



9.2 Erie County Water Authority

This section presents the jurisdictional annex for the Erie County Water Authority. 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 Water Authority participated in the planning process; an assessment of the Erie County Water Authority’s risk and vulnerability; the different capabilities utilized in the Water Authority; and an action plan that will be implemented to achieve more resilient operations.

9.2.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Erie County Water Authority’s hazard mitigation plan primary and alternate points of contact. The Erie County Water Authority 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 from the Chief Security Officer and the Chief Operating Officer. The Chief Security Officer represented the community on the Erie County Hazard Mitigation Plan Planning Partnership, 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.

The following table summarizes municipal officials that participated in the development of the annex and in what capacity. Additional documentation on the municipality’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meeting Documentation).

Table 9.2-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name/Title: Matt Barrett, Chief Security Officer Address: 295 Main Street Buffalo, NY 14203 Phone Number: 716-685-8562 Email: mbarrett@ecwa.org	Name/Title: Russell Stoll, Chief Operating Officer Address: 295 Main Street Buffalo, NY 14203 Phone Number: 716-685-8276 Email: rstoll@ecwa.org

9.2.2 Water Authority Jurisdictional Profile

The Erie County Water Authority (ECWA) is a public benefit authority formed in 1949 to provide a potable water supply to the citizens of Erie County. The ECWA finances, contracts, constructs, and operates a water supply and distribution system for residents of Erie County. The Authority began operating in 1953. The Erie County Water Authority is responsible for the treatment and distribution of 25 billion gallons of safe, clean, potable water annually to more than 540,000 residential, commercial, and industrial customers in 36 municipalities located within Erie County and parts of Chautauqua, Cattaraugus, western Wyoming and western Genesee counties, as well as the territories of the Seneca Nation of Indians (Erie County Water Authority 2021). The Authority employs 40 staff in its headquarters and 190 staff throughout the districts and provides 24/7 operations.

ECWA operates two treatment plants and many pump stations and tank sites throughout Erie County. The water is distributed through 3,600 miles of pipe. ECWA both owns and leases sites throughout Erie County. The Authority owns and operates two treatment plants and many pump stations and tank sites, none of which are in a floodplain. Mitigation projects have included substantial security upgrades at many different locations. Seven





county sewer districts outside of the City of Buffalo serve most, but not all, the suburban area of Erie County. The Authority’s Sewer Division is responsible for administering, operating, improving, and maintaining infrastructure within the sewer districts. The Sewer Division operates 6 treatment plants, 100 pumping stations and 1,100 miles of sewer. The sewer division coordinates with Emergency Services when they have events like prolonged outages.

ECWA prioritizes continuous service and has mitigated against power outages by installing backup power at the larger pumping stations. All such stations are equipped with remote telemetry that will alert ECWA to hook up a portable generator. All the Authority’s sewer pumping stations are listed as priority facilities with utility providers National Grid and NYSEG. Other local towns/villages, including Buffalo, provide their own water and sewer systems (Erie County Water Authority 2021).

9.2.3 Jurisdictional Capability Assessment and Integration

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

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of administrative and technical capabilities
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Classification under various community mitigation programs.
- The community’s adaptive capacity to withstand hazard events.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in this Jurisdictional Capability Assessment (Section 9.2.3). The Erie County Water Authority’s identified opportunities for integration of mitigation concepts to be incorporated into municipal procedures are included in the updated mitigation strategy.

Planning, Legal, and Regulatory Capability and Integration

The table below summarizes the regulatory tools that are available to the Erie County Water Authority. The comment field provides information as to where hazard mitigation has been integrated.

Table 9.2-2. Planning, Legal, and Regulatory Capability and Integration

	Jurisdiction has this? (Yes/No)	State Mandated? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible
Codes, Ordinances, & Requirements					
Local municipalities are responsible for adopting and enforcing codes and regulations that guide development, construction, etc. within their municipal boundaries					
Planning Documents					
Comprehensive Plan	Yes	No	Erie County Water Authority Comprehensive Strategic Plan, 2019	County	Erie County Water Authority



