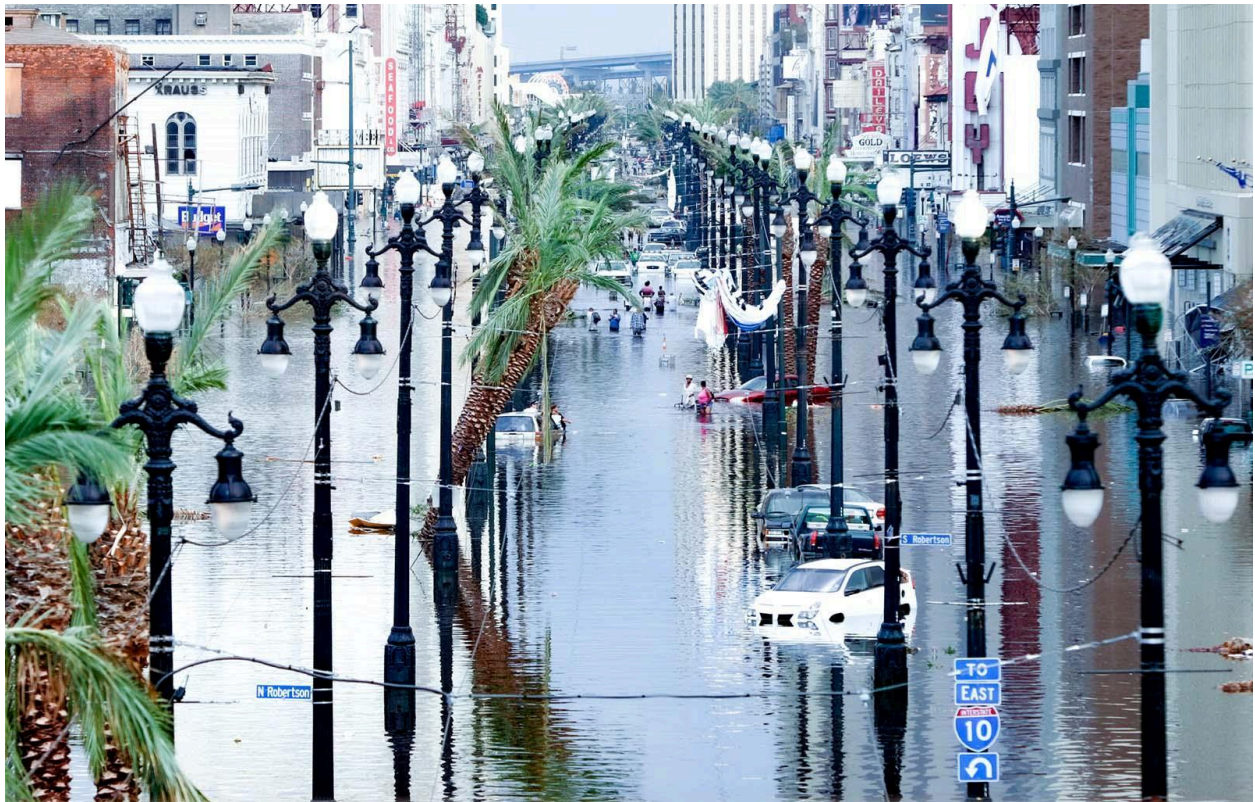


# Flood Emergency Plan

## NOLA Health Department, New Orleans, Louisiana



Kartiki Vaidya, Mahnoor Ahmed, Rebekah McNeill, & Korian Thomas  
GPH GU 5150  
June 7, 2024

## **Table of Contents**

Preface.....	3
Signature Page.....	4
Mission and Statement of Purpose.....	5
Authorities.....	5
Definitions.....	5-6
Communications Plans.....	6-7
Mutual Aid Agreement.....	7
Public Health Concept of Operations .....	8-10
Annex 1.....	11-12
Annex 2.....	13-14

## **Preface**

New Orleans, Louisiana, is located in the southern United States, close to the gulf of Mexico and the Mississippi river. The city of New Orleans is 10 to 15 feet below sea level. The distance from the Mississippi river to Lake Pontchartrain in New Orleans is only 5 to 10 miles.

