

9.1 City of Ithaca

This section presents the jurisdictional annex for the City of Ithaca. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the City of Ithaca and who in the City participated in the planning process; an assessment of the City of Ithaca’s risk and vulnerability; the different capabilities utilized in the City; and an action plan that will be implemented to achieve a more resilient community.

9.1.1 Hazard Mitigation Planning Team

The following individuals have been identified as the City of Ithaca’s hazard mitigation plan primary and alternate points of contact.

Table 9.11-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name/Title: Michael Thorne, Superintendent of Public Works Address: 108 East Green Street, Ithaca, NY 14850 Phone Number: 607-274-6531 Email: mthorne@cityofithaca.org	Name/Title: Julie Holcomb, City Clerk Address: 108 East Green Street, Ithaca, NY 14850 Phone Number: 607-274-6573 Email: jholcomb@cityofithaca.org
NFIP Floodplain Administrator	
Name/Title: JoAnn Cornish, Director of Planning and Development Address: 108 East Green Street, Ithaca, NY 14850 Phone Number: 607-274-6566 Email: jcornish@cityofithaca.org	

9.1.2 Municipal Profile

The City of Ithaca is located at the southern end of Cayuga Lake in Tompkins County in the Finger Lakes Region of New York. Ithaca is approximately 225 miles northwest of New York City. The City is the urban center, and county seat, of Tompkins County and has a population of 30,837 (2019). The City of Ithaca is home to Cornell University (and 20,000 students), and Ithaca College (7,000 students) is located just south in the Town of Ithaca. Ithaca is also home to the Tompkins County Museum, the Sciencenter, Museum of the Earth, Cayuga Nature Center, Cornell University’s Johnson Museum of Art and Lab of Ornithology, and numerous galleries and theatre spaces.



Ithaca became the county seat of Tompkins County at its formation in 1817 and was incorporated as a Village in 1821. Cornell University was founded in 1865 and brought considerable change to the area. Telephone lines were installed in Ithaca in 1878, along with electric streetlights, paved streets, and a fire alarm system. An electric street railway system was chartered in 1884. Ithaca became the 29th city in New York in 1888. In 1892, the Ithaca Conservatory of Music was founded, which later became Ithaca College. Throughout the late 19th and into the 20th century, major industrial companies, including the Ithaca Gun Company, Morse Chain and International Salt Company, created a strong economy for the growing city. The Ithaca Farmer’s Market was established in 1973 for local farmers and artisans to sell their goods to the community. In 1974, the downtown pedestrian mall, the Ithaca Commons was built in response to the large shopping malls being built outside of the city. Collegetown, adjacent to the Cornell campus, is another concentration of commercial and pedestrian activity within the city. The primary industries in Ithaca are education and agriculture, and the economy is supported by regional tourism.

The City of Ithaca has a Mayor - Council form of government. The Mayor is elected for a four-year term. There are 10 members of Common Council who represent 5 Wards in the City. Each Ward elects 2 representatives to four-year, staggered terms. There is a Chief of Staff who works with Mayor. The City has approximately 450 employees working in 11 departments.

According to the 2014-2018 American Community Survey, the population for the City of Ithaca is 30,568.

9.1.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction’s overall risk to its hazards of concern. Table 9.11-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. Figure 9.11-1 at the end of this annex illustrates the geographically delineated hazard areas and the location of potential new development, where available.

Table 9.11-2. Recent and Expected Future Development

Type of Development	2014	2015	2016	2017	2018
Number of Building Permits for New Construction Issued Since the Previous HMP* (within regulatory floodplain/ Outside regulatory floodplain)					



Type of Development	2014		2015		2016		2017		2018	
	NA	NA								
Single Family (R-1)	NA	NA	119	0	75	0	103	0	84	0
Multi-Family (R-2, R-3, MU)	NA	NA	453	7	390	21	406	7	373	6
Other (commercial, mixed-use, etc.)	NA	NA	356	5	387	6	364	6	391	5
Total	1,015	12	928	12	852	27	873	13	848	11
Recent Major Development and Infrastructure from 2014 to Present										
Lofts at Six Mile	Multi-Family		45 units		217 South Cayuga St		Flood		Built	
210 Hancock	Multi-Family		54 Units		210 Hancock		Flood		Built	
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years										
City Harbor	Multi-Family		156 Units		Pier Road				Approved	
Carpenter Park	Multi-Family		124 Units		3 rd Street				Approved	
Rothschild Bldg	Multi-Family		200 Units		State Street		None		Approved	
Vencino Project	Multi-Family		~200 Units		Green Street		None		Approved	
Chainworks Project – 95-acre industrial redevelopment on City/Town line	Mixed-Use; Multi-Family				South Hill		None		Approved	

SFHA Special Flood Hazard Area (1% flood event)

* Only location-specific hazard zones or vulnerabilities identified.

**NOTED Within SFHA are those building permits where any portion of the parcel is within the SFHA. Building may or may not be in SFHA.

9.1.4 Capability Assessment

The City of Ithaca performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of planning, legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of administrative and technical capabilities.



- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Classification under various community mitigation programs.
- The community’s adaptive capacity for the impacts of climate change.
- Information on National Flood Insurance Program (NFIP) compliance.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in Capability Assessment (Section 9.11.4). The City of Ithaca identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy. **This is shown in bold text in the comments box where appropriate.** Appendix I provides the results of the planning/policy document review.

9.1.4.1 Planning, Legal, and Regulatory Capability

The table below summarizes the regulatory tools that are available to the City of Ithaca and where hazard mitigation has been integrated.

Table 9.11-3. Planning, Legal, and Regulatory Capability

	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (local, Town, state, federal)	Department / Agency Responsible	State Mandated
Codes, Ordinances, & Requirements					
Building Code	Yes	The Uniform Code (19 NYCRR Parts 1219 to 1229)	Local and State	Local Code Department	Yes
<i>Comments: NYS Uniform and Energy Code 2020; Regulated at local and state levels. The Uniform Code (19 NYCRR Parts 1219 to 1229) now includes the 2015 editions of the code books published by the International Code Council (the "2015 I-Codes"), as amended by the publication entitled the 2017 Uniform Code Supplement (publication date: July 2017).. Article 18 of the Executive Law (§§ 370 through 383) establishes the State Fire Prevention and Building Code Council, directs the Code Council to promulgate and maintain the Uniform Code, and charges each city, town, and village in the State (with the exception of the City of New York) with the duty of administering and enforcing the Uniform Code within its municipal boundaries.</i>					
Zoning Code	Yes	City of Ithaca Code, Chapter 325 https://www.cityofithaca.org/151/Zoning	Local	City Planning and Economic Development Division	No
Comment: Article IX, Section 2, of the State Constitution and by the various state enabling statutes. In New York, the zoning enabling acts continue to require that zoning be undertaken "in accord with a well-considered plan" ¹¹ or "in accordance with a comprehensive plan." ¹² Unless the town, city or village has adopted a comprehensive plan document using the more recently-enacted statutes (described later herein), local officials must refer to the extensive body of case law to determine how zoning can					



