MUNICIPAL ANNEX | City of Syracuse

Total Population (2010 Census)
145,170

Total Land (square miles)
25.6

Total Number of Buildings
51,837

Percent of Buildings in Regulatory Floodplain
2%

Number of National Flood Insurance Program (NFIP) Policies and Percent in Regulatory Floodplain
200 (56%)

Number of Repetitive Loss (RL) Properties
5

Total Agricultural Land (acres)
229.0

Harmful Algal Bloom Impacted Waterbody
Yes

Proposed Project Types

Structure and Infrastructure Projects, Education and Awareness Programs, Local Plans and Regulations, and Natural Systems Protection

Mitigation Focus

Severe Storm
Harmful Algal Bloom
Severe Winter Storm

9.33 CITY OF SYRACUSE

This section presents the jurisdictional annex for the City of Syracuse. 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 municipality and who in the city participated in the planning process; an assessment of the City of Syracuse'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.

9.33.1 Hazard Mitigation Planning Team

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

Primary Point of Contact	Alternate Point of Contact
Name: Mary E. Robison Title: City Engineer Phone Number: 315-448-8200 Address: 233 E. Washington Street, Room 401 Syracuse, NY 13202 Email: mrobison@syrgov.net	Name: Russell Houck Title: Facilities Engineer Phone Number: 315-448-8059 Address: 233 E. Washington Street, Room 401 Syracuse, NY 13202 Email: rhouck@syrgov.net
Floodplain Administrator	
Name: Ken Towsley Title: Director, Div. of Code Enforcement/Neighborhood & Business Dev. Phone Number: 315-448-8681 Address: 233 E. Washington Street, Room 401 Syracuse, NY 13202 Email: ktowsley@syrgov.net	

9.33.2 Municipal Profile

The City of Syracuse lies in the center of Onondaga County in central New York State. The City of Syracuse has a total area of 25.6 square miles. The city has functioned as a major crossroads over the last two centuries, first between the Erie Canal and its branch canals, then of the railway network. Syracuse is located by the intersection of Interstates 90 and 81, and its airport is the largest in the region. Syracuse is home to Syracuse University, a major research university, as well as several smaller colleges and professional schools. The city stands at the northeast corner of the Finger Lakes Region. Land to the north of Syracuse is generally flat while land to the south is hilly. Onondaga Creek, a waterway that runs through downtown, flows northward through the city. The city is bordered by the Town of Salina to the north, the Town of Geddes to the northwest, the Village of Solvay to the west, the Town of Onondaga to the south and the Town of DeWitt and Village of East Syracuse to the east.

Onondaga Creek, a waterway that runs through downtown, flows northward through the city. The city has many neighborhoods which were originally various villages that joined the city over the years. Although the central part of Syracuse is flat, many of its neighborhoods are located on small hills such as University Hill and Tipperary Hill. The City of Syracuse officially recognizes 26 different neighborhoods and includes numerous business districts including Downtown, Eastwood, Little Italy, University Hill, and Westcott. The estimated 2016 population was 144,350, a 0.6 percent decrease from the 2010 Census (145,170).

The city is headed by an elected mayor who is limited to two four-year terms. The legislative branch of Syracuse is the Syracuse Common Council. The Onondaga County Supreme and County Court is the trial court of general

jurisdiction for Syracuse. It is also the administrative court for the Fifth District of the New York State Unified Court System.

Data from the 2016 U.S. Census American Community Survey estimates that 6.8 percent of the city population is five years of age or younger, and 11.9 percent is 65 years of age or older.

History and Cultural Resources

In the early 1800's, before Syracuse was known as Syracuse, it was called Bogardus Corners because the first building in the area was an inn owned by Mr. Bogardus. The inn was sold to Mr. Cossit, and the name of the area was changed to Cossit's Corners. The community was growing and wanted a post office and a new name. John Wilkinson, the man who was to become the Village of Syracuse's first postmaster, suggested the name "Syracuse". He had read about a city in Sicily called "Siracusa" that sounded a lot like Cossit's Corners. So Cossit's Corners became Syracuse, and Syracuse became a village, just in time for opening of the Erie Canal.

Syracuse's low, swampy land was ideal for canal construction. The Erie Canal opened in 1825 and quickly established Syracuse's dominance over nearby settlements, including the Village of Salina. As a result of the boom of the early canal years, the villages of Salina and Syracuse merged to become the City of Syracuse in 1848. Syracuse's first mayor was Harvey Baldwin. Syracuse's nickname is the "salt city." Some people say that Syracuse was a city that salt built. But in reality, the city was built because of the Erie Canal, which continued to run through the heart of the city until the mid-1920's.

The present appearance of Syracuse was shaped in the years after the Civil War, a time when salt manufacturing began to decline. But Syracuse's many businesses and diversified industries assured the city's continued economic prosperity. Candle makers, beer brewers, steel producers and manufacturers of furniture, caskets, bicycles and cars helped the city to flourish. All sorts of goods were made in Syracuse (including gears, typewriters, electrical devices, shoes, glass and china) by companies who took advantage of Syracuse's good transportation system, its central location and its ready, skilled labor force.

The City of Syracuse is home to several colleges and universities including Syracuse University, SUNY College of Environmental Science and Forestry, SUNY Upstate Medical University, Onondaga Community College, Pomeroy College of Nursing at Crouse Hospital, St. Joseph's College of Nursing, and Le Moyne College. In addition to collegiate sports teams, the city is also home to the Syracuse Mets (New York Mets AAA baseball affiliate), the Syracuse Crunch (hockey), the Syracuse FC (soccer), and the Syracuse Silver Knights (indoor soccer). The city has numerous sports venues of various sizes to host the wide array of athletic programs. The City of Syracuse is also home to ten city libraries, various performing art venues, numerous museums and art galleries, and over 170 parks, fields, and recreation areas.

Growth/Development Trends

Table 9.33-1 summarizes major residential/commercial development within in the regulated floodplain that is under construction or planned as of 8/15/2018. Refer to the map in Figure 9.33-1 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.33-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2013 to present					
COR Inner Harbor Development	Phase 1 - Res/Comm	112 res. units	701 Van Rensselaer St	NEHRP: D&E	Near completion as of 11/2018

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Known or Anticipated Development in the Next Five (5) Years					
Star Park – State Fair Blvd	Res	1 new structure with 50 Units	135 State Fair Blvd.	Flood: 1% Annual Chance Flood; NEHRP: D&E	Not yet in construction
Rescue Mission Housing	Mixed Use	Renovation and new addition – 128 Units	120 Gifford Street	Flood: 0.2% Chance; NEHRP: D&E	Shelter - Not yet in construction
Maguire Syracuse	Comm	1 new Structure/1 significant improvement	959, 1027 Hiawatha Blvd. W; 401-403 and 406-410 State Fair Blvd.; 101-103 Rusin Avenue	Flood: 1% Annual Chance Flood; NEHRP: D&E; Carbonate Bedrock	Auto Dealership lot and buildings- Not yet in construction
COR Inner Harbor Development	Res/Comm – Phase 2	500+ units	Syracuse Inner Harbor	Could not locate.	Not yet in construction

** Only location-specific hazard zones or vulnerabilities identified.*

9.33.3 Hazard Event History Specific to the City of Syracuse

Onondaga County has a history of natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The City of Syracuse's history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Onondaga County. Table 9.33-2 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 9.33-2. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	Onondaga County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April – May 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (FEMA-DR-1993)	Yes	A slow moving warm front pushed northward across central New York late in the afternoon on April 25th. Severe weather developed, and in addition to reports of severe wind damage and hail, plenty of wind shear in the vicinity of the warm front allowed for a few super-cell thunderstorms and tornadoes to develop. In addition, areas of heavy rain caused significant flash flooding in several locations of central New York. On May 26, a deep upper level low pressure system shifted east from the mid-Mississippi Valley region through the afternoon and evening, allowing numerous showers and thunderstorms to develop. Many reports of large hail and damaging winds occurred in central New York.	The city experienced straight line wind damage, resulting in road closures and facility damages.

Dates of Event	Event Type (Disaster Declaration if applicable)	Onondaga County Designated?	Summary of Event	Municipal Summary of Damages and Losses
June 30-July 1, 2015	Flash Flood	No	An unseasonably strong storm system tapping into above normal moisture sources across the Great Lakes and Northeast triggered multiple heavy rain producing thunderstorms across the region. Localized torrential rainfall in central New York caused serious urban flash flooding in the Syracuse, NY metropolitan area.	Citywide, damages were estimated between three and five million dollars. At the Croly/E. Fayette intersection, one person was killed after entering a flooded street area and being pulled into a manhole and into the sewer system. $500,000 settlement made.
Sept 2017, August 2018	Harmful Algal Bloom	No	Harmful algae blooms were identified in Skaneateles Lake in 2017, followed by small localized blooms in 2018 resulting in the detection of microcystin (a form of cyanotoxin) in raw and treated water samples collected from Syracuse Water Department Lake Intakes.	Severe illness potential; economic impacts if water supply curtailed.

Notes:

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

Figure 9.33-1. Syracuse Labor Day Windstorm – September 1998

Figure 9.33-2. Syracuse Labor Day Windstorm – September 1998

Figure 9.33-3. Skaneateles Lake Harmful Algal Bloom - September 2017

9.33.4 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 hazards of greatest concern and risk to the City of Syracuse. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk Ranking

This section includes 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 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 town or village may have differing degrees of risk exposure and vulnerability compared to Onondaga County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the City of Syracuse. The City of Syracuse has reviewed the County 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 indicated the following:

- Severe winds storms are the highest hazard have caused the most damage and injury within Syracuse over the last three decades. The city agreed with the hazard ranking for severe winter storms.
- Harmful algal bloom was deemed a high hazard due to the dependence of the City on the lake for drinking water.
- Flash flooding with damages occurs every one to two years within Syracuse and recently caused a related fatality. This hazard is ranked a medium risk.
- Drought hazard was considered to be a medium risk and adjusted the calculated ranking to reflect that the city is minimally affected by drought events as the lake provides the city potable water supply and there is minimal water reliant industry.
- The Invasive Species Hazard was adjusted to reflect a medium ranking to consider the environmental impacts of the emerald ash borer including impact to the urban tree canopy, heat island effects, and safety issues.

Table 9.33-3. City of Syracuse Municipal Hazard Ranking Input

HAZARD	Drought	Earthquake	Flood	Geologic	Harmful Algal Bloom	Invasive Species	Severe Storm	Severe Winter Storm
RELATIVE RISK FACTOR	Medium	Low	Medium	Low	High	Medium	High	High

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

Critical Facilities Flood Risk

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 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYSDHSES 2017).

The City of Syracuse has a listing of critical facilities located in the 1-percent and 0.2-percent floodplain. The owners of these facilities will be contacted by mail alerting them to the potential flood hazards relative to their facility. This action is incorporated into Table 9.33-12 Proposed Hazard Mitigation Initiatives (Initiative C-15). The initiative also targets conducting and maintaining a city critical infrastructure inventory.

Identified Issues

The municipality has identified the following vulnerabilities within the community:

- Severe winds storms are the highest hazard have caused the most damage and injury within Syracuse over the last three decades. Severe snow storms caused power outages and limit transportation until roads are cleared.
- Harmful Algal Blooms have been experienced in 2017 and 2018 on Skaneateles Lake affecting the City of Syracuse drinking water supply. In February 2019, the City Mayor asked state lawmakers for $12 million in funding assistance for the city to extend its water intake pipe deeper and farther into the lake to reduce risk of contamination.
- Flash flooding with damages occurs every one to two years within Syracuse and recently caused a related fatality. Sedgewick, Eastwood, I-690/I-81 interchange and the Fayette/Westmoreland areas have experienced such flooding recently. The city has noted that flash flooding is becoming increasingly common and problematic. As a result, the city is interested in targeting reducing flash flood volumes and sewer infrastructure improvements.
- Drought hazard was considered to be a medium risk and adjusted the calculated ranking to reflect that the City is minimally affected by drought events as the lake provides the city potable water supply and there is minimal water reliant industry.
- The Invasive Species including the emerald ash borer have impacted the urban tree canopy, heat island effects, and caused safety issues.

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

- Northeastern corner of Onondaga county is prone to flooding
- In Syracuse, Lodi street as it passes under 690
- Flooding in lower lying streets like W. Fayette Street between Magnolia Street and S Geddes Street in Syracuse.
- Distribute information about basic emergency kits to bolster emergency preparedness efforts.
- Greener infrastructure to manage stormwater on public and private land - and you should include saving the rain in codes and ordinances as a requirement for property retrofits.
- Get more literature out more frequently- not just the NYS Fair- about emergency preparedness. Provide details and a basic started kit if possible, or at least a list of inexpensive items that people can get to start them out.

