



Testimony of
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Commissioner
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before the
New York City Council
Committee on Environmental Protection, Resiliency, and Waterfronts

April 26, 2024

Good morning, Chair Gennaro and members of the Committees on Environmental Protection, Resiliency, and Waterfronts. I am Rohit T. Aggarwala, Commissioner of the New York City Department of Environmental Protection (DEP). I am joined today by Chief Operating Officer Kathryn Mallon, Deputy Commissioner of Water and Sewer Operations Tasos Georgelis, and Deputy Commissioner of Sustainability Angela Licata. Thank you for convening this hearing on this critical topic of stormwater resilience.

[NYC's coastal resilience path offers lessons for stormwater resilience](#)

I do not have to tell you that climate change is real, and it is here. In 2020, the US National Climate Assessment reclassified New York City from the coastal temperate climate zone to the humid subtropical climate zone – a recognition that we now live in a place that our infrastructure was not designed for.

We face several types of flooding impacts and risks as a result. Rising sea levels are creating more frequent tidal flooding, which we have seen particularly, but not exclusively, in the communities around Jamaica Bay. Rising sea levels are also causing groundwater levels to rise, which is exacerbated during heavy storms and periods of long-term rainfall. Of course, this means an increasing risk of coastal inundation. I note that multiple forecasters have indicated that this hurricane season is expected to be more severe than average. [See Appendix 1: Flooding Types]

Today's hearing is primarily about stormwater management, but before I turn to that I would like to say a few words about coastal defenses, given the forecasts. In the 12 years since Hurricane Sandy, New York City has pursued two, complementary kinds of coastal flooding strategies. One is about preventing storm surges from causing flooding; this is what coastal defenses are. The reality is that these major projects – such as East Side Coastal Resiliency (ESCR), Red Hook Coastal Resiliency (RHCR), and the South Shore of Staten Island seawall – are massive, complex projects that take years to design and years to build. We are making significant progress, and in fact we expect the first gates of ESCR to be turned over by the contractor later this year. Within two to three years, several of these projects will be complete, and many neighborhoods of New York City will be protected against storm surges. As of now, more than a dozen projects are underway, but none is complete and fully functional. The reality is that this year, if a storm surge hits New York City, there will be flooding. [See Appendix 2: Storm Surge]

The good news is that we have also invested huge amounts of money in resilience – which is not about preventing flooding but ensuring that we can withstand and bounce back from it. As we know, 44 New Yorkers lost their lives in Hurricane Sandy, and thousands had property destroyed, but among the

storm's major impacts was the long-term disruption it caused. Because so many buildings had their electrical equipment in the basements, many buildings were without power for weeks, and some – especially at NYCHA – were without elevators for months. We learned from this and now, happily, our building-level resilience efforts are well advanced. Our power plants and wastewater treatment facilities are better protected. Many buildings – including at many NYCHA facilities – have relocated or hardened their critical equipment. While a flood today would still cause damage, in most cases it would be the kind of damage that disrupts lives for hours, or a day or two, rather than months.

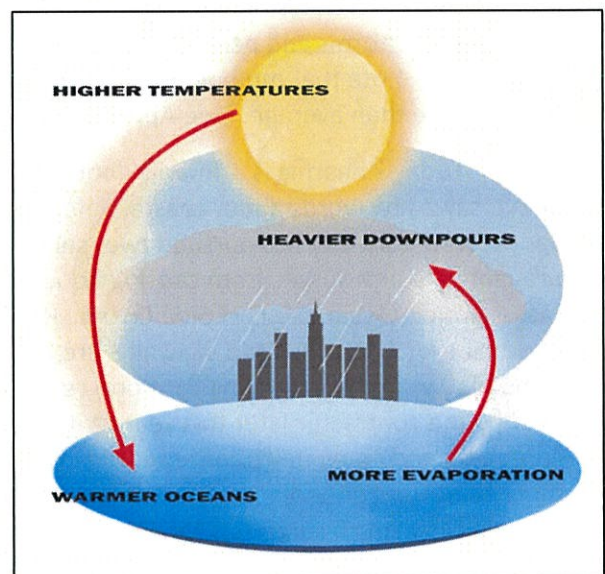
Overall, New York City will have invested more than \$18 billion in coastal preparedness in the aftermath of Hurricane Sandy, mostly from Federal funds. Roughly speaking, somewhere between a quarter and a third of that is for building- or site-specific resilience, and the remainder is for large-scale coastal infrastructure. Even with this, the work is far from complete, and the US Army Corps HATS study will cost upwards of \$50 billion. And we do not have a dedicated source of funding, either Federal or local, for coastal resilience.

I say this in part because of what we may face this summer, but also because the reality is that our stormwater resilience efforts really started in earnest only two and a half years ago, after Hurricane Ida, whereas our coastal work began twelve and a half years ago, after Sandy. As with coastal resilience, it will take well over a decade for us to see measurable progress in stormwater resilience infrastructure, and it will cost billions and billions of dollars. As with coastal resilience, building-level resilience will be much faster to achieve than infrastructure-level prevention, and the reality is that we will need both. One key difference is that we expect to pay for most stormwater resilience projects with local funding sources. That is of course both good news and bad news. As New Yorkers, we will be less dependent on state or federal decisions to shape whether we achieve stormwater resilience, but the bad news is that the more resilience we want, the higher our bills will have to rise.

Climate change is causing stormwater flooding by exceeding the design standards of the sewer system

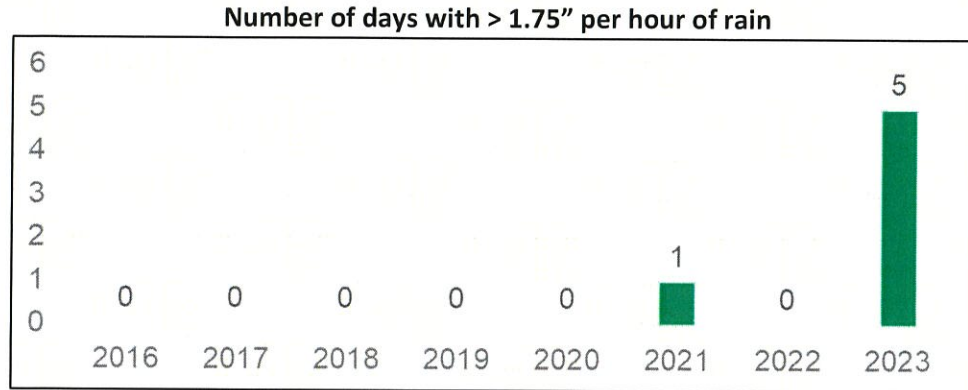
How does climate change cause flooding? The heating caused by climate change adds extra moisture to the atmosphere, intensifying storms and making them harder to manage. These massive storms now bring short, extremely intense bouts of rain, which are called cloudburst events. The deluge from cloudburst events can overwhelm stormwater management systems.

For the past century, the New York City stormwater system generally performed sufficiently, capturing rainwater and carrying it to treatment facilities or open waterways. Storm sewer capacity varies around the city, but, at most, it is meant to manage 1.75 inches of rain per hour. Until recently, rain was expected to exceed this intensity only once every five years. In other words, there was a 20% chance that a storm would exceed this intensity in a given year.





But now, we are in a subtropical environment, so we see these storms more frequently. Last year was especially wet. New York City experienced rain every three days in 2023, and experienced five storms that exceeded 1.75 inches per hour, as measured at our wastewater resource recovery facilities. Instead of one “five-year storm” every five years, we had five “five-year storms” in one year.



It is possible that 2023 was an outlier. It may be that the next few years will be somewhat drier, but increasing overall rainfall is consistent with all climate models for the northeastern United States. The recent New York City Climate Change Vulnerability, Impacts, and Adaptation Study (a collaboration between the city and local scientists) concludes that the “five-year storm” toward the latter half of the century (2050-2099) is expected to be between 2.1 inches and 2.6 inches per hour. We are likely to face more extreme swings, so that we should expect to see more wet years punctuated by drought years. This is exactly what has happened over the last few years. It is easy to forget that, in between the record-breaking storm years of 2021 and 2023, 2022 was a drought year, with very little rain until the late autumn.

It is important to note that flooding is not uniform. It is perhaps obvious that areas at the tops of hills do better in storms than areas at the bottom of hills because water flows down and gathers in natural valleys. Many of our most flood-prone locations are the sites of former waterways or wetlands that were filled in for real estate development. Water doesn’t care that a stream has been filled in; it will continue to flow to that spot, as it has for millennia. Some parts of the city, notably in Queens, parts of Brooklyn, and the Bronx, are additionally challenging because their sewers were built to lower capacity standards back when sewers were handled by the borough presidents and were not uniform across the city.

To protect themselves, people must be able to understand how vulnerable their property is. To provide that understanding, DEP and MOCEJ have been working for some time to develop flood maps of the city. In 2021, we released stormwater flooding maps for future climate change scenarios. In 2022, as part of Rainfall Ready, the Adams Administration’s first step towards stormwater resilience, we released maps of flooding with current sea levels and in somewhat extreme storms (roughly 2.1 inches per hour, which, as mentioned above, is called a “ten-year storm” now but may be just a “five-year” event in the future as the climate changes).

Noting the request in Intro 815, I’m pleased to note that we are finalizing a new flood map showing those locations with flooding expected at the five-year storm level, which is about 1.75 inches



per hour. This will soon be available on DEP's website, along with the existing 100-year and 10-year maps.

It's worth noting that these are just models, and data analysts have a saying that "all models are wrong" because they are at best approximations and estimates. One way we check our maps is to talk to you and your colleagues, as well as residents, when we do walking tours about how the map compares to lived experience. We've had good feedback, but it remains important not to mistake models for infallible fact. We've had several unprecedented storms and can only expect to have more. Also, of course, in a city as big as New York rainfall varies dramatically across the city. For example, on September 29, 2023, when north Brooklyn received 2.6 inches in the most intense hour of the storm – the second-most intense rainfall ever recorded in New York City – other parts of the city received less than 1 inch per hour. When I say that the city experienced five "five-year storms" in 2023, it doesn't mean that everywhere on the flood map flooded five times.

One thing is clear in looking at these flood maps: flood risk is a citywide problem. Manhattan, due to its elevations, its bedrock, and the sewer policies of Manhattan borough presidents past, tends to do well, but even Manhattan has flood-prone locations especially in upper Manhattan where there were once streams and wetlands. I know that for each of you, your neighborhood's flood-prone locations seem like the worst anywhere, but we need to recognize that this is a citywide problem and think about citywide solutions.

We have been working to improve the performance of the current stormwater management system

As I said, the fundamental challenge is that we have a stormwater management system that was designed for one climate and is now facing another. Our first step, and clearly the most cost-effective step, is maximizing the performance of our current system, and we have been doing that.

