

HARTFORD, CONNECTICUT EMERGENCY OPERATIONS PLAN
ANNEX N
FLOOD EVACUATION for LEVEE PROTECTED AREAS
JULY 1, 2009
REVISED 3/10/2016

**HARTFORD, CONNECTICUT
EMERGENCY OPERATIONS PLAN**

**ANNEX N
FLOOD EVACUATION FOR LEVEE
PROTECTED AREAS**

July 1, 2009
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Submitted By:



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Emergency Management Director

5/24/16

Date

Approved By:



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6-6-16

Date

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I. PURPOSE

This annex to the City of Hartford's Emergency Operations Plan (EOP) was developed to define:

- The performance and functions of an orderly and coordinated evacuation in the event of a flood.
- Possible sheltering considerations for the identified resident population.

II. SCOPE

This Annex will be activated during times of significant flooding (detailed within) in the City's Levee Protected areas. The Annex enhances the City's EOP specifically for the levee protected areas. Residential property owners are responsible for personal pre-flood preparedness. Non-residential commercial property owners are responsible for maintaining site specific plans necessary to mitigate property loss and assure business continuity as deemed appropriate. Specifically this annex assigns roles and responsibilities for City departments but does not detail the operational features of tactical functions. The Hartford Levee Protected Areas are described in greater detail within this plan.

III. SITUATION AND ASSUMPTIONS

A. SITUATION

1. ***Hazard Analysis Summary:*** A hazard analysis of the Hartford Levee system along the Connecticut River was conducted in 2008 and concluded that if the levee were to breach, a significant hazard would be presented which may require the evacuation of a portion of Hartford's population under certain conditions¹. The hazards identified are the result of simulated levee breaches assuming 100-year and 500-year flood conditions defined as a 1 % annual chance flood and a 0.2 % annual chance flood, respectively. The possible inundation of flood waters from those breaches is indicative of Hartford's Levee Protected Areas and includes four major neighborhoods bordering the levee system itself: North Meadows, Downtown, Sheldon / Charter Oak, and the South Meadows.

Hartford Levee Breach Analysis Mapping is included as Appendix A to help illustrate potential flood inundation levels and flood sequences.

¹ The firm of Fuss & O'Neill conducted a breach analysis of Hartford's Flood Control System – issuing its report of findings in November of 2008 –Environmental Services Contract # 6079

2. The system protects about 3,000 acres of highly developed residential, commercial, and industrial areas in the capital City of Hartford from flooding, primarily within the Downtown, Sheldon/Charter Oak, North Meadows, and South Meadows neighborhoods. The population within the levee protected area is approximately 11,447 people during the day and 3,765 at night, according to the National Levee Database, developed by the U.S. Army Corps of Engineers. The extent of any evacuation will be based on the “anticipated” extent of flooding affecting these residents.
3. **Capability Assessment:** As the largest municipality in the region Hartford maintains sufficient capacities and capabilities to manage an evacuation from the Levee Protected Areas. The City may require assistance for mass care and animal response depending on the number of individuals and animals needing temporary sheltering or housing as a result of being displaced from their homes. The extent of this displacement can exceed the City’s current capabilities requiring the City to rely on regional, state, and federal assistance.
4. **Mitigation Overview:** It is the goal of this flood evacuation plan to mitigate loss of life and property in the event of a levee breach or a significant flood condition. The primary mitigation strategy revolves around citizen preparedness and timely dissemination of critical elements of information. The City of Hartford Department of Health and Human Services has a primary role in providing public health emergency preparedness education and will use those same strategies for coordinating pre-event citizen education and preparedness measures in conjunction with the City’s emergency management services. All City departments will ensure department / event specific standard operation policies/procedures are in place and that all employees are knowledgeable of plans and procedures applicable to them and their department. Hartford’s Public Information Office will be responsible for coordinating all public messaging and preparedness alerts and warnings as events escalate requiring evacuation. Further, the City of Hartford follows NIMS (National Incident Management System) and the Incident Command System (ICS) guidelines; as such City employees will be trained to the appropriate NIMS/ICS level in accordance with the City’s NIMS / ICS training matrix.
5. The City of Hartford Department of Public Works will utilize four (4) phases of Hartford Levee Action and Notification Levels. (Associated actions for each are detailed in Sec. III – Concept of Operations-sub. B)
 - A. **Phase I Flood Monitoring:** Begins when the Connecticut River reaches 12.0 feet gage datum.
 - B. **Phase II Flood Monitoring:** Begins when the Connecticut River reaches Moderate Flood Stage (24.0 feet gage datum).

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C. **Levee Breach Early Warning:** Issued when the Connecticut River is expected to reach the 100-Year Frequency Stage (31.2 feet gage datum) OR at lower stages if conditions exist at the levee that could potentially require the evacuation of the protected area.

D. **Levee Breach Final Warning** – Issued when the Connecticut River exceeds the 100-Year Frequency Stage (31.2 feet gage datum) OR at lower stages if, in the judgment of a qualified inspector, a failure of the levee is likely.

Appendix B, *Hartford Levee Notification Flowchart*, is included in this Annex to provide a visual representation of notifications expected to take place in order to “operationalize” this Annex. Appendix C, *City of Hartford Department of Public Works Flood Control Contact Information*, provides the DPW personnel responsible for flood control activities for the City.

B. ASSUMPTIONS

1. The public will receive and understand official information (warnings) related to the evacuation.
2. The public will act in its own interest and evacuate dangerous areas when there is sufficient warning of a threat. Between 5 and 20 percent of the people at risk are expected to evacuate before being directed to do so.
3. Some people will refuse to evacuate, regardless of the threat.
4. Some owners of pets and animals will refuse to evacuate unless arrangements have been made to care for their animals.
5. Approximately 20 percent of the population at risk will require displacement or evacuation to a shelter/mass care facility. Evacuees will be encouraged to seek shelter with relatives and friends or in motels rather than use government-provided shelter/mass care facilities.
6. The City of Hartford will operate an evacuee processing/reception center and temporary shelter at the Hartford High School field house located at 55 Forest Street.
7. Other shelter options may be necessary depending on total number of evacuees in need of assistance. Those options include the Connecticut State Armory, other Hartford school facilities, and support from other communities within the Capitol Region Emergency Planning Committee (CREPC).

8. The City of Hartford Department of Health and Human Services will provide support to the City's Office of Emergency Management and the American Red Cross in management of their shelter(s) and temporary housing for displaced persons.
9. Designated evacuation routes will be marked by the City's Department of Public Works.
10. The Levee Protected Areas consist of four city neighborhoods, North Meadows, Downtown, Sheldon / Charter Oak, and South Meadows. Residents will be instructed to use designated evacuation routes when given the order to evacuate.
11. Evacuation during emergency situations that occur with little or no warning will be implemented on an *ad hoc* basis. The incident commander (IC) at the scene of the emergency will be the person responsible for implementing the evacuation. The emergency operations center (EOC) will support this decision as necessary. Evacuation instructions will be based on real or anticipated flooding in the Levee Protected Areas.
12. This plan assumes a severe levee breach during a 500-year Flood Stage on the Connecticut River.
13. When available, the military (as approved by the Governor) will support the incident commander in these evacuation efforts.

IV. CONCEPT OF OPERATIONS

A. GENERAL

1. The responsibility for ordering evacuation rests with the City of Hartford's Mayor, or anyone legally administering that office. In instances where emergent action is required for localized evacuation the Fire Chief or senior fire officer-in-charge (Incident Commander) has statutory authority to order an evacuation.
2. The evacuation of "special needs" populations associated with facilities housing or caring for this population group is specified in those facilities' own emergency plans. Traditionally these would include Skilled Nursing Facilities (SNF), day care centers, shelters for the homeless and public and private schools. However, there are no SNFs located within the Levee Protected Areas. Housing managed by the City's Housing Authority can be expected to house the more vulnerable, and/or transportation dependent citizens, who may require assistance. It is the Housing Authority's responsibility to maintain site specific plans for evacuation or sheltering in place. Further, the City's Housing Authority is responsible for communicating special needs assistance requirements to the City's Emergency Management office.