9.33.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the City of Syracuse.

Table 9.33-4. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Comprehensive Plan	Yes – 3/17/2014	Local	Planning, Common Council, Mayor's Office	City of Syracuse Comprehensive Plan 2040
Capital Improvements Plan	Yes	Local	Mayor's Office	Capital Improvement Program 2018/19 – 2023/24
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	Yes	Local/State	Engineering Dept.	Syracuse Stormwater Management Plan- May 2018
Open Space Plan	Yes	Local		Part of Land Use and Development Plan 2040; specific plan under development
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	Yes	Local	Planning, Common Council, Mayor's Office	Syracuse Comprehensive Plan 2040
Comprehensive Emergency Management Plan	Yes	County	Part of County Plan	Comprehensive Emergency Management Plan
Emergency Operation Plan	Yes	County	Part of County Plan	Emergency Operation Plan
Evacuation Plan	Yes	County	Part of County Plan	Evacuation Plan
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	Yes	Local/MPO	SMTC, Engineering, Mayor	SMTC 2050 Long Range Transportation Plan 2015; Syracuse Bicycle Plan 2040; Syracuse Pedestrian Plan under development
Strategic Recovery Planning Report	No	-	-	-
Climate Adaptation Plan	No	-	-	-
Resilience Plan	No	-	-	-
Other Plans:	No	-	-	-
Regulatory Capability				
Building Code	Yes	Local/State	Codes	New York State Building Code (2015 International Building Code); Revised

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
				General Ordinances of the City of Syracuse **(A**dopted 1961)
Zoning Ordinance	Yes	Local	Zoning Dept.	Charter of the City of Syracuse, Local Law #13 of 1960
Subdivision Ordinance	Yes	Local	Zoning Dept.	Revised General Ordinances of the City of Syracuse **(A**dopted 1961)
NFIP Flood Damage Prevention Ordinance	Yes – 9/6/2016	Local	Codes, Engineering	City Local Law 5 of 2016
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	Local, State	Codes, Engineering	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	All City Depts.	Revised General Ordinances of the City of Syracuse **(A**dopted 1961)
Stormwater Management Ordinance	Yes	Local	Codes, Engineering	Syracuse Ordinance 53-2007
Municipal Separate Storm Sewer System (MS4)	Yes	Local, County	Engineering, DPW	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS Department of State, Real Estate Agent	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Municipal Tree Ordinance	Yes	Local	Parks	Revised General Ordinances of the City of Syracuse (Adopted 1958, Revised 1981)
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Pending	Local	Zoning Department	Future Zoning ordinances to address wetlands, steep slopes, woodlands

Administrative and Technical Capability

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

Table 9.33-5. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Planning Dept.
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	SIDA/SECO (Economic development agencies)

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Maintenance programs to reduce risk	Yes	Drainage clearing (DPW); Tree trimming (Parks/arborist)
Mutual aid agreements	Yes	Local Fire Depts.
Technical/Staffing Capability		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Planning Dept., Engineering Dept.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Engineering (Civil engineers)
Planners or engineers with an understanding of natural hazards	Yes	CFM – Engineering Dept.
NFIP Floodplain Administrator (FPA)	Yes	Director of Codes
Surveyor(s)	Yes	Engineering Dept.
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Engineering Dept. (GIS)
Scientist familiar with natural hazards	Yes	City Arborist
Warning systems/services	No	-
Emergency Manager	No	-
Grant writer(s)	Yes	Research Dept., Planning Dept.
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

Fiscal Capability

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

Table 9.33-6. 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	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Environmental Facilities Corp.; NY Consolidated funding; NYS DEC, Urban & Community Forestry Grant Program
Open Space Acquisition funding programs	No
Other	Yes

Community Classifications

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

Table 9.33-7. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Yes	7	2017 Recertification (Feb 2018)
Building Code Effectiveness Grading Schedule (BCEGS)	Unknown	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	1	-
NYSDEC Climate Smart Community	Yes	Registered	2010
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	Yes	-	Onondaga Lake Watershed Advisory Committee
Public education program/outreach (through website, social media)	Yes	-	Stormwater and flood safety outreach through website and city-wide mailings
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:
N/A *Not applicable*
NP *Not participating*
- *Unavailable*

The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule (https://www.isomitigation.com/bcegs/)
- The ISO Mitigation online ISO's Public Protection website at https://www.isomitigation.com/ppc/
- New York State Climate Smart Communities (http://www.dec.ny.gov/energy/56876.html)
- The National Weather Service Storm Ready website at https://www.weather.gov/stormready/communities
- The National Firewise Communities website at http://firewise.org/

Self-Assessment of Capability

The table below provides an approximate measure of the City of Syracuse's capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.33-8. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability		X	
Fiscal capability	X – City budget is fiscally constrained due to limited tax base relative to extent of city infrastructure		
Community political capability		X	
Community resiliency capability	X – City budget limited for response and recovery. External sources relied upon to mitigate hazard damages.		
Capability to integrate mitigation into municipal processes and activities		X	

National Flood Insurance Program

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

NFIP Floodplain Administrator (FPA)

Ken Towsley, Director of Codes

National Flood Insurance Program (NFIP) Summary

The City of Syracuse utilizes the FEMA repetitive loss list to track properties that have been flood damaged. The city does not make Substantial Damage estimates. The city's NFIP report from 8/31/2016 indicated 3 substantial damage closed paid losses. Flooding has been very infrequent in Syracuse in the last 4 decades. Major damage has not been evidenced in this period due to riverine flooding. The NFIP indicated that 97 losses were claimed as of 8/31/2016, with 3 substantial damage closed paid losses. 5 repetitive loss properties were identified on the FEMA 2016 listing (2 not from riverine flooding).

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

Table 9.33-9. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
City of Syracuse	200	136	$365,786	5	0	112

Source: FEMA Region 2 2018.
(1) Policies, claims, RL, and SRL statistics provided by FEMA Region 2, and are current as of June 30, 2018. Total number of RL properties does not include SRL properties. Number of claims represents claims closed by July 31, 2018.
(2) Total building and content losses from the claims file provided by FEMA Region 2.

(3) Number of policies inside and outside of flood zones is based on latitude and longitude coordinates provided by FEMA Region 2 in the policy file. FEMA noted that for a property with more than one entry, more than one policy may have been in force or more than one Geographic Information System (GIS) specification was possible. Number of policies and claims, and claims total, exclude properties outside Onondaga County boundary, based on provided latitude and longitude coordinates.

RL Repetitive Loss

SRL Severe Repetitive Loss

Resources

The Codes Department and Engineering Department are responsible for floodplain administration. NFIP administration services and functions include building permit review, floodplain development review, elevation certificate review, hydraulic study review, and site inspections. The city provides NFIP insurance and safety outreach to property owner requests and NFIP and risk mitigation information on the city website and through city-wide mailings. The FPA noted that they have access to available USGS gage data and USGS stream discharge statistics based on regression analysis for New York to help determine possible future flooding conditions from climate change. The FPA feels adequately supported but noted that limited city staffing and budget present barriers to running an effective floodplain management program. The FPA noted they would consider attending continuing education and/or certification training on floodplain management if it were offered in the County for all local floodplain administrators.

Compliance History

The City of Syracuse is in good-standing in the NFIP. The most recent compliance audit [e.g. Community Assistance Visit (CAV)] took place in November 2016.

Regulatory

The Flood Damage Prevention Ordinance for the City of Syracuse exceed FEMA and State minimum standards. For all development, project fill within the regulated floodplain cannot exceed excavation, so there is no net loss of flood storage. Within the Floodway, the city requires that a hydraulic analysis (signed by a New York licensed PE) be performed that demonstrates that the development causes no increase in base flood elevations. The city can also enforce this requirement outside the Floodway in the regulated flood zone if it is determined appropriate for a project. The City of Syracuse participates in the Community Rating System (CRS) program to reduce flood insurance premiums for their insured and would attend a CRS seminar if offered locally.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which are also indicated below.

Planning

Existing Integration

Syracuse Comprehensive Plan of 2040: The City of Syracuse's Comprehensive Plan includes a Land Use and Development Plan. Steep slope and the floodplain areas are considered. The Plan does not refer to the Countywide Hazard Mitigation Plan. Neighborhood and economic resilience are incorporated in the Plan.

Stormwater Management Plan: The City of Syracuse is an MS4 Regulated Community and has a formal Stormwater Management Plan. The Plan specifies projects/actions/initiatives to reduce the volume of stormwater, or otherwise mitigate stormwater flooding.

The City of Syracuse has a Re-Development Plan (included in the 2040 Comprehensive Plan), Economic Development Plan (Central New York Economic Development Plan; 2040 Comprehensive Plan), Watershed or Stream Corridor Management Plan (Onondaga Creek Revitalization Plan), Local Waterfront Revitalization Plan (Syracuse Local Waterfront Revitalization Plan 2013), Comprehensive Emergency Management Plan (Onondaga County Comprehensive Emergency Management Plan), Post-Disaster Recovery Plan/Strategic Recovery Plan. The city does not have a Growth Plan, Open Space Plan, a Continuity of Operations/Continuity of Government (COOP/COG) plan(s), resilience plan/strategy, Climate Adaptation Plan/strategy.

Opportunities for Future Integration

Updates to existing plans or new plans will include information on natural hazard risk and refer to the Countywide Hazard Mitigation Plan. The city's Capital Improvement Plan (CIP) will be updated to include mitigation projects.

Regulatory and Enforcement (Ordinances)

Existing Integration

Zoning Ordinance: The City of Syracuse Zoning Ordinance (Charter of the City of Syracuse, Local Law #13 of 1960) was established in the public interest in order to promote the health of the public and the safety and welfare of the inhabitants of the City of Syracuse, restraints on individual discretion by creating certain zoning districts which contain rules, regulations, restrictions, and prohibitions concerning the location, construction, alteration and use of buildings, structures and land in the City of Syracuse. Such districts and the zoning plan and map shall determine by classes and sub-classes the uses which will be permitted and excluded; the height and bulk of buildings and structures to be erected; the density of population; the area of lot coverage and for yards; distances of buildings and structures from other buildings, structures and lot lines; open spaces, off-street parking, loading and unloading requirements; and the like.

It shall further be the purpose of this Ordinance, based upon the objectives set forth in the City of Syracuse General Plan, to lessen congestion in the streets; to secure safety from fire and other hazards; to prevent the overcrowding of land; to avoid undue concentrations of population; to provide adequate light, air, open space, and privacy; and to facilitate the adequate provision of transportation, water, sewerage, schools, parks and other public requirements. Such regulations shall be proposed with reasonable consideration, among other things, as to the character of the district and its suitability for particular uses, and with a view to conserving the value of land and buildings and encouraging the most appropriate use of land throughout the City of Syracuse.

The State Environmental Quality Review Act process considers natural hazard risk, as does the city's site plan review process. Developers are required to take additional actions to mitigate natural hazard risk through to referral process to other Departments, including Engineering and Public Works, Onondaga County Planning Board, etc.

The city passed General Ordinance No. 9 of 2015 regarding policy on improper disposal of cleared snow and ice, and associated penalties.

Opportunities for Future Integration

The city is currently working on an **Urban Forest Master Plan** for all areas within the corporate limits. One of the goals of the master plan is to increase tree canopy to help reduce average temperatures. The Master Plan can also address resiliency of tree species to heat, drought and severe storms (wind, snow). An Urban Forest Management Plan was written in 2002 that recommended a 7-year inspection to identify highest risk trees for management as well as a 7-year pruning cycle to create good tree architecture over time so that they can

withstand the impacts of most wind storms. This plan was never adopted by council, nor ever funded to achieve the recommended goals within.

Operational and Administration

Existing Integration

Planning Commission: The City of Syracuse Planning Commission is comprised of five Board members. Meetings are held on Monday evening at 6:00 p.m. in the Common Council Chambers located on the third floor of Syracuse City Hall located at 233 East Washington Street, Syracuse, N.Y. unless otherwise indicated.

Board of Zoning Appeals: The City of Syracuse Board of Zoning Appeals is comprised of six Board members. The term of office of each member, except as herein provided, shall be for three years dating from July first of each year, provided, however, that two of the members first appointed under the provisions hereof shall be appointed for a term of office of one year, two members for a term of office of two years, and one member for a term of three years. The commissioner of planning shall be ex officio a member of the board of appeals and shall act as its secretary. He shall not be entitled to vote as a member thereof. Meetings are held on Thursday afternoons at 1:00 p.m. in the Common Council Chambers located on the third floor of Syracuse City Hall located at 233 East Washington Street, Syracuse, N.Y. unless otherwise indicated.