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (Local, Town, state, federal)	Department / Agency Responsible	State Mandated
<p>meet the more general "comprehensive plan" requirement **May be impacted by State wetland regulations which protect wetlands greater than 12.4 acres and established buffer zones. Regulated at local level.</p> <p>*During the next update of the municipal zoning code, the City will review the HMP and determine how they can incorporate the HMP into the zoning code. By doing so, it will help promote development and redevelopment patterns that are at less risk from known hazards.</p>					
Subdivision Regulations	Yes	http://www.cityofithaca.org/202/Subdivision-Application-Process-Forms	Local	City Planning and Economic Development Division	No
<p>Comment: Subdivision is defined in the State enabling Statutes as: the division of any parcel of land into a number of lots, blocks, or sites as specified in a local ordinance, law or regulation, with or without streets or highways, for the purpose of sale, transfer of ownership, or development. There is not a requirement by NYS for subdivisions. Each municipality is permitted to further define subdivision for its own purposes in connection with its subdivision review procedure. The enabling statutes provide that a plat showing a division of land which is subject to a municipality's subdivision regulations, may not also be subject to review under its site plan review authority. (general city law s. 32 & 33, Town Law s. 276 & 277, Village Law s. 7-728 & 7-730).</p> <p>*When the City updates the subdivision regulations, they will review the HMP and consider different ways to integrate the HMP into the regulation. By doing so, it helps the City encourage new developers to design areas that avoids or minimizes hazards.</p>					
Stormwater Management Regulations	Yes	Title 6, Ch. X, 17-7,8,70	Local	City Planning and Economic Development Division	Yes
<p>Comment: Codes Rules and Regulations of the State of New York, Title 6. Department of Environmental Conservation, Chapter X. Division of Water Resources, Subchapter A. General Article 3. State Pollutant Discharge Elimination System, Part 750. State Pollutant Discharge Elimination System (SPDES) Permits. New York Environmental Conservation Law, Article 17, Titles 7, 8 and Article 70. New development and redevelopment projects that result in a land disturbance of one acre or greater, including projects less than one acre if they are part of a larger common plan of development or sale or if controlling such activities in a particular watershed is require a permit by the Department</p>					
Post-Disaster Recovery Plan or Regulation	No	NA	Local	NA	No
<p>Comment:</p>					
Real Estate Disclosure	Yes	Property Condition Disclosure Act, NY Code - Article 14 §460-467	State	NYS Department of State, Real Estate Agent	Yes
<p>Comment: In addition to facing potential liability for failing to disclose under the exceptions to "caveat emptor," a home seller must make certain disclosures under the law or pay a credit of \$500 to the buyer at closing. While the PCDA requires a seller to complete a standardized disclosure statement and deliver it to the buyer before the buyer signs the final purchase contract, in practice, most home sellers in New York opt not to complete the statement and instead pay the credit.</p> <p>*The City will review the HMP and identify areas of integration that they can incorporate into their real estate disclosure procedures. This can include developing disclosure requirements to have natural hazard related information and include all natural hazards that can impact the City.</p>					



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (local, Town, state, federal)	Department / Agency Responsible	State Mandated
Growth Management Regulation	No	City does have zoning regulations connected with Comprehensive Plan	Local	Local Planning Board	No
<p>Comment: In New York State, virtually all land use regulation, which is the primarily tool for Smart Growth, takes place at the municipal level (i.e., in a city, village or town government). Land use planning is also primarily a municipal function. While State law provides for certain planning functions at the county or regional level, these mechanisms are largely advisory, whereas municipal planning is directly related to land use regulation.</p>					
Site Plan Review	Yes	General City Law s. 27-a, Town Law s. 247a, Village Law s. 7-725a	Local	City Planning and Economic Development Division	No
<p>Comment: The authority to require site plan review is derived from the State enabling Statutes (General City Law s. 27-a, Town Law s. 247a, Village Law s. 7-725a) The local legislative body has the power to delegate site plan review to the planning board, zoning board, etc. *When the City updates the site plan review requirements, they will review the HMP and identify ways, if any, to integrate the HMP into the requirements.</p>					
Environmental Protection	Yes	Title 6 NYCRR Part 617	State	City Planning and Economic Development Division	Yes
<p>Comment: New State Environmental Quality Review Act (SEQR) Title 6 NYCRR Part 617 Regulations are in effect as of January 1st, 2019</p>					
Flood Damage Prevention Law	Yes	Chapter 186, City Code https://ecode360.com/8389425	Local State Federal	City Planning and Economic Development Division	Yes - BFE+2 feet for all construction in the SFHA (residential and non-residential)
<p>Comment: A community must adopt a Flood Damage Prevention Ordinance to participate in the National Flood Insurance Program. *The City's law meets the minimum requirements set by NYS. In the event those requirements are revised, the City will revise their law to include any revisions.</p>					
Municipal Separate Storm Sewer System (MS4) Regulation	Yes	EPA Phase II Stormwater Rule	Federal	Department of Public Works	Yes
<p>Comment: This requires urbanized areas (local governments) to develop a stormwater management program that will reduce the amount of pollutants carried by stormwater during storm events to waterbodies to the "maximum extent practicable". The goal of the program is to improve water quality and recreational use of waterways. A Municipal Separate Storm Sewer Systems Permit, GP-0-15-003 is required.</p>					
Emergency Management	Yes	NYS Executive Law, Article 2B.	Local	With Local OEM	Yes
<p>Comment: The development of the New York State Comprehensive Emergency Management Plan (CEMP) is required under NYS Executive Law, Article 2B. The City developed its CEMP in 2005 with County DOER.</p>					



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (Local, Town, state, federal)	Department / Agency Responsible	State Mandated
Climate Adaptation	No	NYS Executive Law, Article 75	Local	NA	No
Comment: The environmental conservation law was amended by adding ARTICLE 75 - CLIMATE CHANGE under Assembly Bill A. 8429 and Senate Bill S. 6599, dated June 18, 2019.					
Disaster Recovery Ordinance	No	NA	Local	NA	No
Comment:					
Disaster Reconstruction Ordinance	No	NA	Local	NA	No
Comment:					
Emergency Preparedness Ordinance and Continuity of Government Ordinance	Yes		Local	Various	No
Comment:					
Planning Documents					
Comprehensive Plan	Yes	General City Law section 28a(3)(a); Plan Ithaca (2015) https://www.cityofithaca.org/165/City-Comprehensive-Plan	Local	City Planning and Economic Development Division	No
Comment: Optional under NYS Law, municipality may adopt a comprehensive plan or proceed through a planning process which has evolved based on case law. (Per State Legislature General City Law section 28a, Town Law s. 272a, Village Law s. 7-722) **May be impacted by State wetland regulations which protect wetlands greater than 12.4 acres and established buffer zones. Regulated at the local level. *When the City updates their comprehensive plan, they will review the HMP and identify any opportunities to integrate the HMP into the comprehensive plan. This will help promote consistency between the two plans and encourage multi-objective management and planning in the community.					
Capital Improvement Plan	In process (2021)	General Municipal Law Section 99-g.	Local	Multiple	No
Comment: Capital planning is performed on an annual basis with the Mayor's Office, City Controller, Planning Dept, and DPW. Mitigation projects are sometimes included in the annual capital request. Capital Improvement Plan to be developed in 2021. * This will be informed in part by the HMP mitigation strategy.					
Disaster Debris Management Plan	In process (2021)	-	Local	?	No
Comment: Based on past experience with disaster management, it is apparent that local municipalities that have an Emergency Debris Management Plan in place are able to manage their emergency response in a more comprehensive and coordinated manner and are able to address recovery and clean up faster and more efficiently than those without plans. With that in mind,					