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Prisoners in police holding cells will be the responsibility of the Police Department. The CT Department of Corrections (CT-DOC) facility located on Weston Street will be the responsibility of the CT Department of Corrections for development of site specific evacuation and/or sheltering in place strategies. It will be the responsibility of the CT-DOC to provide the City with a copy of any evacuation plan as deemed appropriate. The EOC will notify local motels and hotels in the affected area. Hotel guests are assumed to have their own transportation. Residents and transients without transportation should call the number identified by the City's Public Information Office.

3. If an evacuation is ordered, the City of Hartford will appoint an Evacuation Coordinator as determined by the Emergency Management Director and the Mayor. Elements of an evacuation plan are included as Appendix C, *Elements of Evacuation Incident Action Plan* to assist the City's incident management team in applying planning and functional tasks to an evacuation of the Levee Protected Areas.
4. The Hartford Public Information Officer (PIO) is responsible for keeping the evacuees and the general population informed on evacuation activities. (See EOP Annex D - Emergency Public Information).
5. The departments of Emergency Services and Police will develop and maintain necessary options and appropriate evacuation routes to protect and move people away from the Levee Protected Areas in Hartford.
6. Personal vehicles will be the primary resource for transportation. This will be supplemented by any City van or bus services either owned by, or contracted to the City as well as CT-Transit buses from the state. Under certain or extreme circumstances, Hartford emergency vehicles, or public works trucks, etc. may be used.
7. The Evacuation Coordinator will use pre-designated assembly areas or identify assembly areas in hazard areas for collection and transportation of residents in need of transportation. Pre-designated areas serving as potential collection points for residents are included in Appendix D *Evacuation Collection Points*.
8. The Evacuation Coordinator and the Police Department will develop an evacuation movement control procedure.
9. The Police Department is responsible for access control to the evacuation area(s). The Public Works Department will assist in access control by providing vehicles and barricades.

10. The Police Department is responsible for the protection of property in the area(s) that have been evacuated.
11. The Evacuation Coordinator will develop a standard operating procedure (SOP) to outline the provisions that have been made for the return of people to their homes.

B. HARTFORD LEVEE ACTIONS AND NOTIFICATION LEVELS

Monitoring of the Hartford levee system during a flood event will be performed by Hartford Department of Public Works (DPW) staff in accordance with the procedures outlined in the latest version of the Operation and Maintenance (O&M) Manual. Hartford DPW staff will also be responsible for determining when the levee system is at each of the five stages described below. *Note that river stages listed below refer to United States Geological Survey (USGS) Gage # 01190070, located on the downstream side of the Bulkeley Bridge, and use National Geodetic Vertical Datum (NGVD) 29 datum, (hereafter referred to as "gage datum").*

1. **Phase I Flood Monitoring:** Begins when the Connecticut River reaches 12.0 feet gage datum. Hartford DPW staff will do the following:
 - Take advance measures to ensure the availability of adequate labor and materials to meet all contingencies. Flood operations are controlled from the South Meadows Pump Station.
 - Perform an initial project inspection as outlined in the O&M Manual when the Flood Stage is initially forecasted.
 - Patrol the levee in accordance with the O&M Manual while the river is in Flood Stage (16.0 gage datum). Patrol teams should adhere to the procedures and equipment lists in the O&M Manual, and should look particularly for:
 - Sand boils or other wet areas on the land side of the levee
 - Slides or sloughs in levee embankment
 - Wave wash or scouring on the river side of the levee embankment
 - Low areas along levee crest
 - Settlement or movement of flood walls
2. **Phase II Flood Monitoring:** Begins when the Connecticut River reaches Moderate Flood Stage (24.0 feet gage datum). Hartford DPW staff will do the following:
 - Establish a Flood Operation Control Center in the Emergency Operation Center at the Public Safety Complex at 253 High Street if the river stage reaches 24.0 feet. Procedures and equipment lists outlined in the O&M Manual should be followed. Key City officials should participate or be represented continuously for the duration of the flood.

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- Patrol levee in accordance with the O&M Manual at least every eight (8) hours once the river stage reaches 24.0 feet gage datum. The levee should be patrolled continuously when the river reaches Major Flood Stage (28.0 feet gage datum) and special watchmen assigned at critical locations.
 - Assist the Communications Director in keeping the public informed of the current situation through the media, if warranted.
3. **Levee Breach Early Warning:** Issued when the Connecticut River is expected to reach the 100-Year Frequency Stage (31.2 feet gage datum) OR at lower stages if conditions exist at the levee that could potentially require the evacuation of the protected area:
- Hartford DPW staff will inform appropriate City of Hartford officials that certain conditions at the levee site exist that may require the evacuation of residents in the levee protection area within several hours to avoid loss of life in the event of a levee failure.
 - The City of Hartford has the authority and responsibility of alerting potentially affected residents and businesses of the possibility that evacuation may become necessary. This public notice should be performed in accordance with the City of Hartford's Emergency Operations Plan.
4. **Levee Breach Final Warning:** Issued when the Connecticut River exceeds the 100-Year Frequency Stage (31.2 feet gage datum) OR at lower stages if, in the judgment of a qualified inspector, a failure of the levee is likely.
- Hartford DPW staff will inform appropriate City of Hartford Officials that a Final Warning should be issued, who will in turn issue an evacuation order to residents within the levee protection area.
 - Designated local emergency response officials have the authority to order the evacuation. An evacuation notice should be performed in accordance with the City of Hartford's Emergency Operations Plan.
5. **All Clear Notice:** In the event that an Early or Final Warning is issued and/or an evacuation occurs; the following steps must be taken;
- Hartford DPW staff will determine if the flood emergency has been abated. The levee safety emergency can be considered abated when the river has subsided below Flood Stage or the emergency situation has been stabilized.
 - Hartford DPW staff will have the levee inspected by a licensed professional engineer experienced with levees.

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- Hartford DPW staff will inform appropriate City of Hartford Officials that an All Clear Notice should be issued if the levee is not found to be in danger of failing.
- City of Hartford Officials may then issue an All Clear Notice allowing the return of evacuated residents.
- The All Clear Notice will be issued via the same mechanisms and media as the flood warnings.

C. MUTUAL AID AND REGIONAL RELATIONSHIPS

1. The City of Hartford is a participant in mutual aid as part of emergency preparedness through CT General Statute 28-22.a *Intra-State Mutual Aid Compact*. In an emergency of a local nature, the Region 3 Coordinator for CT-Department of Emergency Management and Homeland Security (DEMHS), as well as the Capitol Region Emergency Planning Committee (CREPC) Emergency Support Function -5 (ESF-5 Emergency Management) on call Duty Officer will be notified. When feasible these notifications should take place as early as possible to provide an elevated alert status. Communities with mutual aid agreements specific to elements of this plan will be alerted. The mutual aid agreements, verbal and written, will be utilized if feasible and necessary.

Mutual aid assistance from other communities, volunteer organizations, private agencies, and the state and/or federal governments will be requested by the Mayor or his or her duly authorized designee, and coordinated by the Evacuation Coordinator and the Emergency Management Director.

2. Regional assistance is provided through the Capitol Region Emergency Planning Committee (CREPC). CREPC is responsible for the CT-Region 3 Regional Emergency Support Plan (R3-RESP). The R3-RESP follows NIMS and the National Response Framework and is used to provide a coordination mechanism for intra and inter regional resources in conjunction with the CT-DEMHS Region 3 Coordinator. The R3-RESP is activated through the Regional Integrated Coordination System (RICS) via phone, or through the Inter-City radio network. (The R3-RESP can also be activated through the Region 3 DEMHS Coordinator).

V. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

The City of Hartford's Emergency Operations Plan (EOP).defines the organization for managing all emergencies. Specific to flood evacuation, the following also apply:

MAYOR:

1. Issues a local State of Emergency declaration.
2. Directs the Evacuation Coordinator to report to the Emergency Operations Center (EOC) when notified of an emergency situation.
3. Issues a statement explaining Hartford's policy when people do not comply with evacuation instructions. The statement addresses the consequences for not evacuating and the services (food, medical, utilities, sanitation, etc.) that will be discontinued or interrupted in the evacuation area.
4. Issues evacuation instructions or an evacuation order when appropriate.