Syracuse Landmark Preservation Board: The Syracuse Landmark Preservation Board is authorized by the City of Syracuse Zoning Ordinance (Part C Section VII) to regulate any material change in appearance to any property that is in a Local Preservation District (e.g., Sedgwick) or that has been designated a Local Protected Site (e.g., City Hall). The Board reviews demolition proposals for any property that may be eligible for historic designation. The Board also recommends to the City Planning Commission the designation of Local Protected Sites and Local Preservation Districts. The Board is composed of nine members, all of whom are appointed by the Mayor. Two members are nominated by the American Institute of Architects, one member is nominated by the Real Estate Board, one member is nominated by the Preservation Association of Central New York, one member is nominated by the Onondaga Historical Association, and one member is nominated by the Conservation Advisory Council. Three members are "at-large" appointments. The Board regularly meets the first and third Thursday of each month, 8:30am, City Hall, Common Council Chambers, 3rd floor, 233 East Washington Street, Syracuse, N.Y.

Snow Removal: The city initiated in November 2018 a pilot program to remove snow from 40 miles of city sidewalks upon 3 or more inches of snowfall. The city plows and coordinates with the county the plowing of critical road routes within the city.

City Planning Division: The City Planning Division is responsible for the planning, coordination and execution of the Mayor's sustainability initiatives, major planning and urban design projects, and both intradepartmental and interdepartmental administrative and planning efforts to ensure consistency with and progression of the Mayor's agenda. This Division is charged with advancing sustainability initiatives including but not limited to those pertaining to energy, clean air, clean water, stormwater management, smart growth, green building, natural resource protection, environmental advocacy and education, as well as interaction with local, state and federal agencies such as the New York State Department of Environmental Conservation (DEC), the New York State Energy Research and Development Authority (NYSERDA), the US Environmental Protection Agency (EPA), the US Department of Energy (DOE), and other governmental and non-governmental agencies.

This Division is charged with the creation and/or implementation of plans and other administrative tools related to land use, zoning, historic preservation, public art, brownfield management, and urban architectural and landscape design. Additionally, the Division will work with individual city departments to assist in the creation of plans that will help guide operations in the most effective and efficient manner. Concurrently the Division

will work to make sure the plans and guiding documents being used by different departments are well coordinated with each other and are in keeping with the Mayor's agenda.

The City Planning Division is also responsible for the implementation of the city's Comprehensive Plan and its components:

- Land Use & Development Plan,
- Sustainability Plan,
- Historic Preservation Plan,
- Public Art Plan,
- Parks and Open Space Plan (pending)

The Combined Onondaga County/Syracuse Planning Department serves as the city's municipal planner and develops the County Multi-Jurisdictional Hazard Mitigation Plan. NFIP Floodplain Management functions are performed by Ken Towsley, Director of Codes is the Floodplain Administrator; Russell Houck, CFM (Engineering Dept.) provides technical support. Stormwater Management functions are performed by the City Engineer. The city does not have staff or contract with firms that have experience with developing Benefit-Cost Analysis or can perform Substantial Damage Estimates. The City Research Department and Planning Department have experience in preparing grant applications for mitigation projects. No City staff have job descriptions that involve natural hazard risk. City staff receive training or continuing professional education in floodplain management and stormwater management which supports natural hazard risk reduction. City staff participate in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities (ASFPM, NYSFSMA, MS4 Coalition). The city also has stormwater system cleaning and detention basin cleaning programs.

Opportunities for Future Integration

On an as needed basis, the city will hire staff or contract with firms that have experience with developing Benefit-Cost Analysis or can perform Substantial Damage Estimates.

Funding

Existing Integration

The City of Syracuse has a line item for mitigation projects/activities in the municipal budget. The Capital Improvements Budget includes budget for mitigation related projects. The city has pursued and been awarded grant funds for mitigation-related projects through the FEMA Post-Disaster grant program. The City does not have any other mechanisms to fiscally support hazard mitigation projects.

Opportunities for Future Integration

The city could apply for grants/loans through FEMA, New York State, and the USACE to support hazard mitigation projects.

Education and Outreach

Existing Integration

The City of Syracuse performs public education and outreach on the following topics:

- Flood Hazard information – Website (http://www.syracuse.ny.us/Home.aspx), kiosks, mailings; community meetings
- Stormwater information – website, mailings

Opportunities for Future Integration

The city could develop a city webpage focused on natural hazards and mitigation.

Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must 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.

Temporary and Permanent Housing

The City of Syracuse has identified the following potential sites for the placement of temporary housing for residents displaced by a disaster:

- Meacham Field (City Park): 100 Block West Seneca Turnpike. The Park has a capacity of 5+ acres of flat land.
- NYS Fairgrounds
- Old Kennedy Square: Water Street/East Fayette Street.

The city has not identified potential sites suitable for relocating homes out of the floodplain and/or building new homes once properties in the floodplain are acquired. To accommodate longer term housing needs of permanently displaced residents, there is an existing supply of vacant housing units within the county which may be able to satisfy and absorb those housing needs. The county also has ample buildable land availability throughout its communities to satisfy construction of new housing units if needed, as mapped in Section 4, figure 4-20 in Volume I of this plan. Of note, given the nature of the hazards of concern to Onondaga County, the extent of housing needed is also not likely to exceed currently available housing stock for all but the most extreme and widespread hazard events.

Evacuation and Sheltering Needs

The City of Syracuse works and coordinates with the Onondaga County Dept. of Emergency Management Services and follows the County emergency management plan. Per the County Emergency Management Plan, in the event of a hazard occurrence, the Department of Emergency Management is tasked with coordinating evacuation procedures with the Sheriff's Department, the On-Scene Commander, the Transportation Coordinator, the ARC, hospitals, special facilities, the fire service and the Health Department. The Sheriff's Department is responsible for implementing traffic control procedures including coordination of vehicular traffic and protection of resources, facilities and services in the affected areas. As noted in Section 4, Figure 4-19 in Volume I of this plan, the primary roads and highways are the evacuation routes for Onondaga County; the county is fortunate to have a variety of well-connected arterial and collector roadways to provide a variety of routing options during times of large-scale evacuation.

The American Red Cross (ARC) has primary contractual responsibility to provide sheltering, including short term housing, for Onondaga County individuals and families during an emergency occurring in Onondaga County. Services of the ARC include emergency sheltering needs, mass care, feeding, information and referral, and special population assistance. A confidential shelters list is maintained by the Department of Emergency Management and the ARC which identifies capacity for 15,000+ residents across Onondaga County. The ARC is responsible for maintaining shelter and temporary housing agreements with selected facilities.

9.33.6 Mitigation Strategy and Prioritization

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

Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2013 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 9.33-10. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
CSY-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Flood, Severe Storm		Research (Grants), Engineering, Mayor's Office	No Progress	Cost		1. Discontinue 2. Limited flood damage over last 4 decades; 5 repetitive loss structures (2 not due to riverine); No severe repetitive loss properties. Discontinue due to low B/C ratio. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
CSY-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Flood, Severe Storm		Research (Grants), Engineering, Mayor's Office	No Progress	Cost		1. Discontinue 2. Limited flood damage over last 4 decades; 5 repetitive loss structures (2 not due to riverine); No severe repetitive loss properties. Discontinue due to low B/C ratio. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
CSY-2	Conduct and facilitate community and public education and outreach for residents and businesses to include, but not be limited to, the following to promote and effect natural hazard risk reduction: • Provide and maintain links to the Onondaga County HMP website, and regularly post notices on the municipal homepage referencing the Onondaga County HMP webpages. • Prepare and distribute informational letters to flood vulnerable property owners and neighborhood associations, explaining the availability of mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation. • Use the village email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures. • Work with neighborhood associations, civic and business groups to disseminate information on flood insurance and the availability of mitigation grant funding. Municipal outreach activities to be supported by the county, as identified at county initiative OC-0.							
	See above.	All Hazards	Limited outreach conducted by the county and	Municipal officials and floodplain administrators	In Progress	Cost		1. Include in 2019 HMP 2.
						Level of Protection		

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
			city regarding natural hazards.	supported by the county (through SOCPA and EM)		Damages Avoided; Evidence of Success		3.
CSY-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	All Hazards	Continue participation in HMP for safety and funding reasons.	Municipality (through mitigation planning point of contacts)	In Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing Capability.
CSY-4	Maintain compliance with and good-standing in the NFIP including adoption and enforcement of floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community. Further meet and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified as Initiatives CSY-0, 1a, 1b, 2, and 8 through 23.	Flood	Continue with NFIP participation to reduce risk, reduce insurance costs and promote sound floodplain management.	Engineering and Codes	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2. City Floodplain law adopted in September 2016 with stricter SHFA development requirements.
						Damages Avoided; Evidence of Success	Several new development projects with structures in the SFHA are now at BFE +2; Floodplain storage maintained by new law.	3. Ongoing capability
CSY-5	Continue to develop, enhance, and implement existing emergency plans.	All hazards	Continue plan development for safety and funding reasons.	EMO, Mayor's Office, Engineering, DPW	No Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3.
CSY-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	All hazards	Pursue mutual aid agreements to increase safety and	EMO, Mayor's Office,	In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. County has begun snow plowing of specific City roads

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
			efficiency, and to reduce costs.	Engineering, DPW		Damages Avoided; Evidence of Success		3.
CSY-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	All hazards	Continue to pursue regional and watershed-based hazard management.	Office, Engineering, DPW	In Progress	Cost Level of Protection Damages Avoided; Evidence of Success		1. Discontinue. 2. 3. Ongoing capability.
CSY-8	Support/Participate in the Stream Team program offered by the Onondaga County SWCD, to assist in the removal of debris, log jams, etc. in flood vulnerable stream sections.	Flood, Severe storms	Continue to pursue regional and watershed-based hazard management.	Office, Engineering, DPW	In Progress	Cost Level of Protection Damages Avoided; Evidence of Success		1. Include in 2019 HMP 2. Channel cleaning is an ongoing program 3.
CSY-9	As identified in the 2006 Beartrap-Ley Creek Drainage District Study, the confluence of the Ley Creek North and South Branches, and the nearby Sanders Creek 'bottleneck' from Townline Road to the confluence with Ley Creek – North Branch and Ley Creek – South Branch. Support a detailed survey within the area to allow for a more precise determination of the limits of flooding impacts because the Beartrap-Ley Creek Drainage Study (2006) was based on 10-foot contours and the inundation mapping created may be conservative. The Ley Creek Main stem flows through the City of Syracuse and the Towns of Salina and Dewitt.							
	See above	Flood, Severe storms			No Progress	Cost Level of Protection Damages Avoided; Evidence of Success		1. Discontinue 2. Low B/C ratio; no extensive flood damage in this area 3.
CSY-10	As identified in the 2006 Beartrap-Ley Creek Drainage District Study, continue existing Beartrap-Ley Creek District channel	Flood, Severe storms			No Progress	Cost Level of Protection		1. Discontinue 2. Low B/C ratio; no extensive flood damage in this area

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	maintenance and inspection programs within Ley Creek – Main Stem to ensure that debris does not accumulate in the watercourse. Continue to support this action. The Ley Creek Main stem flows through the City of Syracuse and the Towns of Salina and Dewitt.					Damages Avoided; Evidence of Success		3.
CSY-11	The Beartrap-Ley Creek Drainage District is flat and heavily urbanized making the lowest areas extremely vulnerable to rain-event flooding that approaches or exceeds 5-year storms. Conduct /support a more detailed topographic study in the identified critical areas in the 2006 Beartrap-Ley Creek Drainage District Study to determine which individual properties are most at risk to assist with determining mitigation actions.	Flood, Severe storms			No Progress	Cost		1. Discontinue
						Level of Protection		2. Low B/C ratio; no extensive flood damage in this area
						Damages Avoided; Evidence of Success		3.
CSY-12	Investigate the feasibility of "daylighting" feeder streams to Onondaga Creek (e.g. Harbor Brook, Kimber Brook) to return these streams to a more natural condition, increasing their capacity particularly during high water and storm events. Implement feasible "daylighting" projects as funding becomes available.	Flood, Severe storms		Mayor's Office, Engineering, DPW	No Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. Consider re-naturalization of tributaries as part of overall Onondaga creek re-naturalization study.
						Damages Avoided; Evidence of Success		3.
CSY-13	Repair/rehabilitate deficient combined sewers (sewer sections identified below) to increase capacity and reduce associated flooding, and reduce risk of overwhelming treatment systems. (See locations below).	Flood, Severe storms		Mayor's Office, Engineering, DPW	In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. Continue sewer replacements, separations, and overflow reduction to improve stream and Onondaga Lake water quality
						Damages Avoided; Evidence of Success		3.