In terms of demographics, as of 2021, New Orleans had approximately 369,000 people living there. About 59% of the population is Black, while 31% are White, 4% are White Latino/a/x, and 3% are Asian. With respect to gender, 53% of the population is female and 47% are male. A majority of the population (55%) is between 20 and 60 years old and just 4% of the population is 80 years old or above. In the state of Louisiana, a large proportion, 34% of the population, have a disability. This includes: self-care related disabilities (5%), vision related disabilities (7%), hearing related disabilities (7%), independent living related disabilities (9%), mobility related disabilities (16%), and cognition related disabilities (17%). Specifically, in the city of New Orleans, 10% of the population aged 16 to 64 have disabilities.

Flooding in New Orleans tends to occur in June, July, and August, the rainy months in Louisiana. Rainfall varies in the city, although even a 1-2 inch rainfall can cause flooding of 6-10 inches because of the Mississippi River. Hurricanes, which are also a hazard in New Orleans, can add an average of 6 to 12 inches of rainfall and cause flooding.

Flooding is a major issue in New Orleans and one that will continue in the city due to its topography. The city does have an emergency flood plan on its Ready NOLA website. The article is lengthy and details different information and strategies about the risk of flooding in the city. Ideally a preparedness document like this would be 50-70 pages long and be written clearly enough so that any emergency staff member could read and understand it easily.

## Signature Page

I have read the NOLA Health Department Flood Emergency Plan and approve the implementation of the plan course of action in the case of a major flood occurrence in New Orleans. By signing below I agree to collaborate to support this plan in the case of a flood emergency:

\_\_\_\_\_  
NOLA Health Department Director

Date: \_\_\_\_\_

\_\_\_\_\_  
New Orleans Mayor

Date: \_\_\_\_\_

\_\_\_\_\_  
Louisiana Department of Health State Health Officer

Date: \_\_\_\_\_

\_\_\_\_\_  
Louisiana Department of Health  
Director of Emergency Preparedness

Date: \_\_\_\_\_

\_\_\_\_\_  
Louisiana Department of Health  
OPH Medical Director

Date: \_\_\_\_\_

## **Mission of Facility**

The mission of the NOLA Health Department is to promote, protect and improve the health of all in our community through equitable policies, programs, and partnerships.

## **Statement of Purpose**

The purpose of this flood plan is to provide a procedure for the NOLA Health Department to follow that will ensure the health needs of individuals in New Orleans.

## **Authorities**

- Federal Government
  - Federal Emergency Management Agency (FEMA)
- City government of New Orleans
- State Government
  - Louisiana Emergency Operations Plan (EOP): Highlights the roles of the Louisiana Department of Health when preparing for, responding to, and recovering from emergencies i.e. flooding
  - Louisiana Administrative Code– Title 48-Public Health-General: includes regulations pertaining to healthcare facilities’ operations particularly for emergency preparedness

## **Definitions**

- **Flood Emergency Plan:** A detailed strategy developed to manage and mitigate the effects of flooding, ensuring the safety and well-being of the affected population.
- **NOLA Health Department:** The public health authority for the city of New Orleans, Louisiana, responsible for promoting and protecting the health of the community.
- **Flood:** An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer term event than flash flooding: it may last days or weeks.

- **Flash flood:** A flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.
- **Flood Warning (FLW):** A release to inform the public of flooding along larger streams where there is a serious threat to life or property.
- **Flood Watch:** Issued to inform the public and cooperating agencies that conditions are such that there is a threat of flooding, but the occurrence is not certain or imminent.
- **Flood Wave:** A rise in streamflow to a crest and its subsequent recession, caused by precipitation, snowmelt, dam failure, or reservoir releases.
- **Flood Routing:** The process of determining the timing, shape, and amplitude of a flood wave as it moves downstream
- **Flood Inundation Mapping (FIM):** Expected maximum inundation extent over a specific period, derived using the Height Above Nearest Drainage (HAND) method.