	Jurisdiction has this? (Yes/No)	State Mandated? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible
Comment: The ECWA Comprehensive Strategic Plan establishes a strategy to support ECWA's infrastructure to reliably meet the service needs of our present and future customers in a cost-effective manner. Maintain and constantly re-examine our vulnerability assessments and emergency response plans.6) Develop a plan and practice measures needed to operate key components of the water treatment and distribution systems in the event of the loss of automated monitoring and control capabilities.7) Review cyber security awareness and plan for operation in the event of corruption/attack of key IT systems.					
Capital Improvement Plan	No	No	-	-	-
Comment: N/A					
Disaster Debris Management Plan	No	No	-	-	-
Comment: N/A					
Floodplain or Watershed Plan	No	No	-	-	-
Comment: N/A					
Stormwater Plan	No	No	-	-	-
Comment: N/A					
Open Space Plan	No	No	-	-	-
Comment: N/A					
Urban Water Management Plan	No	No	-	-	-
Comment: N/A					
Habitat Conservation Plan	No	No	-	-	-
Comment: N/A					
Economic Development Plan	No	No	-	-	-
Comment: N/A					
Shoreline Management Plan	No	No	-	-	-
Comment: N/A					
Community Wildfire Protection Plan	No	No	-	-	-
Comment: N/A					
Forest Management Plan	No	No	-	-	-
Comment: N/A					
Transportation Plan	No	No	-	-	-
Comment: N/A					



	Jurisdiction has this? (Yes/No)	State Mandated? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Department / Agency Responsible
Climate Change /Resilience/ Sustainability Plan	No	No	-	-	-
Comment: N/A					
Agriculture Plan	No	No	-	-	-
Comment: N/A					
Other (this could include a tourism plan, business development plan, etc.)	-	-	-	-	-
Comment: N/A					
Response/Recovery Planning					
Comprehensive Emergency Management Plan	No	No	-	-	-
Comment: N/A					
Strategic Recovery Planning Report	No	No	-	-	-
Comment: N/A					
Threat & Hazard Identification & Risk Assessment (THIRA)	No	No	-	-	-
Comment: N/A					
Post-Disaster Recovery Plan	No	No	-	-	-
Comment: N/A					
Continuity of Operations Plan	No	No	-	-	-
Comment: N/A					
Public Health Plan	No	No	-	-	-
Comment: N/A					
Other	No	-	-	-	-
Comment: N/A					

Development and Permitting Capability

The table below summarizes the capabilities of the Erie County Water Authority to oversee and track development.



Table 9.2-3. Development and Permitting Capability

Indicate if your jurisdiction implements the following	Yes/No	Comment:
Do you issue development permits? If yes, what department is responsible?		ECWA does not issue building permits. Building permits are issued by local municipalities.
Are permits tracked by hazard area? (For example, floodplain development permits.)		
Do you have a buildable land inventory?		
If yes, please describe If no, please quantitatively describe the level of buildout in the jurisdiction.		

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Erie County Water Authority and their current responsibilities which contribute to hazard mitigation.

Table 9.2-4. Administrative and Technical Capabilities

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, integration of hazard mitigation):
Administrative Capability		
Planning Board	No	-
Zoning Board of Adjustments	No	-
Planning Department	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Public Works/Highway Department	No	-
Construction/Building/Code Enforcement Department	No	-
Emergency Management/Public Safety Department	No	-
Warning Systems / Services (mass notification system, outdoor warning signals)	Yes	ECWA communicates with the public about warnings via the agency website, Facebook and Twitter
Maintenance programs to reduce hazard (stormwater maintenance, tree trimming, etc.)	Yes	ECWA performs regular trimming of trees that could impact important Authority facilities.
Mutual aid agreements	No	The ECWA is not party to any mutual aid agreements.
Other	No	-
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	There are several staff with knowledge of land development, several of whom are engineers
Engineers or professionals trained in building or infrastructure construction practices	Yes	There are many Authority staff with experience with building or infrastructure practices.
Planners or engineers with an understanding of natural hazards	Yes	There are several Authority staff with an understanding of natural hazards.
Staff with expertise or training in benefit/cost analysis	No	-



Resources	Available? (Yes/No)	Comments (available staff, responsibilities, integration of hazard mitigation):
Professionals trained in conducting damage assessments	Yes	ECWA works closely with insurance agents to derive damage assessments.
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	ECWA staff includes GIS expertise and the Authority’s assets are maintained in GIS data format.
Scientist familiar with natural hazards	No	-
NFIP Floodplain Administrator (FPA)	No	-
Surveyor(s)	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	No	-

Fiscal Capability

The table below summarizes financial resources available to the Erie County Water Authority.