You all know that sewers are the first line of defense against flooding, and catch basins are the way that stormwater enters our sewers. Further, I know you all know that catch basins can be blocked in two ways. They can get filled up with debris, in which case DEP has to come clean them by removing the grate on top and scooping out that debris; or they can get matted over, in which case someone – which could be anyone – needs simply use a broom or rake to clear away the leaves and litter that are blocking the drain.

We are tackling both types of blockages. I am very proud of the data-driven catch basin inspection program that DEP implemented, thanks to Deputy Commissioner Tasos Georgelis, that optimizes the cleaning of our more than 150,000 catch basins. Informed by past cleaning data, we target more frequent inspections in areas that are most likely to need cleaning.

We've also created a new fleet maintenance team to augment the work Sanitation and Parks do to maintain our vehicles. Given their design and the stresses they experience, catch basin cleaning trucks are inherently prone to breakdowns. Just last year, we hired our own small team of mechanics, and we are now better able to accelerate repairs to get our catch basin cleaning trucks back into service.

Our new inspection schedule and our new maintenance team have allowed us to increase catch basin cleanings by 22% through the first four months of FY2024 while overseeing a 45% decrease in the resolution time to clear a clogged catch basin. Today, I'm pleased to say, we clean clogged catch basins



within three days of identifying that cleaning is necessary – whether they are identified by a 311 call or our proactive inspections.

To prevent matting over from completely blocking water from entering a catch basin, we have begun installing a new catch basin design that includes a second grate on the sidewalk. This additional, elevated grate allows the basin to function even if leaves cover the main grate during a storm. This additional grate can help prevent water from reaching private properties and causing damage in certain locations. While steps like this can reduce the instances of flooding, they cannot increase the overall capacity of the system. We have installed 50 slotted manhole covers through this pilot and have a target to install 100 this year.

We have also been doing more to clean out sewers than before. Over time, small debris and grease can build up on the inside of sewers, which reduces their capacity. In fiscal year 2023, we cleaned 692 miles of sewers – essentially 10% of our sewer network – employing vacor trucks and other cleaning methods to clear out accumulated debris. Cleaning alone won't solve the capacity problem, but it can add a bit of capacity – and every little bit helps in a major rainstorm.

As I've discussed before, though sewers are the primary tool for managing stormwater, we rely on a suite of tools based on communities' needs. While we are doing this improved sewer work, we are also continuing to implement our green infrastructure program. As I mentioned last month, in 2023 we added nearly one thousand new green infrastructure assets to our system, raising the total to 13,000. We are also making progress on cloudburst infrastructure which designs public spaces to retain water during major storm events. I'm pleased that our first cloudburst project, at the South Jamaica Houses of NYCHA, will break ground this summer. We have another four that are in design and that will enter construction over the next two years. We've had great success with obtaining and seeking federal money for these. We have been selected and are awaiting award of \$123 million for cloudburst projects already and are applying for more funding for additional neighborhoods, including East Elmhurst and Central Harlem. [See Appendix 3: Stormwater Management Toolbox]

Finally, I should also mention that our Unified Stormwater Rule, adopted in early 2022 thanks to the leadership of Deputy Commissioner Angela Licata and her team, is having tremendous impact. The rule requires developers of sites greater than 20,000 square feet or those that add 5,000 square feet or more of new impervious surfaces to install on-site stormwater management practices when building a new development or significantly renovating an existing site. Since it took effect 25 months ago, DEP has approved permits for 500 properties that have implemented projects to capture nearly 40 million gallons of stormwater per year. Because of this rule, new development around the City means increased stormwater management. We also encourage green infrastructure on private property, including by offering a green roof grant program as well as Resilient NYC Partners, a program that provides technical and financial assistance to advance green infrastructure on large properties such as Greenwood Cemetery.

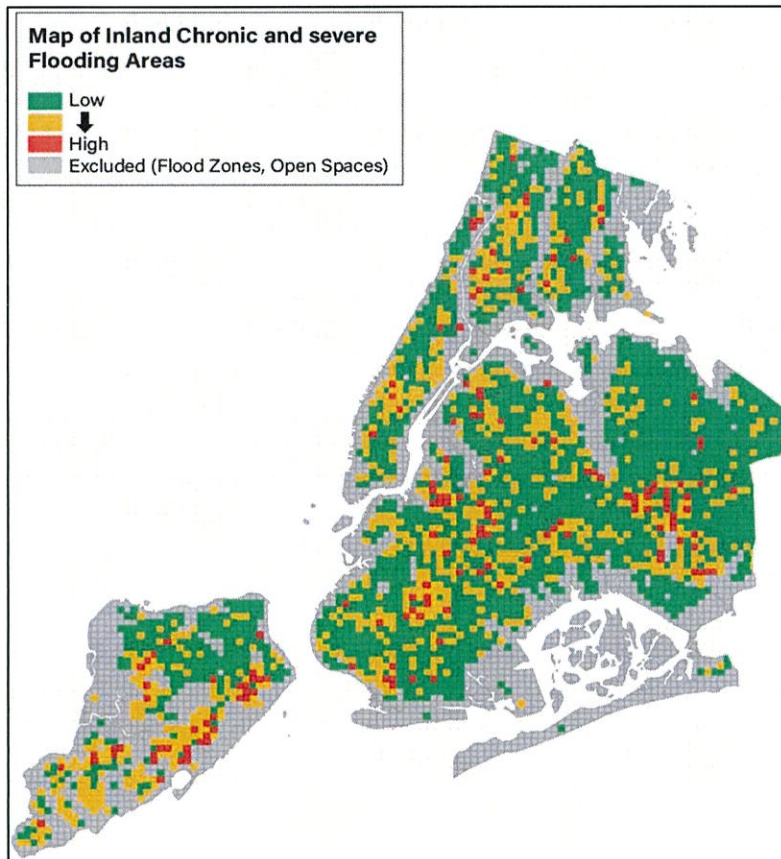
I will acknowledge that the Unified Stormwater Rule has caused complaints among developers – and fellow City agencies – about the documentation required and how long it takes DEP to evaluate applications. Figuring out how to streamline the rule – without reducing its impact – is a task that Deputy Commissioner Licata and I have prioritized for this year.

We have been working on longer-term stormwater resilience

As you know, and as we committed in PlaNYC, DEP has been working on a stormwater resilience strategy for the city.

Our first step was to ensure that our two stormwater planning organizations – the Bureau of Water and Sewer Operations’ Capital Program Management Group, led by Wendy Sperduto, and the Bureau of Environmental Planning and Analysis’s Capital Planning Group, led by Melissa Enoch, were staffed as fully as we could accommodate and were working together. Because green infrastructure in the past had been considered only as part of the City’s long term-control plan for reducing combined sewer overflows, DEP had not traditionally considered a mix of green and grey infrastructure to address a given flooding issue. Now, with great collaboration – which I would point out is led by great female engineers and planners – and working together, we are tackling this challenge in the right way.

Our second step was to assess how many locations are likely to require significant work to meet a basic level of future stormwater resilience. Over the past year, we completed a study to identify the areas in NYC most in need of stormwater flooding relief. This study looked at our flood maps, and incorporated community complaint records and sewer system capacity. We identified more than 80 discrete areas that experience the most chronic and severe flooding during a storm that produces 2.1” of rain in an hour. These areas represent 20% of the area in the city subject to street flooding during such a storm.





We have begun to build the tools we need to plan for resilience

Our third step was to build tools that would make our planning work easier and more effective. Previously, New York City had not invested in a digital model of our entire sewer system. This meant that we could not fully model flooding scenarios. Deputy Commissioner Georgelis, Director Spurduto, and I all prioritized this work, and under Wendy's leadership this digital model was completed earlier this year, enabling us to identify efficient and cost-effective solutions to capacity limits in a way we have not been able to before.

The investment in this model is already paying off. We are now able more easily to identify where interventions are needed to reduce specific areas of flooding. Identifying these intervention opportunities is more complicated than one might think. Sometimes a corner floods because of an issue at that corner. That's easy to identify. Sometimes a corner floods because of an issue upstream or downstream of the corner, in a location that we hadn't looked at before, because it does not have any flooding. That's where this modeling system can help us identify the problem.

We are also using this tool to identify areas where we can use existing capacity more efficiently, by identifying ways to redirect flow and create new pathways to spread the volume. These innovations would use existing infrastructure to significantly increase sewer capacity and possibly avoid our needing to upsize miles of trunk sewers. We are early in this process, but I look forward to speaking to you all about its progress.

Before I move on, I want to stress this: the kind of dramatic planning we will need to do to re-engineer our system for a new climate will require not just a bunch of projects but will require us to invest in, and maintain, new tools that help us be much smarter about the work we need to do. As you ask us questions and seek to hold us accountable, I hope you think not only about the new things we build, but also about how we are managing and maintaining the tools we need to do the job, whether those are catch basin cleaning trucks or digital models for engineering.

We have used this model, and our new integrated planning approach, on a few sample locations

Our next step was to apply our model, and our new integrated planning approach, to a set of site-specific case studies around the city. The goal was to do some deep engineering assessments to see in depth what the needs were in each location, what the potential mix of solutions might be, and what an intervention might cost. We looked at four locations in depth: Dyker Heights, Kissena Park, Knickerbocker Avenue, and the Jewel Streets area.

I won't bore you with the details of each assessment, but a few lessons emerged:

- **Where there is excess capacity in sewer mains, the most effective solution will be ensuring the sewers in neighborhoods are large enough to convey the local flow to these larger trunk mains to take advantage of this capacity.** This was the key lesson of the Dyker Heights case study, where we plan to upsize the network of local sewer pipes that lead to significant downstream capacity.
- **Green and grey infrastructure can be complementary.** In the Jewel Streets neighborhood, which sits at the lowest elevation in the area, we are exploring the combination of a bluebelt to capture and store stormwater alongside a larger pump station and trunk main capacity to

effectively drain the water. Here, the combination of grey and nature-based solutions allow each to provide part of the solution.

- **Green infrastructure can be effective, faster, and cheaper in some situations, but it can be complex to implement and maintain.** In Kissena Park, one attractive alternative could replace some of the recreation space in the park with a bluebelt. Jointly with the Parks Department, we will need to see whether this is a change that residents would support. Further, green infrastructure tends to be more maintenance-intensive than grey infrastructure; we will need to ensure that responsibilities are clear and that maintenance funding is available, or else green infrastructure investments will fail for lack of maintenance.
- **In some situations, expanding grey infrastructure, like trunk sewers, can be the most efficient solution to drain large volumes of stormwater from flood-prone locations.** Bushwick has an extensive array of rain gardens and other green infrastructure assets that were built to improve water quality of stormwater runoff. However, the Knickerbocker area still faces regular flooding during significant rainfall events. The best solution in this area is to dramatically increase the size of the sewer that runs down Knickerbocker Avenue.