## **Communication Plans**

In the case of a flood warning in the state of Louisiana and/or the city of New Orleans, the NOAA Weather Radio and the Emergency Alert System will communicate the emergency to the impacted area. Should a flood state of emergency be declared, members of NOLA Health Department Emergency Flood Plan will be contacted via text, followed by phone call, followed by a call to an emergency contact. Members will be notified of any need to report to the Department of Emergency Preparedness for further instruction. The NOLA Health Department will monitor the situation regarding flood impact and determine the need to implement the Emergency Flood Plan.

Residents of New Orleans will also receive alerts from the NOAA Weather Radio (NWR) and Emergency Alert System (EAS). NWR notifications can be specified to each parish of the

greater Orleans area and can also be placed in “stand-by” mode at night when severe weather is most common in Louisiana. Residents additionally have the option to sign up for alerts from the City of New Orleans by texting “NOLAREADY” to 77295. This system will further allow residents to provide any information that may need to be shared with emergency responders and local emergency management professionals. Information communicated via this method will be utilized in further planning for flood emergency response by the NOLA Health Department.

### **Mutual Aid Agreements**

- American Red Cross
- FEMA
- Louisiana Department of Environmental Quality
- Louisiana Department of Children and Family services; family support
- Second Harvest Food Bank
- SocialServe.com Housing Resource Helpline
- United Way for South Louisiana
- Louisiana 2-1-1
- Louisiana Voluntary Organizations Active in Disasters (LVOAD)
- Volunteer Louisiana
- Feeding Louisiana
- New Orleans Medical Reserve Corps

## CONOPS

### **Assessing the Needs of those Impacted by Floods**

New Orleans has a population of around 369,000, consisting of roughly 350 square miles and is situated about 10 to 15 feet below sea level.<sup>3</sup> Approximately 181 square miles of the city comprises lakes and rivers. The distance from the Mississippi river to Lake Pontchartrain in New Orleans is only 5 to 10 miles.<sup>3</sup> New Orleans has 24 drainage pump stations, with 120 pumps in total working at any given time. The time of greatest rainfall in New Orleans is the summer, specifically from June to August, but the occurrence of hurricanes can extend the rainy season through November. Due to the location's high susceptibility to flooding, a disaster response requires assessing the needs of the general population that is affected including vulnerable groups, including the elderly, low-income families, disabled, etc. The general needs following a flood typically include evacuation assistance i.e., transportation, medical care, non-perishable food and water, access to sanitation facilities, and universal communication. Vulnerable populations include people with disabilities (especially those with mobility challenges and those who require special medical equipment), individuals with caregivers, people of color, senior citizens, low-income families, individuals residing in group homes, children, pregnant women, and other marginalized groups. Non-English speakers are at increased risk of adverse disaster-related outcomes because of communication challenges.

### **Matching Available Resources to the Needs**

To ensure that vulnerable populations are adequately reached in disaster mitigation, communication is prioritized. The NOLA Ready initiative provides New Orleans residents with the Smart911 system through which they can receive alerts from the city regarding emergencies. The system then allows participants to communicate any need for personal transportation in the event of an emergency, any need for communication equipment or an interpreter, or the existence of a health condition that may worsen during an emergency in which healthcare services may be interrupted.<sup>1</sup>

Once needs are identified, the New Orleans Office of Transportation will advise and organize safe transport of individuals in need. The LA Commission for the Deaf will coordinate interpreter services for the deaf and hard of hearing individuals in need. The New Orleans



Language Access Coordinator will determine availability and arrangement of interpreters to aid those unable to communicate in English. The New Orleans Bureau of Regional and Clinical Operations will organize medical directors and nursing services available to aid in care coordination during evacuation and rescue processes. The services covered by these departments aim to provide vulnerable populations with the specialized care necessary to meet their unique needs.