Table 9.2-5. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Community Development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas, or electric service	Yes, ECWA levies a commodity charge and an infrastructure charge that varies based on size of connection. There are also fees to maintain hydrants.
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	Yes
Open Space Acquisition funding programs	No
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	Water Infrastructure Finance & Innovation Act

Education and Outreach Capability

The table below summarizes the education and outreach resources available to the Erie County Water Authority.



Table 9.2-6. Education and Outreach Capabilities

Outreach Resources	Available? (Yes/No)	Comment:
Public information officer or communications office	Yes	Matthew Barrett; ECWA Security Officer. The Authority contracts with E3 Communications to provide public information services.
Personnel skilled or trained in website development	Yes	Matthew Barrett; ECWA Security Officer. The Authority contracts with E3 Communications to provide public information services.
Hazard mitigation information available on your website	Yes	Matthew Barrett; ECWA Security Officer. The Authority contracts with E3 Communications to provide public information services, particularly regarding water quality and boil water advisories.
Social media for hazard mitigation education and outreach	Yes	Matthew Barrett; ECWA Security Officer. The Authority contracts with E3 Communications to provide public information services and makes use of Facebook and Twitter.
Citizen boards or commissions that address issues related to hazard mitigation	No	-
Other programs already in place that could be used to communicate hazard-related information	Yes	ECWA is determining whether to provide reverse 9-1-1 service.
Warning systems for hazard events	Yes	Matthew Barrett; ECWA Security Officer, distributes service warnings via the Authority website, Facebook and Twitter.
Natural disaster/safety programs in place for schools	No	-
Other	No	-

Community Classifications

The table below summarizes classifications for community programs available to the Erie County Water Authority.

Table 9.2-7. Community Classifications

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Not applicable, individual municipalities are responsible for their classifications in various programs		
Building Code Effectiveness Grading Schedule (BCEGS)			
Public Protection (ISO Fire Protection Classes 1 to 10)			
NYSDEC Climate Smart Community			
Storm Ready Certification			
Firewise Communities classification			
Other			

Note:

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

Adaptive Capacity

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current capabilities to adjust to, protect from, or withstand a future hazard event, future conditions, and changing risk. The table below summarizes the adaptive capacity for each hazard of concern and the jurisdiction’s rating.



Table 9.2-8. Adaptive Capacity

Hazard	Adaptive Capacity - Strong/Moderate/Weak*
Coastal Erosion	Strong
Cyber Attack	Moderate
Earthquake	Strong
Expansive Soils	Strong
Extreme Temperature	Strong
Flood	Moderate
Hazardous Materials	Strong
Landslide	Strong
Pandemic	Strong
Severe Storm	Strong
Severe Winter Storm	Strong
Utility Failure	Strong
Wildfire	Strong

*Strong Capacity exists and is in use
 Moderate Capacity may exist; but is not used or could use some improvement
 Weak Capacity does not exist or could use substantial improvement

9.2.4 National Flood Insurance Program (NFIP) Compliance

This section provides specific information on the management and regulation of the regulatory floodplain, including current and future compliance with the NFIP.

NFIP Floodplain Administrator (FPA)

Not applicable, municipalities are responsible for floodplain administration

National Flood Insurance Program (NFIP) Summary

Not applicable, municipalities are responsible for floodplain administration

Table 9.2-9. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Not applicable, municipalities are responsible for floodplain administration						

Source:
 Notes:
 RL Repetitive Loss; SRL Severe Repetitive Loss

Flood Vulnerability Summary

Not applicable, municipalities are responsible for floodplain administration

NFIP Compliance

Not applicable, municipalities are responsible for floodplain administration

9.2.5 Evacuation, Sheltering, Temporary Housing, and Permanent Housing

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





Evacuation Routes and Procedures

Not applicable, municipalities are responsible for determining evacuation routes and procedures

Sheltering

Not applicable, the Water Authority is not responsible for identifying or operating emergency shelters.

Table 9.2-10. Designated Emergency Shelters

Site Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Not applicable, municipalities are responsible for identifying emergency shelters							

Temporary Housing

Each jurisdiction must identify sites for the placement of temporary housing units to house residents displaced by a disaster. The Erie County Water Authority is not responsible for identifying or operating emergency shelters.