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
CSY-14	Repair channel linings in Onondaga Creek through the city.	Flood, Severe storms			No Progress	Cost		1. Discontinue
						Level of Protection		2. Re-naturalization, sediment removal and flood storage increase will address better the Onondaga Creek goals.
						Damages Avoided; Evidence of Success		3.
CSY-15	Conduct dredging/cleaning of Onondaga Creek through the city to regain capacity and reduce flooding.	Flood, Severe storms	Ongoing sedimentation from upstream sources (e.g. Tully Mudboils) continues to reduce channel capacity and flood storage	Mayor's Office, Engineering, DPW	In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3.
CSY-16	Conduct repairs to the bank of Onondaga Creek through the city (stabilization, retaining wall repairs, brush clearing, and bridge scour repair).			Engineering, DPW	No Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. Target removal of invasive species and replanting with native species. Coordinate with re-naturalization and flood storage projects.
						Damages Avoided; Evidence of Success		3. Downtown channel stabilization project funded.
CSY-17	Repair culverts (approx. 40, varying in length from 50'-350') on the following creeks, which due to their age are in varying states of deterioration: Hopper Brook, Furnace Brook, Spring Brook and Cold Brook				No Progress	Cost		1. Combine with CSY 13. Discontinue as separate initiative. Combine with CS-13.
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3.
CSY-18	Conduct dredging/cleaning of Hopper Brook, Furnace Brook, Spring Brook and Cold Brook to regain capacity and reduce flooding.		(see project definition)		In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. Sedimentation basins are periodically cleaned; for stream channels rewrite to focus on re-naturalization and flood storage projects rather than dredging.

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Damages Avoided; Evidence of Success		3.
CSY-19	Conduct scour/bank repair at seven pedestrian bridges over Onondaga Creek in the city.				No Progress	Cost		1. Discontinue
						Level of Protection		2. Covered under CSY-16
						Damages Avoided; Evidence of Success		3.
CSY-20	Conduct regular cleaning of catch-basins throughout the city (approx. 11,300) to maintain stormwater management capacity.		(see project definition)		In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3.
CSY-21	Determine if a Community Assistance Visit (CAV) or Community Assistance Contact (CAC) is needed, and schedule if needed.				Complete	Cost		1. Discontinue
						Level of Protection		2. Cav visit in fall 2016; completed 2017.
						Damages Avoided; Evidence of Success		3.
CSY-22	Remove/raise lowest abandoned bridge at Jefferson Street to reduce flood risk.	Flooding	Low chords of three downtown bridges are below the base flood elevation. Bridge removal or raising will reduce constriction and increase channel conveyance.	Planning, Engineering	In Progress	Cost		1. Include in 2019 HMP
						Level of Protection		2. Study funded by LWRP program. Focus on lowest bridge only.
						Damages Avoided; Evidence of Success		3.

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
CSY-23	Participate in RL/SRL property owner outreach and education activities, provided by FEMA, as initiated and coordinated by the County initiative OC-35, described herein. Within the first year of Plan adoption, request FEMA to conduct a mitigation workshop targeting those communities with significant numbers of flood vulnerable properties and Repetitive Loss/Severe Repetitive Loss (RL/SRL) properties (e.g. Towns of Cicero, DeWitt, Elbridge, Lafayette, Lysander, Manlius; Village of Skaneateles; City of Syracuse). This program should address the specific interests and concerns of these flood vulnerable communities in the County which includes: • Gaining a better understanding of the available mitigation grant programs, including the procedural requirements of a RL/SRL community under this program; • Understanding how flood vulnerable and RL/SRL communities can enhance their efforts to encourage and support property owners to mitigate their properties, • Understanding how flood vulnerable and RL/SRL communities can best leverage existing data, information and studies (e.g. NFIP data) to target specific properties for mitigation, and Learning what resources are available to conduct/complete Repetitive Loss Area Analyses, and gather critical data (e.g. structure elevations) to screen and move properties through the applicable mitigation grant programs. The County shall promote this workshop through established groups and forums including the OC SWCD and the ongoing County Hazard Mitigation Planning Committee. Further, the County shall continue to conduct meetings as needed with these flood vulnerable communities, with the support of NYSOEM and FEMA, to assist communities as they work to address their flood vulnerable and RL/SRL properties.							
	See above.				In Progress	Cost		1. Limited flood damage over last 4 decades; 5 repetitive loss structures (2 not due to riverine); No severe repetitive loss properties. Discontinue due to low B/C ratio. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
CSY-24	Participate in regional, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts. Such programs may include developing a detailed inventory of critical facilities based upon FEMA's Comprehensive Data Management System (CDMS) which could be used for various planning and emergency management purposes including: • Support the performance of enhanced risk and vulnerability assessments for hazards including flooding, earthquake, wind, and land failure. Support state, county and local planning efforts including mitigation (including updates to the State HMP), comprehensive emergency management, debris management, and land use. Improved structural and facility inventories could incorporate flood, wind and seismic-specific parameters (e.g. first floor elevations, roof types, structure types) based on FEMA-154 "Rapid Visual Screening of Buildings for Potential Seismic Hazards" methodologies, or "Rapid Observation of Vulnerability and Estimation of Risk - ROVER. It is recognized that these programs will likely need to be initiated and supported at the Regional and/or State level, and will likely require training, tools and funding provided at the regional, state and/or federal level.							
	See above.	All hazards			Choose an item.	Cost		1. Include in 2019 HMP 2. Need to coordinate with County on critical facilities inventory.
						Level of Protection		
						Damages Avoided; Evidence of Success		

Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The City of Syracuse has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2013 Plan:

- Mitigate Skaneateles Lake Harmful Algal Blooms
  - Lead agencies: Water Dept., Onondaga County
  - Extend lake water intakes by 3,400 linear feet into deeper water to prevent/reduce bacterial toxin intake into city water supply.
- Mitigate Sedgewick/Eastwood Neighborhood Flash Flooding
  - Lead agencies: Engineering Dept. and DPW
  - Increase storm sewer capacity and reduce storm runoff to reduce/prevent flash flooding.
- Increase flood storage of Onondaga Creek at Arsenal Park
  - Lead agencies: Engineering, OEI, NYSDEC
  - Create large storage basin and wetland area adjacent to Onondaga Creek to detain water during high flow events with purpose of reducing downstream flood elevations. Include recreational components to basin area. Project is in the study phase

Proposed Hazard Mitigation Initiatives for the Plan Update

The City of Syracuse participated in a mitigation action workshop on January 14, 2019 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: 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 9.33-11 summarizes the comprehensive-range of specific mitigation initiatives the City of Syracuse 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, 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 9.33-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-1	Skaneateles Lake Harmful Algal Blooms	1, 3	Harmful Algal Bloom	**Problem:** Exposure to cyanobacteria and the toxins they release is through ingestion of drinking water contaminated with cyanotoxins and through direct contact, inhalation and/or ingestion during recreational activities. Significant harmful algae blooms were identified in Skaneateles Lake in 2017, followed by small localized blooms in 2018 resulting in the detection of microcystin (a form of cyanotoxin) in raw and treated water samples collected from Syracuse Water Department Lake Intakes. Exposure to cyanobacterial blooms and their cyanotoxins can result in a wide range of symptoms in humans, including fever, headaches, muscle and joint pain, blisters, stomach cramps, diarrhea, vomiting, mouth ulcers, and allergic reactions. **Solution**: Extending Lake water intakes into deeper water-The city's shallowest water intake is located at a depth of 20 ft. By extending the Intake (a 2004 Engineering Study proposed a 3,400 ft. extension), the water supply will be drawn from a depth of approximately 60 ft. The extended length will allow for a greater margin of safety, affording chlorine gas injected at the Water Intake additional contact time to inactivate microcystin.	Yes	No	5 years	City of Syracuse Water Department	$12 million	Toxins removed from drinking water source; avoid building filtration plant	NYS EFC, CFA, HMGP	High	SIP	PP

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-2	Syracuse Flash Flooding Mitigation Sedgewick/Eastwood	1, 3	Flood, Severe Storm	**Problem:** In Syracuse's Eastwood and Sedgewick neighborhoods, short duration intense rainstorms overwhelm the storm sewer's capacity to capture and convey stormwater resulting in flooded areas and sewer backups. The localized flooding has caused traffic accidents, detours and delays. Localized erosion and road undermining has resulted necessitating road repairs. The city has initiated Phase 1 study of this problem; the study report is expected to be completed in January 2019. **Solution**: Hybrid – Increase Storm Sewer Capacity and Reduce Stormwater Runoff – In select areas, increase the number of catch basins to capture a higher percentage of area runoff. Increase the size of local and mainline sewers to increase conveyance to avoid surcharges. Install storm surge manhole covers to prevent unknown underwater hazards. Increase public outreach of flash flood risks. In addition to increasing capacity, develop green infrastructure/retention areas to reduce stormwater runoff to the local sewer systems.	No	Yes	5 years	City of Syracuse, Onondaga County WEP	[Input report data – March 2019]	Reduce flash flooding and sewer surcharges; reduce street and building damage; increase safety	NYS EFC, CFA, HMGP	Medium	SIP	SP

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-3	City of Syracuse, Onondaga County WEP	1, 3, 4, 5	Flood	**Problem:** Flood risks and the size of the Special Flood Hazard Area have both increased for Onondaga Creek within Syracuse. FEMA issued new Flood Insurance Rate Maps in 2016 which increased the size of the SFHA by 175 acres and added almost 1,200 residential and commercial structures. The major part of this addition is within lower-income residential areas on the south side of Syracuse adjacent to Onondaga Creek, adding the financial burden of flood insurance. The last major flood causing evacuations along Onondaga Creek within Syracuse was recorded in 1974; however, it has been observed that approximately every one to two years, Onondaga Creek has overtopped its channel banks at locations within Syracuse at discharges of approximately only 50% of the FEMA 1%-Annual Chance Discharge and at approximately only 50% of the design capacity for the engineered channels within the city.	No	Yes	5 years	City of Syracuse Engineering Department.	Phase 1 (study): $150K-400K Phase 2 (design): $200K-$600K Phase 3 (Construction): $2-8 million	Reduce flood risks, reduce flood insurance costs; reduce damage from major flooding events	NYS EFC, CFA, HMGP	High	SIP, NSP	PP, SP, NR

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: Reduce Onondaga Creek Peak Discharges – Arsenal Park Flood Storage The Arsenal Park area along Onondaga Creek near Syracuse's southern boundary provides the largest single tract of land within Syracuse (approx. 15 acres) which could be used for flood storage with the goal of reducing Onondaga Creek peak discharges within Syracuse and removing structures and residents from the Special Flood Hazard Area. This Alternative would be three phased: Phase 1 – Conduct a study to determine the amount that the Arsenal Park tract could reduce Onondaga Creek peak discharges and how many structures and residents would be removed from the SFHA. A Benefit/Cost analysis would be included. This alternative could include diversion/detention and infiltration into newly developed natural and wetland areas. The tract is currently privately–owned but initial discussions with the owner indicate sale is possible. The hydraulic study would be submitted to FEMA, USACE, and NYSDEC for review of the proposed concept. Sediment capture from upstream sources could also be considered as part of the design. Phase 2: Engineering Design of Arsenal Park Flood Risk Reduction project. An environmental assessment would be required. Phase 3: Construction of the Arsenal Park Flood Risk Reduction project and submission of new hydraulic study to FEMA for FIRM revisions.										

