

Emergency Response for Major Flooding:  
*Evacuation of Basement Apartments*

*New York City, New York, USA*



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Management of Public Health Disasters  
Fall, 2021

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## Preface

As of 2019, approximately 8.5 million people reside in the boroughs of New York City. Most live in safe residences, with emergency exits and evacuation plans. However, almost 100,000 people live in illegal cellar or basement apartments, which are unsafe as they are often without adequate egress. Residents in these types of basement apartments are at high risk for injury, displacement, or even death during storm surges that result in major flooding. Emergency evacuation plans do not exist for many if not most of these illegal apartments.<sup>1</sup> According to the New York City Housing Preservation and Development website:<sup>2</sup> In New York City, basements of one and two-family homes can be lawfully occupied only if the following conditions are met:

- The room complies with the requirements of the Housing Maintenance Code for rooms not located in the cellar or basement, e.g., minimum room size.
- There is a minimum ceiling height of 7 ft.
- The walls, as high as ground level, must be damp- and water-proofed if HPD determines that subsoil conditions on the lot require it.
- The basement is occupied by only members of the family or families occupying the dwelling.

Basements in a one-family home can be lawfully rented only if the following conditions are met:

- Compliance with the Housing Maintenance Code for minimum room size.
- There is a minimum ceiling height of 7 ft.
- The walls, as high as ground level, must be damp- and water-proofed if HPD determines that subsoil conditions on the lot require it.
- The basement is occupied by one family and does not include borders.
- Every room must have at least one window.
- The bottom of any yard or other required open space cannot be higher than six inches below the windowsill of any required window in the room.

Basements in a two-family home cannot be lawfully rented:

- If the rental of a basement in a two-family dwelling would result in changing the status of the building to a multiple dwelling (three-family or more) and would require a new Certificate of Occupancy issued by the Department of Buildings. Please call 311 for more information on compliance.

## Cellars

- Cellars in one- and two-family homes can never be lawfully rented. Cellars in one- and two-family homes cannot be lawfully used for sleeping, eating, or primary.

The need for an emergency evacuation plan for cellar and basement apartments in New York City was evident during Hurricane Ida of September 2021, which generated major flooding and took the lives of 13 NYC residents: of these, 11 were tenants of these basement apartments.<sup>3</sup> An evacuation plan does not exist because these apartments are not legal. There is a need for various emergency response departments, such as the New York City Department of Emergency Management, American Red Cross, fire departments, police departments, and Emergency Medical Services, to collaborate in carrying out an effective evacuation plan for tenants of basement apartments.

## Signature Page

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New York City Emergency Management date

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New York City Police Department, Chief date

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New York City Fire Department, Chief date

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American Red Cross GNY Region, Regional Disaster Officer date

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New York City Department of Buildings date

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New York City Mayor's Office date

## Mission Statement

*MISSION, New York City Office of Emergency Management*

To help New Yorkers before, during, and after emergencies through preparedness, education, and response.

## Statement of Purpose

The purpose of this plan is to mitigate deaths, injuries, and displacement of tenants residing in cellar and basement apartments in New York City. Major flooding occurs during hurricanes and tropical storms, which have increased in frequency and severity in recent years. This plan will prepare tenants for major flooding by educating them on safe evacuation procedures, how to protect themselves and their living space in the event of major flooding, and how to access information regarding storm warnings and finding temporary shelters.

## Authorities

Occupants of illegal basement and cellar apartments face potential dangers such as carbon monoxide poisoning, inadequate light and ventilation, vermin infestation and mold, and inadequate egress in the event of a fire or flood. Occupants of illegal basement and cellar apartments may be ordered by the city to vacate and leave any illegal basement or cellar apartment. Basements and cellars in residential properties of all sizes can NEVER be lawfully rented or occupied unless the conditions meet the minimum requirements for light, air, sanitation, and egress, and have received approval by the Department of Buildings (DOB).<sup>2</sup>

Both the Housing Preservation and Development and Department of Buildings may inspect for illegal occupancy of basements or cellars. Each agency may issue violations and finds for illegal occupancy conditions or issue Vacate Order that the occupant leave the illegal space. If a Vacate Order is issued by either agency, the occupant is advised that they can receive relocation services through HPD. Property owners will face a lien for any costs incurred by the agency and provide relocation services (which may include temporary housing) to any occupants who receive these services. These costs can be significant.

