy. That's why we set the goal that way.

CHAIRPERSON KAGAN: Since we are in City Hall, what additional funding besides City Council initiatives can you receive from the City?

PETER MALINOWSKI: What additional funding?

CHAIRPERSON KAGAN: Yes.

PETER MALINOWSKI: We have a lot of different funding needs to scale up our operations. We're a non-profit. We fundraise all the time. We're grant-funded, funded by public monies through the

State Department of Environmental Conservation. We've worked directly with city DEP before and the Governor's Office of Storm Variety, a variety of private foundations, but we need a lot of funding. Our annual budget is right around 6 million dollars. To get to where we want to go, we need to improve our infrastructure so there's some capital costs and then, because of our commitment to involve young people in all aspects of our work, there are programmatic costs that go along with all of that.

CHAIRPERSON KAGAN: Are we talking about triple, five times more that you need to achieve your goals or like how much money are we talking about?

PETER MALINOWSKI: Yes, I think that we would have a realistic chance of meeting our goals if we were able to double our current budget.

CHAIRPERSON KAGAN: Double? Okay. I also would like to mention that we were joined by Council Member Gennaro. Thank you for joining us.

Have you installed any oyster reefs at Coney Island Creek? You know I represent Coney Island so very important…

PETER MALINOWSKI: That's such an interesting question, and I'm so glad you asked it.

Coney Island Creek is one of my favorite places in New York City, and it’s one of the few places where there are wild oysters. There’s an active community of users, fishermen, people swimming in the creek, which the water quality is not very great so that’s not always advisable, but there’s an active community of users, there are wild oysters in the creek, and it's one of the places where, one of our biggest challenges is a regulatory challenge, is getting permission to put oysters in the water in various places, and that is most challenging where the water quality is worst so in places like Coney Island Creek, Newtown Creek, Gowanus Canal, Bronx River, places with really poor water quality, while in many of those cases they could survive and they could do their best work in those places. Because those oysters would be dangerous to people who harvested them illegally and ate them, you should not eat any oysters from New York Harbor, but because of that the oysters that we have put in Coney Island Creek we’ve been required to remove before they reach market size, and that’s not a good practice. It’s not good for restoration obviously, you want to leave the oysters in, they grow, and they reproduce, and so

that is a regulatory challenge that I think if the City or the City Council had clear priorities in where we want to restore oysters and the scale that we want oysters restored at, it would make it easier for us to do our work, and we would love to put more oysters in Coney Island Creek.

CHAIRPERSON KAGAN: Let me rephrase. First of all, you're saying there are no oyster reefs right now in Coney Island Creek, correct?

PETER MALINOWSKI: There is a small oyster reef, but we remove it each year so we put new oysters in and then we take it out.

CHAIRPERSON KAGAN: Because of existing regulations?

PETER MALINOWSKI: Because of regulations at that site, yeah.

CHAIRPERSON KAGAN: And you're saying it's not a sensible regulation? You're saying it should be changed?

PETER MALINOWSKI: Yes. I think we should all be allowed to restore and enjoy native keystone species in our city where they used to be. I don't think that there should be regulations limiting the

important natural organisms that play a vital ecosystem role so this is my personal preference.

CHAIRPERSON KAGAN: Is it New York City or New York State regulations?

PETER MALINOWSKI: The New York State Department of Environmental Conservation does a fantastic job regulating shellfish in New York State and keeps us all safe in restaurants and they do incredible work doing that, and we are partners with DEC and we work together to restore oyster reefs, but that particular issue about the human health risk of oysters is a point where we diverge and we have different perspectives. From the perspective of a restoration practitioner, I believe that oysters should be allowed to be anywhere because they provide these vital ecosystem services. They are seen by state regulators as a public health risk because essentially New Yorkers cannot be trusted to live near a natural resource that could make them sick if they eat them, harvest them illegally, and because of that it makes your specific question about Coney Island Creek, that’s the challenge there.

CHAIRPERSON KAGAN: Okay. One more question. Through the shell collection program, how

many shells are collected from restaurants per week? Talking about restaurants.

PETER MALINOWSKI: We collect right now from about 65 restaurants. The peak was 80 before…

CHAIRPERSON KAGAN: 65 restaurants?

PETER MALINOWSKI: The peak was 80 before the pandemic. At our absolute peak, we were getting 10,000 pounds of shell per week out of the waste stream. I do not know how many shells that is, but it's a lot, and now I think we're probably around 6,000 pounds of shell per week, but we've collected over a million pounds of shell and diverted that from the waste stream, packaged it into reef structures, and put it back on the bottom in New York Harbor.

CHAIRPERSON KAGAN: My last question would be about schools and students. We saw beautiful pictures, and I know you work closely with many students so are you working with schools and students throughout New York City or only New York Harbor School?

PETER MALINOWSKI: No, we work with schools throughout the city, and it's a train-the-trainer model. We've developed a 6th-through-8th grade STEM curriculum that meets all the standards

and we train teachers to implement our curriculum and train them in field education. We want students to be in the field and have that hands-on experience. Each school almost completely free of charge gets to come out and get trained, they get an oyster research station full of live oysters, science equipment, field guides, and the curriculum, and they receive professional development to be able to implement it and then they can go back to their school, hang the oyster cage over the edge at a site near their school and learn all of the background knowledge that's required in order to be effective field scientists at that oyster research station and then a couple times a year, they'll come out into the field, pull the oyster research station up, monitor the live oysters, identify the other animals that live on the cages, understand the water quality parameters, and then report all that data back to us so we have a network of schools who are all working together on this and everyone comes together on Governors Island for an annual research symposium, which you all should definitely come to. It's my favorite day of the year. Hundreds and hundreds of 10- to 14-year-olds fired up about New York Harbor, presenting their research to

each other, and it's a science fair but it's all about the Harbor and how we can take better care of it and, of course, oysters.

CHAIRPERSON KAGAN: You need to send invitations to all Council Members to such event so once a year, opportunity.