Stormwater resilience will need to be a citywide effort, not a service DEP provides

The task of designing and delivering major sewer and related infrastructure projects in the 80 or so locations we identified will take at least 30 years at our current funding levels of roughly \$1 billion per year for stormwater-related infrastructure. And this is just to achieve a basic level of resilience, not at all to protect every New Yorker against all storms. Achieving protection from the kind of storm we experienced last September could cost upwards of \$250 billion – a cost New Yorkers would need to bear in the absence of state or federal funding sources – and may not even be physically possible in some areas given limited space for larger sewers beneath our streets.

This work also leads to three other conclusions that I hope this committee takes into consideration.

The first is that, as a city, we will have to make decisions about the trade-off between more flood protection and greater costs for New Yorkers. We will certainly do everything we can to maximize federal and state dollars – and I thank the committee for Resolution 144 to help us get our fair share of funding from the state – but the reality is that the vast majority of our stormwater resilience efforts will be paid for by New Yorkers. However much we want to be protected, our costs will rise accordingly.

The second is that building-level protection is both faster and more cost-effective than neighborhood-wide infrastructure. The work New York City has done to make individual buildings more resilient to coastal inundation has moved much faster than our work to prevent coastal inundation. In the same way, building-level stormwater resilience will be faster and usually cheaper. Pursuant to Local Law 1 of 2023, we have been developing a plan for a backwater valve program and are on track to meet the requirements of this local law. We don't see this effort as a replacement for infrastructure, but as a complement. The City's infrastructure should expand to deal with our new weather patterns, but homeowners and building owners will also have to do more to protect their own property and create resilience. This may also mean using basements differently, just as was required in the coastal flood plain after Sandy, and as Intro 815 implies. It might mean doing more onsite to manage stormwater, like disconnecting roof runoff from sewer lines to removing impermeable surfaces or installing drywells.



How we accomplish this is still to be determined, but it is likely that the City will need to do more to provide technical assistance to property owners to make their properties more resilient.

The final conclusion I ask you to think about is that this is not just a technocratic decision. DEP alone cannot deliver a stormwater resilience plan for the city. We will need a much broader conversation about how much we are willing to pay, how much flooding we are willing to accept, and what kinds of responsibilities we are willing to impose on homeowners. DEP is the right agency to offer alternatives, but these are fundamentally political questions.

What DEP Needs from The Council

I very much appreciate the impulses behind several bills being heard today, and I believe there is a path forward to crafting legislation based on both Intros 814 and 815 that we would support. However, these are complex issues and I hope that the Council does not seek to legislate hastily.

We support the idea behind Intro 814, which is to codify our ongoing stormwater resilience planning into law. However, many of the specifics in this bill are problematic, and others miss the main need and instead mandate reports and disclosures that will distract our staff without creating real value for the public. Given the update I have provided today I hope this committee appreciates that we are taking stormwater resilience planning very seriously and that you will work with us to codify an approach that gets this right. This will require setting reasonable definitions of what the Council will require DEP to assess, reasonable timeframes for doing the work, and useful reporting requirements. I will point out that the identification of five flood-prone areas in each borough is highly arbitrary and doesn't reflect the reality of the city.

With respect to Intro 815, we believe that the maps we have published are robust and informative, so the legislation need only require that they should be maintained and updated as necessary. If the council has specific concerns with those maps, I'd be happy to discuss them. Further, I'd point out that DEP, not MOCEJ, is the right agency to manage floodmaps.

The other item in 815 is the idea that building code changes may be needed to address stormwater challenges. Given what I have said about the need for building-level resilience, I completely agree with this idea, but we are highly concerned that the approach 815 takes to this is premature and may be counterproductive. As a result, we must oppose Intro 815 as it stands, but we are willing to work with the Council to amend it if the Council is willing to allow enough time to do so.

I would like to use Intros 814 and 815 as an opportunity to streamline existing reporting requirements. MOCEJ in particular, and DEP as well, are subject to a long list of reporting requirements with inconsistent reporting dates, multiple reports on similar topics, and permanent reporting requirements that have long since outlived their usefulness. We are wasting scarce staff time in writing reports that no one reads, and we need to get out of that business so we can actually do the policy and engineering work to make progress.

As I have noted, we continue to need help getting our fair share of federal and state funding, so, while the Administration does not traditionally opine on council resolutions, I will say that Resolution 144 is consistent with messages I am trying to convey and can only help the City's cause.



Above all, we need the City Council to help us think about this difficult tradeoff we will have to decide upon as a city: how much resilience are we willing to pay for, and how much inconvenience are we willing to impose on homeowners and building owners?

Thank you



Appendix 1: Flooding Types

Four Main Types of Flooding:

1. Stormwater Flooding

Climate change brings more significant and more frequent stormwater flooding events because it adds extra moisture to the atmosphere, making storms more intense and harder to manage. Short, intense bouts of rain are called cloudburst events. The deluge from cloudburst events can overwhelm stormwater management systems.

Low-lying areas, areas with poor drainage, and areas with insufficient stormwater infrastructure, including inland neighborhoods, are particularly vulnerable to stormwater flooding.

2. Groundwater Flooding

Both cloudburst events and slow, steady rain can lead to groundwater flooding. Groundwater flooding occurs when the ground becomes so oversaturated it can no longer hold the water. If water finds penetration points, such as cracks in foundation or a leaking flood drain, it starts to seep into basements.

3. Coastal Surges

Coastal surges happen when a large amount of seawater rushes onto land, as the city experienced during Hurricane Sandy. The frequency and intensity of coastal surges are exacerbated by sea level rise. Since 1900, sea level in our city has risen 12 inches and is projected to continue to increase by as much as 6.25 feet by 2100.

4. Chronic Tidal Flooding

Chronic tidal flooding, which is also called sunny day flooding because it can occur on sunny days, occurs when water from regular high tides breaches the land, even without storms. This impacts our low-lying coastal communities. Sections of the city's coastline will be subject to daily tidal flooding by the 2050s. Some low-lying areas are already experiencing chronic tidal flooding.

Flooding Inter-Connections

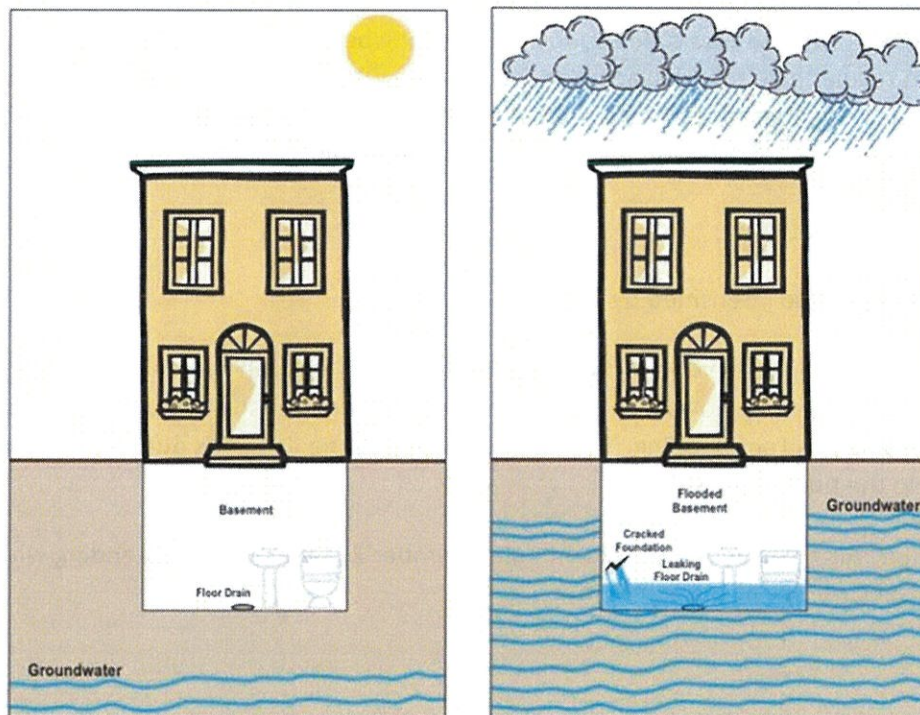
One type of flooding can be intensified by another.

For example, high tides can exacerbate other types of flooding. Tides can even impact inland communities. If high tide water flows into the storm sewer system outfall, it would prevent stormwater from draining, leading to street flooding. This flooding clears as the tide goes out, but there is little that can be done while the tide is still high.

Some of the hardest hit areas during the storm on September 29, 2023 were contending with tidal flooding and extreme rainfall at the same time.



Similarly, heavy or prolonged precipitation will likely saturate the ground. When the ground is oversaturated, it may begin to leak through cracks into basements. Further, when the oversaturated ground is unable to absorb more water, street flooding from stormwater will likely increase.



Appendix 2: Storm Surge

Coastal Resilience Projects - Status			
Project Name	Lead Agency	Description	Key Dates <i>(anticipated milestone dates)</i>
East Side Coastal Resiliency (ESCR)	DDC	This is a coastal protection system spanning 2.2 miles of the east side of Manhattan, from Montgomery St to 23rd St.	Groundbreaking March 2020 <i>Phase 2 Construction Completion - Summer 24</i> <i>Phase 1 Construction Completion - Summer 26</i> <i>Parallel Conveyance Construction Completion - Fall 26</i>
Brooklyn Bridge - Montgomery Coastal Resiliency (BMCR)	DDC	This is a coastal protection system that spans the Lower Manhattan Coast from Montgomery St to the Brooklyn Bridge.	Groundbreaking January 2023 <i>Construction completion - Fall 26</i>
South Battery Park City Resiliency	Battery Park City Authority	This is an integrated coastal flood risk management system from the Museum of Jewish Heritage, across Wagner Park and Pier A Plaza, and along the northern border of the Historic Battery.	Groundbreaking -Spring 2023 <i>Construction Complete - Early/Mid 2025</i>
North-West Battery Park City Resiliency	Battery Park City Authority	This project contemplates protective measures employed along the northern and western portions of Battery Park City to reduce the risks associated with storm surge and sea level rise.	<i>Currently at 60% design</i>

<p>The Battery Coastal Resilience</p>	<p>EDC (on behalf of Parks)</p>	<p>The Battery Coastal Resilience project will integrate two layers of protection: an elevated waterfront edge to mitigate risks from sea level rise and future storm surge protection built on higher ground. Together, the Project and adjacent resiliency efforts form a coordinated set of coastal protections that maintain the uses and character of the park today, while providing protections for storm events in the future.</p>	<p>Final design completed in Fall 2022</p>
<p>NYNJHATS</p>	<p>USACE</p>	<p>This project is aimed as a large-scale flood protection project to reduce the risk of coastal storm damage to multiple communities in the New York Metropolitan area. Alternative 3B is the current tentatively selected plan, and includes (subject to revisions):</p> <ol style="list-style-type: none"> 1. Jamaica Bay and Southern Brooklyn Storm Surge Gate and Shoreline-based Measures 2. Kill Van Kull and Arthur Kill Storm Surge Gates with Shoreline-based tie-ins 3. Storm Surge Gates and Shoreline-based tie-ins for Gowanus, Newtown and Flushing Creeks 4. Shoreline-based measures for Lower Manhattan, East Harlem, and Jersey City 5. Numerous other complementary structural, non-structural, and NNBFs to complement measures listed above and better manage remaining residual risk (many still under development/evaluation) 	<p>NYC Agency comments submitted as of 3/31/23 <i>Currently evaluating projects to move forward for Congressional Authorization and appropriation of funds in 2026, 2028 and 2030.</i></p>