Table 9.2-11. Temporary Housing Locations

Site Name	Site Address	Capacity (number of sites)	Type	Infrastructure / Utilities Available (water, electric, septic, etc.)	Actions Required to Ensure Conformance with the NYS Uniform Fire Prevention and Building Code
Not applicable, municipalities are responsible for determining temporary housing locations.					

Permanent Housing

Structures located in the regulatory floodplain may need to be relocated due to high flood risk or new properties must be built once severely damaged properties are demolished. Jurisdictions must identify suitable sites currently owned by the jurisdiction and potential sites under private ownership that meet applicable local zoning requirements and floodplain laws. The Erie County Water Authority is not responsible for locating new permanent housing for displaced residents.

Table 9.2-12. Permanent Housing Locations

Site Name	Site Address	Capacity (number of sites)	Type	Infrastructure / Utilities Available (water, electric, septic, etc.)	Actions Required to Ensure Conformance with the NYS Uniform Fire Prevention and Building Code
Not applicable, municipalities are responsible for determining permanent housing locations.					

9.2.6 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction’s overall risk to its hazards of concern. Table 9.2-13 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development.



Table 9.2-13. Recent and Expected Future Development

Type of Development	2015		2016		2017		2018		2019		2020	
Number of Building Permits for New Construction Issued Since the Previous HMP* (within regulatory floodplain/ Outside regulatory floodplain)												
	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA
Single Family	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Multi-Family	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (commercial, mixed-use, etc.)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Permits Issued	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Property or Development Name	Type of Development	# of Units / Structures		Location (address and/or block and lot)		Known Hazard Zone(s)*		Description / Status of Development				
Recent Major Development and Infrastructure from 2015 to Present												
N/A												
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years												
N/A												

SFHA Special Flood Hazard Area (1% flood event)

* Only location-specific hazard zones or vulnerabilities identified.

9.2.7 Jurisdictional Risk Assessment

The hazard profiles in Section 5 (Risk Assessment) provide detailed information regarding each plan participant’s vulnerability to the identified hazards. Refer to Section 5.2 (Methodology and Tools) and Section 5.4 (Hazard Ranking) for a detailed summary for the Erie County Water Authority’s risk assessment results and data used to determine the hazard ranking discussed later in this section.

Hazard area extent and location maps were generated to illustrate the probable areas impacted within the county and the ECWA’s coverage area. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Erie County Water Authority has significant exposure. Hazard maps are shown in the respective hazard profiles in Section 5 (Risk Assessment). For security reasons, the Erie County Water Authority assets and infrastructure are not shown in greater detail in this annex.

Hazard Event History

Erie County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5 (Risk Assessment) 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 Erie County Water Authority’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Erie County. Table 9.2-14 provides details regarding municipal-specific loss and damages the Water Authority experienced during hazard events since the last hazard mitigation plan update. 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 9.2-14. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Did your community suffer losses/costs from this event? If yes, please provide details
January 1-9, 2015	Lake-effect Snow	No	Although the county was impacted, the Water Authority did not report damages.
August 11-15, 2015	Flash Flood	No	Although the county was impacted, the Water Authority did not report damages.
October 28-29, 2015	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
November 6, 2015	Thunderstorm Wind	No	Although the county was impacted, the Water Authority did not report damages.
November 12, 2015	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
November 18, 2015	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
January 11, 2017	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
March 8, 2017	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
March 13, 2017	Winter Storm	No	Although the county was impacted, the Water Authority did not report damages.
July 20, 2017	Tornado	No	Although the county was impacted, the Water Authority did not report damages.
August 4, 2017	Thunderstorm Wind	No	Although the county was impacted, the Water Authority did not report damages.
December 10-15, 2017	Lake-effect Snow	No	Although the county was impacted, the Water Authority did not report damages.
December 24-29, 2017	Lake-effect Snow	No	Although the county was impacted, the Water Authority did not report damages.
January 2, 2018	Blizzard	No	Although the county was impacted, the Water Authority did not report damages.
October 6, 2018	Lightning	No	Although the county was impacted, the Water Authority did not report damages.
February 24, 2019	High Wind	No	Although the county was impacted, the Water Authority did not report damages.
February 24, 2019	Lakeshore Flooding	No	Although the county was impacted, the Water Authority did not report damages.
October 27- November 1, 2019	Lakeshore Flooding DR-4472 NY	No	Although the county was impacted, the Water Authority did not report damages.
October 31- November 1, 2019	High Wind DR-4472 NY	No	Although the county was impacted, the Water Authority did not report damages.
November 27, 2019	Lakeshore Flooding	No	Although the county was impacted, the Water Authority did not report damages.
January 12, 2020	Lakeshore Flooding	No	Although the county was impacted, the Water Authority did not report damages.
January 18, 2020	Lakeshore Flooding	No	Although the county was impacted, the Water Authority did not report damages.
March 2020-Present	COVID Pandemic, DR 4480	Yes	The COVID-19 pandemic killed and/or sickened thousands of Erie County residents

Notes:

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





Hazard Ranking and 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 Erie County Water Authority’s risk assessment results and data used to determine the hazard ranking.