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (local, Town, state, federal)	Department / Agency Responsible	State Mandated
<p>the Department developed an Emergency Management Plan Tool Kit. The NYSDEC (Department) strongly urges all municipal officials to conduct pre-disaster planning and prepare emergency debris management plans. The Department recommends that these plans should be reviewed and updated annually. Will be developed as a part of county resiliency plan.</p> <p>*This is being developed concurrent with the HMP.</p>					
Floodplain or Watershed Plan	No	NA	NA	NA	No
<p>Comment: The State Pollutant Discharge Elimination System (SPDES) permit program is a primary way the DOW implements its watershed protection and restoration activities.</p>					
Stormwater Plan	No	NA	NA	NA	No
<p>Comment: Local Authority - Could be an element of the Comprehensive Plan. There is a required planning process that must be followed when addressing stormwater management in regulated new development and redevelopment projects.</p>					
Open Space Plan	Yes	NYS Constitution - Article 9; Statute of Local Governments. Section 10 (7) Included as part of Plan Ithaca	Local	City Planning and Economic Development Division	Yes
<p>Comment: Planning boards prepare or oversee the preparation of local comprehensive plans, which should include an open space element. The primary purpose of a local open space plan is to cause the important open lands in the community to be conserved for open space uses.</p>					
Urban Water Management Plan	Yes	Local Flood Hazard Analysis	Local	Department of Public Works	No
<p>Comment: https://www.cityofithaca.org/DocumentCenter/View/11208/Local-Flood-Hazard-Analysis---City-of-Ithaca---February-2020?bidId=</p>					
Habitat Conservation Plan	No	NA	Local	NA	No
<p>Comment: Laws related to habit protection and biodiversity control the use and application of certain pesticides, demolition projects and clearing of vegetated areas. Identifying certain critical habitat areas could be included in the Comprehensive Plan. Critical Habitat is a part of certain State and Federal Permitting. The State had a Wildlife Action Plan requires to maintain eligibility for the State Wildlife Grant Program.</p>					
Economic Development Plan	Yes	Tompkins County Economic Development Strategy (2015-2020)	Local	City Planning and Economic Development Division	No
<p>Comment: An Economic Development Plan may be prepared by a local government and be included or separate from the Comprehensive plan http://tcad.org/content/uploads/2014/07/1577_EconReport_Digital.pdf</p>					
Shoreline Management Plan	No	Article 34, Environmental Conservation Law, Coastal Erosion Hazard Areas 6 NYCRR Part 505, Coastal Erosion Management Regulations	Local	-	Yes
<p>Comment: Article 34, Environmental Conservation Law, Coastal Erosion Hazard Areas 6 NYCRR Part 505, Coastal Erosion Management Regulations</p>					
Community Wildfire Protection Plan	No	NA	Local	NA	No



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (Local, Town, state, federal)	Department / Agency Responsible	State Mandated
Comment: Under the federal Farm Bill, every 10 years each state must submit a State Forest Action Plan to the U.S. Forest Service. The Plan must be approved by the State Forester, who in New York is the director of DEC's Division of Lands and Forests. The next update of the Plan must be submitted to the Forest Service by June 2020.					
Forest Management Plan	No	-	Local	NA	No
Comment: City does have a City Forester, and Chapter 306 of the City Code addressed Trees and Shrubs.					
Transportation Plan	Yes	2040 Long Range Transportation Plan	Local	Ithaca-Tompkins County Transportation Council	No
Comment: https://tompskinscountyny.gov/itctc/lrtp - City is also developing parking plan to become part of larger transportation plan.					
Agriculture Plan	No	NA	Local	NA	No
Comment: Municipalities may develop agricultural and farmland protection plans, in cooperation with cooperative extension and other organizations, including local farmers. Tompkins County has an Agriculture and Farmland Protection Plan but does not include the City of Ithaca.					
Other (tourism, business dev, etc.)					
Comment:					
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	NYS Executive Law, Article 2B	Local	Local OEM	Yes
Comment: The development of the New York State Comprehensive Emergency Management Plan (CEMP) is required under NYS Executive Law, Article 2B. The plan is developed and maintained by the New York State Office of Emergency Management and agencies that comprise the NYS Disaster Preparedness Commission (DPC). City developed CEMP with County in 2005. *When the City updates their CEMP, they will review the HMP and identify any areas that can be integrated. This can include an analysis of the potential hazards to the City and update goals and objectives to align with the HMP, as necessary.					
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	THIRA completed in 2019 for Tompkins County	Local	Local OEM	Yes
Comment: HIRA is an annual requirement that all states must complete to remain eligible to receive federal homeland security grant funding. It also involves a hazard and capability assessment but DHSES has several methodological concerns with the THIRA process and has developed CEPA to serve as the State's system to capture and analyze hazard/capability information. However, CEPA has been engineered to support the completion of the THIRA.					



	Does your municipality have this? (Yes/No)	Code Citation and Date (code chapter, name, date, link)	Authority (local, Town, state, federal)	Department / Agency Responsible	State Mandated
Post-Disaster Recovery Plan	No	NA	Local	NA	No
Comment:					
Continuity of Operations Plan	No	-	Local	-	No
<p>Comment: According to the FEMA, "State and local governments should consider developing or updating contingency plans for the continuity of operations (COOP) of vital government functions. Jurisdictions must be prepared to continue their minimum essential functions throughout the spectrum of possible threats from natural disasters through acts of terrorism. COOP planning facilitates the performance of State and local government and services during an emergency that may disrupt normal operations. No formal plan but do have Continuity of Government Ordinance. we have done continuity of operations planning twice – once in 2009 during the H1N1 Flu season, and once in 2020 during the COVID-19 Pandemic. We have departmental information about which services are mandatory to provide, which employees are needed to provide them, and how departments would assure that service delivery – we just need to tie everything together into a general plan.</p>					
Public Health Plan	No		Local	NA	No
Comment: Public Health planning conducted through County					
Other: Emergency Response Plan	Yes or No	-	Local		No
Comment: Nothing is mandated by law in NYS, however, article 2B of the Executive Law provides for authority to draft emergency plans by various levels of government in NYS.					
Other: Special Purpose Ordinances (such as critical or sensitive areas)					
Comment:					

Table 9.11-4. Development and Permitting Capability

Indicate if your jurisdiction implements the following	Response Yes/No; Provide further detail
Development Permits. If yes, what department?	Yes: Division of Planning and Economic Development
Permits are tracked by hazard area. For example, floodplain development permits.	Yes, Division of Planning and Economic Development; City GIS
Buildable land inventory If yes, please describe If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes



9.1.4.2 Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the City of Ithaca.

Table 9.11-5. Administrative and Technical Capabilities

Resources	Available? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	PBZ&ED
Mitigation Planning Committee	No	-
Environmental Board/Commission	Yes	PRNR Committee
Open Space Board/Committee	Yes	PRNR Committee
Economic Development Commission/Committee	Yes	PEDC
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	County SWIFT 911
Maintenance programs to reduce risk	Yes	-
Mutual aid agreements	Yes	Yes - DPW
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	PBZ&ED and DPW
Engineers or professionals trained in building or infrastructure construction practices	Yes	PBZ&ED and DPW
Planners or engineers with an understanding of natural hazards	Yes	PBZ&ED and DPW
Staff with expertise or training in benefit/cost analysis	Yes	Controller and Planning
Professionals trained in conducting damage assessments	Yes	Building Division, Engineering, Fire Department
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	DPW
Scientist familiar with natural hazards	Yes	DPW
NFIP Floodplain Administrator (FPA)	Yes	PBZ&ED
Surveyor(s)	No	Contract with surveyors
Emergency Manager	Yes	IFD
Grant writer(s)	Yes	Various
Resilience Officer	No	-
Other		



9.1.4.3 Fiscal Capability

The table below summarizes financial resources available to the City of Ithaca.