EVACUATION COORDINATOR:

1. Upon arrival at the EOC, reviews known information about the emergency situation and makes recommendations to the Emergency Management Director on the appropriate evacuation options to implement.
2. Determines any scene(s) which the Incident Commander (IC) may have already evacuated. If so, identifies the perimeters.
3. Identifies assembly areas for picking up people who need transportation.
4. Identifies evacuation routes.
 - Estimates the traffic capacity of each designated evacuation route.
 - Selects evacuation routes from risk areas to designated shelter/mass care facilities.
 - Examines access to and evacuation from each part of the risk areas.
 - Prepares the evacuation movement control plan.
 - Coordinates with law enforcement officials.
5. Assists, as appropriate, the animal care and control officers' efforts to evacuate animals at risk.

EMERGENCY MANAGEMENT DIRECTOR:

1. Makes recommendations to the Mayor on the appropriate evacuation options to implement.
2. Identifies that functional coordinators are clear on locations of shelter/mass care facilities outside of the risk areas that will be used to house evacuees.
3. Coordinates with and assists the Animal Care and Control Coordinator to identify facilities that may be used to house evacuated animals.

4. Arranges the move to an alternative/appropriate back up EOC location In the event the City's EOC must be evacuated.

DEPARTMENT OF PUBLIC WORKS:

1. Operates and maintains the flood control system for the levee protected areas.
2. Monitors Connecticut River levels / flood stages, and the flood control levees.
3. Verifies the structural safety of evacuation routes (roads, bridges, railways, etc.).
4. Assists the HPD with traffic control measures, e.g. barricades, as necessary.
5. Maintains vital City facilities.
6. Removes debris.
7. Provides damage assessments.

POLICE DEPARTMENT:

1. Provides traffic control during evacuation operations. Operational considerations include:
 - Route assignment and departure scheduling.
 - Road capacity expansion.
 - Entry control for outbound routes.
 - Perimeter control on inbound routes.
 - Traffic flow, including dealing with breakdowns.
 - Establishment of rest areas.
2. Secures, protects, and houses prisoners that must be evacuated.
3. Assists in the evacuation of the risk areas, as necessary.
4. Protects property in the evacuated areas.
5. Limits access to the evacuated areas.
6. Coordinates with the Evacuation Coordinator.
7. Provide Crowd control.

EMERGENCY SERVICES AND TELECOMMUNICATIONS:

1. Provides alert and emergency warning capabilities through reverse notification technologies.
2. Provides city wide communications.
3. Provides dispatch for police, fire and EMS.
4. Provide support to the Flood Operation Control Center

FIRE DEPARTMENT:

1. Assists with alert and emergency warning if needed.
2. Provides Rescues as required.

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3. Assists with access control.
4. Coordinates Emergency Medical Services (EMS) responses with contracted EMS providers).
5. Responds when requested to manage hazardous materials problems.

PUBLIC INFORMATION OFFICER (PIO):

1. Disseminates the following types of instructional materials and information to the public and evacuees:
 - Identification of the specific area(s) to be evacuated.
 - List of items that evacuees should take with them (such as food, water, medicines, portable radios, fresh batteries, clothing, and sleeping bags).
 - Departure times.
 - Pick-up points for people requiring transportation assistance.
 - Evacuation route maps and directions.
 - Location of shelters or mass care facilities outside of the evacuation areas.
2. Keeps evacuees and the general public informed on evacuation activities and the specific actions they should take.
3. Disseminates information on appropriate actions to protect and care for companion animals that are to be evacuated.

SHELTER/MASS CARE COORDINATOR
(Department of Health and Human Services):

1. Activates staff and opens shelter/mass care facilities outside the evacuation areas when directed to do so by appropriate authority.

HEALTH AND MEDICAL COORDINATOR
(Director, Department of Health and Human Services):

1. Ensures applicable health code provisions are complied with before re-entry or re-population of Levee Protected Areas.
2. Determines that any affected patient population within the Levee Protected Areas is reduced as appropriate if evacuation becomes necessary.
3. Evaluates and report that transport and medical care are provided for the patients being evacuated.
4. Coordinates with other agencies and facilities for continued medical care for patients who cannot be moved when hospitals, nursing homes, and other health care facilities are evacuated.
5. Provides food and sanitary inspections at designated City shelters.

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HARTFORD PUBLIC SCHOOLS:

1. Evacuates students from school buildings when the situation warrants or when directed to do so by appropriate authority.
2. Closes school facilities and releases students from school when directed to do so by appropriate authority.
3. Coordinates, where appropriate, the use of school buses/drivers to support the overall evacuation effort.
4. Makes available, where appropriate, school facilities and personnel to aid in the temporary sheltering of affected Levee Protected Areas residents.

**ANIMAL CARE AND CONTROL COORDINATOR
(Animal Control Officers – Hartford Police Department):**

1. Makes an initial estimate of the numbers and types of animals that may need to be evacuated based on information on the Levee Protected Areas in Hartford provided by the Evacuation Coordinator,
2. Coordinates with the Evacuation Coordinator to arrange travel routes and schedules the timing for evacuation of animals in kennels, veterinary hospitals, pet stores, animal shelters, and wildlife (as appropriate) from the risk area.
3. As appropriate, mobilizes transportation vehicles (stock trailers, trucks equipped with animal cages, etc.) that may be used to evacuate the animals.
4. Implements evacuation by sending evacuation team(s) to load and transport the animals being evacuated.
5. Dispatches search and rescue teams to look for animals left behind by their owners, stray animals, and other animals needing transport to a safe location when appropriate.

ALL TASKED ORGANIZATIONS:

1. All departments with resources or assets located within Hartford's Levee Protected Areas are responsible for maintaining plans to provide services from backup locations; as well as make provisions to protect and secure facilities and equipment not removed from the evacuation area.
2. Identify and make provisions to relocate organizational equipment and supplies that will need to be moved from the evacuation area.

Appendix E, *First Hour Emergency Checklist*, is included in this Annex to assist the City in the tracking and execution of certain critical task during the earlier stages of a citywide emergency event.

VI. ADMINISTRATION AND LOGISTICS

A. ADMINISTRATION

The government for the City of Hartford is responsible for all people and property within its City boundaries to the limit of Hartford resources.

1. The Evacuation Coordinator is responsible for maintaining complete records and reports tracking the status of evacuation events, including:
 - Evacuation notices.
 - The number of people evacuated.
 - The number of evacuees in shelter or mass care centers (this is done in conjunction with the Shelter/Mass Care Coordinator).
2. The Hartford Police Department is responsible for maintaining up-to-date evacuation route maps with primary and alternate designated evacuation routes.

B. LOGISTICS

1. The Evacuation Coordinator in conjunction with the City's procurement Manager will make provisions to move from the evacuation area those essential supplies and equipment items needed to sustain operations and to meet the needs of evacuees. Typical items include:
 - Food.
 - Water and water trailers.
 - Medical supplies.
 - Food, carriers, leashes, etc. for animals.
 - Sanitation devices.
 - Portable generators and lighting devices.
 - Gas and diesel fuel.
 - Public works equipment and vehicles such as bulldozers, graders, dump trucks, snowplows, etc.
 - Police and fire fighting vehicles, etc.
2. Mutual aid agreements with neighboring jurisdictions identifying the support (law enforcement personnel, vehicles to transport evacuees, shelter/mass care staff and facilities, etc.) to be provided by the jurisdictions to facilitate evacuation operations.
3. Coordination of resources and assistance through the DEMHS Region 3 / Capitol Region – Regional Emergency Support Plan outside of standard mutual aid agreements referenced in item # 2 supra.

4. Support may be requested from various private and volunteer organizations. These organizations will assist in the manner best suited to their respective capabilities.

VII. PLAN DEVELOPMENT AND MAINTENANCE

This annex shall be reviewed and updated by the Emergency Management Director as changes occur throughout the year. All changes in the annex, its attachments, standard operating procedures and other necessary implementing documents shall be forwarded to the Emergency Management Director as they occur. At a minimum this annex will be reviewed and updated every two (2) years. The Emergency Management Director shall decide whether or not an updated portion should be reproduced and sent to all holders prior to the completion of the two-year review cycle.

VII. AUTHORITY AND REFERENCES

Authority for this annex is contained in the City of Hartford's Emergency Operations Plan; Title 28, Chapter 517 of the Connecticut General Statutes, as amended; CT General Statutes Title 7, Chapter 98; FEMA's Guide for All- Hazard Emergency Planning (SLG 101); and such Executive Orders, Charter Provisions, and Hartford city Ordinances or Special Acts as may be applicable.