PETER MALINOWSKI: Got it.

CHAIRPERSON KAGAN: How many schools are we talking about?

PETER MALINOWSKI: It's about 100 schools.

CHAIRPERSON KAGAN: 100 schools?

PETER MALINOWSKI: It's worth mentioning that Maryland Public School, in Maryland Public Schools every student is required to learn about the Chesapeake Bay, every public school student in Maryland. The vast majority of New York City public school students can get from kindergarten to 12th grade without learning one thing about New York Harbor or the animals that live here. When I was in middle school, as I'm sure when you were in middle school and you were learning about how nutrients flow through an ecosystem, you saw a picture of prairie dogs, snakes, and a hawk. We should be showing students in New York City pictures of lobsters, blue

crabs, ospreys, seahorses, black sea bass, oysters, all of the amazing animals that live right here in New York City.

CHAIRPERSON KAGAN: Okay. I would like to give a chance to ask a few questions to my Colleagues. First, Council Member Marte, please.

COUNCIL MEMBER MARTE: Thank you, Chair Kagan, and thank you, Pete and everyone else, for being on today to testify. I'm the Council Member that represents Governors Island and Billion Oyster Project so this is one of my favorite hearings that we had all year, and it's great to see Pete in a shirt and a suit jacket, looking sharp.

My question is we already talked about some of the challenges, right, the financial challenge, you need to double that, some of the regulatory challenges you have. What are some other obstacles that you have currently or that you can foresee that specifically the City Council can assist you on?

PETER MALINOWSKI: Interestingly, many of the challenges that exist throughout the city have been considered and addressed through the Comprehensive Waterfront Plan. What we deal with is,

this is a surprise to no one here, but there are different levels of access to New York Harbor in different neighborhoods in New York City, and access to the Harbor can be, if you live near Brooklyn Bridge Park or Hudson River Park, you have very easy access to the Harbor. In other places in New York, it's not easy. We deal with those barriers. We have a community reefs program where we put small oyster reefs in communities and work with those communities to get down to the water's edge, and there are barriers to access throughout the Harbor. The Comprehensive Waterfront Plan attempts to address some of those concerns. Similarly, there are plans to restore the ecology, obviously more ferries but more teaching and learning about the Harbor and so I think that really is a strong roadmap there to addressing a lot of those challenges.

I do not know what the City Council's ability is to advocate for certain things being taught in schools, but it would be incredibly helpful for Billion Oyster Project if there was a priority in all New York City public schools that students learn about climate change, learn about New York Harbor, learn about oyster restoration, learn about our local

ecosystem. That should be a requirement, and, if it was made a requirement, all students in New York City would be having this experience.

COUNCIL MEMBER MARTE: Awesome. That's great. I think we could definitely figure out how to help you on that front.

Secondly, what is your expansion plan for the next year? Are there any areas in the city that, you know you're coming to Battery Park City soon, which is another part of my District so we're proud of that, but what other areas are you looking to touch in the next one or two years?

PETER MALINOWSKI: Next year or two years? Our reef installations are a little stochastic because they take multiple years to come together, but the big focus for the next year is adding oysters at the mouth of the Bronx River at Soundview Park, the West Side of Manhattan, Hudson River Park in the Sanctuary there, and in Jamaica Bay. Those are our big reef sites that we're targeting to add oysters to so we're currently raising money right now to put a bunch of oysters in Jamaica Bay at a site we've been working at for a number of years, but that happens. There's a multiyear permitting phase and design phase

for all of our projects so we work to get the resources together, the partners together, the community support, and then we get the funding together and get permission to put the oysters down so it takes a while for, the cycle is a multiyear cycle.

COUNCIL MEMBER MARTE: Awesome. Thank you.

PETER MALINOWSKI: Thank you.

CHAIRPERSON KAGAN: Don’t forget Coney Island Creek.

PETER MALINOWSKI: Let’s talk more. I love Coney Island Creek.

CHAIRPERSON KAGAN: I would like to give a chance to ask questions to my Colleague, Council Member Nurse.

COUNCIL MEMBER NURSE: Thank you, Chair. Good afternoon. Just really happy for this hearing. This is a great project and a big fan. One of my favorite stories is about Thomas Downing who was one of the first black-owned oyster bars right here on Broad Street and was an abolitionist and ran an underground railroad stop and those stories can maybe be a part of connecting some New Yorkers who don’t

have access to the Harbor to something that might be really exciting and resonate to their history.

Separate from that, I guess I would love to hear just a little bit more about Newtown Creek. Council Member Kagan always talks about Coney, but we also have a polluted creek up where I'm at so I'm just curious about how things are going there and what's the work that you all have been doing.

PETER MALINOWSKI: Another one of my favorite places in New York City. Interestingly, there are wild oysters in Newtown Creek also. They go about into the nature walk, and then the dissolved oxygen in the creek continues to fall and they sort of give way to red mussels which can survive lower dissolved oxygen. There's a wild oyster population in the creek. We in the past have had research cages of oysters in the creek. We're working right now to try to get permission to put new oysters in the creek right by the wastewater treatment plant there, just a little ways in from that. It's very complicated that, because of the superfund designation and because of the water quality concerns, that's a site we've been trying to put oysters at for a long time, and it's remained a challenge to permission to put oysters

there so it's a sort of a too dirty to clean mentality.

COUNCIL MEMBER NURSE: Just to dial in on that, more because I'm just confused. Is there a lot of occurrences of people fishing in Newtown Creek, like a high enough rate of incidents that it's alarming?