Hazard Ranking

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

As discussed in Section 5.3 (Hazard Ranking), each participating jurisdiction may have differing degrees of risk exposure and vulnerability compared to Erie 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 Erie County Water Authority. The Erie County Water Authority 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 Water Authority indicated agreement with the results of the risk ranking shown in Table 9.2-15.

Table 9.2-15. Hazard Ranking Input

Coastal Erosion	Cyber Attack	Earthquake	Expansive Soils	Extreme Temperature	Flood	Hazardous Materials
Low	Medium	High	Low	Medium	Low	Low
Landslide	Pandemic	Severe Storm	Severe Winter Storm	Utility Failure	Wildfire	
Low	Medium	High	High	High	Medium	

Note: The scale is based on the hazard rankings established in Section 5.3 and modified as appropriate during review by the jurisdiction

Critical Facilities

New York State Department of Environmental Conservation (DEC) Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a Special Flood Hazard Area (SFHA) unless constructed according to specific mitigation specifications, including being raised 2’ above the Base Flood Elevation (BFE). This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 0.2-percent annual chance 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 (NYS DHSES 2017).

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



Table 9.2-16. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
N/A – Information regarding the vulnerability of ECWA assets and infrastructure is not for public release.						

Identified Issues

After review of the Erie County Water Authority’s hazard event history, hazard rankings, jurisdiction specific vulnerabilities, hazard area extent and location, and current capabilities, the Erie County Water Authority has identified the following vulnerabilities within their community:

- Several ECWA facilities lack surveillance and security measures
- Wave action, compounded by lack of winter ice cover, has severely eroded the Lake Erie shoreline at the ECWA Sturgeon Point Water Treatment Plant.
- Cyber security shortfalls will be assessed to determine necessary upgrades in software and processes to prevent cyber attack on the ECWA water distribution system.
- The Water Authority lacks Reverse 9-1-1 capability
- ECWA has numerous facilities with backup generators in remote locations. Some of the access roads are substandard. Others become impassable due to debris and downed power lines during storms.

9.2.8 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 2015 HMP. 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 9.2-17. 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)	<ol style="list-style-type: none"> 1. Next Steps Project to be included in 2022 HMP or Discontinue 2. If including action in the 2022 HMP, revise/reword to be more specific (as appropriate). 1. If discontinue, explain why.
No Projects were listed in the 2015 HMP for the ECWA							

Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The Erie County Water Authority did not identify any projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2015 HMP.



Proposed Hazard Mitigation Initiatives for the HMP Update

The Erie County Water Authority participated in a mitigation action workshop in June 2021 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).

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

Table 9.2-18. Analysis of Mitigation Actions by Hazard and Category

Hazard	FEMA				CRS					
	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Coastal Erosion	-	-	-	-	X	X	-	-	-	-
Cyber Security	X	X	-	-	X	X	-	-	-	X
Earthquake	-	-	-	-	X	X	-	-	-	-
Expansive Soils	-	-	-	-	X	X	-	-	-	-
Extreme Temperature				-	X	X	-	-	-	-
Flood	X	X	X	-	X	X	-	X	X	X
Hazardous Materials	-	-	-	-	X	X	-	-	-	-
Landslide	-	-	-	-	X	X	-	-	-	-
Pandemic	-	-	-	-	X	X	-	-	-	-
Severe Storm	-	X	-	-	X	X	-	-	X	-
Severe Winter Storm	-	X	-	-	X	X	-	-	X	-
Utility Failure	-	-	-	-	X	X	-	-	-	-
Wildfire	-	-	-	-	X	X	-	-	-	-

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

Table 9.2-19 summarizes the comprehensive range of specific mitigation initiatives the Erie County Water Authority 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 9.2-20 provides a summary of the prioritization of all proposed mitigation initiatives for the HMP update.