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-4 (old CSY-2)	Conduct and facilitate community and public education and outreach	2	All	**Problem:** To reduce risk to citizens and property, increase awareness of local hazards and mitigation proposals and efforts. information meetings that summarize risks and mitigation measures. **Solution**: Complete and adopt the MJHMP; update the SOCPA and city websites re risk and hazard mitigation; provide press releases and information packets; conduct community	No	No	Ongoing	Municipal officials and floodplain administrator supported by the County (through SOCPA and EM)	Ongoing efforts as part of Engineering, Planning, DPW, and Mayor's Office work tasks.	Reduction in risk to people and property with increased awareness of hazards and potential mitigation actions.	NYS SEMO, DHS grants	High	EAP	PI, 510 FMP
C. of Syracuse-5 (CSY-6)	Create/enhance/ maintain mutual aid agreements with neighboring communities.	1, 2, 3, 4,5, 6	All	**Problem:** Hazards are not defined by municipal boundaries. **Solution**: Continue to coordinate on MJHMP; establish semi-annual hazard mitigation meetings between county, city and surrounding towns. Identify hazards and response actions that will benefit from multijurisdictional coordination.	No	No	Ongoing	Onondaga County, City of Syracuse, towns	Ongoing efforts as part of Engineering, Planning, DPW, Water Depts. and Mayor's Office work tasks.	Increased coordination between Syracuse, the County and surrounding municipalities for hazard mitigation planning and hazard response will reduce risks and harm to property and people. Faster response and recovery will result.	NYS SEMO, DHS grants	Medium	LPR	PR, ES, 510 FMP
C. of Syracuse-6 (CSY-8)	Support/Participate in the Stream Team program	1, 4	Flood, Severe storms	**Problem:** Debris and sediment can cause stream blockage resulting in flooding and damage, particularly at restriction areas such as bridges, culverts and narrow channels.	No	No	Ongoing and as needed.	Syracuse DPW and Engineering, Onondaga County WEP	Ongoing efforts as part of Engineering, and DPW tasks;	Reduction of flooding; reduction of risk to people and property;	NY Water quality grants	Medium	NSP	NR, 540 DR

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: The city continues to inspect streams regularly and after higher flow events. Continue to mobilize DPW forces to remove debris and blockages, particularly at bridges and culverts. Coordinate with Onondaga County and surrounding towns.					additional funding could be used after high impact storm events.	reduced damage to property and to city bridges and culverts.				
C. of Syracuse-7 (CSY-12)	Investigate the feasibility of "daylighting" feeder streams to Onondaga Creek.	1, 4	Flood, Severe storms	**Problem:** Channelized engineered streams in Syracuse have high velocity during larger storm events. Urban channels have lost capacity due to sedimentation from upstream sources. Closed channels and culverts have limited capacity and can back up at the entry point causing localized flooding. **Solution**: Investigate the feasibility of "daylighting" feeder streams to Onondaga Creek (e.g. Harbor Brook, Kimber Brook) to return these streams to a more natural condition, increasing their capacity particularly during high water and storm events. Implement feasible "daylighting" projects as funding becomes available. Identify specific areas stream reaches where daylighting, re-naturalization and flood storage can be added, including wetland development to reduce flooding, and reduce channel velocities.	No	Potentially, if a historic structure is impacted.	1-10 years; study phase first, design second, construction third phase.	Mayor's Office, Engineering, DPW, NYSDEC, USACE, Onondaga Environmental Institute (OEI)	Study and design costs $50,000 to $500,000; Construction costs $100,000 to several $ million.	Flood reduction; stream velocity reduction, aquatic habitat betterment	HMP, NY Water quality grants	Medium	NSP	NR
C. of Syracuse-8 (CSY-13)	Repair/rehabilitate deficient combined sewers and culverts to increase capacity; separate storm and sanitary sewers.	1, 3	Flood, Severe storms	**Problem:** Limited sewer capacity (particularly in combined sewer systems) can result in surcharges, localized flooding and overflows to local streams. Water quality impacts to local streams. Repair deteriorated culverts to maintain capacity **Solution**: Repair deficient sewers replace sewers with greater capacity systems; continue to separate combined storm and sanitary sewers to reduce overflows.	No	No	Ongoing/yearly	Mayor's Office, Engineering, DPW	$500,000 + yearly	Reduction in overflows, reductions in localized flooding; improved water quality due to reduced untreated sanitary discharges.	NY Water quality grants	Medium	SIP	SP

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-9 (CSY-15)	Conduct dredging/cleaning of Onondaga Creek .	1, 4	Flood, Severe storms	**Problem:** Ongoing sedimentation from upstream sources (e.g. Tully Mudboils) continues to reduce channel capacity and flood storage **Solution**: Remove sediments in channel and vegetation overgrowth to increase flow capacity	No	No	1-3 years	Mayor's Office, Engineering, DPW	$16 Million per NYSDEC/OBG study	Flood reduction, risk reduction; floodplain reduction (new study would be needed)	NY Water quality grants	Medium	NSP	NR
C. of Syracuse-10 (CSY-16)	Conduct repairs to the bank of Onondaga Creek.	1, 4	Flood, Severe storms	**Problem:** Erosion and scour have increased potential damage to bridge abutments and culverts. **Solution**: Repair damaged channel sections; Remove invasive species, plant native species for stabilization.	No	No	1 season and multi-season projects	Engineering, DPW	$10,000 to $million	Reduced risk to infrastructure (bridges, culverts, stability of bank)	HMP	Low	NSP	NR
C. of Syracuse-11 (CSY-18)	Conduct dredging/cleaning of Hopper Brook, Furnace Brook, Spring Brook and Cold Brook.	1, 4	Flood, Severe storms	**Problem:** Ongoing sedimentation and vegetation overgrowth reduce channel capacity and increase risk of flooding. **Solution**: Remove sediments in channel and vegetation overgrowth to increase flow capacity	No	No	1-3 years	Mayor's Office, Engineering, DPW	$100,000 approx. per stream.	Flood reduction, risk reduction; floodplain reduction (new study would be needed)	NY Water quality grants	Medium	NSP	NR
C. of Syracuse-12 (CSY-20)	Conduct regular cleaning of catch-basins	1, 3	Flood, Severe storms	**Problem:** Blocked catch basin and storm sewer lines caused localized flooding. vehicle, pedestrian and property risks results **Solution**: Conduct regular cleaning of catch-basins throughout the city (approx. 11,300) to maintain stormwater management capacity. Conduct regular inspection and maintenance of catch basin ad storm sewer system; conduct TV inspections	No	No	Ongoing capability; additional funding can expand program	Mayor's Office, Engineering, DPW	$100,000 per year to expand program	Reduction in personal risk, and property damage. Reduction in road closures.	NY Water quality grants	Medium	SIP	PR
C. of Syracuse-13 (CSY-22)	Remove/raise lowest abandoned bridge at Jefferson Street.	1, 3	Flooding	**Problem:** Low chords of three downtown bridges are below the base flood elevation. Bridge removal or raising will reduce constriction and increase channel conveyance.	No	No	Study in 2019; to be followed by construction project	Planning, Engineering	Study and construction: $500,000 - $750,000	Reduced flood risk and potential flood damages.	LWRP	Medium	SIP	PP

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: LWRP study currently funded with focus on lowest bridge. The lowest bridge will be removed if it can be obtained from the private owner.										
C. of Syracuse-14 (CSY-24)	Support RL/SRL owner participation in mitigation activities.	2	Flood	**Problem:** Syracuse currently has 5 repetitive loss properties and one repetitive loss area along Meadowbrook. **Solution**: Participate in RL/SRL property owner outreach and education activities, provided by FEMA.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI
CSY-14A (CSY-23)	411 Crawford Ave Syracuse, NY 13224	2	Flooding / Sewer surcharge	**Problem:** This property is uphill from and outside of the 0.2% annual chance flood zone. There is no evidence that Meadowbrook overflowed its banks on these loss dates. The property is located near the base of a slope and on a curve. Stormwater can enter the property from the street. **Solution**: Letter sent to owners in Repetitive loss Area re risks, potential mitigation measures and flood insurance availability. Continue storm sewer cleaning, maintenance and periodic replacement.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
C. of Syracuse-14B	704 Meadowbrook Dr. Syracuse, NY 13224	2	Flooding/Sewer surcharge	**Problem:** There is no evidence that Meadowbrook overflowed its banks on the loss dates in 2007 or 2014. The problem appears to be due to the surcharging of the County trunk sewer. **Solution**: Letter sent to owners in Repetitive loss Area re risks, potential mitigation measures and flood insurance availability. Continue storm sewer cleaning, maintenance and periodic replacement.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI
C. of Syracuse-14C	1118 Meadowbrook Dr. Syracuse, NY 13224	2	Flooding/Sewer surcharge	**Problem:** There is no evidence that Meadowbrook overflowed its banks on these loss dates. There is a significant incline at the rear of the house and the garage is located about 3 feet below the sidewalk and road. Stormwater on the road and to the rear can enter onto the property. **Solution**: Letter sent to owners in Repetitive loss Area re risks, potential mitigation measures and flood insurance availability. Continue storm sewer cleaning, maintenance and periodic replacement.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI
C. of Syracuse-14D	1137 Meadowbrook Dr. Syracuse, NY 13224	2	Flooding/Sewer surcharge	**Problem:** 2007 losses were due to surface runoff into a low sewer vent and /or surface runoff from the incline behind the house. The house foundation has been repaired with site grading modifications.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: Letter sent to owners in Repetitive loss Area re risks, potential mitigation measures and flood insurance availability. Continue storm sewer cleaning, maintenance and periodic replacement.						within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.				
C. of Syracuse-14E	205 Rigi Avenue Syracuse 13206	2	Flooding/Sewer surcharge	**Problem:** This property is not in a flood zone or near a flooding source. **Solution**: The property has an atypical connection to the sewer main. This plumbing connection to the city sewer main was corrected to address surcharge issues. Also, the area is within the Sedgewick/ Eastwood sewer/flooding study. (See CSY-2). Study expected to be completed in March 2019 and will provide recommendations for this area.	No	No	Ongoing yearly outreach.	Engineering	Part of standard Engineering Dept. work tasks.	Outreach increases awareness of flood risks along streams within Syracuse. Provide greater awareness of safety measures to implement and available flood insurance programs.	Part of standard Engineering Dept. work tasks.	Medium	EAP	PI
C. of Syracuse-15 (Old CSY-24)	Critical facility Infrastructure Inventory	2	All Hazards	**Problem:** Incomplete inventories of critical facilities and infrastructure underestimate the amount of risk and potential economic impact that disasters can cause. Inventories also help to prioritize response during and post-disaster.	Yes	No	Ongoing/- Yearly updates	Onondaga County, Syracuse Engineering and DPW.	Part of standard municipal tasks	Incomplete inventories of critical facilities and infrastructure underestimate the amount of	HMP, NY SEMO	High	LPR	PR

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: Participate in regional, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts. Such programs include developing a detailed inventory of critical facilities based upon FEMA's Comprehensive Data Management System (CDMS). As part of this initiative, owners of critical facilities and infrastructure within the regulated floodplain will be notified by mail of the risk to their facilities from flood hazards; potential mitigation options will be provided in the letter.						risk and potential economic impact that disasters can cause. Inventories also help to prioritize response during and post-disaster. Mitigation actions by owners will reduce risks and damages to critical facilities and infrastructure.				
C. of Syracuse-16	Develop storm response/debris management plan	5, 6	Severe Storm	**Problem:** Response to severe storms can be uncoordinated, including storm debris management. Coordination among city Depts., Onondaga County and surrounding municipalities will increase efficiency and maximize FEMA reimbursement. **Solution**: In coordination with Onondaga County and surrounding municipalities, establish storm response plans (pre-storm and post storm plans). Establish a storm response team and communication channels.	Yes	No	Yearly coordination meetings needed.	DPW, Parks, Engineering	Part of standard municipal tasks.	Coordination will quicken response to severe storms and promote more efficient use of resources.	SEMO	High	LPR	PR, ES
C. of Syracuse-17	Street Tree Inventory	4	Severe Storm, Severe Winter Storm	**Problem:** Tree inventories are not updated frequently enough within the city. Trees are living dynamic structures that continually grow and change, requiring regular intervals of maintenance in order to reduce risk of failure. Tree inventories also provide a measure of tree assets within the city.	No	No	Ongoing cyclical inventory needed.	Parks, DPW	Inventory ($30,000 annually) Pruning ($550,000 annually)	Inventory will provide a summary of tree assets, risks, and help direct maintenance	SEMO, HMP	High	LPR, NSP	PR, NR

Table 9.33-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Solution: Conduct cyclical inventory of 1/7th of the street tree population (about 5,200 trees annually) to identify highest risk trees to manage and to establish a cyclical pruning program to reduce risk and improve tree architecture.						resources where needed.				

Notes:

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

**Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.*

Acronyms and Abbreviations:

CAV	*Community Assistance Visit*
CRS	*Community Rating System*
DPW	*Department of Public Works*
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*

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.