This annex will become effective upon the approval of the Mayor, the Emergency Management Director and the Hartford Flood Commission. When approved, this annex will supersede any and all previously written and approved Flood Evacuation plans for the Levee Protected Areas.

APPENDIX A – HARTFORD LEVEE BREACH ANALYSIS MAPPING

Fuss & O’Neill, Inc. performed a breach analysis of the Hartford Levee system to provide critical information to emergency planners regarding the possible timing and extents of flooding for several hypothetical levee breach scenarios. To facilitate the analysis, a computer model of the levee and protected area was developed using topographic data for the area and FEMA hydraulic data for the Connecticut River.

A hypothetical levee breach was simulated in each of the four neighborhoods bordering the levee (North Meadows, Downtown, Sheldon / Charter Oak, and South Meadows) assuming both 100-year and 500-year flood conditions on the Connecticut River. Assumed average breach widths varied from 230 to 240 feet for the 100-year flood stage and from 250 to 280 feet for the 500-year flood stage, depending on the levee height and conditions specific to each breach location. The time required for the breach to form was conservatively assumed to be 6 minutes. For each scenario, the flood elevation at various points throughout the protected area was calculated at specific time steps to determine the sequence and timing of floodwater progression. Sequence maps were developed based on this information showing estimated time to inundation. Maps were produced for both 100-year and 500-year river flood stages showing the estimated maximum inundation depth and extents (based on river stage at the upstream end of the levee). However, only the 500 year river flood stage maps are included in this Annex because they detail the greater evacuation need in contrast to a 100 year river flooding stage. These color maps are summarized in the following table.

Levee Breach Flood Map Index

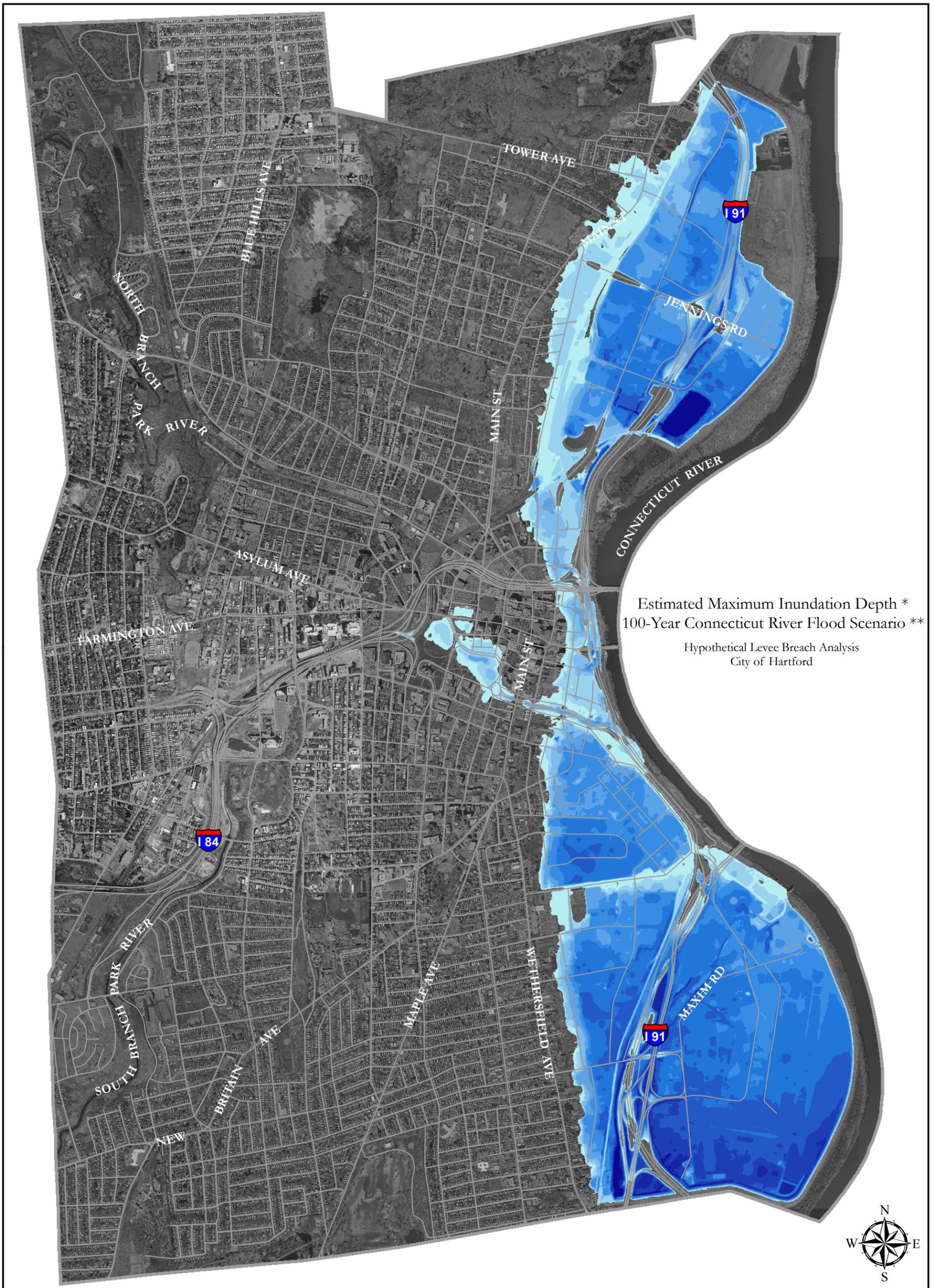
<u>Map Description</u>	<u>500-Year Flood (35.6 ft gage datum)</u>
Maximum Inundation Depth and Extents	Figure A-0
North Meadows Breach Inundation Sequence	Figure A-1
Downtown Breach Inundation Sequence	Figure A-2
Sheldon/Charter Oak Breach Inundation Sequence	Figure A-3
South Meadows Breach Inundation Sequence	Figure A-4

* Current and projected Connecticut River Stages can be found on the National Weather Service’s “Advanced Hydrologic Prediction Service” web page, currently located at <http://www.weather.gov/ahps/>

It is important to note that the magnitude, sequence, timing, and extent of a breach-induced flood would depend on a variety of factors and cannot be predicted with precision. As such the maps produced in this analysis are meant only to provide qualitative information for emergency planning purposes and should not be considered predictive. Factors that could influence the timing and extent of flood progression through the city include the timing and extent of breach formation, the river stage at the time of breach, the effects of flow through storm sewers or other conduits, and actual flow path topography.

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Figure A-0 Maximum Inundation Depth and Extents



Estimated Maximum Inundation Depth *
 100-Year Connecticut River Flood Scenario **
 Hypothetical Levee Breach Analysis
 City of Hartford



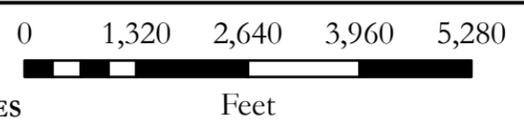
November 2008

Legend

- Roads
- Town Boundary

Estimated Maximum 100-Year Maximum Innundation Depth (feet)