<p>South Shore of Staten Island Coastal Storm Risk Management Project (SSSI)</p>	<p>USACE</p>	<p>SSSI project establishes a 5.5-mile long continuous coastal protection system including buried seawall, floodwall, and earthen levee, in conjunction with NYCDEP's Bluebelt program, as well as tide gates and other gate chamber and culvert structures.</p>	<p><i>Expected Completion 2028 or later</i></p>
<p>Rockaways Jamaica Bay - High Frequency Flood Risk Reduction Features (HFFRRF)</p>	<p>USACE</p>	<p>The Mid-Rockaway plan will reduce high frequency flooding risk on the Jamaica Bay side of the Rockaway peninsula in the Hammels, Arverne, and Edgemere communities. The line of protection includes floodwalls, berms, nature based features, bulkheads and revetments. Modifications to outfalls and drainage, as well as 6 stormwater pump stations will prevent backflow and ensure functional drainage of the project during storm conditions.</p>	<p><i>Expected design completion in early 2027 Expected construction completion in 2030</i></p>
<p>Rockaways - Atlantic Shorefront</p>	<p>USACE</p>	<p>The Coastal Storm Flood Risk Management plan for the Atlantic Shorefront Reach of Rockaway Beach in Queens will reduce risks for erosion and wave attacks. It will also limit storm surge inundation and cross peninsula flooding. Project features include: reinforced dune, beach berm, beach renourishment, and groins</p>	<p><i>Groundbreaking in 2020 Construction completion by 2025</i></p>
<p>Red Hook Coastal Resiliency (RHCR)</p>	<p>DDC</p>	<p>This project implements a flood protection system consisted of floodwall, raised streets, flip-up and roller gates. Project area is in Atlantic Basin and Beard Street in Red Hook, Brooklyn.</p>	<p><i>Final design 2024 Construction Kick-off - Early 2025 Construction Completion - Early 2028</i></p>

<p>FiDi Seaport Climate Resilience Master Plan</p>	<p>EDC</p>	<p>The project involves shoreline raising and extension along the project alignment - 0.9 mile from Brooklyn Bridge to Battery Park. A stormwater pump station will be built to manage interior drainage. This project aims to not only provide storm surge protection to the area, but also provide public access to the waterfront.</p>	<p>Design started in July 2023 <i>Design to be complete by June 2025</i> <i>Plan expected to take 15-20 years to fully implement.</i></p>
<p>Tottenville Shoreline Protection Project</p>	<p>Governor's Office of Storm Recovery (NYS)</p>	<p>This project is designed to reduce wave impacts and erosion along the shoreline by constructing a series of permanent risk reduction measures from Swinnerton St to Page Ave along the southern shore of Tottenville, Staten Island.</p>	<p><i>Construction completion by 2026</i></p>
<p>Bellevue Hospital Flood Protection System Design</p>	<p>DDC</p>	<p>The project will implement flood defense and stormwater management infrastructure in order to protect the hospital and surrounding community.</p>	<p><i>Construction Start expected in 2026</i> <i>Construction completion in 2030</i></p>

Appendix 3: Stormwater Management Toolbox

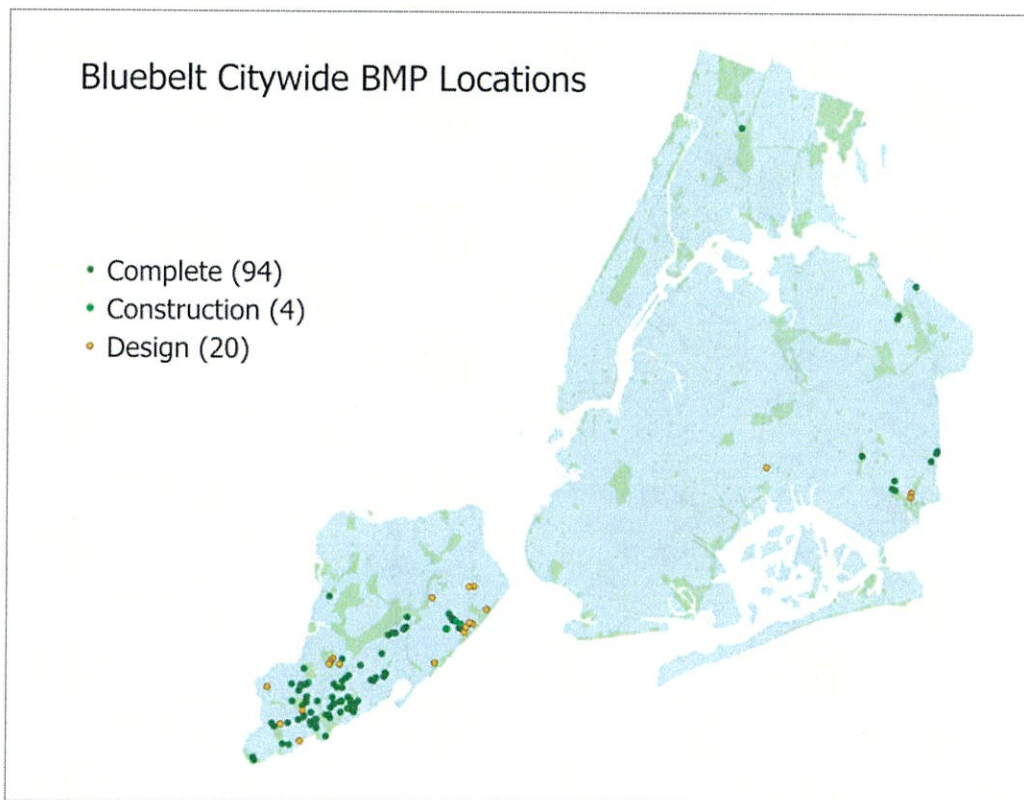
It will take a full suite of solutions to mitigate flooding: traditional sewer pipes model (gray infrastructure), nature-based solutions (green infrastructure and Bluebelts), and in-ground retention and detention infrastructure (“cloudburst” infrastructure).

Sewers:

Sewers have traditionally been the first line of defense in a storm. New York City has approximately 7,500 miles of sewers – the equivalent distance of flying to Japan. Sewers work in every rainstorm and protect fully against 98% of rain events, but sewers are not designed to handle hurricane-level rain. The sewer system can get overwhelmed when the amount of water produced by the storm is greater than the capacity of the pipes.

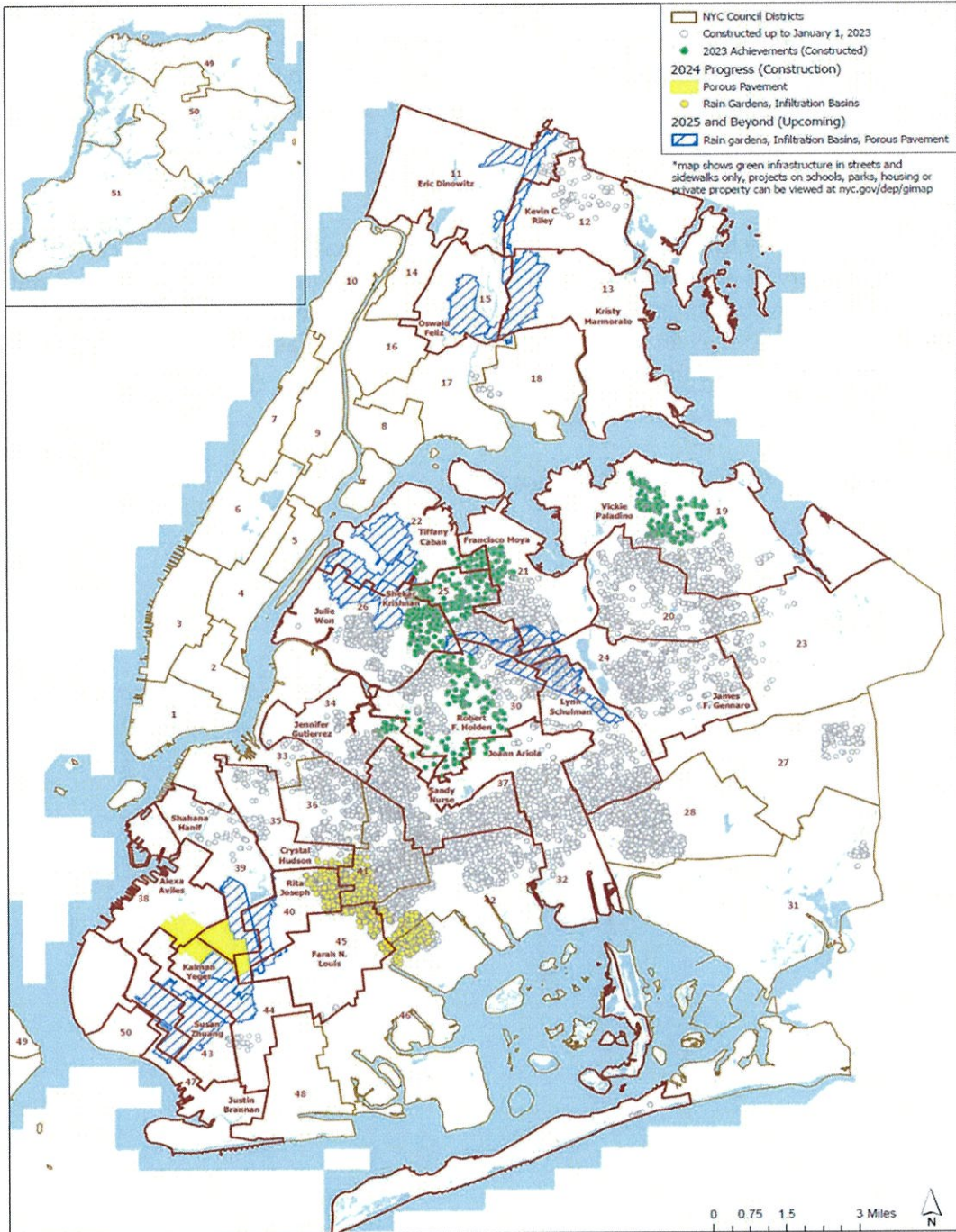
Bluebelts:

Bluebelts divert rainfall away from sewers, provide retention, and create rich ecological areas. They work with nature, preserving or restoring natural drainage corridors like streams, ponds, and wetlands, using these natural systems to store and filter stormwater. Unlike green infrastructure, bluebelts are connected to sewer pipes, so they are part of the sewer system. DEP has completed 545 acres of bluebelts in the Bronx, Staten Island, and Queens.