PETER MALINOWSKI: There's definitely more people fishing in Coney Island Creek, but I don't think so. I'm not an expert on like how many people are fishing in Newtown Creek. I don't think many people are fishing in Newtown Creek. The entire oyster market in New York City is dominated by half shell oysters that look much different than the oysters we grow on our reefs, which grow in clusters, they don't look the same, so it's very unlikely that oysters from our sites would ever wind up illegally at the market. It's a complex issue that DEC takes very seriously, and we appreciate their work to keep us all safe. My personal opinion is that it's a perceived risk and it's not an actual risk and that sometimes people eat the fish out of New York Harbor, sometimes people eat the clams out of New York Harbor, and it's probably not the best idea a lot of

times, but our oyster reefs are underwater, hard to get to, there's not an active community harvesting oysters in New York City, and there's no market for them locally.

COUNCIL MEMBER NURSE: Are your cages locked or would it be hard to break into?

PETER MALINOWSKI: They're closed, but the oysters kind of grow out through the cages so if you were scuba diving in Newtown Creek and we had an oyster reef there and you had a strong interest in breaking a few off, it would be possible.

COUNCIL MEMBER NURSE: Okay. All right. I'll pull back from those details. Are you in conversation with the State around this…

PETER MALINOWSKI: Yeah. It's a ongoing, decade-long conversation, and we consider DEC to be really strong partners, and it's just a bit of a sticking point. Our oysters create an attractive nuisance so it's just like if you leave your keys in the car and someone steals your car and crashes and hurts themselves, you're partially liable because you created an attractive nuisance. How could they be expected not to steal your car because your keys were in it?

COUNCIL MEMBER NURSE: Right. Okay. My last question is there's plans for the redevelopment of Governors Island and just wanted to know what your thoughts on these efforts are including the creation of a Center for Climate Solutions and how you all fit into that, if at all.

PETER MALINOWSKI: I'm incredibly encouraged to see that the plans for Governors Island take advantage of Governors Island's unique position in the center of New York Harbor and have to do with natural environment and education. I think it would be really tragic if Governors Island became just like any other part of New York City, not that that's bad, but didn't take advantage of its very unique position. We're very excited about the Climate Center. We also love Governors Island just how it is, but the fact that the development that's going to happen is going to be science-focused and education-focused and community-focused, I think it's our job and probably you all's job to make sure that that is what happens and continue to engage community partners and make sure that we're all working together to have that kind of outcome. We fit well into a Climate Solution Center and so we'd love to

have a big role in the future of Governors Island. We'd love for Governors Island to be the center of harbor restoration like it already is to a certain extent but at a much larger scale.

COUNCIL MEMBER NURSE: Awesome. Thank you so much and looking forward to continuing support. Thanks, Chair.

PETER MALINOWSKI: Thank you.

CHAIRPERSON KAGAN: Thank you so much. I would like to give a chance to speak to Council Member Gennaro.

COUNCIL MEMBER GENNARO: Thank you, Mr. Chairman. Pete, always good to see you. I go back with the Harbor School when they were located in Bushwick. Former Council Member Chen was very involved in the funding, and I was too as the Chair of the Committee on Environmental Protection. There was a problem with the dock. We finally got the dock. It's a great legacy.

I just want to follow up on what Council Member Nurse was talking about. With regards to the new Climate Center that is slated to go there, I think we're down to two final proposals or whatever that are kind of duking it out I think. When people

talk about the new development on Governors Island, I think they're talking about the development of the Climate Center. I think one of the proposals calls for repurposing some of the current buildings, and the other application is a little stronger on building new infrastructure, new buildings and that kind of thing, and I think that's the controversy that's kind of going on now. It's my understanding, not that I'm in the hunt, not that I have anything to do with this, but is it fair to say that the folks from Stony Brook have been a little more forthcoming in working with the Billion Oyster Project because they have a great Marine Sciences Center there now, SOMAS, as you probably know, and have you had more interaction with them the other applicant because I'm hearing, I'm like a Stony Brook guy so I'm connected with those folks, not on this particular effort but I have a long history with the School of Marine and Atmospheric Sciences. Have you had direct contact with the people at SOMAS, meaning Stony Brook.

PETER MALINOWSKI: Thank you for all of your support for so long. We're in contact with all the teams. We are definitely in the most contact with the Stony Brook team.

COUNCIL MEMBER GENNARO: Who are you talking to over there? Shepson?

PETER MALINOWSKI: No, we talk to…

COUNCIL MEMBER GENNARO: It might not be someone like in the academic department. It's probably like Stony Brook on High, so it's like…

PETER MALINOWSKI: Yeah. I can get that to you, but from a personal preference standpoint I think the adaptive reuse is way cooler and way more important than the, reusing all of those buildings, it's a nut that you're going to have to crack at some point, and it seems like this is a good opportunity to do that, but we are, as our vulnerable small non-profit on Governors Island, are pretty neutral in these proceedings…

COUNCIL MEMBER GENNARO: Yeah, I'm just curious about your interaction. However this goes, I think we could… let me put it this way, do you have an ongoing partnership right now with the School of Marine and Atmospheric Sciences at Stony Brook? Is that something that exists now?

PETER MALINOWSKI: Yeah. There's not like a written MOU or anything like that, but we consider all of our installations to be research platforms.

Researchers from academic institutions at CUNY and SUNY and Columbia and NYU all come in in different ways and interact with their students or partner on various things that come up, but there's no formal arrangement.

COUNCIL MEMBER GENNARO: Right. Okay, that's certainly good to know. What is Murray Fisher up to these days? What's he doing?

PETER MALINOWSKI: Murray's doing great. I just saw him the other night. He recently came off of our Board. He was the Board Chair for a number of years. He's doing great, living up in Bedford, got three little kids, beautiful family…

COUNCIL MEMBER GENNARO: Okay, but isn't he, so he's not involved with the…

PETER MALINOWSKI: He's not directly involved. He'll always be involved. He's a great mentor and friend to me, and he's incredibly supportive of the organization and helpful ongoing, but his official association ended when he came off the Board of Directors a couple of years ago.

COUNCIL MEMBER GENNARO: Okay, but again, he's got a great legacy with the school, did so much,

and it wouldn't be there if not for him. Thank you, Pete. Good to see you here. Thank you, Mr. Chairman.