Table 9.11-6. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	Yes
Other	

9.1.4.4 Education and Outreach Capability

The table below summarizes the education and outreach resources available to the City of Ithaca.

Table 9.11-7. Education and Outreach Capabilities

Indicate if your jurisdiction has the following resources	Yes/No; Please describe
Public information officer or communications office?	Yes
Personnel skilled or trained in website development?	Yes
Hazard mitigation information available on your website; if yes, describe	Yes. LFHA
Social media for hazard mitigation education and outreach; if yes, briefly describe.	Yes
Citizen boards or commissions that address issues related to hazard mitigation; if yes, briefly describe.	Yes. Public Safety Commission
Other programs already in place that could be used to communicate hazard-related information; if yes, briefly describe.	Yes, Swift 911
Warning systems for hazard events; if yes, briefly describe.	Yes, Swift 911
Natural disaster/safety programs in place for schools; if yes, briefly describe.	Yes – IPD participation in Safe Schools initiative
Other	



9.1.4.5 Community Classifications

The table below summarizes classifications for community programs available to the City of Ithaca.

Table 9.11-8. Community Classifications

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Unknown	-	-
NYSDEC Climate Smart Community	Yes	Bronze	2018
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Other			

Note:

- N/A Not applicable
- NP Not participating
- Unavailable

9.1.4.6 Adaptive Capacity

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions. The table below summarizes the adaptive capacity for each hazard and the jurisdiction’s rating.

Table 9.11-9. Adaptive Capacity

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low*
Drought	Medium
Extreme Temperature	Medium
Flood	Medium
Harmful Algal Bloom	Medium
Invasive Species	Medium
Severe Storm	Medium
Severe Winter Storm	High

- *High Capacity exists and is in use
- Medium Capacity may exist; but is not used or could use some improvement
- Low Capacity does not exist or could use substantial improvement
- Unsure Not enough information is known to assign a rating



The City of Ithaca has a unique tool for addressing stormwater concerns. A Stormwater User Fee has recently been assessed for every Equivalent Residential Unit (<https://ecode360.com/29575853>). The fees collected are used to help to annually support the implementation of stormwater services.

9.1.4.7 National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

NFIP Floodplain Administrator (FPA)

Name/Title: JoAnn Cornish, Director of Planning and Development

Address: 108 East Green Street, Ithaca, NY 14850

Phone Number: 607-274-6566

Table 9.11-10. Floodplain Administrator Questionnaire

NFIP Topic	Comments
Flood Vulnerability Summary	
Describe areas prone to flooding in your jurisdiction. <ul style="list-style-type: none"> Do you maintain a list of properties that have been damaged by flooding? 	Descriptions and non-regulatory maps provided in recent LFHA
Do you maintain a list of property owners interested in flood mitigation? <ul style="list-style-type: none"> How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)? 	No
Are any RiskMAP projects currently underway in your jurisdiction? <ul style="list-style-type: none"> If so, state what projects are underway. 	Yes, FEMA is currently in process of updating FIRMs
How do you make Substantial Damage determinations? <ul style="list-style-type: none"> How many were declared for recent flood events in your jurisdiction? 	Yes – City DPW has submitted for some reimbursements in the past.
How many properties have been mitigated (elevation or acquisition) in your jurisdiction? <ul style="list-style-type: none"> If there are mitigation properties, how were the projects funded? 	To be determined.
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <ul style="list-style-type: none"> If not, state why. 	City currently uses 1981 FEMA flood maps, which are outdated. Recent LFHA study provides more detail on flood risks and mitigation strategies, but it does not replace the FEMA maps from a regulatory standpoint.
Resources	



NFIP Topic	Comments
What local department is responsible for floodplain management?	Division of Planning and Economic Development
Are any certified floodplain managers on staff in your jurisdiction?	No
Do you have access to resources to determine possible future flooding conditions from climate change?	Yes, recently completed Local Flood Hazard Analysis
Does your floodplain management staff need any assistance or training to support its floodplain management program? • If so, what type of assistance/training is needed?	N/A
Provide an explanation of NFIP administration services you provide (e.g. permit review, GIS, education/outreach, inspections, engineering capability)	-
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	-
What are the barriers to running an effective NFIP program in the community, if any?	Capacity to administer program
Compliance History	
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? • If so, state the violations.	-
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	11/09/2015
Regulatory	
What is the local law number or municipal code of your flood damage prevention ordinance? • What is the date that your flood damage prevention ordinance was last amended?	Chapter 186 of Municipal Code https://ecode360.com/8389425 (1987)
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	N/A
Are there other local ordinances, plans or programs (e.g. site plan review) that support floodplain management and meeting the NFIP requirements? For instance, does the planning board or zoning board consider efforts to reduce flood risk when reviewing variances such as height restrictions?	Planning Board evaluates flood risk when reviewing site plans and variances.
Community Rating System (CRS)	
Does your jurisdiction participate in CRS? • If yes, is your jurisdiction interested in improving its CRS Classification? • If no, is your jurisdiction interested in joining the CRS program?	No, potentially interested in joining CRS.



9.1.4.8 National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the City of Ithaca.

Table 9.11-11. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties
City of Ithaca	145	97	\$179,835	2	0

Source: FEMA 2020

Notes: Policies, claims, repetitive loss, and severe repetitive loss statistics provided by FEMA Region 2, and current as of July 7, 2020. The total number of repetitive loss properties does not include severe repetitive loss properties. SRL property information was not included in the available data set.

RL = Repetitive Loss; SRL = Severe Repetitive Loss

9.1.4.9 Additional Areas of Existing Integration

The City of Ithaca is advancing numerous efforts which incorporate key aspects of hazard mitigation. The City has done so in planning through the development of Plan Ithaca (Comprehensive Plan) as well as its work to become a certified Climate Smart Community. The City has also led the development of the Local Flood Hazard Analysis out of Public Works which helped to identify key actions to help reduce adverse flood impacts in the City. This effort further is helping to shape the update of FIRM maps. Local neighborhood plans also address a number of localized hazard concerns and works to advance cross cutting community actions.

City will further seek opportunities to advance mitigation measures through the implementation of its Comprehensive Plan.

9.1.4.10 Evacuation, Sheltering, Temporary Housing, and Permanent Housing

Evacuation routes, sheltering measures, temporary housing, and permanent housing must all be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

Evacuation Routes

The City considers the State Highways to be the main evacuations routes out and around the City. Those include Routes 13, 79, 96, 34 and 89. Depending on the nature of the emergency any combination of these routes would be activated for emergency evacuation plans. The City will identify evacuation routes according to procedures outlined in the ESF16 annex of the Tompkins County 2021 CEMP.



Sheltering

The City of Ithaca has the following known emergency shelters. In the 2021 Tompkins County CEMP, ESF 6 (Mass Care) outlines the sheltering procedures for Tompkins County. The ARC and the County keep a copy of the shelter agreements established between the County, the ARC, and the facility serving as a shelter.