Green Infrastructure:

Green infrastructure absorbs water into the ground in areas with good soil. It can also green neighborhoods, reducing urban heat island effect. Green infrastructure reduces street flooding by capturing and slowing stormwater before it enters the sewer system, freeing up drainage capacity and reducing sewer overflows into local waterways. Examples of green infrastructure include curbside rain gardens, greened medians with underground stormwater retention, or porous pavements, which are a special roadway paving designed to absorb and drain rainwater.



Cloudburst Management Systems:

A cloudburst is a sudden, heavy downpour that drops a lot of rain in a short amount of time. Cloudbursts can overburden the sewer system and cause flooding.

Cloudburst management systems use a combination of grey and green infrastructure to capture and retain or detain stormwater until the sewers can handle the flow. Cloudburst management projects often feature special community amenities and open spaces that can be used by the public on dry days.

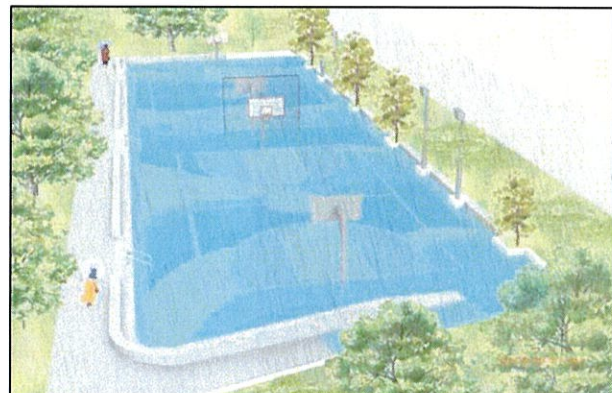


Example: South Jamaica Houses

Dry Weather Condition

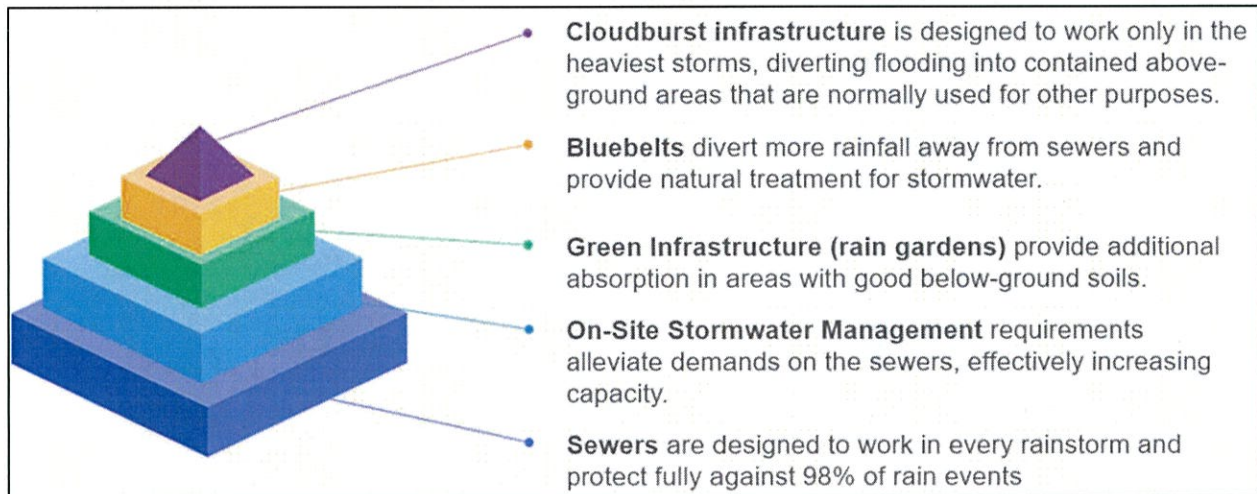


Cloudburst Condition



Tool Collaboration

None of these tools is a singular solution. We need a layered approach. We found through our case studies that grey infrastructure upgrades will virtually always be needed to mitigate severe flooding, so it is the foundation of the stormwater management network. Private property on-site management, which I will speak about shortly, green infrastructure, Bluebelts, and cloudburst infrastructure build on that foundation to provide extra management as volume increases.





JUMAANE D. WILLIAMS

**STATEMENT OF PUBLIC ADVOCATE JUMAANE D. WILLIAMS
TO THE NEW YORK CITY COUNCIL'S COMMITTEE ON
ENVIRONMENTAL PROTECTION, RESILIENCY AND WATERFRONTS
April 26, 2024**

My name is Jumaane D. Williams and I am the Public Advocate for the City of New York. Thank you Chair Gennaro and members of the Committee on Environmental Protection, Resiliency and Waterfronts for holding this hearing and for allowing me to share my statement. Thank you, Commissioner Aggarwala and the NYC DEP team for being here.

Fundamentally, New York City needs to be better prepared for natural disasters. Climate change is intensifying the frequency and intensity of storms, as well as increasing the rate of rain. Several communities across New York City face constant flooding even during lighter rainstorms, and it is an issue that requires our attention. The “non-storm flooding areas” have resulted in extensive property damage and in some cases, deaths by drowning.

I appreciate Commissioner Aggarwala elaborating on DEP’s plans for addressing flooding at the Preliminary Budget Hearing last month. Specifically, Commissioner Aggarwala explained that the DEP is evaluating a long-term plan to fix our combined sewer system, which was projected to be in the tens of billions of dollars. It is essential that for the depth of work and the amount of money needed to fund the work, there must be oversight and input from the New York City Council for these stated reasons, I support Int 0814. Additionally, Intro 0814 asks the DEP to prioritize five areas per borough that have re-occurring flooding and requires the DEP to address these problematic areas. I agree that we should be prioritizing areas with the worst infrastructure.

Furthermore, Int 0815 will better prepare New York City’s built environment and city agencies for climate change impacts. We know that because of increased precipitation, flood zones are expanding beyond what the federal government has traditionally considered a flood zone. It is important that New York City plans as if these areas which are not designated in any flood zones are treated as though they are.

For example, residents of 183rd street in Hollis, Queens were devastated by Hurricane Ida where the storm decimated entire streets of houses in that community. The damage was extensive and required significant work. Many of the flood victims were unable to return to their homes. My office was unsuccessful in assisting them to obtain financial relief because their houses were not located in a designated flood zone making them ineligible for Flood Mitigation Assistance (“FMA”) grants. It is important to look at flooding patterns and extend eligibility to the FMA grants based on the historical and persistent patterns of flooding irrespective of whether its’ located in a designated flooding zone. This area and areas like it should be treated as a flood zone and be given the resources it needs to be protected from a flood. Thank you.



**Public Comment of Transportation Alternatives
Committee on Environmental Protection, Resiliency and Waterfronts
Flooding and Stormwater Infrastructure**

Apr 26, 2024

Good morning, and thank you to the Chair and members of the Committee on Environmental Protection, Resiliency, and Waterfronts for the opportunity to comment today on flooding and stormwater infrastructure in New York City.

Earlier this year, Transportation Alternatives updated our Spatial Equity Project in partnership with MIT. [Spatial Equity NYC](#) is a tool that documents the ways in which public space is inequitably designed, distributed, and accessed in New York City. Below, please see our findings on the inequities of flood risk across the five boroughs, followed by recommendations to prepare for and mitigate the risk of flooding in street space.

Flood Risk is Much Higher in Black Communities. Traffic-Calming Green Infrastructure Can Help. More than [70%](#) of New York City's surface area is impermeable streets, sidewalks, parking lots, and rooftops. With the majority of space unable to absorb rainfall, water collects in low-lying areas such as curb cuts, subway stations, and basement apartments – restricting mobility, damaging infrastructure, and endangering lives. When heavy rain overwhelms New York City's sewer system, impermeable surfaces [deliver sewage and street pollution](#) into waterways. Our stormwater infrastructure is already overburdened and many neighborhoods periodically flood, and yet New York City [is projected to receive](#) 10% more rain and one foot of sea level rise by the 2030s, which will further endanger our most vulnerable communities.

Spatial Equity Findings on Flooding* Analyzed By City Council District

1. **Black New Yorkers are more impacted by flooding.** In the [10 City Council districts with the most flooding](#), the share of Black residents is 32% higher than the average district.
2. **Flooding will decimate communities in Southeast Queens.** The two most flood-prone City Council districts, [32](#) and [31](#) along the waterfront in

Southeast Queens, have 30% and 21% of their residents, respectively, living in projected stormwater and coastal floodplains.

3. The most flood-prone districts are some of the least prepared for it.

The 10 City Council districts expected to see the most flooding have less water-absorbing greenery – with 10% less permeable surface area and 22% less tree canopy than the average district – despite 85% more of their residents living in a floodplain, compared to the average district.

Transportation Alternatives' Recommendations

Build “permeable corridors” on all New York City streets in the flood hazard zone using [water-absorbing green medians](#) as called for in CM Feliz’s recently introduced bill [Int 0746-2024](#). Require all streets that can be outfitted with permeable surfacing be retrofitted by 2026 to optimize storm wave and high tide drainage. Converting asphalt into planted medians can [reduce runoff by 80%](#) and also reduce pedestrian fatalities and injuries by 30%.

Daylight all “deep flood” intersections citywide with green infrastructure, such as [bioswales](#), street trees, and rain gardens, to control rainwater flooding. Mayor Adams has promised to daylight 1000 intersections each year. The New York City Department of Transportation and Department of Environmental Planning should work together to create a plan to daylight all intersections subject to [“deep and contiguous”](#) flooding with flood control infrastructure by 2025. One bioswale can manage as much as [2,200 gallons](#) of water during a storm.

**percent of residents living in stormwater and projected 2080 coastal floodplains*



Testimony of Riverkeeper, Inc.

before the

**New York City Council Committee on Environmental Protection, Resiliency and
Waterfronts**

Oversight hearing on Flooding and Stormwater Infrastructure

April 26, 2024

Thank you, Chairperson Gennaro and Members of the New York City Council Committee on Environmental Protection, Resiliency and Waterfronts, for your leadership to improve stormwater infrastructure to reduce local flooding and improve water quality throughout the city. I appreciate the opportunity to provide testimony on behalf of Riverkeeper, a member-supported watchdog organization dedicated to protecting and restoring the Hudson River from source to sea, expanding recreational access in waters throughout New York City, and safeguarding drinking water supplies, through advocacy rooted in community partnerships, science and law.

I. Riverkeeper strongly supports Int. No 814 to direct the Department of Environmental Protection to update its sewage and stormwater plans every five years.

We appreciate that the Department of Environmental Protection (DEP) is proactively planning for stormwater management, including through the Rainproof NYC public-private partnership. This legislation prudently directs the agency to henceforth continue updating its analyses every five years, which will be especially important as storms become more frequent and intense. A combination of these storms and poor sewer infrastructure is causing thousands of sewer backups each year.¹ Identifying areas where backups have repeatedly harmed life, health or property will allow the city to prioritize and plan for stormwater infrastructure investments.