If the Vacate Order is issued by HPD, the agency will notify the owner and occupants and provide an enforcement date. HPD will re-inspect the premises on the enforcement date to verify the illegal basement or cellar apartment is vacant and properly sealed.

## Definitions and Acronyms

**DOB:** Department of Buildings

**HPD:** The Department of Housing Preservation and Development of New York City

**Basement:** a part of the house that is below curb level with at least one half of its height above curb level

**Cellar:** a part of the house that is below curb-level but less than one half of its height is above curb level

**Flash Floods:** Rapid flooding in low-level areas brought on by heavy rain from intense storms or large amounts of water from melted ice or snow

**Climate Change:** Human-induced global warming caused by excess emissions that has resulted in poor air quality, intensified storms, and irregular weather patterns

**Disaster:** a unexpected or sudden event that has a magnitude that extends beyond local response capacity and requires outside resources and assistance

**Emergency:** an immediate threat to people's lives, health, property, or surrounding environment

## Communication Plan

### *Alert System*

A city-wide text message alert system will be implemented via mobile phone carrier companies to communicate the status of the impending disaster. When the National Weather Service issues a Flood Watch, a message will be sent through this alert system that a flood is possible and to begin preparations for possible evacuation to nearby shelters. If the Flood Watch escalates to a Flood Warning, a message will be sent through this alert system that a flood is imminent or occurring and to act. Both these messages will have a link to a map of available shelters.

### *Internal*

At the time of an imminent or ongoing flooding emergency, New York City Emergency Management will immediately notify all first responders, field workers, and personnel of all available details of the event. These responding groups include the NYPD, FDNY, and American Red Cross. The American Red Cross Disaster Action Team will be responsible for communicating with shelter facilities and hotels for displaced individuals, food vendors for

shelters, all in contact with police and fire departments, local hospitals, and local public health organizations. Additionally, the Command Staff will designate someone from the External Relations Team to use the Red Cross Emergency Alert System to create a notification for people in threatened areas. The Command Staff will communicate the Red Cross' status and overall responsibilities during the given event to the responding personnel, in addition to the immediate roles and responsibilities of the responding groups and personnel.<sup>4</sup> To ensure prompt and orderly communication, a staff directory and telephone tree should be created and used. In the likely event that primary communication methods are compromised (mobile phones, email, etc.), long-distance walkie talkies and satellite telephones should be available and used.

### *External*

Red Cross management personnel will contact appropriate external agencies and organizations. Specifically, for large events, the Red Cross Command Staff is responsible for the management of the overall disaster response operation and the Disaster Action Team is responsible for this during smaller incidents.<sup>4</sup> Externally, the Command Staff will communicate with elected and government officials and community organizations to ensure appropriate response.<sup>4</sup> The Red Cross External Relations team will communicate with Emergency Management officials, community members, private sector donors, the media, and the public.<sup>4</sup> The External Relations Team will also be responsible for communicating with threatened populations and communities through the Red Cross Emergency Alert System. The Red Cross Coordinating Officer will work closely with the External Relations team to secure the appropriate response of state emergency departments and medical services.<sup>4</sup> Long-distance walkie talkies and satellite telephones should be pre-arranged and available to all external partners and groups.

## **Mutual Aid Agreement**

The office of New York City Emergency Management is responsible for coordinating citywide emergency planning and response for all types and scales of emergencies. It is staffed by more than 200 dedicated professionals with diverse backgrounds and areas of expertise, including individuals assigned from other City agencies. NYCEM also works closely with a wide range of community and governmental organizations.