Table 9.11-12. Shelter Locations in the Municipality

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Boynton Middle School	1601 N. Cayuga Street, Ithaca, NY	500/200	-	-	-	-	-
Center Ithaca	171 East State Street, Ithaca, NY	500/250	-	-	-	-	-
Cornell University	554 Campus Road, Ithaca, NY	950/475	-	-	-	-	-
GIAC	301 W. Court Street, Ithaca, NY	100/50	-	-	-	-	-
Ithaca High School	1401 N. Cayuga St., Ithaca, NY	1000/500	-	-	-	-	-

Temporary Housing

The City has numerous hotels and college residence halls that can be used for temporary housing. City parks and other public lands could also serve as shelter areas depending on the severity of the emergency. In the event temporary housing is needed, the City will work with the County to find suitable locations using the locations identified in Section 4 (County Profile) Table 4-9 as needed.

Table 9.11-13. Temporary Housing Locations in the Municipality

Site Name	Site Address	Infrastructure / Utilities Available (water, electric, septic, etc.)	Capacity (number of sites)	Type	Actions Required to Ensure Conformance with the NYS Uniform Fire Prevention and Building Code
<p>The City has numerous hotels and college residence halls that can be used for temporary housing. City parks and other public lands could also serve as shelter areas depending on the severity of the emergency. In the event temporary housing is needed, the City will work with the County to find suitable locations using the locations identified in Section 4 (County Profile) as needed.</p>					



Permanent Housing

The City is encouraging a build out of appropriate housing density based on its prescribed density with the greatest density occurring in and around downtown Ithaca.

Table 9.11-14. Permanent Housing Locations in the Municipality

Site Name	Site Address	Infrastructure / Utilities Available (water, electric, septic, etc.)	Capacity (number of sites)	Type	Actions Required to Ensure Conformance with the NYS Uniform Fire Prevention and Building Code
There are various locations throughout the City of Ithaca where increases in housing density, options and availability are occurring.					

9.1.5 Hazard Event History Specific to the City of Ithaca

The City of Ithaca has a history of natural hazard events that are detailed in Volume I, Section 5 (Risk Assessment) of this plan. A summary of historical events is then also provided in each of the hazard profiles and includes a chronology of events that have affected the City. Table 9.11-15 provides details regarding municipal-specific loss and damages the City experienced during hazard events. Information provided in the table below is based on reference material or local sources. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

Table 9.11-15. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
January – Feb. 2014	Ice Jam	No	Ice jams in Cascadilla Creek resulted in adjacent flooding to Northside neighborhood	Significant staff time, equipment and materials
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	On May 16, heavy rainfall resulted in flash flooding and washed out roads.	Although the City was impacted, City of Ithaca did not report any damages.
August 3, 2014	Heavy Rain and Flash Flooding		Showers and thunderstorms in the area produced torrential downpours. In the County, several roadways were inundated causing approximately \$100,000 in property damage.	Although the City was impacted, City of Ithaca did not report any damages.



Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
June 14-15, 2015	Heavy Rain and Flash Flood		A tropical-like airmass was in place allowing for a stripe of 2-4 inches of very heavy rain to fall in a narrow band extending from near Watkins Glen to areas north of Binghamton. Severe flash flooding was encountered with numerous roads and culverts destroyed by raging water. In some areas, homes, schools and other businesses were flooded. In Tompkins County, flooding caused the washout of numerous bridges in the area. The County had approximately \$1.5 million in damages from this event.	Although the City was impacted, City of Ithaca did not report any damages.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	Yes	Snowfall ranged between 12 and 24 inches in Tompkins County with the highest amounts in the far southeast part of the county.	Although the City was impacted, City of Ithaca did not report any damages.
July 24, 2017	Heavy Rain and Flash Flooding		Widespread thunderstorms produced three to inches of rain. This led to streams and creeks overflowing their banks and flash flooding in many areas. The County had approximately \$75,000 in property damage.	Although the City was impacted, City of Ithaca did not report any damages.
October 31-November 1, 2019	Severe Storms, Straight-Line Winds and Flooding (DR-4472)	Yes		Although the City was impacted, City of Ithaca did not report any damages.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)
- N/A Not applicable

9.1.6 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the City of Ithaca’s risk assessment results and data used to determine the hazard ranking.



9.1.6.1 Critical Facilities

New York Department of Environmental Conservation (DEC) Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a Special Flood Hazard Area (SFHA) unless constructed according to specific mitigation specifications, including being raised 2' above the Base Flood Elevation (BFE). This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 0.2-percent or 500-year flood event, or worst damage scenario. For those that do not meet this criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents Hazards United States (HAZUS) – Multi-Hazards (MH) estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.11-16. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
Andree Petroleum	Fuel	No	Yes	No
Bangs Ambulance	Emergency Services	No	Yes	No
City Water and Sewer Cold Storage	Government	No	Yes	No
City Water and Sewer Division	Government	No	Yes	No
Fingerlakes Independent Center	Non-Profit	No	Yes	No
Hydroelectric Plant	Education	Yes	Yes	Yes
Ithaca Healthcare Center	Health	No	Yes	No
Ithaca High School	Education	No	Yes	No
Ithaca Free Clinic	Health	No	Yes	No
Ithaca Wastewater Plant Treatment Plant	Government	No	Yes	No
Planned Parenthood	Health	No	Yes	No
Suicide Prevention	Health	No	Yes	No
Boynton Middle School	Education	No	Yes	No

Source: Tompkins HAZUS 2020



9.1.6.2 Hazard Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment) of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating jurisdiction may have differing degrees of risk exposure and vulnerability compared to Tompkins County? as a whole. Therefore, the City of Ithaca ranked the degree of risk to each hazard as it pertains to the community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the City of Ithaca. The City of Ithaca has reviewed the City hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the City of Ithaca indicated the following:

- The condition of the Fall Creek levee was an identified concern. The City will include erosion repairs on the Fall Creek levees as part of the detailed study of the floodwall systems for the City.
- The City supports the following hazard rankings identified in the plan.

Table 9.11-17. Hazard Ranking Input

Hazard	Ranking
Disease Outbreak	Medium
Drought	Medium
Extreme Temperature	Medium
Flood	High
Harmful Algal Bloom	Medium
Invasive Species	Medium
Severe Storm	High
Severe Winter Storm	Medium

Note: The scale is based on the following hazard rankings as established in Section 5.3.

9.1.6.3 Identified Issues

The City of Ithaca has identified the following vulnerabilities within their community:

- Flooding continues to be the City’s most pressing vulnerability, which is why investment has been made in the City’s Flood Inundation Study to identify methods for reducing this risk.
- Drought is also a recurring concern, though redundancy plans are being established with other area water purveyors.



Specific areas of concern based on resident response to the City of Ithaca Hazard Mitigation Citizen survey include:

- Climate Change, extreme temperatures, and severe winter storms were of greatest concerns for survey respondents.
- No respondent carried flood insurance.
- Most supported a mitigation measure of informing property owners of what they can do to reduce risk.