¹ Samantha Maldonado, *Spike in Sewer Backups Leaves New Yorkers in a Soggy Mess, with Long-Term Fixes Years Away*, The City (Feb 8, 2024), <https://www.thecity.nyc/2024/02/08/sewer-backups-elmhurst-solutions/>.

II. Riverkeeper strongly supports Int. No. 815 to plan updates to the zoning resolution due to climate impacts and to create and update an inland flood hazard area map.

Riverkeeper applauds the Council's efforts to strengthen the city's zoning resolution and construction codes. The Council should proactively set forth zoning policy as soon as possible that discourages construction in areas that are expected to experience flooding consistently. Buildings can be designed to withstand inundation, but it is often the case that the area around the flooded building is also impacted, which can cause residents to go without local access to utilities, fresh groceries, transportation and other life necessities for weeks or months. Therefore, construction in flood hazard areas should be discouraged. At the very least, these areas should remain low density, with higher density incentivized in less flood-prone areas. Areas with particularly high flooding hazards should be left completely undeveloped and should be incorporated into the city's Bluebelt Program. Otherwise, the city risks creating conditions that will necessitate future flood buyouts. The inland flood hazard area map will be necessary to provide information to property owners, renters, and city officials to protect life and property and to plan future development.

III. Riverkeeper supports Proposed Res. No. 144-A requesting that the state Environmental Facilities Corporation remove barriers to access to clean water infrastructure funding, and we note that the Council should prohibit offloading city water rate funding intended for water infrastructure to the general fund.

The state should not put arbitrary limitations on New York City when it comes to funding wastewater infrastructure. The former Commissioner of the state Department of Environmental Conservation, Basil Seggos, has estimated that the cost of upgrading the city's sewer system to come into compliance with the Clean Water Act standards set by the state and approved by the federal Environmental Protection Agency would total \$108 billion.² The city's wastewater infrastructure serves approximately 43% of the state's population and roughly 58% of the state's disadvantaged communities.³ However, we understand that under the limitations set by the Environmental Facilities Corporation, the city would be eligible for roughly only 23% of the funding. This unfair limitation ignores the needs of the city. At minimum, the state should create a level playing field in which the city can compete for a share of water funding commensurate with the population. To build into the funding system rules restrictive barriers that put the city at a disadvantage from the start, without even considering how the funds could be spent, is inconsistent with the goals of the Bipartisan Infrastructure Law and the Justice40 initiative.

² Email from Basil Seggos, Comm'r., Dep't of Env'tl. Conservation, to Pete Lopez, Reg. 2 Reg'l Admin., U.S. Env'tl. Protection Agency (Aug 15, 2019).

³ Li Cohen, *New York Identifies Over 1,700 "Disadvantaged Communities" That Will Receive Boost in Climate Funding*, CBS News (Mar. 30, 2023), <https://www.cbsnews.com/news/new-york-disadvantaged-communities-climate-funding-boost/>.

The fact remains, however, that state funds alone cannot cover the city’s sewerage needs. The city, too, must do its part to raise revenues to keep up with its aging system. Unfortunately, the city has chronically and severely underfunded its water infrastructure, due to its failure to collect adequate revenues. While the city brags about its water rates being “approximately 20 percent below the average for the thirty largest U.S. cities,”⁴ residents are experiencing thousands of sewer backups per year, and local waterways are severely degraded, receiving roughly 21 billion gallons of raw sewage and stormwater discharges (known as “combined sewer overflows”) annually.⁵ The Council should incorporate into this resolution a call for the Water Board to collect funds commensurate with the city’s infrastructure needs.

Finally, the Council should pass legislation to prevent the Mayor from collecting an “annual rental payment,” which siphons monies from water ratepayer funds to the general tax fund, further reducing the resources available for maintaining and improving water infrastructure. Riverkeeper will continue to support removing limitations on infrastructure funding, but the city must also hold up its end of the bargain to do more to upgrade its water and sewer systems.

* * *

Thank you for your consideration of Riverkeeper’s testimony. We look forward to continuing to work with the Council Members, DEP and others to ensure sufficient funding is in place to construct and maintain safe and effective stormwater infrastructure.

Contact:

Michael Dulong, Legal Program Director, (914) 478-4501, mdulong@riverkeeper.org

⁴ New York City Dep’t of Env’tl. Protection, Press Release Rate Proposal Would Keep the Cost of Water in New York City Well Below the National Average (2021), <https://www.nyc.gov/site/dep/news/21-013/rate-proposal-would-keep-cost-water-new-york-city-well-below-national-average>.

⁵ Larry Levine, Blog: A Wet 2018 Saw Sharp Rise in NYC Sewage Alerts: 1 in 3 Days (Apr. 12, 2019), <https://www.nrdc.org/bio/larry-levine/wet-2018-saw-sharp-rise-nyc-sewage-alerts-1-3-days>.



Testimony before the New York City Council Committee on Environmental Protection, Resiliency and Waterfronts: Oversight – Flooding and Stormwater Infrastructure

April 26, 2024

Good afternoon. My name is Theodora Makris and I am a Senior Program Manager at the Center for NYC Neighborhoods, Inc. I would like to thank Committee Chair James F. Gennaro and members of the Committee on Environmental Protection, Resiliency and Waterfronts for holding today’s hearing to discuss flooding and stormwater management in New York City.

About the Center

The Center for NYC Neighborhoods promotes and protects affordable homeownership in New York so that middle- and working-class families are able to build strong, thriving communities. Established by public and private partners including the City Council, the Center meets the diverse needs of homeowners throughout New York by offering free, high quality housing services. Since our founding in 2008, our network has assisted over 280,000 homeowners with matters ranging from foreclosure prevention, climate-related disaster recovery, flood insurance, and more. The Center also administers FloodHelpNY.org, a digital platform for educating New Yorkers on their flood risk, in partnership with the Mayor’s Office of Climate and Environmental Justice and the Governor’s Office of Storm Recovery.

Resiliency and climate adaptation at the Center

In the aftermath of Hurricane Sandy, the Center initiated a range of recovery programs to support impacted communities. We have since developed programs in anticipation of future climate disasters that prioritize and promote long-term resiliency and adaptation. So far in FY 2024 we have requested \$100,000 in Schedule C funds from Green NYC Initiative to support marketing and outreach efforts in the Bronx and Brooklyn to better connect homeowners and community members to NYSERDA resources from our Clean Energy Hub and to train our Hub hotline members as energy advisors to support resident needs.

Strong homeowners. Strong communities.

55 Broad Street, 10th Floor | New York, NY 10004 T 212-566-3050 F 212-566-2460 cnycn.org

Thousands of residential units are at risk of flooding in NYC

FEMA's assessment of the 100-year floodplain projects that 183,000 residential units in New York City are at risk of flooding.¹ The same study found that by 2050, the number of people living in the 1% annual chance floodplain could more than double. FEMA's Preliminary Flood Insurance Rate Maps (PFIRMS) were released as part of a citywide flood map update and are the best available flood hazard data for building codes and planning purposes. Notably, however, these maps are nearly ten years out of date and the increase in both frequency and severity of rainfall flooding in the northeast – a peril unmapped by FEMA – suggests that neighborhoods located outside of special flood hazard areas are at risk. Additionally, research from First Street Foundation asserts that, due to input from special interests groups and budget constraints from Congress and public officials, there are likely more residential units at risk of flooding than the PFIRM maps predict.²

NYC must keep people safe and adapt to the increasing flood risk

On September 1st, 2021 The National Weather Service in New York declared the City's first flash flood emergency when the remnants of Hurricane Ida swept across the State. A historic three inches of rain fell per hour across the five boroughs, a record set only days earlier by Tropical Storm Henri. Tragically, 13 New York City residents lost their lives.

Later that year, New York City's Extreme Weather Task Force published a report which outlined the immediate need for substantial policies and protocols to combat and adapt to the City's increasing flood risk.³ Their assessment includes a series of recommendations to enhance infrastructure that bolsters individual and community resilience in the wake of severe rainfall and coastal flooding. Among their recommendations, the task force has advocated for:

- The immediate commencement of a study to examine the expansion of household backwater valve installations.
- Expanding backwater valve installations to the City's most vulnerable residential topologies to prevent sewer backups into private properties.
- Accelerating the short-term Stormwater Resiliency Plan, which lays out 17 initiatives to reduce our risk to extreme precipitation over 10 years.
- Accelerating "high-level" storm sewer upgrades to prepare for intense rainfall flooding.
- Continuing the integration of Bluebelts to handle stormwater runoff while protecting natural drainage corridors.

¹ Info Brief: Flood Risk in NYC, NYC Department of City Planning, 2016

<https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/climate-resiliency/flood-risk-nyc-info-brief.pdf>

² Research: Understanding FEMA Flood Maps and Limitations, First Street Foundation, 2019

<https://firststreet.org/research-library/understanding-fema-flood-maps-and-limitations#65b40ed50af491002221833e>

³ The New Normal: Combating Extreme Storm-Related Weather in New York City, Extreme Weather Task Force, 2021 <https://www1.nyc.gov/assets/orr/pdf/publications/WeatherReport.pdf>

Prioritizing stormwater management pays off – The success of Hoboken, NJ

Hoboken, NJ began investing in stormwater management immediately after Hurricane Sandy in 2012 through a mix of federal funds and support from Rebuild by Design. With the help of engineers, architects, city planners and community organizations, solutions to integrate climate adaptation and water management strategies into their existing infrastructure were operationalized. Within ten years, underground tanks and pumps were built to successfully collect, store and expel excess water from rain and tidal surges.

The results paid off – during the September 29, 2023 flash flood, which brought New York City to a grinding halt and resulted in roughly \$100M in damages, Hoboken was back on their feet the next day. ResilienCity Park, Hoboken’s newest and largest park, collected 1.4 million gallons of rainwater during the storm. It is estimated that Hoboken is prepared to manage 9 out of 10 rain events without significant flooding, according to the North Hudson Sewerage Authority. ⁴

Flood management and stormwater infrastructure upgrades are desperately needed

The Center for New York City Neighborhoods applauds the New York City Council for the suite of climate adaptation bills that have been introduced and we advocate for their swift passage into law. Specifically, Intro. 815 related to the creation of an inland flood hazard map, climate adaptation planning, and resilient construction for inland areas; Intro. 814 related to stormwater management plans and reports; and Resolution 144 which calls upon the NYS Environmental Facilities Corporation to remove restrictive barriers and uncap funds New York City can receive for water infrastructure upgrades. These bills directly address the myriad of stormwater and infrastructure-related issues facing New York City outlined by the Extreme Weather Task Force.

We are in a critical moment that requires bold and swift action in order to protect the structural integrity of our City’s homes and buildings, and the people who reside within them. We implore the New York City Council to pass the aforementioned bills into law to protect household health, safety, and economic security.