Among those organizations are:

FDNY

NYPD



EMS

New York City Shelters

New York City Food Kitchens

New York City Mayor's Office

New York City Department of Buildings

## Concept of Operations

### Overview

This preparation and response phase concept of operations aims to prevent and mitigate the threats and impacts of major flooding events in New York City. These events in NYC are intensifying, which is resulting in exacerbated risks for tenants of basement apartments. Importantly, illegal basement apartments are not uncommon in NYC, and their occupants are often socially disadvantaged people, only adding layers of vulnerability during disaster events. It is estimated that there are at least 50,000 illegal basement apartments with 150,000 or more tenants in New York City. Basement apartments, regardless of safety or legality, are utilized by tenants who cannot afford safer living conditions in the city and are most often, the occupants are immigrants who rely on jobs that are in the city.<sup>5</sup> There are potentially another 30,000 illegal basement apartments the government does not know about, with the majority concentrated in rent-burdened communities of color.<sup>6</sup> Efforts have been made by the local government to bring these apartments up to code; however, many property owners fear fines if the Department of Buildings or Department of Housing Preservation and Development find the hidden apartments.<sup>6</sup> Therefore, many of these basement tenants remain at risk for damage, injury, or death from flooding.

### Preparation

During the Preparation Phase, public health officials and local fire department chiefs will lead community preparedness programs implemented through school systems, faith-based organizations, immigrant outreach organizations, networks of food pantries and soup kitchens, and other community channels. This plan provides a general overview of those programs and their purposes.

## **Create Your Own Disaster Plan**

### *Operational Goal*

One of the important goals of our outreach training program to reduce risk is to target middle and high school students and provide them with the tools needed to create and practice individualized flood evacuation plans with their families and potentially fellow building tenants. The goal is to reduce risk for tenants of illegal basement apartments.

It is important to acknowledge that many tenants of illegal basement apartments face societal barriers that can prevent them from accessing any disaster preparedness information. NYC's housing landscape is such that multiple families may live in a single building, which provides a unique opportunity to share information regarding disaster flood preparedness with individuals living in illegal basement apartments. This program engages students from NYC's school districts in efforts to reach tenants of basement apartments and illegal basement apartments.

### *Operational Components*

#### *Phase 1*

The first phase of this program delegates public health officials and local fire department chiefs to hold informational assemblies at NYC elementary, middle, and high schools to teach students about major flooding events. Specifically, students should be taught about the dangers of flooding, what to do in the event of a flood, how to prepare, the importance of preparing, how to prepare, as well as fundamental components of a flood evacuation plan (egress routes and means of calling for help if trapped).<sup>7-9</sup>

#### *Phase 2*

The second phase of this program tasks students with creating and practicing a flood evacuation plan with their families.<sup>7-10</sup> Students will be sent home with informational materials that were discussed in the assembly as well as a flood evacuation checklist that requires a parent/guardian signature upon completion.

#### *Phase 3*

The third phase of this program provides students with a flyer to take home to their family to inform them of community training seminars. These seminars will be like the grade school assemblies but will provide more information and context.

## **Community Preparedness Seminar for Adult Tenants of Basement Apartments**

### *Operational Goal*

The purpose of this seminar is to provide attendees with the knowledge and tools necessary to adequately prepare for a flooding emergency while living in a basement apartment or illegal

basement apartment. Attendees are largely expected to be tenants of legal and illegal basement apartments. To reach these populations, fliers will be distributed within popular community spaces such as schools, recreation centers, cafes, libraries, food trucks, apartment complexes, and more. These fliers will contain information regarding the seminar date, time, topic, and location. Additionally, fliers should clearly state that this seminar is solely an informational seminar and that it does not cost money or ask for any identifying information.