Table 9.2-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2022-ECWA-001	Erie County Water Authority surveillance and security enhancement	1	Cyber Security	<p>Problem: Several ECWA facilities lack adequate security measures, exposing them to cyber or other terrorist attack.</p> <p>Solution: ECWA staff will add to and update alarm monitoring and surveillance systems already in place at specified locations. Staff will install automated gates controlled by card readers to grant access at designated locations.</p>	Yes	No	Within 3 years	ECWA	\$475,000	Continuity of water services	HMGP, BRIC, ECWA budget	High	SIP	PR
2022-ECWA-002	Erie County Water Authority – Sturgeon Point Water Treatment Plant Shoreline Stabilization	1	Severe Storm, Flood, Severe Winter Storm	<p>Problem: Wave action, compounded by lack of winter ice cover, has severely eroded the Lake Erie shoreline at the ECWA Sturgeon Point Water Treatment Plant. The erosion threatens the integrity of the plant’s critical outfall structure and the foundation supporting a United States Customs and Border</p>	Yes	May require permitting	Within 3 years	ECWA; NYSDEC and USACE (regulatory)	\$500,000	Continuity of water services	HMGP, BRIC, ECWA budget, Water Infrastructure Finance and Innovation Act	High	SIP	PP, SP



Table 9.2-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				Protection communication tower. Solution: A stabilization program will be implemented to protect the shoreline from further erosion and to maintain the integrity of the outfall and communication tower structures. It is anticipated the improvements required will include injection grouting below/behind the existing outfall structure and armor stone revetment of the currently unprotected shoreline including the area immediate to the communication tower.										
2022-ECWA-003	Critical roadway access to ECWA facilities with fuel powered generators	1	Flood	Problem: ECWA has numerous facilities with backup generators in remote locations. Some of the access roads are substandard. Others become impassable due to debris and	Yes	No	Within 6 months	ECWA	TBD per engineering assessment	Continuity of water service during extended power outages	ECWA budget	High	LPR, NSP	ES, NR



Table 9.2-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<p>downed power lines during storms. These obstructions can cause fuel delivery delays to backup generators during power outages.</p> <p>Solution: ECWA will conduct an assessment to determine which facilities require mitigation measures to ensure access for fuel delivery to backup generators. ECWA will institute these measures and also establish an ongoing program for tree clearing and trimming with the jurisdictions responsible for these roadways</p>										
2022-ECWA-004	Cyber security assessment	1,2	Cyber Security	<p>Problem: Cyber security shortfalls will be assessed to determine necessary upgrades in software and processes to prevent cyber attack on the ECWA water distribution system.</p>	Yes	No	Within 1 year	ECWA	\$100,000	Mitigating cyber security vulnerabilities and making necessary security improvements	ECWA	High	LPR	ES



Table 9.2-19. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				<p>Solution: ECWA will support a full cyber security assessment of the ECWA water distribution system. Authority staff will implement priority measures identified in the assessment.</p>						nts to ensure delivery of water to the public				
2022-ECWA-005	Reverse 9-1-1 service	1	All Hazards	<p>Problem: The Water Authority lacks Reverse 9-1-1 capability</p> <p>Solution: The Authority will develop the capacity to deliver Reverse 9-1-1 service</p>	No	No	2 years	ECWA	TBD	Improved public preparedness to hazards	EMPG, municipal Budget	High	PR	PP



Notes:

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

Acronyms and Abbreviations:

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

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
BRIC	Building Resilient Infrastructure and Communities Program

Timeline:

The time required for completion of the project upon implementation


Cost:

The estimated cost for implementation.

Benefits:

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

Critical Facility:

Yes  Critical Facility located in 1% floodplain

Mitigation Category:

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

CRS Category:

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



Table 9.2-20. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2022-ECWA-001	Erie County Water Authority surveillance and security enhancement	1	1	1	1	1	1	0	1	1	1	0	0	1	0	10	High
2022-ECWA-002	Erie County Water Authority – Sturgeon Point Water Treatment Plant Shoreline Stabilization	1	1	1	1	1	1	0	1	1	1	1	1	1	0	12	High
2022-ECWA-003	Critical roadway access to ECWA facilities with fuel powered generators	1	1	1	1	1	1	1	1	1	0	0	1	1	0	11	High
2022-ECWA-004	Cyber security assessment	1	1	1	1	1	1	0	1	1	1	0	1	1	0	11	High
2022-ECWA-005	Reverse 9-1-1 service	1	1	1	1	1	1	0	1	1	1	1	0	1	0	11	High

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



9.2.9 Action Worksheets

The following action worksheets have been developed by the Erie County Water Authority to aid in the submittal of grant applications to support the funding of high priority proposed actions.