⁴ A Climate Change Success Story? Look at Hoboken, The New York Times, 2023
<https://www.nytimes.com/2023/11/03/headway/hoboken-floods.html>



**Testimony of Alia Soomro, Deputy Director for New York City Policy
New York League of Conservation Voters
City Council Committee on Environmental Protection, Resiliency and Waterfronts
Oversight Hearing on Flooding and Stormwater Infrastructure
April 26, 2024**

Good morning, my name is Alia Soomro and I am the Deputy Director for New York City Policy at the New York League of Conservation Voters. Thank you, Chair Gennaro as well as members of the Committee on Environmental Protection, Resiliency and Waterfronts for the opportunity to testify today.

The latest projections from the New York City Panel on Climate Change (NPCC) [project](#) that the City will be hotter, rainier, and wetter as soon as the 2030s. As summer approaches, we must not lose sight of short-, medium-, and long-term measures our City must take to mitigate the worst impacts of climate change. This includes the compounding effects on our City's waterways and sewer infrastructure, such as coastal storm surge, high-tide flooding, rising groundwater, and extreme rainfall, the last of which can trigger Combined Sewer Overflows (CSOs), which send sewage, industrial waste, and other pollutants into the city's waterways.

NYLCV urges the City to continue taking long-term climate projections into account as the City adapts its existing flooding, sewer, and wastewater infrastructure, especially with regards to the City's wastewater treatment plants' vulnerability to sea level rise, extreme weather events, and rising groundwater. As stated in our [2024 NYC Policy Agenda](#), the City must continue to explore ways to reduce CSOs by funding green infrastructure projects such as rain gardens, bioswales, water squares, green and blue roofs, river daylighting, and permeable pavement that help absorb stormwater, purify the air, and mitigate the urban heat island effect. Moreover, in addition to interim storm measures such as improving communication and clearing catch basins, the City must also continue updating and modernizing our existing sewer system and wastewater treatment process to prevent CSOs from dumping unregulated contaminants in our waterways. We encourage the City to continue funding and expanding the DEP's Bluebelt program to reduce stormwater flooding with careful design and coordination for bluebelts on city parkland.

The City must continue prioritizing environmental justice and equity in all of its climate and environmental planning, implementation, and policies. For instance, according to the recently-released [EJNYC Report](#), areas of New York City most impacted by stormwater flooding include Southeast and Central Queens, North Staten Island, and the Southeast Bronx. Moreover, 7 of the top 10 neighborhoods with the most confirmed sewer backup complaints reported to 311 in 2022 are EJ neighborhoods, and citywide, Black New Yorkers are overrepresented within areas that have a greater than average number of confirmed sewer

backup complaints. Green and gray infrastructure projects should continue to be expanded and implemented equitably so that all neighborhoods can receive the environmental benefits that come with them, with priority for frontline communities that have borne the brunt of environmental racism and climate injustices, including NYCHA campuses.

Regarding the two Council bills being considered today, NYLCV supports the intent of Intros 814 and 815. Intro 814 would require DEP to submit a plan to prevent sewer backups and identify areas that regularly flood after rainfall, in addition to a timeline for installing larger storm sewer mains and gray-water reuse systems. Intro 815 would amend Local Law 122 of 2021, requiring a citywide climate adaptation plan, to also require the City to create an inland flood hazard area map to determine which areas outside of the federally designated coastal flood areas that are most vulnerable to extreme rainfall and stormwater flooding. This bill would also amend Appendix G of the Building Code to require that new or substantially altered buildings in the inland flood hazard area be built to the standards that apply to some federal special flood hazard areas. NYLCV supports Intro 815 but emphasizes that Local Law 122 of 2021 must still be fully implemented. We also suggest that this bill consider the inland flood hazard area map to potentially be combined with the NYC Department of City Planning's [NYC Flood Hazard Mapper](#). We look forward to working with the Council, the Administration, and advocates to ensure these bills strike the right balance of long-term planning with ambitious but achievable milestones without duplicating existing information.

Beyond the bills being considered today, NYLCV would like to highlight a few more stormwater and flooding policy priorities. As stated in our [2024 NYC Policy Agenda](#), if the state legislature passes the Water Bill Fairness Act (S4169/A4019), the City Council should pass legislation allowing NYC DEP to create an equitable payment structure in which property owners would pay fees calculated by the amount they contribute to stormwater runoff. The more impervious surface, the greater the amount of runoff contributed, and therefore the higher the fee. This would fund stormwater infrastructure improvements and green infrastructure projects. We echo calls by other advocates for the City Council to pass a resolution of support for the Assembly Bill A9435 in the 2023-2024 State Legislative Session, which includes stormwater in the definition of sewage for purposes of certain water, sewer, and water and sewer authorities. NYLCV also echoes the recommendations outlined in the [NYC Comptroller's recent report on NYC's flash flood preparedness](#). This includes short-term measures such as improving outreach and communication to at-risk communities and catch basin cleaning procedures, as well as longer-term measures such as implementing capital process reforms such as supporting State legislation to authorize progressive design-build authority, particularly for resiliency and stormwater projects.

Lastly, NYLCV stresses the importance of providing sufficient funding for DEP and MOCEJ hiring and retention so that New York City can meet its climate goals. With the climate crisis upon us, we cannot do more with less. We look forward to working with the Council, Administration, and our fellow advocates to ensure equity, environmental justice, and resiliency are embedded in all of our climate and environmental decisions. Thank you for the opportunity to testify.



April 26, 2024

NYLPI testifies in strong support of [Intro 814](#), updating stormwater management plans and reports, and Proposed Resolution [144-A](#), removing restrictive barriers and uncapping funds the City can receive for water infrastructure upgrades. We also strongly support Public Advocate Jumaane Williams' [Intro 403](#), requiring the cleaning and maintenance of catch basins and transparent reporting. We further encourage the City to ensure [HomeFix 2.0](#) runs and receives adequate funding to cover the major gaps in assistance needed to fund flood resiliency measures in homes and private property.

Too many of our neighbors are underwater with flooded basements and the financial stress and health problems flooding causes. Extreme rainfall events have already increased and will continue increasing in number and severity because of fossil-fueled climate change.

Communities in which New York City has historically invested less money and resources—which tend to be Black, Brown, and low-income communities—[disproportionately bear the burdens of flooding](#) and sewage backups. For example, residents in Queens, the City's most racially diverse borough, made over [4,000 backup complaints](#) involving private sewer systems to the NYC Department of Environmental Protection (DEP) in 2022 alone—nearly six times as many as Manhattan. Sewer backups make residents' environments [unsafe, unhealthy, and inhumane](#), interfering with their [constitutional right](#) to a clean and healthy environment. Now is the time for our elected leaders to act and fix these issues before many more homes and livelihoods are ruined by flooding.

Intro 814 will, critically, require DEP to create and publish a plan to prevent public sewer backups every five years, identifying prevention and response measures. The measure would also mandate that the DEP create a timeline for installing larger sewer mains, identifying at least 5 areas per borough that regularly flood, and planning for how to address such flooding. Such plans, as written, could include elevating homes—but we urge the Council to consider where the funding for such retrofitting will come from and to adequately fund such private measures, as we discuss below with HomeFix 2.0.

Intro 403 would increase transparency to residents regarding the status of sewer and catch basin maintenance and tighten the timeline for DEP response to complaints. Residents are rightfully frustrated with the current lack of transparency regarding maintenance that, if done with reasonable care, can save their health and financial security, and if not, can put them at unnecessary risk. Residents deserve transparency and greater care.

Resolution 144-A would, critically, address the unjust caps on the Bipartisan Infrastructure Law, which prevent NYC from receiving its fair share of desperately needed capital to solve more

severe flooding risks than other areas in the state face. As of now, NYC can only receive 10% of the funds, while having 44% of the state's population, and a far greater percentage of people at risk of flooding and backups than elsewhere. In violation of the Climate Leadership and Community Protection Act Section 7(3), this policy disproportionately impacts minority and low-income communities—the exact communities this money is intended to benefit, and must, by law.

The measures above will help solve issues with *public* sewer lines, which is critical, and will also help prevent private costs and dangers. But far too many homeowners are left to foot the bills from problems created by the City's disinvestment and corporate-caused climate disasters that damage health and private property.

We urge the City to give more support directly to homeowners via programs like HomeFix. The original HomeFix provided low- or no-interest loans up to \$60,000 per unit to homeowners in NYC, but rapidly maxed out its assistance at only 100 homeowners. As of October of last year, HPD was looking for partners for HomeFix 2.0, which would provide loans to about 150 homeowners, and we do not currently know the status of that search. Furthermore, far more residents need access not just to these loans but to *grants* to prevent the compounding costs of flooding and sewage backups.

Our clients in South Jamaica, Queens have a community of 20 homes that are connected on a failing private sewer line requiring frequent repair and maintenance (approximately \$10,000 per year). DEP has pledged to build a public line for this area within 3 years. Residents must then make private 'lateral' connections to the public line, which cost \$15,000 per house. East Elmhurst, Queens has an area of about 35 homes on a public sewer line that faces chronic sewer backups. Many residents have serious health problems caused by sewage backups, including respiratory illnesses and skin infections, and many do not have health insurance. Residents would benefit from the installation of mechanisms like automatic backwater valves, which can cost more than \$5,000.

Currently, residents are left to cover the costs of cleaning and repairing flood damage, which can cost tens of thousands of dollars. The availability of grants and loans for repairs, upgrades, and cleanup costs would make a massive difference. *Preventative* measures are critically important to health and financial security. Retrofitting homes is often far too costly for homeowners, and the City must ensure that homeowners have the support they need to stay safely above water.

Thank you for your consideration and support.

Sincerely,

Suhali Mendez and Niki Cross
New York Lawyers for the Public Interest



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Brooklyn, New York
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The Green-Wood
Cemetery
(718) 768-7300

The Green-Wood
Historic Fund
(718) 210-3080

Good afternoon, Chair Gennaro and members of the committee. My name is Joseph Charap, and I am the Vice President of Horticulture at the Green-Wood Cemetery, a National Historic Landmark and a 478-acre greenspace in the heart of Brooklyn.

Storms before and many since Hurricane Ida have made tragically clear how easily overwhelmed New York City's sewer infrastructure becomes with heavy rainfall. Without upgrades, more untreated wastewater will be discharged annually into waterways, and flood our city with runoff that carries waste and pollution with it, putting our health and homes at risk. As we know, the communities that are burdened with decades of disinvestment are the most vulnerable to these risks.

We at Green-Wood applaud the three local laws on the docket today, especially requiring the city to create a map of the area's most vulnerable to stormwater flooding. The public sector must take the lead in protecting these communities, but private institutions must play a role, especially those in at risk neighborhoods. I'd like to briefly share a storm water project we have implemented thanks to the generous and sustained support from New York State's Green Innovation Grant Program and NYC DEP's Resilient NYC Partners program.