	0-3		15-18
	3-6		18-21
	6-9		21-24
	9-12		24-27
	12-15		27-31

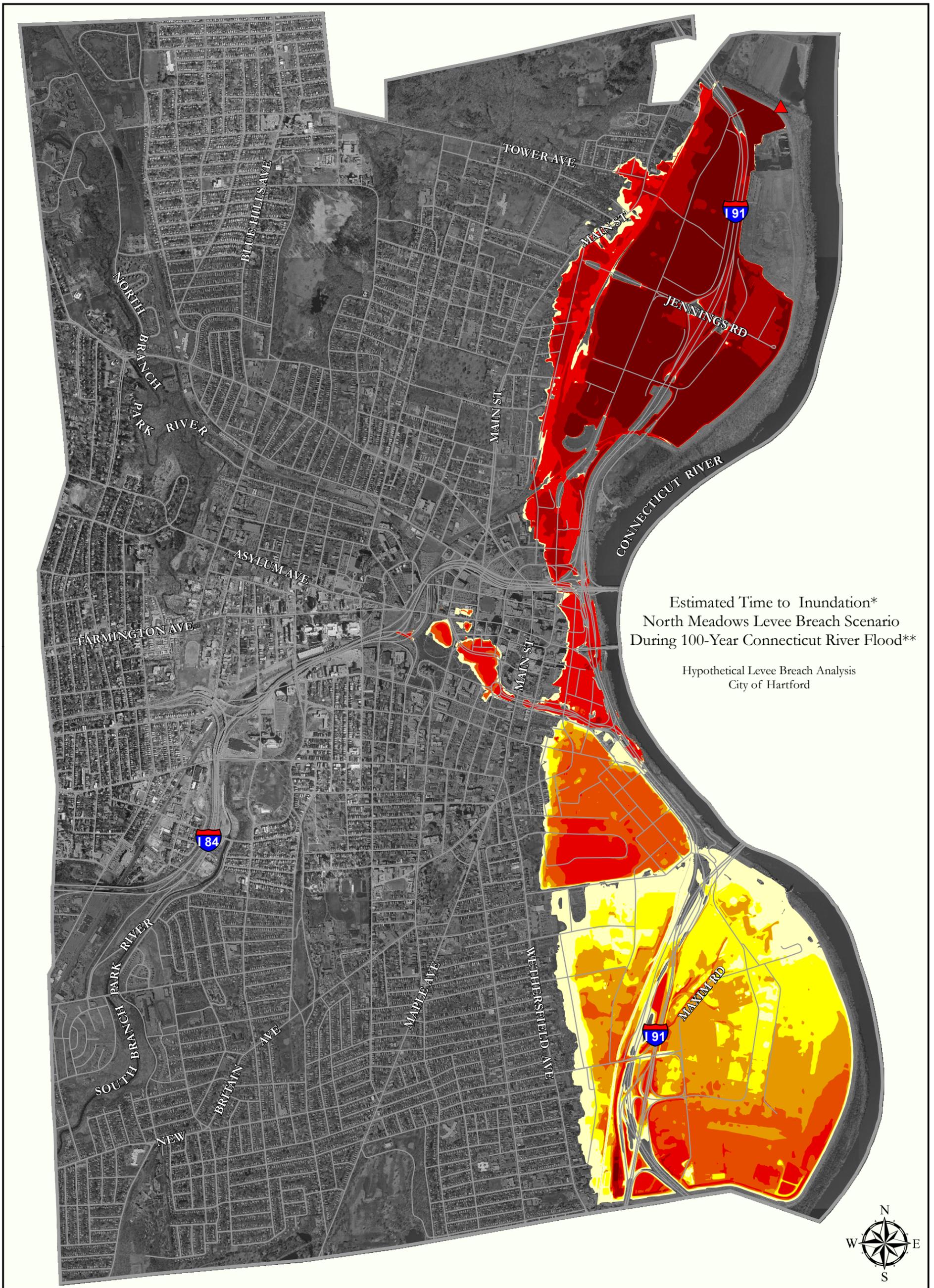


FOOTNOTES

* For planning purposes only. Actual innundation depths will vary.
 ** FEMA 100-Year Flood corresponds to approximately 31.2 feet National Weather Service gage datum (on downstream side of Bulkeley Bridge)

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Figure A-1 Maximum Inundation Depth and Extents



November 2008

Legend

	Estimated Time to Inundation (hours)			
Roads		0 - 1 Hours		12 - 24 Hours
Town Boundary		1 - 3 Hours		24 - 48 Hours
Assumed Breach Location		3 - 6 Hours		48 Hours - Max flood
		6 - 12 Hours		



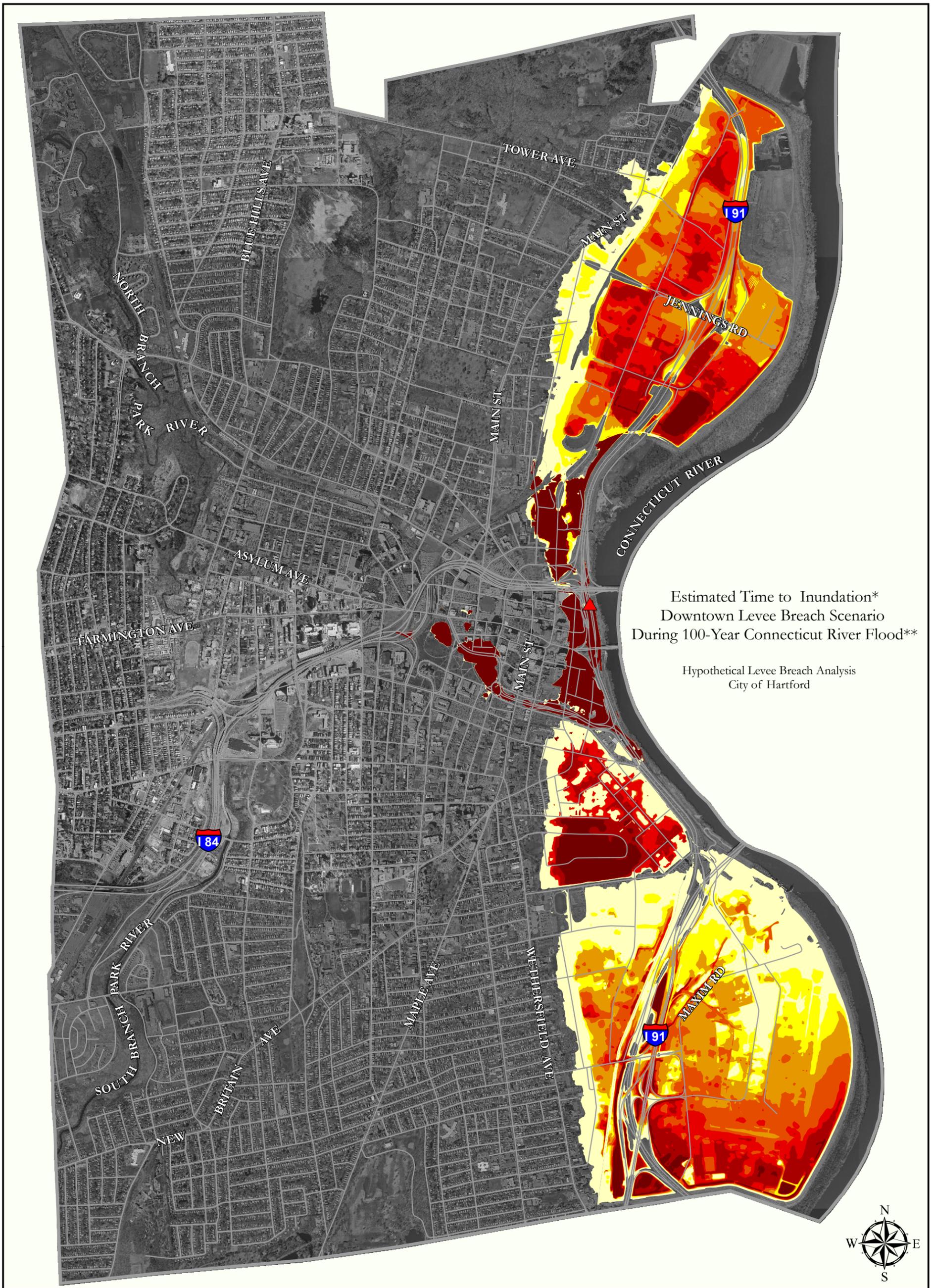
FOOTNOTES
 * For planning purposes only. Actual inundation times will vary. Assumes 230 foot levee breach at location shown.
 ** FEMA 100-Year Flood corresponds to approximately 31.2 feet National Weather Service gage datum (on downstream side of Bulkeley Bridge)



Figure A-1

*HARTFORD, CONNECTICUT EMERGENCY OPERATIONS PLAN
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Figure A-2 Downtown Breach Inundation Sequence



November 2008

Legend

	Estimated Time to Inundation (hours)	
Roads	0 - 1 Hours	12 - 24 Hours
Town Boundary	1 - 3 Hours	24 - 48 Hours
Assumed Breach Location	3 - 6 Hours	48 Hours - Max flood
	6 - 12 Hours	