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*

Critical Facility:

Yes Critical Facility located in 1% floodplain

Table 9.33-12. 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
C. of Syracuse-1	Skaneateles Lake Harmful Algal Blooms	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
C. of Syracuse-2	Syracuse Flash Flooding Mitigation	1	0	0	1	1	1	0	1	0	1	0	1	0	0	6	Medium
C. of Syracuse-3	City of Syracuse, Onondaga County WEP	1	1	1	1	1	0	0	1	1	1	0	0	1	0	9	High
C. of Syracuse-4 (old CSY-2)	Conduct and facilitate community and public education and outreach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
C. of Syracuse-5 (CSY-6)	Create/enhance/ maintain mutual aid agreements with neighboring communities.	1	1	1	0	0	0	0	1	1	0	1	0	1	0	7	Medium
C. of Syracuse-6 (CSY-8)	Support/Participate in the Stream Team program	0	1	0	0	1	0	0	1	1	1	0	1	1	1	8	Medium
C. of Syracuse-7 (CSY-12)	Investigate the feasibility of “daylighting” feeder streams to Onondaga Creek.	0	1	0	0	1	0	0	1	1	1	0	1	1	1	8	Medium
C. of Syracuse-8 (CSY-13)	Repair/rehabilitate deficient combined sewers to increase capacity; separate storm and sanitary sewers.	0	1	1	1	0	1	0	1	1	0	1	0	1	0	8	Medium
C. of Syracuse-9 (CSY-15)	Conduct dredging/cleaning of Onondaga Creek.	0	1	0	0	1	0	0	1	1	1	0	1	1	1	8	Medium
C. of Syracuse-10 (CSY-16)	Conduct repairs to the bank of Onondaga Creek .	0	0	0	0	1	0	0	1	0	0	0	1	1	0	4	Low
C. of Syracuse-11 (CSY-18)	Conduct dredging/cleaning of Hopper Brook, Furnace Brook, Spring Brook and Cold Brook.	0	1	0	0	1	0	0	1	1	1	0	1	1	1	8	Medium

Table 9.33-12. 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
C. of Syracuse-12 (CSY-20)	Conduct regular cleaning of catch-basins throughout the city (approx. 11,300) to maintain stormwater management capacity.	0	1	1	1	0	1	0	1	1	0	1	0	1	0	8	Medium
C. of Syracuse-13 (CSY-22)	Remove/raise lowest abandoned bridge at Jefferson Street.	0	1	0	0	1	0	0	1	1	0	0	1	1	0	6	Medium
C. of Syracuse-14 (CSY-24)	Support RL/SRL owner participation in mitigation activities.	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
CSY-14A (CSY-23) Repetitive Loss Properties	411 Crawford Ave Syracuse, NY 13224	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
C. of Syracuse-14B	704 Meadowbrook Dr. Syracuse, NY 13224	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
C. of Syracuse-14C	1118 Meadowbrook Dr. Syracuse, NY 13224	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
C. of Syracuse-14D	1137 Meadowbrook Dr. Syracuse, NY 13224	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
C. of Syracuse-14E	205 Rigi Avenue Syracuse 13206	0	1	1	1	0	0	1	1	0	1	0	1	1	1	8	Medium
C. of Syracuse-15 (Old CSY-24)	Critical facility Infrastructure Inventory	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	Medium
C. of Syracuse-16	Develop storm response/debris management plan	1	0	1	0	1	1	0	1	1	0	1	0	1	0	8	Medium
C. of Syracuse-17	Street Tree Inventory	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High

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

9.33.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.33.8 Staff and Local Stakeholder Involvement in Annex Development

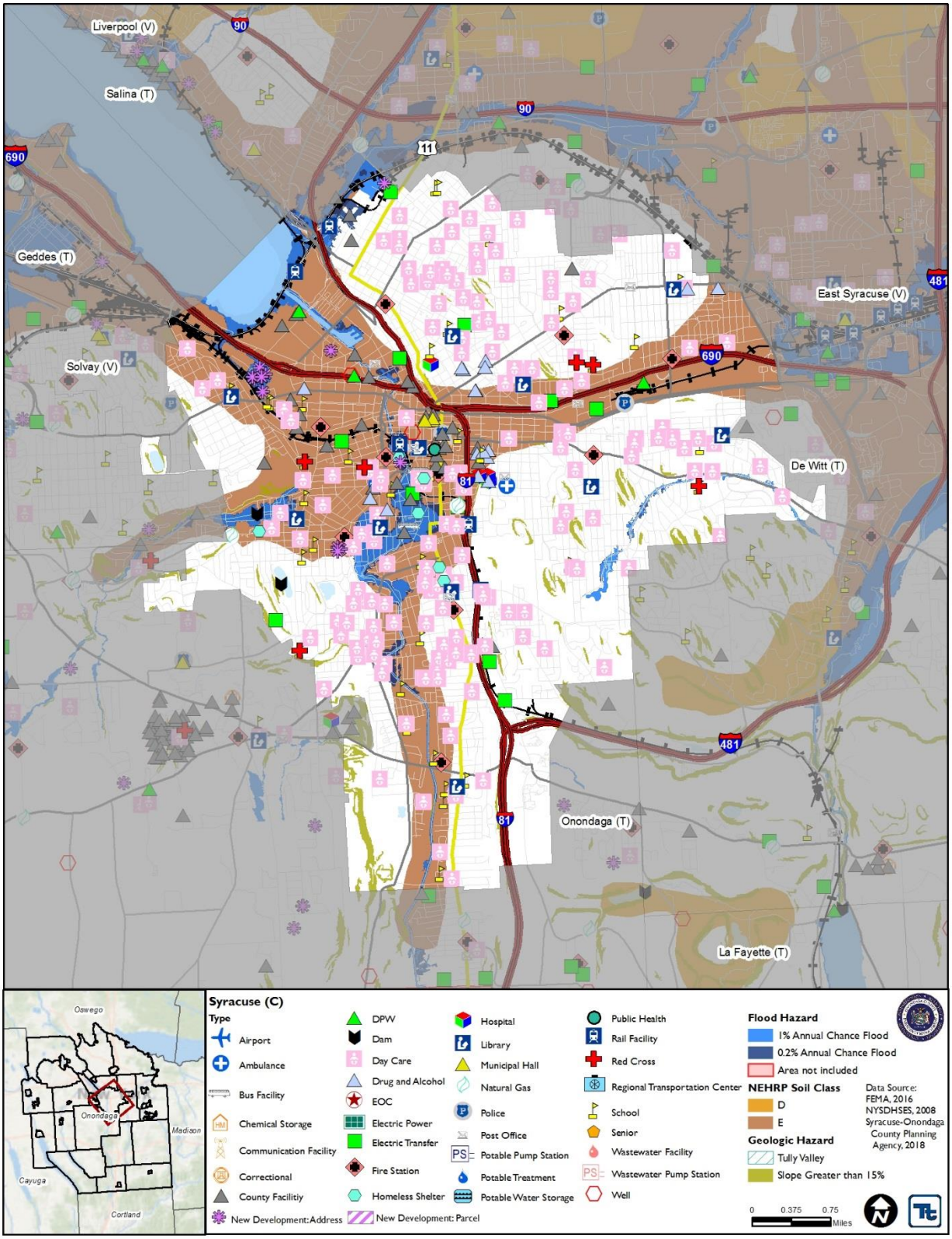
The City of Syracuse followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many city departments, including: Engineering, Water, DPW, and Planning. The City Engineer represented the community on the Onondaga County 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. 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 municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meetings).

9.33.9 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the City of Syracuse that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the City of Syracuse has significant exposure. A map of the City of Syracuse hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain as well as identified critical facilities within the municipality.

Figure 9.33-4. City of Syracuse Hazard Area Extent and Location Map



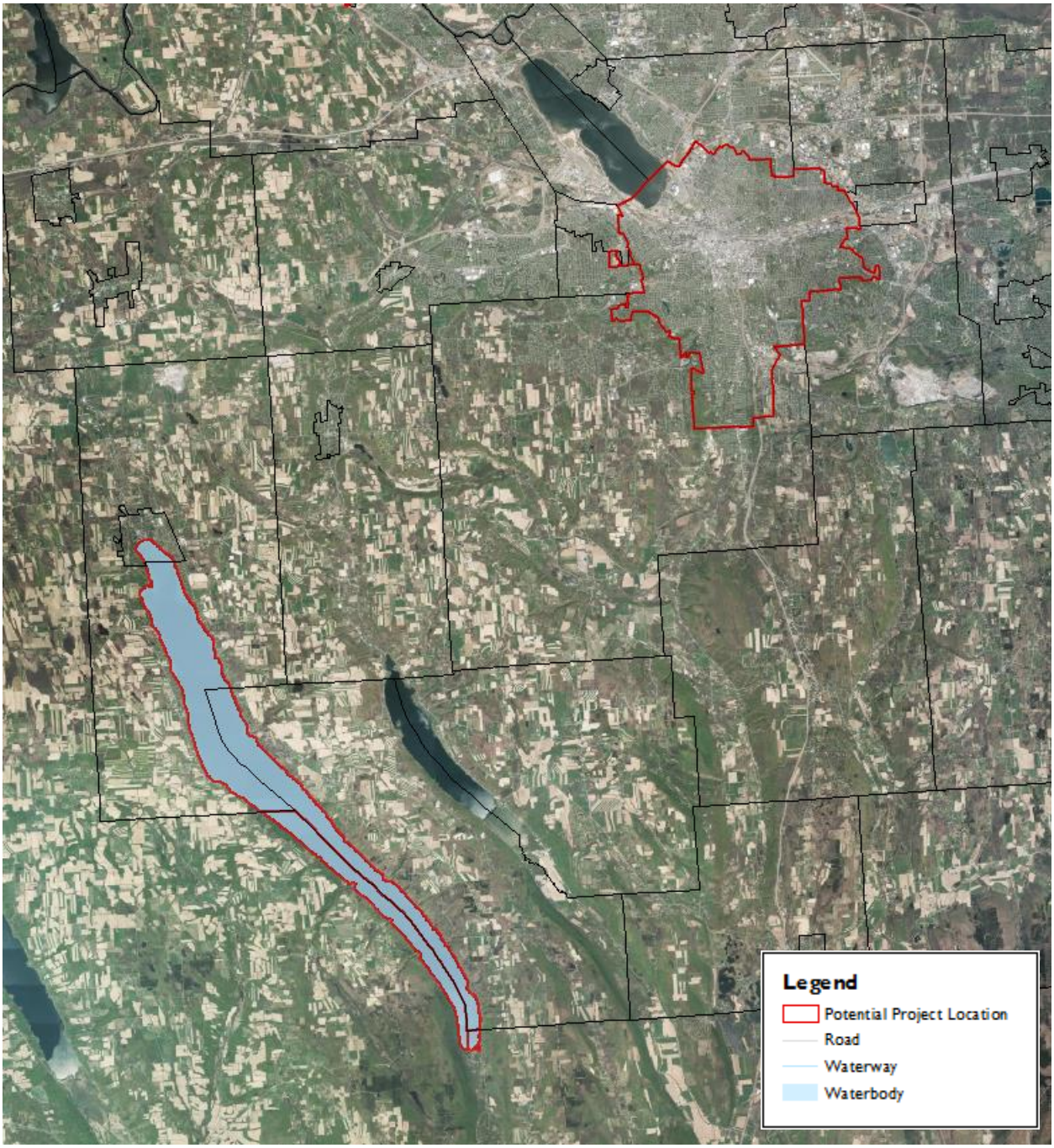
Action Worksheet			
Project Name:	Skaneateles Lake Harmful Algal Blooms		
Project Number:	C. Syracuse-1		
Risk / Vulnerability			
Hazard(s) of Concern:	Harmful Algal Bloom		
Description of the Problem:	Exposure to cyanobacteria and the toxins they release is through ingestion of drinking water contaminated with cyanotoxins and through direct contact, inhalation and/or ingestion during recreational activities. Significant harmful algae blooms were identified in Skaneateles Lake in 2017, followed by small localized blooms in 2018 resulting in the detection of microcystin (a form of cyanotoxin) in raw and treated water samples collected from Syracuse Water Department Lake Intakes. Exposure to cyanobacterial blooms and their cyanotoxins can result in a wide range of symptoms in humans, including fever, headaches, muscle and joint pain, blisters, stomach cramps, diarrhea, vomiting, mouth ulcers, and allergic reactions. The NYS and Onondaga County Health Departments and the City of Syracuse have prepared an Action Plan which includes, sampling for microcystin and additional water quality indicators. The Action Plan addresses public notification protocol following detection of microcystin. The city supply system already injects chlorine at both Intake Cribs. The city also utilizes a UV system; however, UV is not effective in degrading microcystin unless combined with additional treatment such as hydrogen peroxide.		
Action or Project Intended for Implementation			
Description of the Solution:	Extending Lake water intakes into deeper water-The city's shallowest water intake is located at a depth of 20 ft. By extending the Intake (a 2004 Engineering Study proposed a 3,400 ft. extension), the water supply will be drawn from a depth of approximately 60 ft. The extended length will allow for a greater margin of safety, affording chlorine gas injected at the Water Intake additional contact time to inactivate microcystin.		
Is this project related to a Critical Facility?	Yes ☒	No ☐	
Is this project related to a Critical Facility located within the 100-year floodplain?	Yes ☐	No ☒	
(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:	Not applicable. Increase the margin of safety for high quality potable water for the City of Syracuse. Reduce the potential for microcystin detection in the city's drinking water supply.	**Estimated Benefits (losses avoided):**	Improve intakes to avoid the potential high cost to provide an alternative water source for the City of Syracuse or the installation of a water filtration plant.
Useful Life:	50+ years	**Goals Met:**	1, 3
Estimated Cost:	$12 Million	**Mitigation Action Type:**	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	**Desired Timeframe for Implementation:**	2020
Estimated Time Required for Project Implementation:	2-3 years	**Potential Funding Sources:**	HMGP NYS CFA and EFC
Responsible Organization:	City of Syracuse Water Dep. OCWA	**Local Planning Mechanisms to be Used in Implementation if any:**	Providing quality drinking water to the city of Syracuse Support and Promote economic development.