PETER MALINOWSKI: Thank you.

CHAIRPERSON KAGAN: Thank you so much. Thank you, Pete, for your presentation on your great work. You're always welcome to City Hall. Always welcome to contact us. Listen, it's very important what you're doing because it's not just for wildlife, not just for environment, I believe it's for entire New York City. It's vital because it's improving life, improving image, improving our waterways, cleaning up waterways is very important. Thank you very much.

PETER MALINOWSKI: Thank you very much for having us.

CHAIRPERSON KAGAN: Now, I would like to invite Vincent Sapienza, Chief Operating Officer of New York City Department of Environmental Protection.

COMMITTEE COUNSEL STEINBERG ALBIN: Before you begin, I'll administer the affirmation.

Do you affirm to tell the truth in your testimony before the Committee today and answer truthfully to Committee questions?

CHIEF OPERATING OFFICER SAPIENZA: I do.

COMMITTEE COUNSEL STEINBERG ALBIN: Thank you so much.

CHIEF OPERATING OFFICER SAPIENZA: Good afternoon, Chair Kagan and Members of the Resiliency and Waterfronts Committee. My name is Vinny Sapienza, the Chief Operating Officer at the Department of Environmental Protection or DEP.

First, I just want to thank our colleagues at the Billion Oyster Project and the Harbor Water School for just highlighting the great work that they do and water quality issues in general.

I'm here today to speak about DEP's nature-based solutions for various challenges that the City has been facing. DEP has long-standing nature-based infrastructure programs. In fact, DEP is running one of the most advanced nature-based programs in the country. DEP's green infrastructure and blue belt programs are designed to manage stormwater. The first goal of these programs is to improve harbor water quality by keeping stormwater out of the combined sewer systems during rain events. This management reduces the volume of wastewater that might be released untreated into local waterways

during rain events. New GI systems are focused on managing stormwater in areas that are prone to flooding.

DEP's most common stormwater management tools are green infrastructure and blue belts, and so I'd like to tell you a little bit about those programs. Green infrastructure, or GI for short, collects and manages stormwater outside of the traditional storm sewer system. They use or mimic nature. By absorbing stormwater before it enters the sewer system, GI reduces the amount of untreated wastewater and stormwater that could contribute to combined sewer overflows. GI comes in many forms and range in size from rain barrels at individual homes to uncovering streams that have long been buried underground. I'd like to take a minute to walk you through some of the most common types of GI that we have in the City.

First, there's the combination of rain gardens, stormwater green streets, and infiltration basins. These three systems look different on the surface but have similar below-ground engineering to capture stormwater. Each of these installations or assets allows water to flow in and then seep through

layers of engineered soil and stone into the ground underneath. This process is called infiltration. Since 2011, DEP has constructed more than 11,000 of these systems, greening more than 2,000 acres around the city. Rain gardens and stormwater green streets have vegetative tops whereas infiltration basins are installed without gardens so the top looks like a grass strip or a sidewalk. Stormwater green streets are the largest of these assets, and they are located in roadways instead of on the sidewalks so they can vary in size and depth as the location allows.

I'll talk a little bit about green roofs next. Green roofs are rooftops that are designed to capture and retain stormwater runoff. These roofs are different from simple rooftop gardens because they have engineered soils and drainage layers that can maximize rain absorption.

Next group is blue belts, surface detention systems, and rain barrels, and each of these asset types function by capturing and storing stormwater. Unlike the systems I just mentioned, these assets do not immediately infiltrate water into the soil. They hold water in place until the rain event is passed and then release it gradually. These

systems help the sewer system function more effectively and can reduce ponding on streets. Rain barrels work on smaller scales. They are connected to existing downspouts of a roof and collect water that homeowners can later use for watering plants and other landscaping. DEP works with elected officials and community organizations to hold rain barrel distribution events each summer. We have already partnered with many of your offices to distribute rain barrels. I look forward to more events in 2023.

Lastly for GI is permeable pavement. Traditionally, paving an area makes it impermeable meaning water cannot drain through it. This is why water is absorbed by dirt but flows off of streets. Permeable pavement, however, allows water to seep through and into the ground where it can be absorbed. Areas with permeable paving have less stormwater runoff than areas with traditional paving. In particular, we have been expanding our porous pavement, which is one type of permeable pavement. Porous pavement is a special roadway paving that is designed to collect and manage stormwater that runs off the streets and sidewalks when it rains. Typical installations include porous concrete panels in the

parking lanes in non-commercial areas. Overall, GI uses rainwater as a resource instead of treating it as a waste. DEP's GI system keeps our harbor waters clean and reduces ponding. Assets like rain gardens also provide shade, cool and clean air, provide habitats for wildlife, and beautify neighborhoods.

I just want to talk a bit about blue belts, which are a network of engineered water bodies that capture and treat stormwater. They preserve natural drainage corridors such as streams, ponds, and wetlands by connecting them to new storm sewer networks. These systems mitigate street flooding while improving water quality and the ecosystem health. Some blue belts detain water from the sewer network and then slowly drain it back into the sewer systems when the rain event has passed and the system has the capacity to manage it. Other blue belts provide stormwater storage for near-shore neighborhoods and release water into the harbor when the tide goes out. Blue belts allow DEP to provide proper street drainage without expensive pumping. Because blue belts use wetlands and ponds to manage stormwater, they are primarily sited at locations with existing water bodies that are separate from the

sewer network. Most of them are on Staten Island because Staten Island has more intact water courses and water bodies than other boroughs. Over the last 10 years, DEP has built blue belts for approximately 1/3 of Staten Island's land area. DEP also has created some blue belts in Queens and is looking to expand the program to other boroughs. Blue belts are true community assets. In addition to reducing flooding and improving water quality, they provide open green spaces that are landscaped with native vegetation and diverse wildlife. They provide benefits to communities beyond stormwater detention, and, as we face rising sea levels and heavier and more frequent rain events, blue belts offer a natural and effective solution for stable and sound stormwater management.