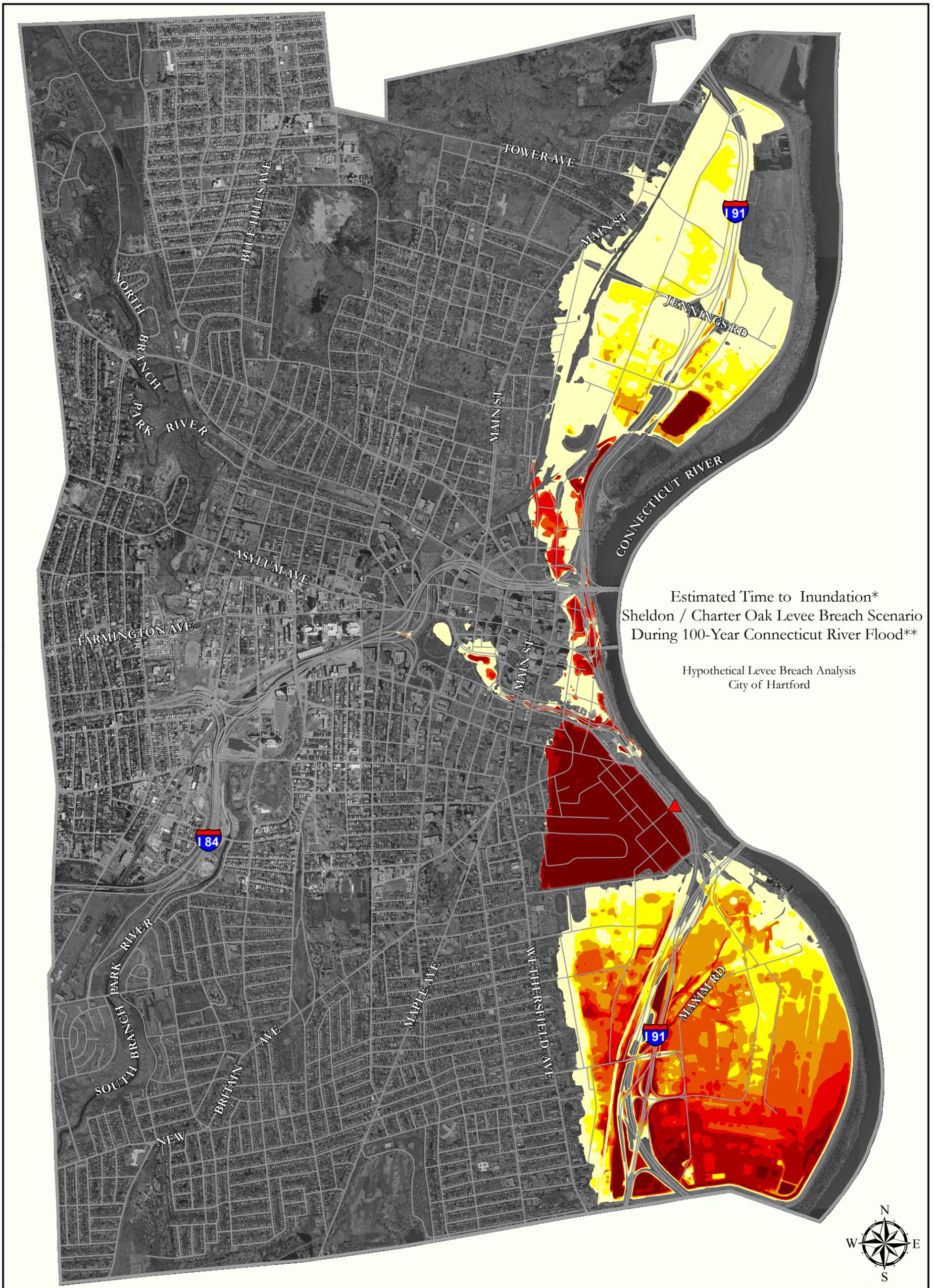
FOOTNOTES
 * For planning purposes only. Actual inundation times will vary. Assumes 240 foot levee breach at location shown.
 ** FEMA 100-Year Flood corresponds to approximately 31.2 feet National Weather Service gage datum (on downstream side of Bulkeley Bridge)



Figure A-2

*HARTFORD, CONNECTICUT EMERGENCY OPERATIONS PLAN
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Figure A-3 Sheldon / Charter Oak Breach Inundation Sequence



Estimated Time to Inundation*
 Sheldon / Charter Oak Levee Breach Scenario
 During 100-Year Connecticut River Flood**
 Hypothetical Levee Breach Analysis
 City of Hartford



November 2008

Legend

	Estimated Time to Inundation (hours)	
Roads	0 - 1 Hours	12 - 24 Hours
Town Boundary	1 - 3 Hours	24 - 48 Hours
Assumed Breach Location	3 - 6 Hours	48 Hours - Max flood
	6 - 12 Hours	



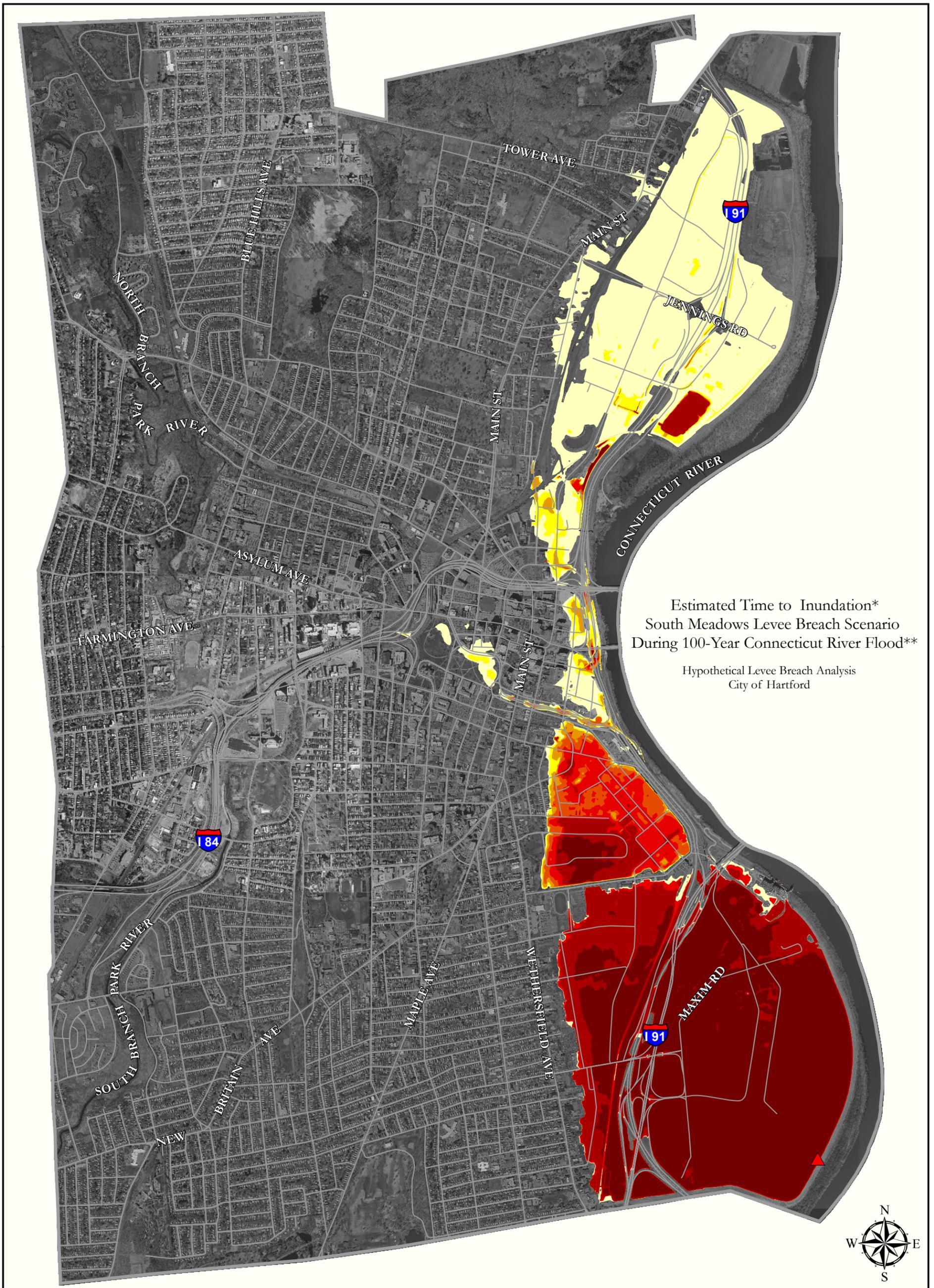
FOOTNOTES
 * For planning purposes only. Actual inundation times will vary. Assumes 230 foot levee breach at location shown.
 ** FEMA 100-Year Flood corresponds to approximately 31.2 feet National Weather Service gage datum (on downstream side of Bulkeley Bridge)