9.1.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

9.1.7.1 Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2014 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.11-18. Status of Previous Mitigation Actions

Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2021 HMP or Discontinue 2. If including action in the 2021 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
C11		Flash Flood, Lake Flood, Severe Storm	City of Ithaca	Inventory storm drains and determine where retrofits needed to prevent backflow flooding		Cost	Level of Protection	Action complete as a part of Streets & Facilities and City GIS.
						Damages Avoided; Evidence of Success		
C12		Flash Flood, Lake Flood	City of Ithaca	Encourage the retrofitting of residential basement utilities		Cost	Level of Protection	No progress.
						Damages Avoided; Evidence of Success		
C13		Flash Flood, Lake Flood	City of Ithaca	Estimate costs that may be incurred to local businesses from increased flooding, particularly in the Route 13 corridor, and work with businesses to adapt to increased risk		Cost	Level of Protection	No progress but contemplated as part of action item with the County.
						Damages Avoided; Evidence of Success		
C14		Flash Flood	City of Ithaca	Analyze and map potential impacts of Hurricane Irene/Lee level precipitation in watersheds of City of Ithaca		Cost	Level of Protection	Complete as a part of City Local Flood Hazard Analysis.
						Damages Avoided; Evidence of Success		
			City of Ithaca			Cost		



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2021 HMP or Discontinue 2. If including action in the 2021 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Damages Avoided; Evidence of Success	
C15		Infestation		Create a rapid response unit in cooperation with the Tompkins County Sheriff's Department to assist in dealing with water borne invasives such as Hydrilla		Level of Protection		Ongoing effort as part of team working on the eradication of hydrilla in the Cayuga Inlet and nearby waterbodies. Should continue as action.
						Damages Avoided; Evidence of Success		
C16		Infestation	City of Ithaca	Continue to advocate for funding to support eradication of Hydrilla from Cayuga Inlet		Cost		Actively funded
						Level of Protection		
						Damages Avoided; Evidence of Success		
C17		Utility Failure	City of Ithaca	Finalize plans for an emergency generator for City Hall and the Water Filtration Plant		Cost		Action complete – both buildings have generators.
						Level of Protection		
						Damages Avoided; Evidence of Success		
C18		Ice Storm, Utility Failure	City of Ithaca	Promote underground utilities and district heating on new development projects		Cost		Underground electric service is currently underway in Collegetown. Lessons learned from this effort will be shared with future projects
						Level of Protection		
						Damages Avoided; Evidence of Success		



Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2021 HMP or Discontinue 2. If including action in the 2021 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
C19		Water Contamination	City of Ithaca	Implement the update of the Water Filtration Plant and formalize protection of the Six Mile Creek Watershed through the development of a watershed plan that includes stream corridor protections and green infrastructure recommendations		Damages Avoided; Evidence of Success		Water Plant Complete but no formal watershed protections City works with Finger Lakes Land Trust and Tompkins County to protect upland conservation lands in Six Mile Creek.
C110		Landslide	City of Ithaca	Address creek side erosion at City of Ithaca Raw Water Intake on Six Mile Creek		Damages Avoided; Evidence of Success		Raw water pipe supports have been recently constructed to protect pipe damage from landslides. Intake work is designed and budgeted, but not yet implemented.



9.1.7.2 Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The City of Ithaca has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2014 Plan:

- In order to address persistent slope stability issues on Forest Home Drive, the City coordinated the reinforcement of the sewer line support and road underpinning adjacent to Fall Creek on the Cornell University campus. All the work connected with this project is complete.

9.1.7.3 Proposed Hazard Mitigation Initiatives for the Plan Update

The City of Ithaca participated in a mitigation action workshop on October 22, 2020 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: e.g., FEMA 551 'Selecting Appropriate Mitigation Measures for Floodprone Structures' (March 2007) and FEMA 'Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards' (January 2013).

Table 9.11-19 summarizes the comprehensive range of specific mitigation initiatives the City of Ithaca would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.11-20 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.11-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2021-C Ithaca-001	Flood Walls and Backflow Preventers on Six Mile Creek and Cascadilla Creek	1, 3	Flood	<p>Problem: Large streamflows on Six Mile Creek and Cascadilla Creek will overtop creek banks and flood neighborhoods, according to a sophisticated flood model recently prepared by the USGS. Neighborhood flooding occurs for 50-year streamflow events and larger events.</p> <p>Solution: The channel capacity along several segments of Six Mile and Cascadilla Creeks needs to be increased. Increasing the effective height of the creek banks can contain flows from severe streamflow events. Floodwalls are one possibility for increasing channel capacity. If floodwalls were used, all storm sewer outfalls into these creeks would require check valves to prevent flooding due to backflow through the storm sewer system.</p>	No	Yes	3-5 Years	City of Ithaca DPW	\$3-4M	\$20M	BRIC, LWRP grants, Local Match	High	SIP	SP
2021-C Ithaca-002	Fall Creek Levee Repair	1, 3	Flood	<p>Problem: The south levee along Fall Creek between N. Cayuga Street and Lake Street, rebuilt nearly 40 years ago, is showing signs of erosion. This levee was breached due to erosion in the late 1970s, resulting in flooding of the Fall Creek neighborhood.</p>	Yes – Ithaca High School	Yes	3 to 5 Years	City of Ithaca DPW	\$1-10M	\$5-10M	BRIC, LWRP, Local Match	High	SIP	SP



Table 9.11-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<p>Solution: At a minimum, the levee should be armored with large riprap or shotcrete after eroded areas are repaired. Ideally, the levees on both the north and south sides should be engineered and rebuilt to standards that meet current FEMA certification requirements.</p>										
2021-C Ithaca-003	Nuisance Flooding Analysis	1, 2	Flood	<p>Problem: The City of Ithaca is located downstream from the Town of Ithaca and Village of Cayuga Heights. Runoff from heavy downpours from surrounding municipalities causes localized nuisance flooding in several parts of the City.</p> <p>Solution: An intermunicipal engineering study is needed to determine causes of the nuisance flooding and identify mitigation measures. Because two or more municipalities (and municipal budgets) are involved, there has been insufficient coordinated drainage design and construction projects.</p>	No	No	3-10 Years	City of Ithaca DPW, Town of Ithaca DPW, Cayuga Heights DPW	\$1M	Avoiding Road Closures, wet basements, eroded channels	Local funds, BRIC	Medium	SIP	SP
2021-C Ithaca-004	Cayuga Inlet Flood Control Channel	1, 2, 3	Flood	<p>Problem: The Flood Control Channel at Cayuga Inlet is not functioning as designed and is no longer certified by the ACOE.</p>	No	Yes	3 Years	NYSDEC	High	Flood reduction to adjacent residences	BRIC, NYSDEC	High	SIP	SP



Table 9.11-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Maintenance			Solution: Dredge in and around the Cayuga Inlet Flood Control Channel to reduce threat of flood inundation and maintain levee function as required by ACOE.						and businesses				
2021-C Ithaca-005	Dam Maintenance	1	Flood, Severe Storm	<p>Problem: The City's 60' Dam on Six Mile Creek requires structural reinforcing and in advance requires dredging to the connected Silt Dam, 60' and 30' dams to reduce flood risk in the City of Ithaca.</p> <p>Solution: Outline steps required for structural reinforcement for 60' and 30' dams including the dredging of those facilities and develop a funding strategy for implementing this work.</p>	Yes	Yes	2 Years	City of Ithaca	\$7M	Proper dam function and flood risk reduction	BRIC, Local Match	Med	SIP	SP
2021-C Ithaca-006	Hydroelectric Plant Resiliency Assessment	1, 2	Flood, Severe Storm	<p>Problem: Cornell hydroelectric plant is a critical facility that lies within 100-year floodplain. Its susceptibility to flood and severe storm events is unclear.</p> <p>Solution: Because these facilities are not municipally owned, the City will conduct outreach to Cornell to investigate any retrofitting options to improve flood mitigation. If measures are recommended apply for FEMA funding to advance improvements.</p>	Yes	Yes	5 Years	City of Ithaca, Cornell University	Unknown	Unknown	Local Funds, BRIC	Med	SIP	SP
2021-C Ithaca-007	Repetitive Loss	1,2,3	Flood Severe Storm	Problem: There are currently 2 NFIP repetitive loss properties in the community.	No	No	1 year	City of Ithaca	Low	Improved understandin	Municipal Budget	Med	EAP	PR