Looking forward, for decades New York and other cities have been growing by working against our natural surroundings, turning vibrant ecosystems into concrete jungles. We've finally come to understand that the most effective way to live in our environment is to embrace it and to incorporate natural systems into our city infrastructure. Even as we expand our stormwater sewer network in some areas,

we are focused on new and innovative solutions including nature-based solutions. These tools are important because there are many challenges that traditional gray-type infrastructure cannot meet alone, and they are key to preparing the city for the future.

I want to thank the Council for its collaboration on these issues and look forward to your questions. Thank you.

CHAIRPERSON KAGAN: Thank you very much for your testimony. I would like to ask a few questions if you don't mind.

What does this administration see as benefits of nature-based features when used as resiliency measures?

CHIEF OPERATING OFFICER SAPIENZA: Thank you for that question, Mr. Chair. Earlier this year, during the summer, Mayor Adams released a Rainfall Ready New York City Report to address the things we're seeing with changing climates, sea level rises, and more intense storms. As we all recall, just over a year ago, the remnants of Hurricane Ida dumped more rainfall in one hour in New York City than we've ever seen before and 13 people died locally. We've come to

realize that sewers alone can't keep our city streets dry. In fact, in many smaller residential streets, we can't put a bigger sewer in so we have to look at other kinds of tools and natural tools, nature-based tools, to make our streets and sidewalks more permeable to allow the ground to absorb stormwater runoff is one way that we're going to be able to have a more sustainable and resilient city.

CHAIRPERSON KAGAN: Thank you. Also, you mentioned in your presentation about rain barrels program. Thank you so much for doing this in my District. More than 300 people received it, and they're very, very happy about it. I know you're doing this in Districts all over the City of New York, rain barrel distributions.

CHIEF OPERATING OFFICER SAPIENZA: That's right. Every little bit helps. You see a little rain barrel. How much water does it capture, but it captures water in essentially every rainstorm that can be used by the property owner, and we've given out literally tens of thousands of barrels now.

CHAIRPERSON KAGAN: Thank you. What resiliency projects are currently in construction

that incorporate natural or nature-based features? Please describe these projects.

CHIEF OPERATING OFFICER SAPIENZA: I mentioned in the testimony all of the rain gardens that we've built, more than 11,000 now. We have more than 2,000 either in construction or in design in the coming years. We have significant funding in our 10-year capital fact. In fact, in the printed testimony that we handed out, it had a map of where the assets have already been installed. By the way, we've primarily been to date in areas where there are impacted water bodies which aligns primarily with EJ neighborhoods. About 90 percent of the rain gardens we've installed are in EJ neighborhoods so that's a significant amount of work that we've done in construction. Blue belts also that I talked about in the testimony, we continue to expand the work there now into parts of northern Staten Island and into Queens, and they've been highly successful on that. We've done some marsh restoration, primarily around Jamaica Bay and into Paerdegat Basin, and as you heard from the Billion Oyster Project, those types of systems help to attenuate wave actions during storms, which protect properties along the shoreline.

Just finally, I want to mention some of the construction that we did around the old Pennsylvania and Fountain Avenue landfills that were closed. DEP spent about 40 million dollars to put natural plantings above that, and it's now been turned into Shirley Chisholm State Park.

CHAIRPERSON KAGAN: Thank you. What natural or nature-based resiliency projects are in the planning stages? If you have any plans for Coney Island, please mention it too.

CHIEF OPERATING OFFICER SAPIENZA: We have plans all around the city. In fact, our 10-year capital plan has almost a billion dollars for nature-based systems all around the city. As mentioned earlier, in the Mayor's Rainfall Ready Report, we really are pivoting from the traditional gray infrastructure, hard pipes, and concrete to more nature-based systems. I want to mention also related to that is we've been working a lot with the Parks Department. They have Parks lakes or ponds in several locations, about eight locations, and working with them to see if we can use those ponds for detention and storage of stormwater runoff so we've been looking at Baisley Pond, Van Cortlandt Park, Willow

Lake, the Harlem Meer, Prospect Park, Indian Lake in Corona, Wolfe's Pond Park, and others so that's something I wanted to highlight as well.

CHAIRPERSON KAGAN: Thank you. I would say last question about floating wetlands, which are artificial wetlands placed in urban waterways to help filter sediment and contaminants currently being used in Boston, Baltimore, Chicago as well as in Canada, U.K., Australia, and Brazil. Have floating wetlands been considered as a tool in New York City? If yes, please describe. If no, why not?

CHIEF OPERATING OFFICER SAPIENZA: We haven't. I've heard about these floating wetlands. We haven't done anything in New York City. What we have done is, as I mentioned earlier, some marshland restoration. Places like Jamaica Bay used to have many marshes that helped filter the water and, over time, they became degraded. We've been working the Army Corps of Engineers and the Parks Department to reestablish those marshes, and we want to do more of that marshland restoration. Again, it does the same thing as the floating wetlands to help filter the water.

CHAIRPERSON KAGAN: Okay. I would like to give a chance to ask any questions. I believe Council Member Gennaro wanted to ask you a question. Council Member Gennaro, did you want to ask a question to the administration?

COUNCIL MEMBER GENNARO: I was in the middle of a staff interaction moment. It was like an action shot. It was a sight to behold I'm sure for everybody. Thank you, Mr. Chairman.

Vinnie, welcome. Always good to see you. I had a question I wanted to ask, but when you mentioned Willow Lake, which is in my District, that kind of jumped to the head of the line. Now just north of Willow Lake, of course, is Meadow Lake that is essentially stormwater runoff both from Van Wyck and from Grand Central so it's already set up for that and that's had its own impact on the quality of the water in Meadow Lake. Is it envisioned that it'll be the same kind of thing for Willow Lake because Willow Lake right now is sort of like on its own, right? You have no storm drains that necessarily feed into it now so is that what is envisioned for it?