### **Evaluating the Effectiveness of the Disaster Response**

The effectiveness of the disaster response plan can be evaluated by assessing how well it meets the needs of the affected population, including both the general population and vulnerable populations. The plan identifies a number of general needs, including evacuation assistance, provision of medical care, food, water, sanitation, and communication. The plan also identifies a number of needs specific to vulnerable populations, such as medical equipment, caregivers, and interpretation services.

The plan allocates resources to address each of these needs. For example, the plan allocates the New Orleans Office of Transportation to provide evacuation assistance, and the LA Commission for the Deaf to coordinate interpreter services for deaf and hard of hearing individuals.

Evaluating the effectiveness of the New Orleans Health Department's disaster response involves assessing several key areas:

1. **Preparedness and Planning:** The department has initiatives for various public health emergencies, including flu season, facility preparedness, and medical reserve corps participation.
2. **Response Execution:** Effectiveness is measured by how quickly and efficiently resources and services are mobilized during a disaster.
3. **Communication:** Clear, timely information dissemination to the public and coordination with other agencies are critical.
4. **Recovery Support:** Assistance provided for long-term recovery and mental health services.

5. **Community Feedback:** Incorporating feedback and improving strategies based on past experiences.

### *Areas for Improvement*

Based on the evaluation results, the disaster response plan could be improved, for example, in the following ways:

- Develop a plan to ensure that sanitation needs are met during a disaster.
- Identify and address communication barriers for non-English speakers.
- Improve the plan for distributing food and water in a timely manner.
- Ensure that the quality of care provided in emergency shelters meets the needs of the affected population.

By continuously evaluating and improving the disaster response plan, communities can better prepare for and respond to disasters, ensuring that the needs of all affected populations are met.

### *Additional Considerations*

In addition to the metrics mentioned above, there are a number of other factors that can be considered when evaluating the effectiveness of a disaster response plan. These include:

- The cost of the disaster response plan
- The sustainability of the plan
- The impact of the disaster on the environment
- The long-term recovery needs of the affected population

By considering all of these factors, communities can develop disaster response plans that are both effective and sustainable.

Evaluating the effectiveness of a disaster response plan is an essential part of disaster preparedness. By regularly evaluating the plan and making improvements as needed, communities can ensure that they are better prepared to respond to disasters and meet the needs of all affected populations.

## Annex 1: Threat and Hazards Assessment Table: New Orleans, Louisiana

Natural	Technological	Human-caused
Resulting from acts of nature	Involves accidents or the failures of systems and structures	Caused by the intentional actions of an adversary
<ul style="list-style-type: none"> <li>● Flooding: The city’s location near the Gulf of Mexico, was historically a wetland area. Thus when swamps were drained, it caused land levels to sink. The city is now 6 feet below sea level on average.</li> <li>● Tropical cyclones/Hurricanes: Due to climate change, shape of the sea floor, and the position along the Gulf of Mexico, the city is more vulnerable to tropical cyclones.</li> <li>● Heavy Rainfall: Intense rain over a short period causing flash floods due to seasonal weather and tropical storms.</li> <li>● Coastal Erosion: The city is susceptible to coastal erosion particularly in areas outside of the levees (eastern and southern parts of the parish). The erosion is caused by various factors including sediment supply, wetland plant health, water quality, sea level change, and subsidence.</li> <li>● Drought: Occasionally, the city faces droughts.</li> </ul>	<ul style="list-style-type: none"> <li>● Levee failure: Levees are an integral part of the state’s flood control system. Some were originally built long ago and thus when it fails or is overtopped, severe floods occur and high water velocities.</li> <li>● Power Outage: Loss of electrical power as a result of storm damage to infrastructure which leads to a disruption of services, communication failures,, health and safety risks.</li> </ul>	<ul style="list-style-type: none"> <li>● Terrorism: Due to the amount of materials that are imported and exported through the city’s ports, river infrastructure, and highways create a crucial challenge to control and monitor. In addition to this, economic and social influence causes the threat to be higher in the city.</li> <li>● Industrial accidents: Industrial areas are located near residential zones and as it floods, hazardous materials emerge from the sites.</li> <li>● Infrastructure failure: Due to flood events, there is damage to crucial infrastructure.</li> </ul>