Table 9.11-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Property Outreach			Solution: Conduct outreach to flood-prone property owners and provide information on mitigation alternatives. After preferred mitigation measures are identified, collect required property-owner information and develop a FEMA grant application and BCA to obtain funding to implement acquisition/purchase/moving/elevating residential homes in the areas that experience frequent flooding.						g of risk reduction				
2021-C Ithaca-008	30 and 60-Foot Dam	1,2	Flood, Severe Storms	<p>Problem: The City of Ithaca’s 30 and 60-foot dams are classified as a class C “high hazard” dams and pose a threat to the surrounding community.</p> <p>Solution: The City of Ithaca will conduct outreach to the dam owner and operator about the condition of the dam and potential risks posed by a dam failure and support an inspection plan of the dam by an engineer in accordance with the existing EAP and NYSDEC Dam Safety guidelines. The City will aid in the development of an updated EAP as needed. If updates have been completed on the dam, the City will request an inspection by NYSDEC to reclassify the dam.</p>	Yes	No	Short, within 5 years	City of Ithaca	Low	High	Municipal Budget	High	EAP	PR



Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
EHP	Environmental Planning and Historic Preservation
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
BRIC	Building Resilient Infrastructure and Communities Program

Timeline:

The time required for completion of the project upon implementation


Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Critical Facility:

Yes  Critical Facility located in 1% floodplain

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.



- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*



Table 9.11-20. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
2021-C Ithaca-001	Flood Walls and Backflow Preventers on Six Mile Creek and Cascadilla Creek	1	1	1	1	1	1	0	1	1	1	0	1	1	0	11	High
2021-C Ithaca-002	Fall Creek Levee Repair	1	1	1	1	1	1	0	1	1	1	0	1	1	0	11	High
2021-C Ithaca-003	Nuisance Flooding Analysis	0	1	0	1	1	1	1	1	1	1	0	1	1	1	11	High
2021-C Ithaca-004	Cayuga Inlet Flood Control Channel Maintenance	1	1	0	0	0	1	0	0	1	1	1	1	1	1	9	High
2021-C Ithaca-005	Dam Maintenance	1	1	0	1	0	0	1	1	1	1	1	0	1	0	9	High
2021-C Ithaca-006	Hydroelectric Plan Resiliency Assessment	0	1	1	0	0	0	1	0	0	1	1	0	0	0	5	Med
2021-C Ithaca-007	Repetitive Loss Property Outreach	1	1	1	0	0	0	0	0	1	0	0	1	0	1	6	Med
2021-C Ithaca-008	30 and 60-Foot Dam	1	1	1	1	1	1	0	1	1	0	1	1	1	1	12	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



9.1.8 Proposed Mitigation Action Types

The table below indicates the range of proposed mitigation action categories.

Table 9.11-21. Analysis of Mitigation Actions by Hazard and Category

Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Disease Outbreak										
Drought										
Extreme Temp										
Flood		001; 002; 003; 004; 005; 006		007; 008	007; 008				001; 002; 003; 004; 005; 006	
Harmful Algal Bloom										
Invasive Species										
Ground Failure										
Severe Storm		005006		007; 008	007; 008				005	
Severe Winter Storm										
Wildfire										

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

9.1.9 Staff and Local Stakeholder Involvement in Annex Development

The City of Ithaca followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many City departments, including: The Department of Public Works and City Clerk. Mike Thorne represented the community on the City of Ithaca Hazard Mitigation Plan Planning Partnership, Steering Committee, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. Julie Conley Holcomb further helped to support the planning process as active member of the Planning Partnership. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment,



reporting on the status of previously identified actions, and participating in action identification and prioritization.

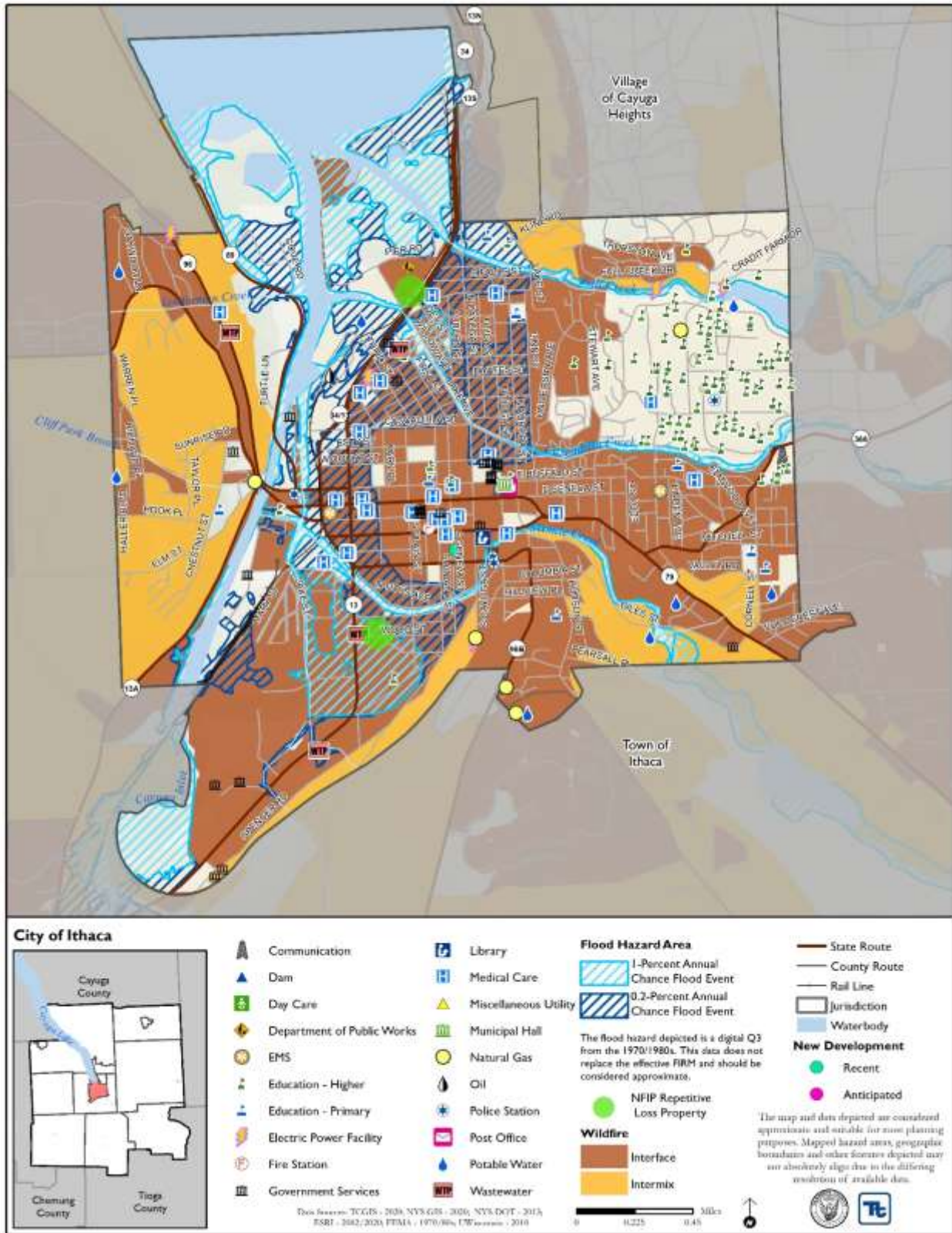
Additional documentation on the City of Ithaca's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meetings).