This past fall, we broke ground on a comprehensive system that will manage about 51 million gallons of stormwater runoff annually, diverting it from entering the Owl's Head sewer shed during storm events. This including subsurface detention basins connected to a bioswale, replacing asphalt with permeable pavers, and retrofitting the pond that feeds into the city sewer system with a smart sensor that will control the outlet valve draining the water level down 24-hours ahead of a storm, increasing the pond's capacity to collect and store stormwater runoff. Additionally, a water harvesting system will be installed



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at the pond so that we can use this water to irrigate our gardens and newly planted trees and reduce potable water consumption by 8 million gallons a year.

The climate crisis is happening now, and it demands that private institutions join their public counterparts, along with city and state governments to make radical changes. No green space in NYC, public or private, big or small, is an island. What happens at Green-Wood does not just affect us, but all those who live around us. We hope that our work sets a model for the city's largest greenspaces.

I'd like to personally invite members of this committee to visit Green-Wood and see the forward-looking work we're doing to benefit Brooklynites and all of us as we battle the effects of climate change. My contact information is in the printed testimony and I look forward to welcoming you all soon.

Joseph Charap
Vice President of Horticulture
jcharap@green-wood.com

Southeast Queens Residents Environmental Justice Coalition
POB 128059
St. Albans, N.Y 11412

April 25,

2024

Good Morning Councilmembers,

My name is William Scarborough, and I am a former state assemblymember representing the 29th Assembly District in Queens. I am currently the president of the Southeast Queens Residents Environmental Justice Coalition, an environmental justice organization in Queens. I am also the president of the Addisleigh Park Civic Organization in Queens. I am speaking in support of Intro. 403, a local law proposed by Public Advocate Jumaane Williams. This law would require that the Dept. of Environmental Protection submit quarterly reports detailing the inspection, cleaning and maintenance of catch basins, listed by community board. Additionally DEP would be required to ensure that catch basins are inspected at least annually, and that a catch basin that is reported or found to be clogged, will be addressed within five days.

We are strongly in support of this legislation- our area of Southeast Queens is subject to persistent flooding, and many residents , institutions and businesses suffer from flooding in their basements 24 hours a day, seven days a week. Part of the problem in our community is due to a high water table, where the standing water level is higher than the basement level, rain or shine, and water continually intrudes into these locations. Another part of our problem is a lack of sewer infrastructure, where build-out is required. A third problem that has plagued our area is a lack of regular maintenance of our catch basins and sewers, and delays in addressing clogged or malfunctioning catch basins.

We have had numerous meetings and town hall forums over the last decade seeking to address our flooding issues. We have requested information from DEP about the scheduling of catch basin maintenance. We were told at one point that they schedule maintenance on a regular basis, going from community board to community board. My recollection is that they outlined a schedule where each board was addressed roughly every two years or so, and that information was never conveyed in writing. To my knowledge, there is no place on the DEP website or elsewhere for the public to access a catch basin maintenance schedule.

This legislation would require that DEP provide regular reports to the council and the Public Advocate detailing its maintenance activities, and that maintenance be done annually in each community board. This

requirement would be of great assistance in reducing flooding in our community. We would add a request that there be included a site or a mechanism on the DEP website where interested citizens can access this information regarding maintenance schedules and repairs or unclogging of catch basins.

We are also in support of Intro. 814 by Councilmember Gennaro. DEP is acutely aware of areas that regularly flood, and this legislation would push DEP to proactively identify and address these locations.

Thank you for your consideration.

Sincerely,

William Scarborough, President

Southeast Queens Residents Environmental Justice Coalition

President,

Addisleigh Park Civic Organization

City Council Hearing on Flooding and Stormwater Infrastructure
April 26, 2024

Good afternoon, Council Members –

My name is Dinu Ahmed and I'm a public defender and long-time resident of East Elmhurst. I am calling in from my basement office today because East Elmhurst has been dealing with toxic sewage backup flooding our homes for years, which is endangering our lives, health and property.

The first storm I can recall was in 2007 when my family's home had over three feet of sewage back up into our garage and basement. When Hurricane Ida happened on September 1, 2021, we had five feet of sewage backup that led to catastrophic damages. I was in the basement just minutes earlier, and the toxic waters entered with such force, and so rapidly that we were left counting the steps before the waters rose to the first floor. The back door became waterlogged and swollen shut in the frame. I have no doubt that had I been down there, my basement would have been a death trap. Other parts of our community had documented cases of six to seven feet of water – an entire floor, flooded.

On that day, we called 311 and 911 and for the first time I can recall, I received a busy signal and was unable to get through to emergency personnel. A woman two doors down in her basement who was home alone made a desperate call to her partner on the phone. She had to climb up on a table to stay above the water. Her door, like all of ours was swollen shut from the volume of water. Ultimately she had to be pulled out through her window to survive.

When Hurricane Ida happened, East Elmhurst made international news due to our failing infrastructure and the horrific fatalities that resulted. Despite the loss of life and President Biden's visit to the area, the sympathy did not move the city to take substantive action. No structural improvements have been made to my block. Two years later, in 2023, I experienced three subsequent instances of sewage backup, and after the remnants of Tropical Storm Ophelia hit us on September 29, 2023, I found myself gutting the basement for the second time in two years. In my haste to grab my things on that day as the waters were rising, I was electrocuted and did not realize at first that current was flowing through my body.

This is a life-threatening issue, where inadequate city infrastructure is not adapting to climate change, and the limited capacity of the city's sewer lines are leading to backups within private homes that our putting our lives at risk. Beyond the prospect of drownings, there are a myriad public health concerns from exposure to toxic unfiltered wastewater, mold growth in homes where residents may not be able to afford proper remediation after flooding, and electrical shock.

East Elmhurst is also an area with a significant elder and immigrant population, creating vulnerabilities that exacerbate the risks we face that may not exist to the same extent in other parts of the city. As a result, not everyone can access resources to rehabilitate themselves and mitigate the collateral health risks I have mentioned.

With every heavy rainstorm, we're out of bed, watching the water levels in the street, adjusting flood quick dams against our basement doors all the while knowing they'll do nothing to stop the flooding caused when the city lines in our streets are overcome and back up through our internal plumbing. We have nightmares of dying in our homes because the city has neglected us, despite knowing how high a price this neglect can cost.

In February, after years of appealing for change, the DEP attended a community forum where they mentioned a 17-month drainage study would be conducted in East Elmhurst, followed by two years of

design work, indicating that no sewer upgrades will be made in East Elmhurst until 2027 at the earliest. Where does that leave us over these next four years?

If tomorrow or next year, we have one more fatality, every elected and agency has been on notice of how grave the risks are for our area. City inaction will be left on the record. There should not be a price tag on life.

This testimony is not just to raise grievances but to share our ideas for how to move forward. We have ideas and examples to look to for how we can keep ourselves safe. East Elmhurst may not have the racial demographics and income of neighboring Maspeth, but there is no reason why our lives would be worth less. In Maspeth, there has been a massive multimillion dollar investment in overhauling the ancient sewer lines and yet Maspeth has never experienced anything close to the volume of sewage flooding we have had, which has ranged from three to seven feet of wastewater across multiple cloudburst events. We are asking for the same valuing of our lives as our neighbors and an overhaul of our sewer lines, starting now.

While that project is underway, we need intermediary measures to keep our homes safe.. We want every homeowner in East Elmhurst experiencing massive sewage backup to have subsidized sewer check valves installed. And because check valves will require breaking through our asbestos laden floors, we want safe and subsidized asbestos abatement. We want our streets to be leveled so water doesn't flow towards our homes. And lastly, we want the DEP working hand-in-hand with community members, with real on the ground engagement throughout this process.

Questions for consideration:

- How are communities prioritized for sewer upgrades?
- Where is the accountability over the federal funds our neighborhood should have received from Ida? Why do our communities not know about where those funds are, who is overseeing them, and how they will be spent? I have asked every elected for our area and the commissioner, and I have yet to get any clarity over what agency is overseeing the funds and how east Elmhurst will benefit.

April 26th, 2024

Installation of new rain gardens

Hurricane Ida and the recent storm on September 29th devastated basements through sewer backup, resulting in thousands of dollars in lost items and damage. East Elmhurst received significant sewer backup and although the city has built new green infrastructure in the neighborhood it is not nearly enough to account for the rapidly changing climate and the preexisting issue of rampant street ponding that exists across the neighborhood.

Some street ponds never evaporate and result in unsanitary living conditions for residents of the neighborhood, often harboring mosquitoes and making flooding worse during heavy rainfall.

I strongly support Proposed Resolution 144-A which would allow for additional funding for stormwater infrastructure. The neighborhood would greatly benefit from additional rain gardens and catch basins as many blocks have no more than 1 catch basin if they have any at all.

Additional funding for rain gardens would provide a sustainable way to help reduce the burden on the sewer system.

Regular cleaning and maintenance of Sewer Mains

In addition to regular maintenance of catch basins proposed in [Intro 403](#), it is critical that the DEP ensure that sewer mains are properly cleaned on a regular schedule every 3-5 years to prevent basement flooding as a result of sewer surcharge during heavy storms.

The National Water Main Cleaning company, a contractor working for the DEP, has been cleaning sewer mains in East Elmhurst since December and nearly 2 months cleaning on our block.

Since July 2023, we've had at least 6 storms that have resulted in various levels of basement flooding. During the cleaning of the sewer mains on our block, we've had at least one heavy storm in March and although it was not as severe as Tropical Storm Ophelia last year, for the first time since September of 2023, homes on our block did not flood. Previously, lesser storms resulted in sewer backup.

In addition to these two proposals, there is no denying the need for larger sewer mains and a separation of stormwater lines from our sewer mains which would reduce sewer backups.

Thank you for your consideration

Nabil Jamaledine

**THE COUNCIL
THE CITY OF NEW YORK**

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

in favor in opposition

Date: 4/26/24

(PLEASE PRINT)

Name: Angela Licata

Address: Deputy Commissioner Sustainability

I represent: DEP

Address: _____

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Date: 4/26/24

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Name: Tasos Georgelis

Address: Deputy Commissioner Water and Sewer Operations

I represent: DEP

Address: _____

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Name: ERIC GOLDSTEIN

Address: _____

I represent: NATURAL RESOURCES DEFENSE COUNCIL

Address: 40 WEST 20 ST NY NY

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Name: Kathryn Mallon

Address: Chief Operating Officer

I represent: DEP

Address: _____

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Name: Rohit Aggarwala

Address: DEP Commissioner

I represent: _____

Address: _____

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Date: _____

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Name: JOE CHARAP

Address: 500 29th STREET, BROOKLYN 11232

I represent: GREEN-WOOD CEMETERY

Address: 11

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Date: 4-26-24

(PLEASE PRINT)

Name: ANGELA LICATA

Address: NYC DEP

I represent: _____

Address: _____

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I intend to appear and speak on Int. No. _____ Res. No. _____

in favor in opposition

Date: 4/26/2024

(PLEASE PRINT)

Name: Theodora Makris

Address: [REDACTED] Brooklyn 11211

I represent: The center for NYC Neighborhoods

Address: 55 Broad Street, 10th Fl, NY NY 10024

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