Late August to late November has been classified as extreme drought conditions.		
---	--	--

**ANNEX 2:**

<b>Training Seminar Title: (Disaster Specific)</b>	
<b>Objectives of your Training Seminar (What mitigation strategy are you advocating?)</b>	<p>The purpose of the training is to provide extensive knowledge about the hazards related to flooding.</p> <ol style="list-style-type: none"> <li>1. New staff will participate in a three day training.</li> <li>2. New staff will learn about the risk of flooding in the New Orleans area.</li> <li>3. New staff will learn about the groups most vulnerable during flooding (People with Disabilities, rehabilitation centers, assisted living facilities, etc.)</li> <li>4. New staff will be divided into groups and participate in hands-on activities so that they can aid in patient evacuations.</li> <li>5. New staff will analyze data related to evacuation groups and learn how to report that data to emergency responders.</li> <li>6. New staff will collect and share resources about flooding.</li> </ol>
<b>Estimate Length of Training</b>	3 days
<b>Target Audience and max size of audience.</b>	New staff at the health department/medical center
<b>Who would be a good candidate (e.g., structural engineer, health dept. official, first responder?) as Facilitator of this session? Why?</b>	Health department official with emergency preparedness background who can utilize training to guide planning; emergency management specialist; Healthcare workers who have experience with flooding and can share knowledge.

<p><b>What do you want community members to do as a result of their attending this session?</b></p>	<p>Understand the specific flood risks in New Orleans and the impact flooding would have on their health center.</p> <p>Understand how to assist most vulnerable groups during evacuations.</p> <p>Prepare facilities in which they work to manage and navigate flood mitigation.</p> <p>Contribute knowledge and training to their community that is at risk of the impacts of flooding.</p> <p>Exercise teamwork and team-building skills for emergency preparedness and mitigation.</p>
<p><b>Strategies to increase community uptake of your mitigation</b>          (We have lots of useful links for checklists on the Course Home page under the Important Links page.)</p> <p>List the ones you think might be useful (in the appropriate language) or provide a title or two of a list or handout that you think would be good to give out to attendees.</p>	<ol style="list-style-type: none"> <li>1.Utilize social media, local news, and community bulletin boards to raise awareness and encourage participation.</li> <li>2.Provide incentives such as free flood-proofing materials, emergency kits, or discounts on home insurance for participants.</li> <li>3.Offer no-cost workshops on flood mitigation techniques, making them accessible to all community members.</li> <li>4.Collaborate with local NGOs, community groups, and schools to reach a wider audience and promote attendance.</li> <li>5.Offer childcare services during workshops to enable parents to attend without concern.</li> <li>6.Comprehensive list of steps for families to prepare for a flood.</li> <li>7.Template for families to create their personalized evacuation plans.</li> </ol>

## References:

1. NOLA Health Department. New Orleans Health Department. nola.gov. Updated May 31, 2024. <https://nola.gov/health-department/>
2. Cowen Institute. Life After High School 2022: New Orleans Demographics. 2022. <https://cowendata.org/reports/life-after-high-school-2022/new-orleans-demographics-1>
3. Chang A. How Humans Sank New Orleans. The Atlantic. February 13, 2018. <https://www.theatlantic.com/technology/archive/2018/02/how-humans-sank-new-orleans/552323/>