CHIEF OPERATING OFFICER SAPIENZA: It is. As you know, over the last six or eight months or so,

our Commissioner, Rit Aggarwala, has been getting some good input from Eric Sanderson, the guy who wrote Mannahatta and looked at how this city was laid out hundreds of years ago with all of these natural streams and creeks that helped to drain our land and essentially going back to how things worked, how areas drained including Willow Lake and Meadow Lake so we've got some thoughts there. I'm happy to walk you through them.

COUNCIL MEMBER GENNARO: Yeah. I think my number one concern would be the impact on dissolved oxygen to the extent that as part of the planning purposes for that we had some kind of robust aeration system so once the lake is hit with that, if we're also putting oxygen in there, that would add to the price tag, of course, but would help to maintain the overall water quality and help it to absorb the hit because the water that's running off these two major roadways, you take a real water quality hit. I wouldn't mind seeing them in Meadow Lake also. I think Meadow Lake could use that just to get some more dissolved oxygen in there and that helps with the algae and everything else.

CHIEF OPERATING OFFICER SAPIENZA: That's a great point. The more water we store and for longer period of time, as you said, the oxygen levels deplete. We've actually put in aeration systems both in Newtown Creek and Shellbank Basin because of that issue so we'll take a look…

COUNCIL MEMBER GENNARO: Right. Well, it's nice when Brooklyn gets stuff. I think that's nice, but I think if we're planning for Willow Lake to be used as a resource, if that could be expanded to include some kind of aeration capacity that could allow the lake to be the asset that you want it to be but also keep the water quality where it should be, that seems to me to be prudent 2022 thinking. Thank you for that.

We've got Rainfall Ready, but going before that we had, you were around when I did the Comprehensive Stormwater Management Plan, it was 15 years ago or like whatever it was, I think it was 2005, 2007, whatever it was, and that gave rise to the rain gardens and all the other, but that was done with a view towards mitigating CSOs, that was really what that was about, and now we're talking much more about mitigating flooding because flooding is

certainly the big topic. Storms now aren't what they were 15 years ago. We've got Rainfall Ready, and I was contemplating doing a bill, which I had written, which was sort of a Stormwater Management Plan 2.0 so to speak, but I spoke to Rit about it, and I know that we have the Rainfall Ready announcement, and it's my understanding, I hope I'm not speaking out of school here, that there's going to be another big announcement around Earth Day that will take the Rainfall Ready and make it into a much bigger thing and I thought to work cooperatively to take whatever that is and crystalize that in law might be something that will succeed this Council and this administration. Your thoughts on that? I'm sorry to kind of run over a little bit, Mr. Chairman.

CHIEF OPERATING OFFICER SAPIENZA: We're happy to get your input on that, but that's the timeline that we're looking at.

COUNCIL MEMBER GENNARO: Yeah, so Earth Day would be, and that's going to overlap with the whole new PlaNYC or whatever it's going to be called, right?

CHIEF OPERATING OFFICER SAPIENZA: Correct.

COUNCIL MEMBER GENNARO: Is that fair to say?

CHIEF OPERATING OFFICER SAPIENZA: That's fair to say.

COUNCIL MEMBER GENNARO: Okay. Thank you. You wrote down the Willow Lake thing, right? Okay, very good. Thank you. Thank you, Vinnie, and thank you, Mr. Chairman.

CHAIRPERSON KAGAN: Thank you. I believe this will conclude our questions for the administration. Thank you, Vincent Sapienza from the Department of Environmental Protection. Also, thank you for being responsive to our request, not just from my office I hear, a very responsive agency. Thank you so much.

CHIEF OPERATING OFFICER SAPIENZA: Thanks, everybody.

CHAIRPERSON KAGAN: I would like to move now to public testimony. I would like to give a chance to testify through Zoom virtual to several students from Harbor School, Connor Perry, Ciara Lyver, and Sommer Stevenson so first is Connor Perry.

SERGEANT-AT-ARMS LOUIS: You may begin.

CONNOR PERRY: Hi. Thank you for having me on this panel. My name is Connor Perry. I'm a junior at New York Harbor School, and for the summer of 2022 I did an internship at Billion Oyster Project. As we know, Billion Oyster Project is trying to restore oyster reefs around New York City's Harbor in order to clean the water and restore native population. In my time with BOP, I've experienced firsthand how oyster reefs are restored and how BOP monitors how well the oysters are doing in their surrounding environments. During my internship, I traveled around the city to all five boroughs, visiting different reefs at different times of the day. I worked with lots of different interns and employees of Billion Oyster Project, and we would go around and monitor reefs and collect data such as oyster measurements and the live/dead ratios for oysters. I learned a lot about how different environments have differentiating impacts on oyster reefs. Some locations, especially near more busy channels, had more of a negative effect on oyster growth while some locations allowed for oyster reef populations to flourish. Being an intern for BOP probably couldn't have been possible without the relationship that Billion Oyster Project

has with my school, which is the New York Harbor High School on Governors Island, and without that relationship they have and basically the aim to educate kids on the New York Harbor, I wouldn't have been a part of this great internship. It gave me excellent work experience, and I'm extremely grateful to have been given the opportunity to contribute to this massive project. I got to be a part of a lot of hands-on labor, and it was really just an amazing experience for me. Yeah, I'm very thankful that I got to be a part of it, and it was a really cool and educating experience. Thank you.

CHAIRPERSON KAGAN: Thank you for your testimony and thank you for great work with Billion Oyster Project. That's very important. Thank you.

CONNOR PERRY: You're welcome.

CHAIRPERSON KAGAN: Next one is Sarah Liger.

SERGEANT-AT-ARMS LOUIS: You may begin.

CIARA LYVER: Hi. My name is Ciara Lyver, and I am a senior at the New York Harbor School. I'm a Marine Affairs Policy Advocacy CTE. The Billion Oyster Project holds a major impact in my educational experience as they work with my school very closely.