#### *Operational Components*

##### *Seminar Teachings*

This seminar will first present important disaster flooding information and preparedness to attendees.<sup>9</sup> Specifically, the seminar will review and teach about the different types of floods, what to do before, during and after a flood, and common myths surrounding floods and flood preparedness. The seminar will then ask attendees to form small groups to participate in rotating discussions and activities involving the following materials and topics.

##### *Be Red Cross Ready Checklist*<sup>8</sup>

This checklist will be given to attendees during the seminar to assess their own disaster preparedness. The checklist asks the reader if they know what disasters happen in their area, if they have an evacuation plan, if they have an emergency supplies kit, and other disaster preparedness fundamentals. Additionally, the checklist lists resources for various courses and apps to help people prepare for disasters.

##### *Emergency Preparedness and Supplies Kits*<sup>11</sup>

The seminar will provide basic but important medical and disaster supplies that will enable each attendee to make their own emergency kits in the presence and with the help of professionals. Attendants will be taught and shown how to use the supplies by professionals if they are not confident in their current ability.

##### *Waterproofing Documents*<sup>12</sup>

Attendees will be provided with waterproofing document covers to use for important documents including birth certificates, tax information, identification, money, and more. The seminar will review how and where to safely store these documents to ensure they are protected during a flooding disaster.

##### *Go-bag*<sup>13</sup>

The seminar will review important items that all tenants of basement apartments should have in the case of an evacuation. This should include medications, clothes, shoes, chargers, hygienic items, first aid kits, back up money if possible, and even important documents. Professionals at the seminar should help attendees to individually brainstorm and make a list of items for their

own go-bag. We will request items from large corporations via email to provide items for this study (Annex 4).

#### *Evacuation Plan*

The seminar will provide the time, tools, and professionals that are needed to support attendees' ability to create a personalized evacuation plan. Attendees will have the opportunity to ask professionals about specific and individualized evacuation plans. This is extremely important because many basement apartments and illegal basement apartments have different and non-traditional layouts that may make creating an evacuation plan more difficult (Annex 3).

### **City-wide Alert System**

#### *Operational Goal*

This robust alert system will build on proposed and existing alert systems to ensure all tenants of basement apartments - regardless of socioeconomic status or basement legality - are immediately and continually alerted of any major flooding threats in their area.<sup>15</sup>

#### *Operational Components*

#### *Anonymity*

This city-wide text message alert system will be implemented through mobile phone carrier companies to prevent tenants of basement apartments from having to disclose any identifying information to the local government body. This is a crucial factor to implement because it acknowledges that some tenants of basement apartments may be hesitant to disclose their identity in fear of facing repercussions for things like renting illegally or undocumented status.

#### *Shelter Locations*

This text message alert will contain a link to a map of local shelters that threatened basement apartment tenants can evacuate to in the case of an emergency flood. Receivers of the text alert will be able to view exact locations of and receive detailed directions to local shelters set up by Red Cross, FEMA, and local fire departments. This shelter location map will also provide information regarding whether or not it is safe to evacuate to a specific shelter.

### **Response**

When a flood watch (possibility of a flood occurring) escalates to a flood warning (imminent or active flooding), the alert system will be activated by the New York City Office of Emergency Management, which will initiate the Incident Command System (Annex 2). The incident commanders in the case of flooding include the Department of Health, the Department of Housing, and local fire departments, acting as a unified commander. However, in the event of

flooding, the fire department will be the lead agency to immediately begin urban search and rescue.

Additionally, they will oversee the operations section, which includes overseeing the Hazmat Branch, Medical Branch, and Public Works. The leaders of the Hazmat and Medical Branches will work together to detect, monitor, and register patients, injuries, and casualties. Public Works will work with Interior Drainage as the flood unfolds in an attempt to reduce flooding damage in basement apartments.