9.1.10 Hazard Area Extent and Location

A hazard area extent and location map has been generated for the City of Ithaca that illustrates the probable areas impacted within the City of Ithaca. This map is based on the best available data at the time of the preparation of this plan and is considered to be adequate for planning purposes. The map has only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Ithaca has significant exposure. The map is illustrated below.



Figure 9.11-1. City of Ithaca Hazard Area Extent and Location Map



Action Worksheet			
Project Name:	Flood Walls and Backflow Preventers on Six Mile Creek and Cascadilla Creek		
Project Number:	2021-C Ithaca-001		
Risk / Vulnerability			
Hazard(s) of Concern:	Flooding		
Description of the Problem:	Large streamflows on Six Mile Creek and Cascadilla Creek will overtop creek banks and flood neighborhoods, according to a sophisticated flood model recently prepared by the USGS. Neighborhood flooding occurs for 50-year streamflow events and larger events.		
Action or Project Intended for Implementation			
Description of the Solution:	The channel capacity along several segments of Six Mile and Cascadilla Creeks needs to be increased. Increasing the effective height of the creek banks can contain flows from severe streamflow events. Floodwalls are one possibility for increasing channel capacity. If floodwalls were used, all storm sewer outfalls into these creeks would require check valves to prevent flooding due to backflow through the storm sewer system.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the critical facility located in the 1% annual chance flood area?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	100-year flood	Estimated Benefits (losses avoided):	\$20 million
Useful Life:	75 years	Goals Met:	Goal 1--Resiliency
Estimated Cost:	\$3-4 million	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Start in 1 year
Estimated Time Required for Project Implementation:	3 to 5 years	Potential Funding Sources:	BRIC LWRP grants Local match
Responsible Organization:	City of Ithaca DPW	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation Plan, USGS report/model
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current risk continues
	Floodwall/Backflow Preventer	\$3-4 million	LFHA Report shows high effectiveness
	Dredge creeks to increase capacity	\$1-2 million?	Recurring work. Permitting issues. Potential unintended consequences.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Flood Walls and Backflow Preventers on Six Mile Creek and Cascadilla Creek	
Project Number:	2021-C Ithaca-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	The project protects life
Property Protection	1	This project protects property
Cost-Effectiveness	1	Benefit/Cost Ratio >5
Technical	1	The municipality has the technical capabilities to conduct this project
Political	1	Aesthetics, access, and views of creek will be important. Temporary system should be considered (temporary use only during emergencies)
Legal	1	There are no legal challenges with this project
Fiscal	0	Funding would need to be secured
Environmental	1	The project has a positive environmental impact
Social	1	Provides flood protection throughout various neighborhoods and land uses. Aesthetics need to be considered.
Administrative	1	DPW will maintain
Multi-Hazard	0	This project only prevents flooding
Timeline	1	The timeline is adequate
Agency Champion	1	City of Ithaca
Other Community Objectives	0	None claimed thus far
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Fall Creek Levee Repair		
Project Number:	2021-C Ithaca-002		
Risk / Vulnerability			
Hazard(s) of Concern:	Flooding		
Description of the Problem:	The south levee along Fall Creek between N. Cayuga Street and Lake Street, rebuilt nearly 40 years ago, is showing signs of erosion. This levee was breached due to erosion in the late 1970s, resulting in flooding of the Fall Creek neighborhood.		
Action or Project Intended for Implementation			
Description of the Solution:	At a minimum, the levee should be armored with large riprap or shotcrete after eroded areas are repaired. Ideally, the levees on both the north and south sides should be engineered and rebuilt to standards that meet current FEMA certification requirements.		
Is this project related to a Critical Facility?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is the critical facility located in the 1% annual chance flood area?		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	High	Estimated Benefits (losses avoided):	Needs to be modeled. Estimate \$5-10 million
Useful Life:	50 years	Goals Met:	Goal 1--Resiliency
Estimated Cost:	\$1-\$10 million	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Start within 2 years
Estimated Time Required for Project Implementation:	3 to 5 years	Potential Funding Sources:	BRIC, LWRP Grant, Local Match
Responsible Organization:	City of Ithaca DPW	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Potential breach and breakage of levee
	Repair erosion on south levee and armor with riprap and/or shotcrete	\$1-2 million	Will address threat, but won't meet FEMA levee certification
	Engineer and rebuild north and south levees to meet FEMA levee certification requirements	\$10 million?	Long term solution. Lower flood insurance rates if levees are certified
Progress Report (for plan maintenance)			
Date of Status Report:			



Report of Progress:	
Update Evaluation of the Problem and/or Solution:	



Action Worksheet		
Project Name:	Fall Creek Levee Repair	
Project Number:	2021-C Ithaca-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	The project protects life
Property Protection	1	This project protects property
Cost-Effectiveness	1	The project is cost effective
Technical	1	The municipality has the technical capabilities to conduct this project
Political	1	There is no political opposition to the project
Legal	1	There are no legal challenges with this project
Fiscal	0	The project requires additional funding that the city does not have
Environmental	1	The project has a positive environmental impact
Social	1	The project has a positive social impact
Administrative	1	The municipality has the proper administrative capabilities
Multi-Hazard	0	This project only prevents flooding
Timeline	1	The timeline is adequate
Agency Champion	1	City of Ithaca
Other Community Objectives	0	None claimed thus far
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Nuisance Flooding		
Project Number:	2021-C Ithaca-003		
Risk / Vulnerability			
Hazard(s) of Concern:	Flooding		
Description of the Problem:	The City of Ithaca is located downstream from the Town of Ithaca and Village of Cayuga Heights. Runoff from heavy downpours from surrounding municipalities causes localized nuisance flooding in several parts of the City.		
Action or Project Intended for Implementation			
Description of the Solution:	An intermunicipal engineering study is needed to determine causes of the nuisance flooding and identify mitigation measures. Because two or more municipalities (and municipal budgets) are involved, there has been insufficient coordinated drainage design and construction projects.		
Is this project related to a Critical Facility?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the critical facility located in the 1% annual chance flood area?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	Medium	Estimated Benefits (losses avoided):	Road closures, wet basements, eroded channels
Useful Life:	50 Years	Goals Met:	Goal 1--Resiliency
Estimated Cost:	\$1 million (design & const.)	Mitigation Action Type:	SIP
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Start engineering design in 1 year
Estimated Time Required for Project Implementation:	3-10 years. Phase in projects as funding allows	Potential Funding Sources:	Local Funds BRIC
Responsible Organization:	City of Ithaca DPW Town of Ithaca DPW Village of Cayuga Heights DPW	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Upland Mitigation	High	Reduce concentrated flow
	Downstream Infrastructure	High	Accommodate increased flow
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Nuisance Flooding	
Project Number:	2021-C Ithaca-003	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	The project protects life
Property Protection	1	This project protects property
Cost-Effectiveness	0	The project is cost effective
Technical	1	The municipality has the technical capabilities to conduct this project
Political	1	Intermunicipal nature may make this more complex.
Legal	1	There are no legal challenges with this project
Fiscal	1	Phased projects over time using local budgets. Grant funding should be sought.
Environmental	1	The project has a positive environmental impact
Social	1	The project has a positive social impact
Administrative	1	The municipality has the proper administrative capabilities
Multi-Hazard	0	This project only prevents flooding
Timeline	1	Some projects could be started sooner rather than later
Agency Champion	1	City of Ithaca
Other Community Objectives	1	Sustainability
Total	11	
Priority (High/Med/Low)	Medium	