Three Alternatives Considered (including No Action)			
Alternatives:	**Action**	**Estimated Cost**	**Evaluation**
	No Action	$0	Current problem continues
	Alt 1- Install a water filtration system.	$60 – 70 Mil. (1999 cost estimate). Approximately $100 million in 2018 dollars.	Feasible alternative but costs are very high.
	Alt 2 - Apply algaecide to Skaneateles Lake	$25,000 – $40,000 per application	Effective in controlling cyanobacteria. Feasible alternative but costs are

			high as multiple applications might be needed per year.
	Alt 3 - Additional Water Source	Costs are expected to be very high to develop a new supply system.	A study / cost estimate has not been completed regarding supplying 100% of the City's water supply requirements from an additional or multiple sources, i.e., Lake Ontario, or Otisco Lake.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			

Action Worksheet		
Project Name:	Skaneateles Lake Harmful Algal Blooms	
Project Number:	C. Syracuse-1	
Criteria	**Numeric Rank (-1, 0, 1)**	**Provide brief rationale for numeric rank when appropriate**
Life Safety	1	Public Health
Property Protection	0	Elevated levels of microcystin detected in the city's finished drinking water could affect the status of the current Filtration Avoidance Determination authorized by the NYSDOH. The construction of filtration facility would require a significant investment in property along the existing conduit system between Skaneateles and the City of Syracuse.
Cost-Effectiveness	1	Water Intake extension would increase chlorine contact time allowing for more effective inactivation of microcystin
Technical	1	Engineering Study Required
Political	1	Skaneateles Lake is potable water source for the Village of Skaneateles and Jordan and Town of Elbridge. Onondaga County and these other municipalities need to be in agreement with the selected alternative.
Legal	1	Permit Required though the NYSDEC
Fiscal	0	Significant cost associated with HAB's include microcystin sampling, increasing chlorine (disinfection) levels to inactivate microcystin.
Environmental	1	Cyanobacterial blooms can be harmful to the environment, animals, and human health. The bloom decay consumes oxygen, creating hypoxic conditions which result in plant and animal die-off. Under favorable conditions of light and nutrients, some species of cyanobacteria produce toxic secondary metabolites, known as cyanotoxins
Social	1	Negative impact on swimming boating, additional recreational activities
Administrative	1	Significant staff resources allocated to meeting with Regulatory Agencies, lakefront associations, concerned citizens
Multi-Hazard	1	Elevated levels of microcystin would significantly affect the City of Syracuse population including residences, schools, hospitals, businesses.
Timeline	1	Long-term monitoring / lake and watershed modelling is currently in-progress
Agency Champion	1	NYSDOH supports the project
Other Community Objectives	1	Public awareness and educational outreach. Numerous forums and workshops have been and will continue to be sponsored by the City of Syracuse to inform Skaneateles Lake Watershed residents and businesses regarding best management practices for reducing pollutants in the Watershed.
Total	12	
Priority (High/Med/Low)	High	

Figure 9.33-5. This map shows Skaneateles Lake which is experiencing harmful algal bloom in relation to the City of Syracuse.



Source: *Syracuse-Onondaga County Planning Agency, New York DHSES*
Note: *Phase 1 (study) of this effort is underway and will identify specific impacted areas and the recommended mitigation components. The study report is expected to be finalized in approximately summer 2019. After completion of the report, this worksheet will be updated.*

Action Worksheet			
Project Name:	Syracuse Flash Flooding Mitigation – Eastwood/Sedgewick		
Project Number:	C. Syracuse-2		
Risk / Vulnerability			
Hazard(s) of Concern:	Severe storm - Flash flooding		
Description of the Problem:	In Syracuse's Eastwood and Sedgewick neighborhoods, short duration intense rainstorms overwhelm the storm sewer's capacity to capture and convey stormwater resulting in flooded areas and sewer backups (report map to be included when available). The localized flooding has caused traffic accidents, detours and delays. Localized erosion and road undermining has resulted necessitating road repairs. The city has initiated Phase 1 study of this problem; the study report is expected to be completed in January 2019. The report will provide recommended alternatives to address flash flooding and sewer surcharges in these neighborhoods. This project is for Phase 2 – Implementation of mitigation alternatives. Problem areas include: James St/Teall intersection; James/Cook/Mildred intersection; S. Collingwood at James St; Nichols St; Rigi St/Tyson St area; and Sunnycrest/Woodbine area.		
Action or Project Intended for Implementation			
Description of the Solution:	Hybrid – Increase Storm Sewer Capacity and Reduce Stormwater Runoff – In select areas, increase the number of catch basins to capture a higher percentage of area runoff. Increase the size of local and mainline sewers to increase conveyance to avoid surcharges. Install storm surge manhole covers to prevent unknown underwater hazards. Increase public outreach of flash flood risks. In addition to increasing capacity, develop green infrastructure/retention areas to reduce stormwater runoff to the local sewer systems. Phase 1 (study) of this effort is underway and will identify specific impacted areas and the recommended mitigation components.		
Is this project related to a Critical Facility?	Yes ☐	No ☒	
Is this project related to a Critical Facility located within the 100-year floodplain?	Yes ☐	No ☒	
(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:	500 year event	**Estimated Benefits (losses avoided):**	[Report data to be utilized when available]
Useful Life:	50 years	**Goals Met:**	1, 3
Estimated Cost:	[Report data to be utilized when available]	**Mitigation Action Type:**	Structure and Infrastructure Project, Natural Systems Protection, Education and Awareness Project
Plan for Implementation			
Prioritization:	Medium	**Desired Timeframe for Implementation:**	By 2025
Estimated Time Required for Project Implementation:	5 years	**Potential Funding Sources:**	HMPG PDM, FMA Grant funding with local cost share; NYS Environmental Facilities Corporation and CFA stormwater/green infrastructure grants
Responsible Organization:	City of Syracuse Dept. of Engineering and DPW; Onondaga County WEP	**Local Planning Mechanisms to be Used in Implementation if any:**	

Three Alternatives Considered (including No Action)			
Alternatives:	**Action**	**Estimated Cost**	**Evaluation**
	No Action	$0	Current problem continues
	Alt 1- Increase Storm Sewer Capacity	[Report summary and recommendations to be utilized when available]	Costs of a complete storm sewer replacement are expected to be beyond the city's fiscal capability.
	Alt 2- Reduce stormwater runoff in localized areas	[Report summary and recommendations to be utilized when available]	As the area is urban commercial and residential, insufficient space is available to address this problem through green infrastructure practices only.

Progress Report (for plan maintenance)	
Date of Status Report:	
Report of Progress:	
Update Evaluation of the Problem and/or Solution:	

Action Worksheet		
Project Name:	Syracuse Flash Flooding Mitigation – Eastwood/Sedgewick	
Project Number:	C. Syracuse-2	
Criteria	**Numeric Rank (-1, 0, 1)**	**Provide brief rationale for numeric rank when appropriate**
Life Safety	1	Project will reduce flood depths and flow velocity; project will also reduce unseen underway hazards; reduction of traffic accidents
Property Protection	0	Reduction of road repair and erosion.
Cost-Effectiveness	0	
Technical	1	Feasible and would utilize common stormwater management actions.
Political	1	
Legal	1	Will need to work with County on sewer projects.
Fiscal	0	Not currently funded; would require new budget authorization.
Environmental	1	Will be implemented in accordance with NYS stormwater regs and reduce CSOs to local streams.
Social	0	
Administrative	1	Could be implemented with city and County capabilities.
Multi-Hazard	0	Applies to flash flooding only
Timeline	1	Will be multiple projects; some completed within 5 years.
Agency Champion	0	
Other Community Objectives	0	Promotes improved environmental quality
Total	6	
Priority (High/Med/Low)	Med	

The following two maps show the Eastwood and Sedgwick neighborhood respectively.

Figure 9.33-6. Eastwood Neighborhood

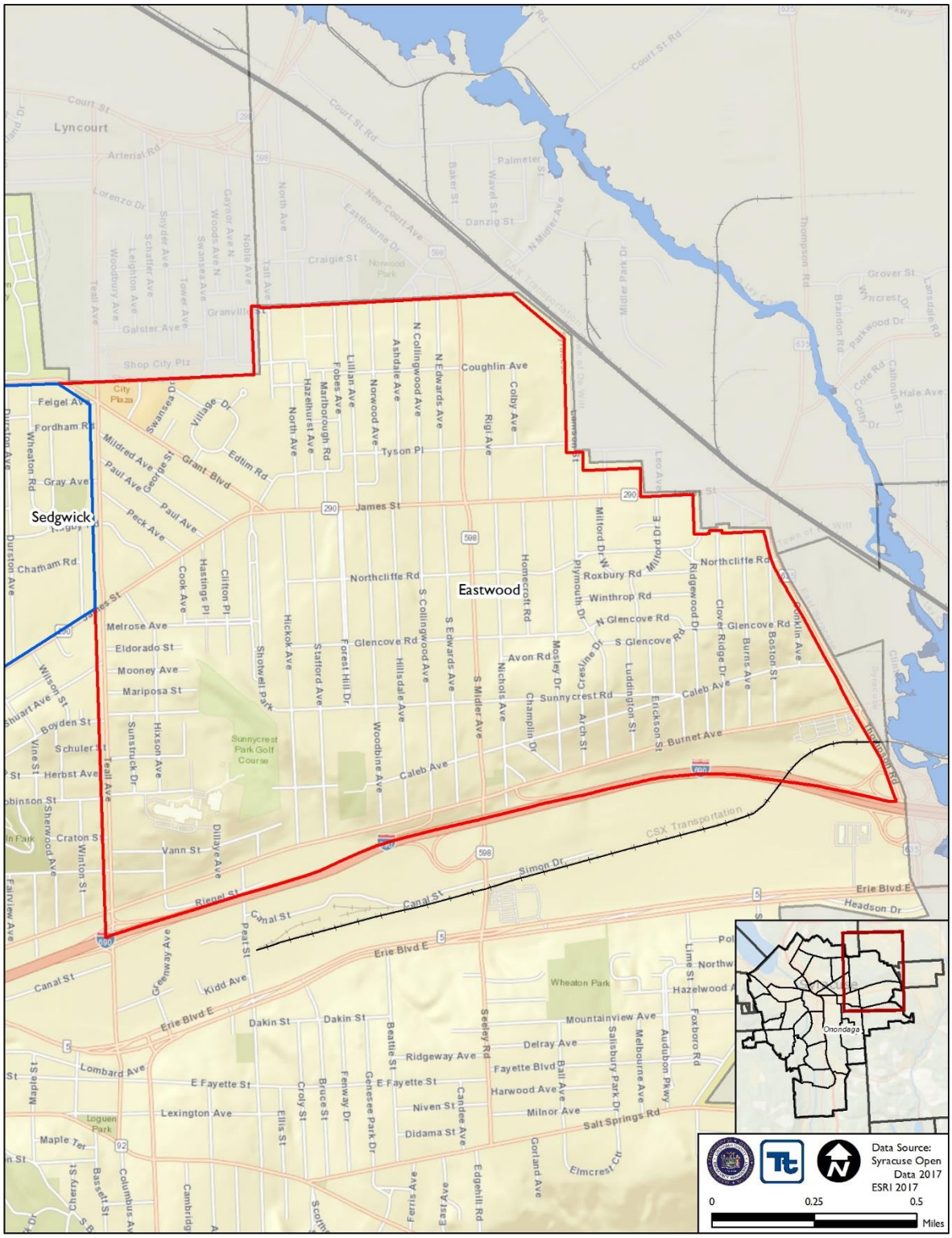
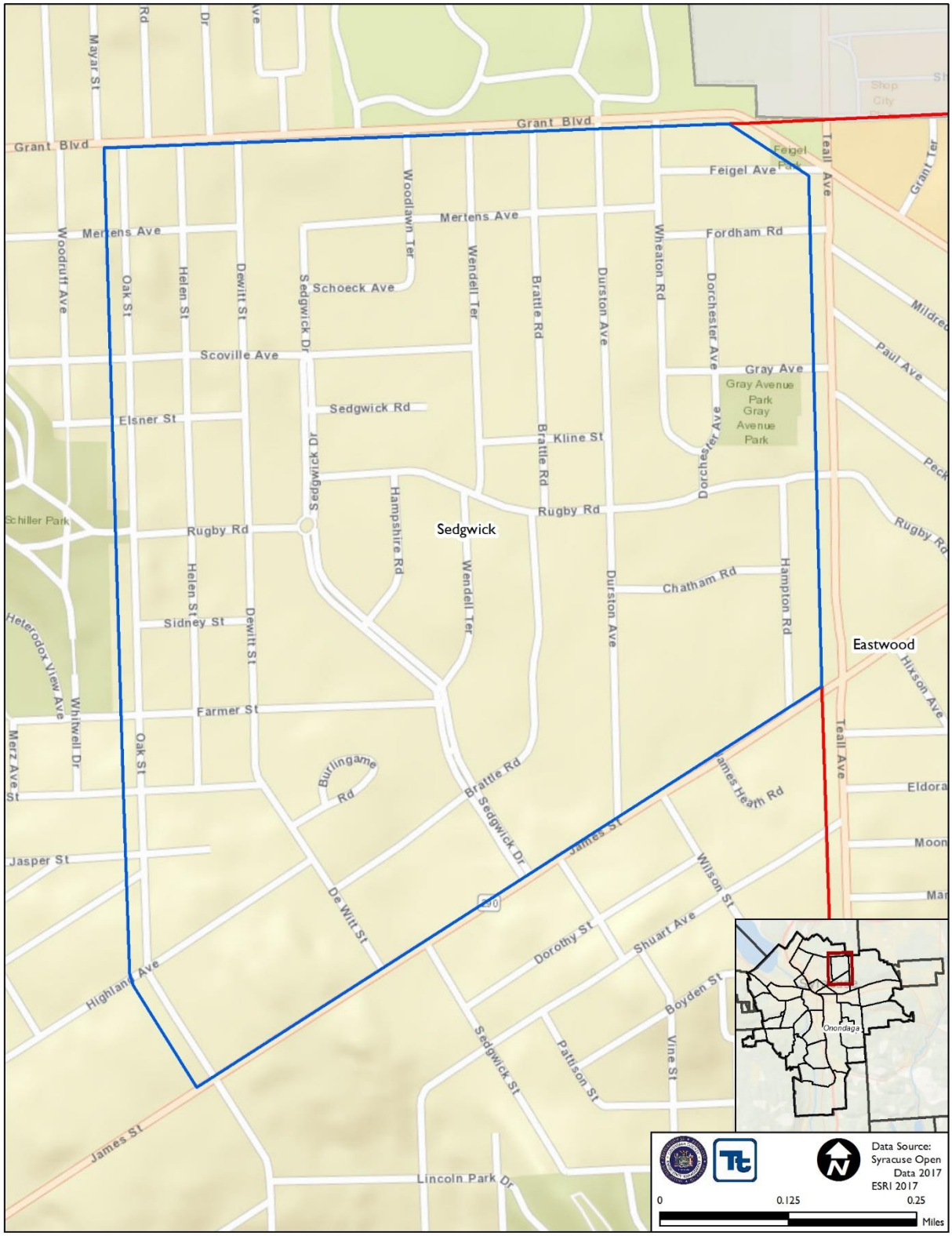