The planning section will assist in evacuation, EMS search and rescue, and staging patients for triage in the First Aid area, in which local police officers will be able to assist in identifying missing persons, potential rescue missions, and personal damage. The leaders of the planning section will be communicating with the logistics staff, in which the NYCOEM cooperates with the Red Cross and FEMA to manage shelters, food, water, and medical supplies.

Lastly, the financial sector will begin working with tenants and families to obtain documentation on potential property lost. Additionally, this will act as a resource to numerate how many apartments may need rehabilitation and how many tenants will be in need of temporary housing due to displacement.

## **Evaluation**

In the most recent flooding emergency that New York City faced in September 2021, Hurricane Ida, eleven people died due to flooding of illegal basement apartments. Prior to this event, there have been limited efforts to improve illegal basement apartments and little to no effort to create evacuation plans for these tenants. Soon after Hurricane Ida, government officials began working on alert systems and evacuation routes, however, these have yet to be published. Therefore, this plan has incorporated recommendations to educate the communities, encourage property owners and tenants to work together to create evacuation plans and kits, and work with the American Red Cross, FEMA, and local fire departments to aid in primary and secondary evacuation.

# Appendix

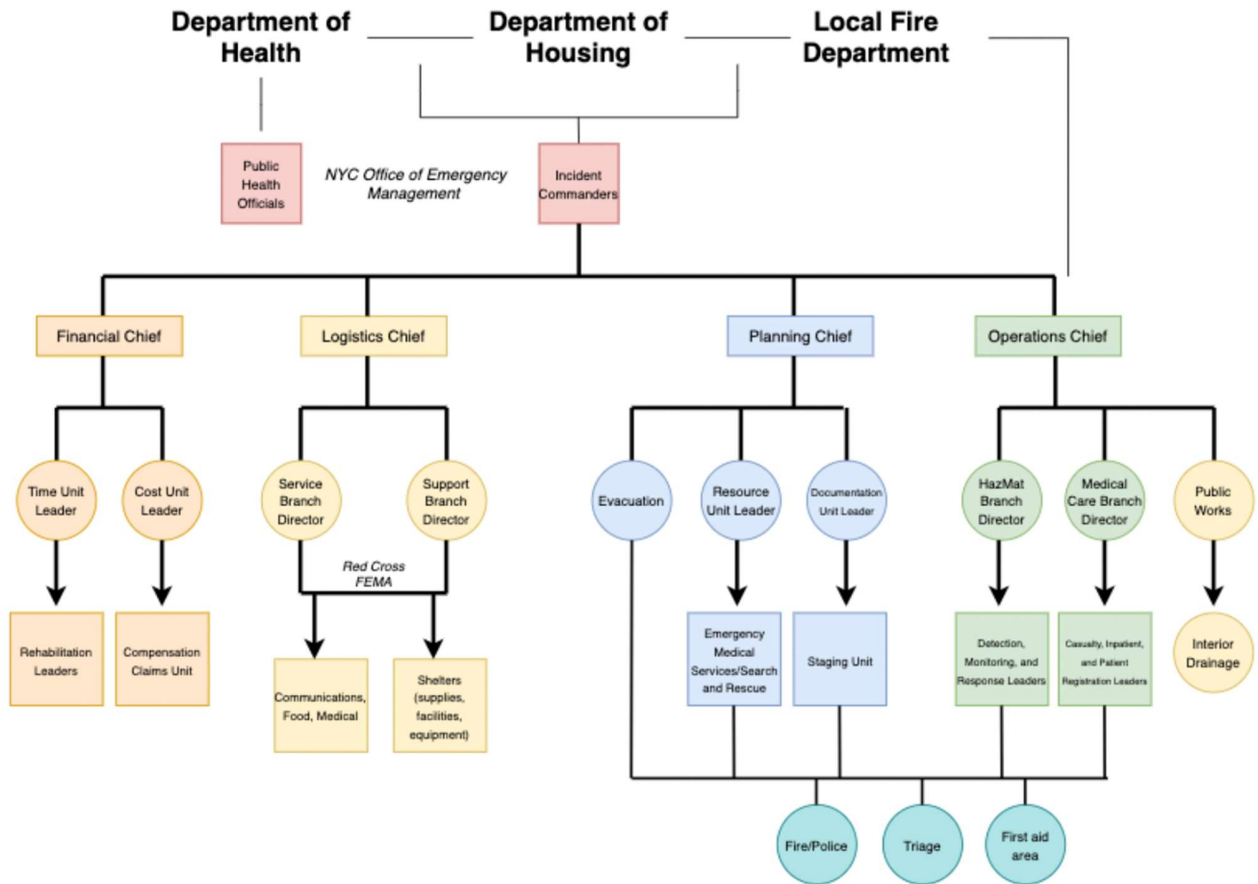
## Annex 1: THIRA

### Threat and Hazards Assessment Table: New York City

<b>Natural</b>	<b>Technological</b>	<b>Human-caused</b>
Resulting from acts of nature	Involves accidents or the failures of systems and structures	Caused by the intentional actions of an adversary
<p><b><u>Hurricanes</u></b> New York City is affected by hurricanes that can lead to flash flooding and unsafe conditions. The effects of hurricane Ida were destructive.</p> <p><b><u>Air Pollution</u></b> Bronx has the highest rates of air pollution in NYC averaging 7.8 micrograms per meter of fine particulate matter (PM2.5).</p> <p><b><u>Extreme Heat</u></b> Extreme heat is one of the most significant hazards facing New York City, and New Yorkers are especially vulnerable to extreme heat-related hazards during the summer months. Generally, extreme heat is defined by temperatures that hover 10 degrees or more above the average high temperature for the region, last for prolonged periods of time, and are accompanied by high humidity.