They provide for not only our city's water restoration but also provide for students like me and various organizations. This summer, I got my first internship as a communications intern with BOP and learned so many new things. I learned how to manage social media and organize labeling on social posts to provide learning opportunities for people on the Billion Oyster Project. Doing this opened me up to a whole new perspective on what they do. The different components they manage and maintain to save our waterways are very impressive. With having 18 reefs across the five boroughs that are breeding millions of oysters, doing this in a sustainable matter as they reuse oyster shells collected from restaurants to cultivate hard substrate so oysters can grow. I've seen the way the communication worker work out to reach out with people across the city to make this happen. My schools Aquaculture CTE is heavily involved in this process of growing algae to feed oysters, and many are going to college to further study in this, and BOP has a major impact on this decision. I've also learned about the climate crisis in our state and how the waters we are surrounded by are 33 feet above sea level. Producing these oysters

are an effective measure they take to lower the water levels and filter the water. The BOP works with tons of volunteers to help do this, and the help they receive in any sort is elaboratively helpful in furthering the steps of creating a safer marine environment for New York City. After I completed my internship, I hope to participate in another this summer to do more for them and having a larger impact on my community. Thank you.

CHAIRPERSON KAGAN: Thank you very much for your testimony and thank you for making sure our city is better, our waterways are better, thank you very much.

Next one is Sommer Stevenson.

SOMMER STEVENSON: Hi. Okay, I'm Sommer Stevenson. I'm a junior at New York Harbor School. Over the course of the summer, me and a few of my fellow peers, we worked alongside BOP. Without the initiative to engage students, I don't think I would've had this opportunity. As a resident of New York City and a student at the New York Harbor School, we work very closely with Billion Oyster Project, and I feel like this is very important because as you guys know New York City once had a

large oyster population and we were like the oyster capital of the world, but why this is important is because oysters help to filter out our water so Billion Oyster Project's mission is to restore oysters back into New York Harbor. Over the summer, I was a community engagement intern so I worked a lot with speaking to youth, like especially elementary and middle school students to try to get them involved before they get to high school because right now we are in high school and we do have great opportunities working with Billion Oyster Project and different internship opportunities. Even aside from internships, we work closely with them just in our school day, with our CTEs and stuff. Basically, over the summer what I did was tabling, community outreach events, working with oysters, working with (INAUDIBLE), counting (INAUDIBLE) that lives on oyster shells, and just a whole bunch of different opportunities that I wouldn't have had without Billion Oyster Project so I feel like their mission is a very good mission. I feel like the whole city should be involved, especially kids, because it's like kids are our future, youth is the future, so the more people get involved and the younger that we get

them involved is the more that they'll want to make change because we have been seeing a lot of growth in our Harbor, like the water is the cleanest is has been for the past 100 years. Just like the quality, animals, sea life are starting to come back, like whales, dolphins. There was actually a Columbia University study about how whales and dolphins are moving back into the Harbor, and they have been spotted for the past three years so I just feel like this is very important and I'm so thankful to have Billion Oyster Project working with our school and other schools around New York City because it is really important to us. Without it, I don't know…

SERGEANT-AT-ARMS LOUIS: Time expired.

SOMMER STEVENSON: Where I would've been right now. Thank you.

CHAIRPERSON KAGAN: Thank you so much. You learned quite a number of skills. Like you are already a leader in our city. Thank you very much.

SOMMER STEVENSON: Thank you.

CHAIRPERSON KAGAN: Thank you very much. The next testimony is Sam Jackson (phonetic), Metro Flood Defense.

SAM JACKSON: Thank you, Chair Kagan, and hello to Council Member Ariola. I'm a Rockaway resident so it's nice to see you here.

I prepared remarks for today and written testimony, which I submitted, and, Council Member Ariola, I'll give you a copy of that and Council Member Kagan, I've already given you a copy, but I'm not going to read my remarks. I'm just going to speak from the heart today because this is an issue that's really, really, I think really important not only for everyone in New York City but everyone in the whole region.

I, first of all, want to say, I think we have one representative from Billion Oyster Project, thank you for everything your organization has done. Billion Oyster Project is the benchmark for coastal resiliency organizations in New York City. I don't believe anyone has had the wide public impact that Billion Oyster Project has had, and, as we work to develop educational programs for New York City public school kids to educate them about the harbors, we look to Billion Oyster Project and one of my colleagues is a Harbor School graduate.

I'm really here today to point out what is already obvious to everyone in this room, and that's that systems like oyster beds are absolutely key and restoring wetlands are absolutely key, but nature-based solutions are only one layer of what we need to do in the city. I'm very concerned, as are my colleagues, that the current plan that the Army Corps is putting forward is not going to protect everyone from storm surge. There's one nature-based solution that really needs to be brought up in this hearing, and that's the unique geography of New York Harbor. New York City has over 500 miles of coastline, and all of those miles of coastline flood through an opening that's six miles wide from Breezy Point to Sandy Hook, New Jersey, and one mile wide at the Throggs Neck Bridge. If we find a way to do what they've done all over the world, in countries all over the world, and what Dutch engineers and our scientists, I work very closely with scientists from Stony Brook University, Professor Malcolm Bowman is the Chair of Metro Flood Defense. Our scientists believe that there's an opportunity to do what's already been done all over the world and instead of doing 550 miles of perimeter barriers which is

basically what the Corps is planning right now along with a few single-basin Seagate systems, we could have one system that would protect everyone, not only in New York City but also hundreds of miles up the Hudson River and hundreds of miles in New Jersey, and there are opportunities to do that. There are several locations for an outer harbor barrier, and I'm here today to say that we need to look at that as a nature-based solution. The geography of New York Harbor is unique, and we need to take advantage of the Dutch principle of shortening the coastline. We need these nature-based solutions to protect us from smaller storms and to minimize wave action and make it so that we don't have to close these Seagate systems. They can be open 99 percent of the time. Our scientists believe that they will not affect the flow of the Harbor. What they'll actually do is restore it to what the flow was before the dredging of the Ambrose Channel by only lowering the flow by 7 percent. This has been done all over the world, and this is New York City and, if they can do it there, we can do it here and, if we do this, then that means that we don't have to build 20-foot walls along the perimeter and we don't have to leave communities