Figure A-3

*HARTFORD, CONNECTICUT EMERGENCY OPERATIONS PLAN
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JULY 1, 2009
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Figure A-4 South Meadows Breach Inundation Sequence



November 2008

Legend

	Estimated Time to Inundation (hours)	
Roads	0 - 1 Hours	12 - 24 Hours
Town Boundary	1 - 3 Hours	24 - 48 Hours
Assumed Breach Location	3 - 6 Hours	48 Hours - Max flood
	6 - 12 Hours	

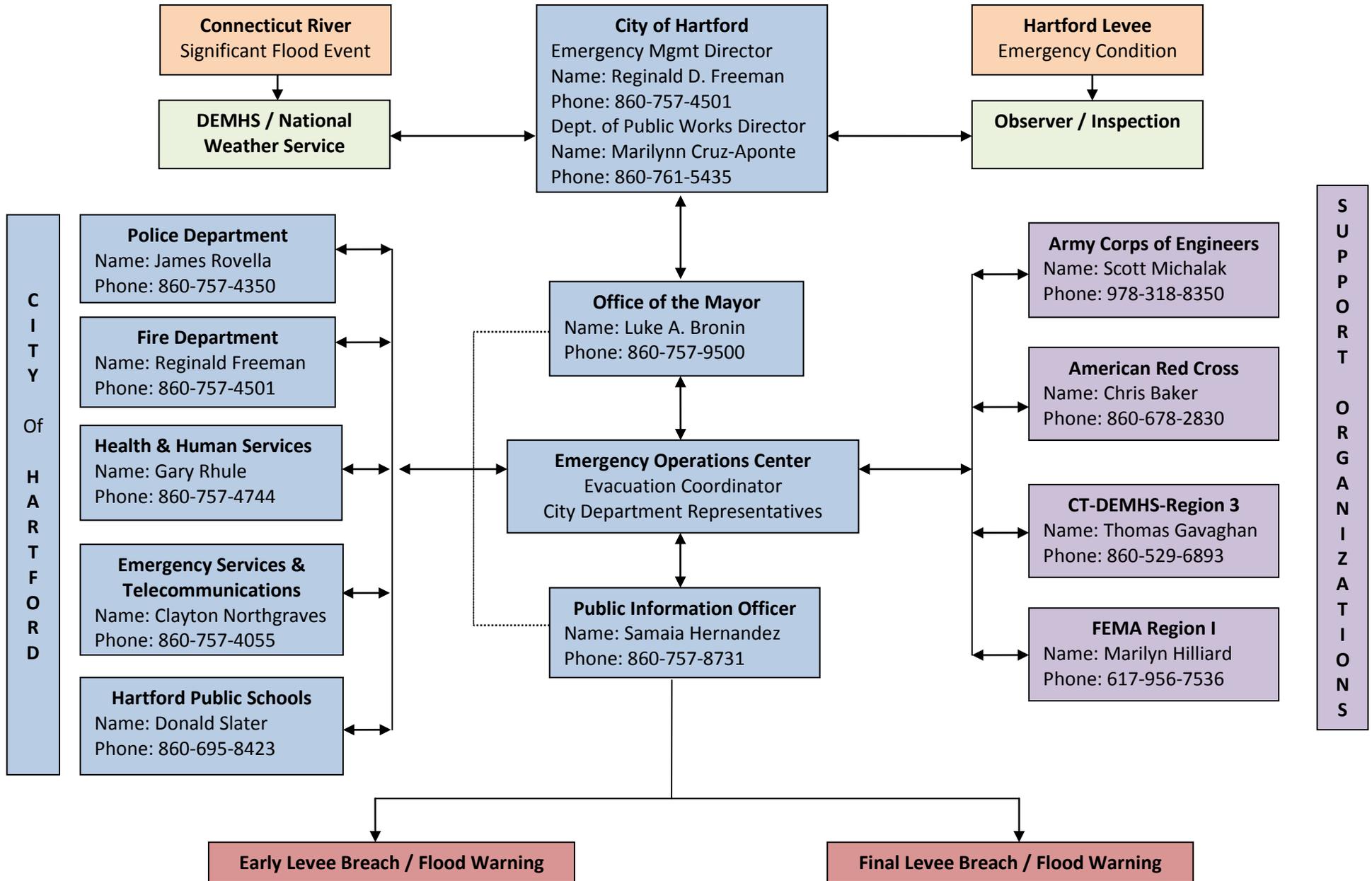


FOOTNOTES
 * For planning purposes only. Actual inundation times will vary. Assumes 240 foot levee breach at location shown.
 ** FEMA 100-Year Flood corresponds to approximately 31.2 feet National Weather Service gage datum (on downstream side of Bulkeley Bridge)



Figure A-4

APPENDIX B - HARTFORD LEVEE NOTIFICATION FLOWCHART



APPENDIX C

CITY OF HARTFORD DEPARTMENT OF PUBLIC WORKS FLOOD CONTROL CONTACT INFORMATION

Director of Public Works
Marilynn Cruz-Aponte
O: 860-757-9960
C: 860-761-5435
E: cruzm002@hartford.gov

**Assistant Director/City Engineer,
Director Greater Hartford Flood Commission**
Constantin Banciulescu P.E.
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C: 860-214-8027
E: constantin.banciulescu@hartford.gov

Superintendent of Streets
Vernon Mathews
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C: 860-761-4237
E: vmathews@hartford.gov

Civil Engineer III
Bob Umashankar
O: 860-757-9985
C: 860-888-9997
E: umasb001@hartford.gov

Flood Control Supervisor
Jeffery Coughlin
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C: 860-985-9050
E: cougj001@hartford.gov

DPW Dispatcher
O: 860-757-4955

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APPENDIX C

ELEMENTS OF EVACUATION INCIDENT ACTION PLAN

In the event of flooding which may result in evacuation of Hartford's Levee Protected Areas these are the essential elements of an Evacuation Incident Action Plan (EIAP).

EIAP Element #	Element Definition – Responsible Department/s	EIAP Element #	Element Definition – Responsible Department/s
1	Determine Current Situation - Dept of Public Works, Emergency Management	11	Determine and Implement Security Measures - Police Dept
2	Determine and Implement Public Protective Actions - Emergency Management	12	Determine and Implement Traffic Control Measures – Police Dept, Dept of Public Works
3	Issue Evacuation Order and Proclamation – Mayor / duly designated authority.	13	Determine and Implement Shelter and Mass Care Needs – Emergency Management, American Red Cross, Dept of Health & Human Services
4	Determine and Implement Alert, Warning, Notification methods – Emergency Management	14	Determine Need For and Identify Transportation Resources – Emergency Management
5	Identify Area(s) and Facilities Requiring Evacuation – Dept of Public Works, Emergency Management	15	Determine need and locations for Hazardous Materials Response – Fire Dept
6	Identify Evacuees: Locations, Numbers and Types – Emergency Management, Fire Dept-CSI	16	Determine need and locations for Decontamination- Fire Dept
7	Identify Pets and Livestock Needing Evacuation: Locations, Numbers and Types- Police Dept Animal Control	17	Determine Need and Locations for Search and Rescue – Fire Dept
8	Determine and Implement Perimeter and Access Control – Police Dept	18	Determine Need and Locations for Mass Casualty Operations – Emergency Management, American Red Cross
9	Determine Evacuation Routes and Destinations – Police Dept, Dept of Public Works, Emergency Management	19	Determine Need and Locations for Mass Fatality Operations – Dept of Health & Human Services, Emergency Management
10	Determine Transfer and Pickup Locations – Emergency Management, Dept of Public Works		

APPENDIX D

Evacuation Collection Points

Evacuation Collection Points may be necessary to evacuate transportation dependent residents. These collections points may have to be altered as the event escalates, or as changes occur in evacuation strategies. The designated collection points are based on anticipated needs among more densely populated neighborhoods. Additionally, strategies may have to be developed ad hoc that depend on “bus” routes rather than static collection points.