</p> <p><b><u>Winter Storms</u></b> New York City winters, which often bring extreme cold, heavy snow, ice, sleet, and</p>	<p><b><u>Housing Quality</u></b> Lower-level New York City apartments are prone to flooding as well as old apartments/homes who have old infrastructure.</p> <p><b><u>Building Collapsing</u></b> New York City is filled with large buildings and skyscrapers. A building collapse or explosion may result from structural damage, a gas leak, or from being an old foundation.</p> <p><b><u>Transportation Failure</u></b> In New York City many rely on subways and public transportation which sometimes fail and breakdown which may lead to casualties.</p> <p><b><u>Lead posing/ Exposure</u></b> Due to old housing and structures the pose of lead paint or lead particulars might be present in NYC housing facilities. In 2018, at least 19 children contracted lead poisoning while living in public housing apartments that NYCHA supervisors falsely claimed had been properly cleaned of lead paint, according to the city Department of Investigation.</p>	<p><b><u>Gang Related Violence</u></b> New York City includes gang activity which can lead to mass casualties due to shootings and violence.</p> <p><b><u>Robbery</u></b> High rates of robbery are reported in some New York City boroughs.</p> <p><b><u>Cyberattacks</u></b> Cyberattacks can lead to loss of money, theft of personal information, lack of safety &amp; privacy, and disrupt business and infrastructure.</p> <p><b><u>Terrorism</u></b> NYC has experienced traumatic 9/11 terrorism attack &amp; other terrorist attacks. However, monitoring and preventing attacks as well as safety</p>

<p>freezing rain, can pose serious hazards.</p> <p><b><u>Thunderstorms &amp; Lightning</u></b>  New York State is considered to have a "moderate" occurrence of lightning, with 3.8 strikes occurring per square mile each year.</p> <p><b><u>High Winds</u></b>  High winds are commonly associated with severe thunderstorms, tornadoes, and coastal storms and hurricanes; however, they may also occur because of differences in air pressures, such as when a cold front pass across the area.</p> <p>High winds can cause downed trees and power lines, and flying debris, which may lead to power outages, transportation disruptions, damage to buildings and vehicles, and serious injury.</p>		<p>precautions have risen.</p>
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**New York City Basement Flooding  
Annex 2: Incident Command System**