vulnerable and disrupt communities by having construction happening all over the city. Instead what we can do is build one system, an off-shore system, that protects us from storm surge and that means that we only need to have perimeter barriers that protect from sea level rise so that means 2-foot barriers instead of 20-foot barriers. This is something that we need to get the attention of everyone in New York City right now. Right now, there's only a few weeks left in the public comment period and while Colonel Luzzatto and others from the Corps have been very adamant that this public comment period is real and that they are going to take comment, most people in New York City don't know what's happening. People in Chelsea don't know that the West Side Highway is going to be behind a 20-foot wall, that all of the beautiful waterfront parks we've built are going to be behind a 20-foot wall. I'll leave it there, and I would love to continue this conversation with you, Council Member. I'd love to come by. I also teach sailing in Jamaica Bay. I harvest oysters. I am an environmentalist and a tree-hugger, but I know that if we don't get the green infrastructure people and the gray infrastructure

people to work together and develop a layered defense then New York City is screwed when the next storm comes so…

CHAIRPERSON KAGAN: Thank you so much. Thank you for your testimony. That's the whole purpose of this hearing, like nature-based solutions like Billion Oyster Project so we hear you. That's why we're hosting this hearing in the first place.

The next public testimony is Paul Gallay, Columbia Climate School Resilience Coastal Communities Project. Paul Gallay.

PAUL GALLAY: Hey. Thanks very much, Chairman Kagan and to all the other Members of the Committee and also, of course, to the Members of the staff. I'm with the Columbia University Resilient Coastal Communities Project. It's a partnership with New York City Environmental Justice Alliance seeking to foster equitable solutions to flood risks along with complementary benefits like habitat restoration, job creation, more empowered communities, and I have three points, all of which have been written down in the testimony so you have the testimony, and I can just talk about the high points.

First of all, the New York City Green Infrastructure Program has done a lot of good work, but it's actually missing both of its milestones so far under an agreement with the New York State Department of Environmental Conservation from 2012. It's just not getting to all of the areas it promised to get to within the first three and eight years of the program. It's missing its targets partly because it isn't getting sufficient funding. One way to get that funding in place would be something that's being used in 800 different communities around the country, and that is instead of charging properties for stormwater fees based on how much drinking water they consume, which allows large stores that don't use a lot of drinking water to pay less than some apartment buildings, we need to charge based on the size of the property. It's laid out on page three of the testimony. It links to a report by Riverkeeper and a number of other organizations called Building an Equitably Green NYC. This idea of rate restructuring so we can pay for more green infrastructure and make the commitments that we promised are essential.

My next set of comments have to do with the Harbor and Tributary Study. It's a 52-billion-

dollar plan, but it's not proactive when it comes to green infrastructure and nature-based solutions. It only uses those techniques to mitigate for some of the barriers that they do intend to create, not to try to create a sort of green infrastructure and nature-based solutions at scale that you've heard talked about by the testimony prior to mine, and so you've really got to get the Army Corps to be comprehensive, proactive, and a brief comment on the previous speaker's advocacy for the big five-mile-long barriers, or two-mile-long barriers, which have never been built at that kind of scale and which, by the way, the Army Corps of Engineers has said in print they wouldn't necessarily know whether they were going to work until the first storm hit and they cost 120-billion dollars give or take, and they don't score as well as the other solutions the Army Corps has put forward so, as you can tell, I'm not a supporter of those solutions, but I am a supporter…

SERGEANT-AT-ARMS LOUIS: Time expired.

PAUL GALLAY: Of building green infrastructure and nature-based solutions at scale. There's more funding for that coming from the newly Bond Act. There's 1.75 billion for restoration, flood

impact reduction, green infrastructure, and similar measures, and New York City voted en masse for that Bond Act and New York City needs to get its share for that Bond Act. I'm sure I'm coming up to my time and so I'm going to keep it brief and simply say we're making a decent start at green infrastructure and nature-based solutions, but we're not doing it at scale, we're not doing it comprehensively, we're not even doing it in some cases equitably because the Green Roof Program that Vincent Sapienza talked about is very much concentrated in well-to-do communities and is not equitable. The funding is there, the ideas are there, and it's time to build green infrastructure and nature-based solutions comprehensively, equitably, and at scale.

Thanks very much for this opportunity to testify.

CHAIRPERSON KAGAN: Thank you very much.

COMMITTEE COUNSEL STEINBERG ALBIN: If there is anybody on the Zoom who has registered to testify and we have yet to call, please use the Zoom raise hand function now.

Seeing none, I will turn it back to the Chair to close out the hearing.

CHAIRPERSON KAGAN: Thank you. Before we end, I would like to thank my Committee staff, Senior Committee Counsel Jessica Steinberg Albin, Senior Policy Analyst Patrick Mulvihill, Finance Analyst Andrew Lane-Lawless, my Chief-of-Staff Jeanine Cherichetti, and my Legislative Director Alex Tymkiv for all their hard work putting this hearing together.

I believe that we learned today a heck of a lot I would say, especially about Billion Oyster Project, how vital it is for cleaning our waterways, for the beauty of New York City, especially of course New York Harbor, how important that we involve our young folks, students, from all over five boroughs to be involved in making sure that we have clean waterways and improving our environment. I would like to thank everyone who participated, everyone who gave testimonies, and everyone who is again making our waterways, our future of our city better, safer for everyone. Thank you so much. [GAVEL]

C E R T I F I C A T E

World Wide Dictation certifies that the foregoing transcript is a true and accurate record of the proceedings. We further certify that there is no relation to any of the parties to this action by blood or marriage, and that there is interest in the outcome of this matter.

Date December 6, 2022