Figure 9.33-7. Sedgewick Neighborhood



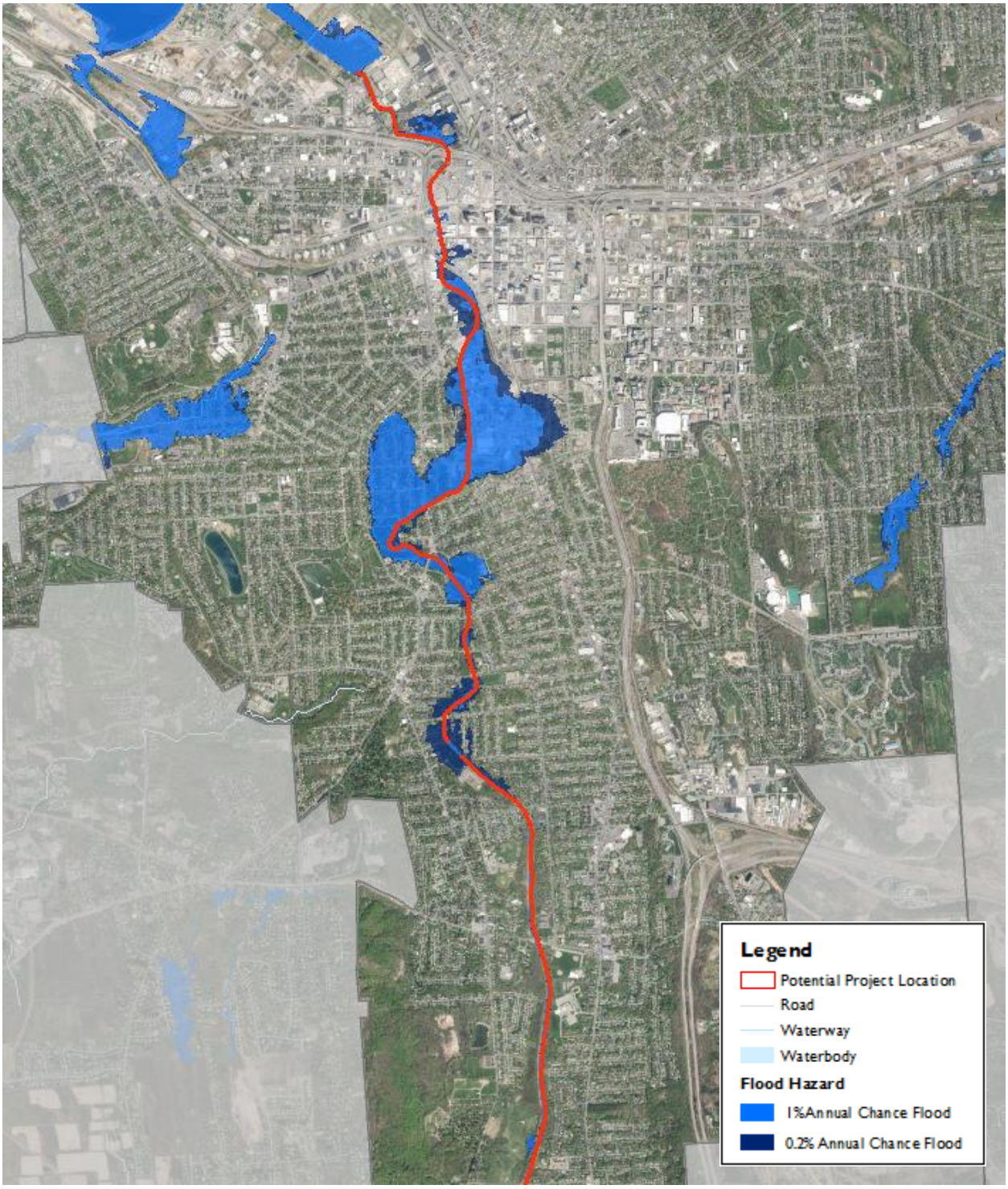
Action Worksheet			
Project Name:	Onondaga Creek Flood Risk Reduction – Arsenal Park Storage		
Project Number:	C. Syracuse-3		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood		
Description of the Problem:	Flood risks and the size of the Special Flood Hazard Area have both increased for Onondaga Creek within Syracuse. FEMA issued new Flood Insurance Rate Maps in 2016 which increased the size of the SFHA by 175 acres and added almost 1,200 residential and commercial structures. The major part of this addition is within lower-income residential areas on the south side of Syracuse adjacent to Onondaga Creek, adding the financial burden of flood insurance. The last major flood causing evacuations along Onondaga Creek within Syracuse was recorded in 1974; however, it has been observed that approximately every one to two years, Onondaga Creek has overtopped its channel banks at locations within Syracuse at discharges of approximately only 50% of the FEMA 1%-Annual Chance Discharge and at approximately only 50% of the design capacity for the engineered channels within the city.		
Action or Project Intended for Implementation			
Description of the Solution:	**Reduce Onondaga Creek Peak Discharges – Arsenal Park Flood Storage** The Arsenal Park area along Onondaga Creek near Syracuse's southern boundary provides the largest single tract of land within Syracuse (approx. 15 acres) which could be used for flood storage with the goal of reducing Onondaga Creek peak discharges within Syracuse and removing structures and residents from the Special Flood Hazard Area. This Alternative would be three phased: Phase 1 – Conduct a study to determine the amount that the Arsenal Park tract could reduce Onondaga Creek peak discharges and how many structures and residents would be removed from the SFHA. A Benefit/Cost analysis would be included. This alternative could include diversion/detention and infiltration into newly developed natural and wetland areas. The tract is currently privately–owned but initial discussions with the owner indicate sale is possible. The hydraulic study would be submitted to FEMA, USACE, and NYSDEC for review of the proposed concept. Sediment capture from upstream sources could also be considered as part of the design. Phase 2: Engineering Design of Arsenal Park Flood Risk Reduction project. An environmental assessment would be required. Phase 3: Construction of the Arsenal Park Flood Risk Reduction project and submission of new hydraulic study to FEMA for FIRM revisions.		
Is this project related to a Critical Facility?	Yes ☐	No ☒	
Is this project related to a Critical Facility located within the 100-year floodplain?	Yes ☐	No ☒	
(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 event	**Estimated Benefits (losses avoided):**	Increased public safety. Reduction in yearly flood insurance costs ($0.5 mill/year; reduction of monetary loss per flood event; assume 200 structures x $30,000 loss per structure per major flood event = $6 million in losses.
Useful Life:	50 years	**Goals Met:**	1, 3, 4, 5
Estimated Cost:	Phase 1(Study) $150-$400K Phase 2(Design)$200-$600K Phase 3 (Construction) – $2 – $8 mill	**Mitigation Action Type:**	Structure and Infrastructure Project, Natural Systems Protection
Plan for Implementation			
Prioritization:	High	**Desired Timeframe for Implementation:**	By 2025
Estimated Time Required for Project Implementation:	5 years (study and implementation)	**Potential Funding Sources:**	HMPG Grants with local share;
Responsible Organization:	City of Syracuse Engineering Department.	**Local Planning Mechanisms to be Used in Implementation if any:**	Flood Risk reduction

Three Alternatives Considered (including No Action)			
Alternatives:	**Action**	**Estimated Cost**	**Evaluation**
	No Action	$0	Flood risk would continue to increase as well as the

			financial burden of flood insurance.
	Alt 1 – Elevation of All Structures within Onondaga Creek SFHA	Approximately $72 million based on 681 residential structures x $40,000 per structure + 347 commercial structures x $200,000 per structure	Costs very high and potential hidden costs for work in older urban areas.
	Alt 2 – Increase Onondaga Creek Hydraulic Conveyance	Estimated $46 million (2016 NYSDEC/OBG engineering report)	Costs very high, environmental issues, community impacts and permitting are obstacles.
	Alt 3 – Sediment and Overgrowth Removal	Estimated $16.5 million (2016 NYS/OBG engineering report)	Costs high, environmental issues, community impacts and permitting are obstacles. Sediment will continue to enter the creek from upstream sources making the gains from this alternative only short-term
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			

Action Worksheet		
Project Name:	Onondaga Creek Flood Risk Reduction – Arsenal Park Storage	
Project Number:	C. Syracuse-3	
Criteria	**Numeric Rank (-1, 0, 1)**	**Provide brief rationale for numeric rank when appropriate**
Life Safety	1	Reduced peak discharges will significantly reduce safety risks
Property Protection	1	Reduced peak discharges will significantly reduce property loses
Cost-Effectiveness	1	
Technical	1	Alternative is feasible;
Political	1	Would have political and community support
Legal	0	
Fiscal	0	Would need significant grant funding to implement; benefit cost analysis needed
Environmental	1	Open fields would be converted to storage and wetland areas; environmental assessment needed
Social	1	Alternate would have political and community support; would not displace persons or businesses; would reduce flood insurance costs to community.
Administrative	1	
Multi-Hazard	0	Flood hazard
Timeline	0	Longer term project (5-year study and implementation).
Agency Champion	1	City of Syracuse
Other Community Objectives	0	
Total	9	
Priority (High/Med/Low)	High	

Figure 9.33-8. Below is a map representing Onondaga Creek and the surrounding floodplain in the City of Syracuse.



Source: Syracuse-Onondaga County Planning Agency, New York DHSES, FEMA 2016