**Annex 3: Community Training Plan** <sup>8-13</sup>

<b>Training Seminar Title:</b> <i>New York City Basement Flooding Community Training</i>	
<b>Objectives:</b> Flooding Preparedness and Safety	<ol style="list-style-type: none"> <li>1. Review weather conditions that result in flooding (Red Cross Flooding Safety)</li> <li>2. Review readiness checklists and provide equipment to make emergency aid kits.</li> <li>3. Create and review evacuation plans.</li> <li>4. Review how to act during and after a flood</li> </ol>
<b>Estimate Length of Training:</b>	75 minutes – to be repeated quarterly
<b>Target Audience and Max Size of Audience:</b>	Building managers/staff and residents of buildings with basement/cellar apartments and the tenants of these apartments
<b>Facilitators:</b>	Local fire department and EMS chiefs and local public health official
<b>Community Key Takeaways:</b>	<ol style="list-style-type: none"> <li>1. For building managers, staff, or residents: improve basement or cellar apartments such that they are up to the New York City Housing Preservation and Development Department codes and/or evict tenants if apartments cannot be updated to safe living conditions.</li> <li>2. For basement/cellar tenants, follow Be Ready Red Cross Checklist to make emergency aid kits and have an emergency evacuation plan that all tenants are familiar with.</li> <li>3. Create emergency contact lists.</li> <li>4. Sign up for alert systems.</li> <li>5. Understand the difference between flash floods and flood warnings.</li> <li>6. Teach families how to prevent damage from flooding.</li> </ol>
<b>Strategies to Increase Community Uptake:</b>	<ol style="list-style-type: none"> <li>1. Post fliers around neighborhoods in stores, cafes, and schools to raise awareness and attendance of classes.</li> <li>2. Provide this seminar to children in grade schools via assemblies to ensure information is understood at all levels.</li> </ol>

	<ol style="list-style-type: none"><li>3. Provide plastic sheet covers for preparing important documents to be protected from the flood.</li><li>4. Provide training on basic first aid.</li><li>5. Provide pamphlets to all attendees regarding all information discussed as they can share and review with family and friends.</li></ol>
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#### **Annex 4: Email to Corporations**

Date: November 29, 2021

To: Laysha Ward and Brian Cornell

From: Marissa Sogluizzo, Mentalla Abbas, Ashlynn McCool

RE: Emergency Preparedness Go-Bag Donations

As the Chief External Engagement Officer and the Chief Executive Officer of the Target corporation, I am writing to you both to request donations for an emergency preparedness project that focuses on tenants living in basement apartments in New York City.

During Hurricane Ida in September 2021, 11 out of 13 people who died due to flooding were tenants of basement apartments, which were mostly illegal. Other recent events, such as several major flooding events, have continued to highlight that the most vulnerable population during natural disasters are the tenants of legal and illegal basement apartments.

In New York City, there are over 150,000 residents, including children, living in illegal basement apartments that do not meet the Department of Housing living standards, increasing the risk for injury and death during flooding disasters due to lack of egress routes. Additionally, tenants face personal loss and damage as well due to lack of education and preparedness. With that said, we aim to educate these communities through community training seminars, in which preparedness techniques and evacuation guidelines are discussed. One of the most important features of this seminar will include waterproofing important documents and creating emergency go-bags. We would like to provide important items for go-bags include first aid kits, flashlights, phone chargers, blankets, toothbrushes and toothpaste, pillboxes, whistles, gloves, underwear, socks, water, feminine hygiene products, pet care products, and plastic sheet covers for important documents. We would be very grateful if you could donate any of these items to our project.

If you have any comments, questions, or concerns, please contact our team via email or telephone at your convenience.

We look forward to your response and working with you!

Sincerely,

Marissa Sogluizzo, Mentalla Abbas, Ashlynn McCool with advisement from

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