Meadow St. & Ledyard St.	Van Block Ave. & Sequassen St.
Curcombe St. & Hendicxsen Ave.	Huyshope Ave. & Nepaquash St.
Norwich St. & Stonington St.	Sheldon St. & Charter Oak Ave.
Columbus Blvd. & Sheldon St.	Charter Oak Ave. & South Prospect St.
Pearl St. & Ann St.	Windsor St. & Blake St.
Bellevue St. & Sanford St.	Earle St. & Main St.
Cleveland Ave. & Main St.	Tower Ave. & Addison St.

APPENDIX E - First Hour Checklist for City Emergencies

Guide for Chief Elected Officials, Department Heads,
Emergency Manager and other Decision-makers in the City of Hartford

This first hour checklist will assist Elected Officials, Public Safety, and Emergency Managers in the City of Hartford to assess what has happened during a disaster (or the threat of a disaster).

This checklist can be used to guide department, agency, and organization discussions and conference calls by helping to quickly review the status of initial actions that may already be in place and then determining protective actions are necessary to protect the public.

For more information on evacuation coordination and response please review the City's Emergency Operations Plan and the Flood Evacuation Plan for Levee Protected Areas.

IMMEDIATE ACTIONS FOR ANY INCIDENT

1. Gain Situational Awareness
2. Determine Response Status
3. Review Status of Initial Protective Actions
4. Consider Additional Protective Actions
5. Evaluate Public Information Needs
6. Determine Next Steps to Coordinate and Implement Protective Actions
7. Establish City Wide Notifications / Conference Call

1 | SITUATIONAL AWARENESS

- If an incident occurred, what happened, including where and when?
 - o What is incident (natural disaster, accident, terrorism)?
 - o Estimated many injuries/fatalities?
 - o Estimated damage to or status of critical infrastructures (transportation, power, medical, water)?
- If incident has not occurred, what is latest information/intelligence about threats to the region? What are the potential impacts?

2 | RESPONSE STATUS

- Who is leading the response or investigation?
- What assets/departments/agencies are on scene, available, or needed?
- What is the threat status and/or emergency declarations status (federal, state, and local)?

3 | INITIAL PROTECTIVE ACTIONS (SCHOOLS, WORKFORCE, AND TRANSPORTATION)

- Has any initial protective action occurred for **schools** (e.g., lockdown)?
- Has any initial protective action occurred for **citizens** and the **workforce** (e.g., shelter in place)?

INITIAL PROTECTIVE ACTIONS — CONTINUED

- How have special populations been addressed?
- Has any initial protective action occurred for **transportation** (e.g., public transit operational, HOV restrictions lifted)?
- What schools/workforce facilities are in the hazard area?
- What other protective actions (see section 4) should be considered, and who else should be involved in discussions?

4 | ADDITIONAL PROTECTIVE ACTIONS

- What additional protective actions may be needed to protect affected general public, schools, workforce, etc.?
 - o Evacuation, in-place protection, quarantine, school/work dismissal, cancellation of public meeting and closing of government facilities
- How can you prepare for response?
 - o Activate emergency operations centers and joint information centers; inform health services sector, mass care facilities, transportation assets, request mutual aid, issue public advisories
- What considerations should be made when making protective action decisions? *Many factors play a role in decisions and should be evaluated case-by-case. The following are general considerations.*
 - o For a **threat or hazard involving regional impact** consider partial or full-scale evacuation of potentially impacted area.
 - o For a **threat or hazard involving local impact**, consider partial local evacuation unless addressed below.
 - o For a **short air release of toxic chemical** (e.g., brief plume), consider sheltering in place initially downwind of release.
 - o For **long air release of toxic chemical** (e.g., continuously leaking), consider local evacuation of persons downwind of release.
 - o For an **explosion**, consider evacuating the impacted area and consider secondary devices.
 - o For **infectious contamination**, depending on type, consider quarantine, requesting strategic national stockpile, and/or mass prophylaxis.
 - o For **dirty bomb**, consider sheltering initially and then evacuation of persons downwind.
 - o For **flooding**, consider evacuation of impacted area.

5 | EMERGENCY PUBLIC INFORMATION

- What should be communicated, when, how, and by whom?
- What information has been communicated to the general public/schools/workforce, and is the message uniform and consistent across all jurisdictions involved?

6 NEXT STEPS

- What response actions need to be coordinated regionally?
- What resources are needed?

For evacuations there are numerous operations that need to be coordinated. The below is a summary of the major evacuation tasks and the agencies that will play a lead role for implementing these tasks.

- Identify evacuation routes - HPD, DPW, C-DOT, CSP
- Coordinate and manage traffic and provide roadside assistance – HPD, DPW, C-DOT (traffic signals), CSP
- Coordinate and provide transportation for residents – Emergency Management, Local Transit Agencies, School System and Bus Driver representatives, Private sector transportation (bus, rail), CREPC
- Provide support for special needs populations – Emergency Management, Health and Human Services, local community and family services departments, faith based and non-governmental organizations, CREPC, CT-DEMHS
- Coordinate and communicate with the private sector and community and faith based organizations to obtain goods and services necessary to support response operations – Emergency Management, CREPC, CT-DEMHS
- Provide shelter for residents – Emergency Management, American Red Cross, CREPC, CT-DEMHS
- Assist with other response operations as needed – Emergency Management, HPD,HFD, EMS, CREPC, CT-DEMHS

REGIONAL COMMUNICATIONS/INFORMATION SHARING

The CT-DEMHS provides a mechanism for State, local and other public agencies, transit and transportation, schools, and volunteer organizations to communicate to collaborate regarding planning, information sharing and coordination before, during, and after a regional emergency through WEB EOC.

The CREPC Regional Coordination Center provides the regional resource coordination and communications platform.

- 1) Hartford will contact CREPC ESF-5 Duty Officer and/or the DEMHS Region 3 Coordinator if the event is significant, may require Regional and State assistance or have an impact on neighboring DEMHS Regions.
- 2) Upon notification, CREPC RCC and Region 3 Coordinator will arrange conference calls and alert Local EMDs, Public Safety, and Regional & State Emergency Support Functions Organizations, and Chief Elected Officials and other public officials.
 - a) The DEMHS Operations Director or his/her designee will lead the EMD-Public Safety Conference Call to obtain regional situational awareness, response status and discuss protective actions. Local EMDs should contact their CEOs to make them aware of the situation and ensure that they can participate in the policy-level CEO conference call.
 - b) No later than 30 minutes following the EMD-Public Safety call, The State Emergency Management Director or his/her designee will lead the policy-level CEO call to review situation status and make regional decisions.

Agenda: During both calls, the group will discuss incident facts, response status, protective actions needed, and regional coordination to implement protective actions.

FIRST HOUR SUMMARY STATEMENT

This summary statement can be filled in with details gathered in steps 1-3.

[An incident] has occurred in [jurisdiction].

[Local and state officials] are [responding / managing the incident].

At this time, we are asking individuals who live or work in the area to *[shelter in place / evacuate]* and monitor local radio and television stations for further information and instructions.

Schools and daycare facilities throughout the region are *[locked down. Students will not be released until the situation has been fully assessed.]*

[Name of transit systems] are [operational]. Roads [remain open], and HOV restrictions [been lifted].

[Include additional protective actions from section 4 and other information from section 5 as necessary.]

EVACUATION STATEMENT

The emergency management agency of *[insert county]* are requesting all persons in the area of *[identify areas]* to immediately evacuate the area. Local officials are requesting residents to evacuate immediately without any delay. *[Insert incident] has occurred and residents in this area are in immediate danger. [insert stronger message if desired about the potential consequences]*

Residents should leave via the following routes(s): *[identify street/roads to use]. [Insert name of transit systems] are [operational]. HOV restrictions [been lifted].*

Shelters have been opened at *[identify shelters name/location]*.

Residents needing emergency transportation should *[call/go to] [identify emergency transportation number or assembly location]*.

Please make sure your neighbors, home-bound persons, latchkey children, and mobility impaired neighbors are aware of this bulletin, and assist them if possible.

Public safety officials are requesting residents to follow their instructions immediately and to drive safely. Tune to radio/television station *[identify radio station]* for information. Follow message signs or tune in to *[insert radio station]* while driving for more information.

Repeat the message