Action Worksheet			
Project Name:	Erie County Water Authority surveillance and security enhancement		
Project Number:	2022-ECWA-001		
Risk / Vulnerability			
Hazard(s) of Concern:	Cyber Security		
Description of the Problem:	Several ECWA facilities lack adequate security measures, exposing them to cyber or other terrorist attack.		
Action or Project Intended for Implementation			
Description of the Solution:	ECWA staff will add to and update alarm monitoring and surveillance systems already in place at specified locations. Staff will install automated gates controlled by card readers to grant access at designated locations.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Is this project related to a Critical Facility located within the Special Flood Hazard Area?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	Ensure that facilities are protected by effective surveillance	Estimated Benefits (losses avoided):	Ensure that water flows uninterrupted to the public
Useful Life:	10 years	Goals Met:	1
Estimated Cost:	\$475,000	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	3 years
Estimated Time Required for Project Implementation:	Within 3 years	Potential Funding Sources:	HMGP, BRIC, ECWA
Responsible Organization:	Erie County Water Authority	Local Planning Mechanisms to be Used in Implementation if any:	Finance, Planning
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Station Police at every ECWA facility	Very High	Not feasible for cost and operational reasons
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Evaluation and Prioritization		
Project Name:	Erie County Water Authority surveillance and security enhancement	
Project Number:	2022-ECWA-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will secure facilities from cyber attack and ensure that water service continues as required to maintain life safety
Property Protection	1	Will protect ECWA assets from attack.
Cost-Effectiveness	1	For the benefits provided the project is cost effective
Technical	1	
Political	1	
Legal	1	
Fiscal	0	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Cyber Security
Timeline	0	Within 3 years
Agency Champion	1	Erie County Water Authority
Other Community Objectives	0	
Total	10	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Erie County Water Authority – Sturgeon Point Water Treatment Plant Shoreline Stabilization		
Project Number:	2022-ECWA-002		
Risk / Vulnerability			
Hazard(s) of Concern:	Severe Storm, Flood, Severe Winter Storm		
Description of the Problem:	Wave action, compounded by lack of winter ice cover, has severely eroded the Lake Erie shoreline at the ECWA Sturgeon Point Water Treatment Plant. The erosion threatens the integrity of the plant's critical outfall structure and the foundation supporting a United States Customs and Border Protection communication tower.		
Action or Project Intended for Implementation			
Description of the Solution:	A stabilization program will be implemented to protect the shoreline from further erosion and to maintain the integrity of the outfall and communication tower structures. It is anticipated the improvements required will include injection grouting below/behind the existing outfall structure and armor stone revetment of the currently unprotected shoreline including the area immediate to the communication tower.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Is this project related to a Critical Facility located within the Special Flood Hazard Area?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect to the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	To fully stabilize shoreline and prevent further erosion	Estimated Benefits (losses avoided):	Continuity of water services
Useful Life:	20 years	Goals Met:	1
Estimated Cost:	\$500,000	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	1 year
Estimated Time Required for Project Implementation:	Within 1 year	Potential Funding Sources:	BRIC, HMGP, WIFIA
Responsible Organization:	Erie County Water Authority (owner); NYSDEC and USACE (regulatory)	Local Planning Mechanisms to be Used in Implementation if any:	Planning, Finance
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Move the WTP to another location	Very expensive	Not feasible
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Evaluation and Prioritization		
Project Name:	Erie County Water Authority – Sturgeon Pt WTP Shoreline Stabilization	
Project Number:	2022-ECWA-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will secure facilities from attack and ensure that water service continues
Property Protection	1	Will protect ECWA assets from attack.
Cost-Effectiveness	1	For the benefits provided the project is cost effective
Technical	1	
Political	1	
Legal	1	May require permitting
Fiscal	0	
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flood, Severe Winter Storm
Timeline	1	
Agency Champion	1	Erie County Water Authority (owner); NYSDEC and USACE (regulatory)
Other Community Objectives	0	
Total	12	
Priority (High/Med/Low)	High	