



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 Erie County Water Authority 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 a more resilient community.

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.

Table 9.2-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name/Title: Matt Barrett 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 District 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 website 2020). 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 and serves over 550,000 customers. 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 flood plain. 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 Division includes 6 treatment plants, 100 pumping stations, 1100 miles of sewer across county. 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 staff 2021)





9.2.4 Capability Assessment

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

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in Capability Assessment (Section 9.2.4). The Erie County Water Authority identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy. Appendix G provides the results of the planning/policy document review and the answers to integration survey questions.

Planning, Legal, and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Erie County Water Authority and where hazard mitigation has been integrated.

Table 9.2-3. Planning, Legal, and Regulatory Capability

	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					
Building Code	No	No	-	-	-
Comment: N/A					
Zoning Code	No	No	-	-	-
Comment: N/A					
Subdivision Ordinance	No	No	-	-	-
Comment: N/A					
Stormwater Management Ordinance	No	No	-	-	-
Comment: N/A					
Post-Disaster Recovery Ordinance	No	No	-	-	-
Comment: N/A					
Real Estate Disclosure	Yes	Yes	Property Condition Disclosure Act, NY Code - Article 14 §460-467	State	NYS Department of State, Real Estate Agent



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	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: N/A					
Growth Management	No	No	-	-	-
Comment: N/A					
Site Plan Review	No	No	-	-	-
Comment: N/A					
Environmental Protection Ordinance	No	No	-	-	-
Comment: N/A					
Flood Damage Prevention Ordinance	No	No	-	Local	Yes - BFE+2 feet for all construction in the SFHA (residential and non-residential)
Comment: N/A					
Municipal Separate Storm Sewer System (MS4)	No	No	-	-	-
Comment: N/A					
Emergency Management Ordinance	No	No	-	-	-
Comment: N/A					
Climate Change Ordinance	No	No	-	-	-
Comment: N/A					
Disaster Recovery Ordinance	No	No	-	-	-
Comment: N/A					
Disaster Reconstruction Ordinance	No	No	-	-	-
Comment: N/A					
Other	No	-	-	-	-
Comment: N/A					
Planning Documents					
Comprehensive Plan	Yes	No	Erie County Water Authority Comprehensive Strategic Plan, 2019	County	Erie County Water Authority
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 our 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					





	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
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					
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	-	-	-



	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: N/A					
Public Health Plan	No	No	-	-	-
Comment: N/A					
Other	-	-	-	-	-
Comment: N/A					

Table 9.2-4. Development and Permitting Capability

Not applicable

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Erie County Water Authority.

Table 9.2-5. 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 risk (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	-	-
Technical/Staffing Capability		
Planners or engineers with	Yes	There are several staff with knowledge of land development, several of



Resources	Available? (Yes/No)	Comments (available staff, responsibilities, integration of hazard mitigation):
knowledge of land development and land management practices		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	-
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 9.2-6. 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



Financial Resources	Accessible or Eligible to Use? (Yes/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 9.2-7. 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.
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

Not applicable.

Adaptive Capacity

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

Table 9.2-8. Adaptive Capacity

Hazard	Adaptive Capacity - Strong/Moderate/Weak*
Coastal Erosion	Strong
Cyber Attack	Moderate



Hazard	Adaptive Capacity - Strong/Moderate/Weak*
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

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

The Erie County Water Authority has access to resources to determine the possible impacts of climate change upon the Erie County Water Authority and is supportive of integrating climate change in policies or actions.

9.2.5 Integration with Other Planning Initiatives

As this HMP update is implemented, the Erie County Water Authority will use information from the plan as the best available science and data for natural hazards. The capability assessment presented in this annex identifies codes, plans, and programs that provide opportunities for integration. The Erie County and local action plans developed for this HMP update actions related to plan integration, as well as progress on these actions, will be reported through the progress reporting process described in Volume I. New opportunities for integration also will be identified as part of the annual progress report.

9.2.6 Evacuation, Sheltering, Temporary Housing, and Permanent Housing

Not applicable.

9.2.7 Hazard Event History Specific to the Erie County Water Authority

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 9.2-9 provides details regarding municipal-specific loss and damage the Water Authority 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 9.2-9. 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	-	Although the county was impacted, the Water Authority did not report damages.
August 11-15, 2015	Flash Flood	-	Although the county was impacted, the Water Authority did not report damages.
October 28-29, 2015	High Wind	-	Although the county was impacted, the Water Authority did not report damages.



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
November 6, 2015	Thunderstorm Wind	-	Although the county was impacted, the Water Authority did not report damages.
November 12, 2015	High Wind	-	Although the county was impacted, the Water Authority did not report damages.
November 18, 2015	High Wind	-	Although the county was impacted, the Water Authority did not report damages.
January 11, 2017	High Wind	-	Although the county was impacted, the Water Authority did not report damages.
March 8, 2017	High Wind	-	Although the county was impacted, the Water Authority did not report damages.
March 13, 2017	Winter Storm	-	Although the county was impacted, the Water Authority did not report damages.
July 20, 2017	Tornado	-	Although the county was impacted, the Water Authority did not report damages.
August 4, 2017	Thunderstorm Wind	-	Although the county was impacted, the Water Authority did not report damages.
December 10-15, 2017	Lake-effect Snow	-	Although the county was impacted, the Water Authority did not report damages.
December 24-29, 2017	Lake-effect Snow	-	Although the county was impacted, the Water Authority did not report damages.
January 2, 2018	Blizzard	-	Although the county was impacted, the Water Authority did not report damages.
October 6, 2018	Lightning	-	Although the county was impacted, the Water Authority did not report damages.
February 24, 2019	High Wind	-	Although the county was impacted, the Water Authority did not report damages.
February 24, 2019	Lakeshore Flooding	-	Although the county was impacted, the Water Authority did not report damages.
October 27- November 1, 2019	Lakeshore Flooding DR-4472 NY	Yes	Although the county was impacted, the Water Authority did not report damages.
October 31- November 1, 2019	High Wind DR-4472 NY	Yes	Although the county was impacted, the Water Authority did not report damages.
November 27, 2019	Lakeshore Flooding	-	Although the county was impacted, the Water Authority did not report damages.
January 12, 2020	Lakeshore Flooding	-	Although the county was impacted, the Water Authority did not report damages.
January 18, 2020	Lakeshore Flooding	-	Although the county was impacted, the Water Authority did not report damages.

Notes:

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

9.2.8 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5 (Risk Assessment) of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes critical facility and community lifeline flood exposure, and the hazards of greatest concern and risk to the Erie County Water Authority. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.



A gradient of certainty was developed to summarize the confidence level regarding the input used to populate the hazard ranking. A certainty factor of high, medium, or low was selected and assigned to each hazard to provide a level of transparency and create increased understanding of the data used to support the resulting ranking. The following scale was used to assign a certainty factor to each hazard:

- High—Defined scenario/event to evaluate; probability calculated; evidenced-based/quantitative assessment to estimate potential impacts through hazard modeling.
- Moderate—Defined scenario/event or only a hazard area to evaluate; estimated probability; combination of quantitative (exposure analysis, no hazard modeling) and qualitative data to estimate potential impacts.
- Low—Scenario or hazard area is undefined; there is a degree of uncertainty regarding event probability; majority of potential impacts are qualitative.

Critical Facilities

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

The table below identifies critical facilities and community lifelines located in the 1-percent and 0.2-percent floodplain. It also summarizes if the facility is already mitigated in compliance with NYS standards (i.e., to the 0.2-percent annual chance event or worse-case scenario), or if a new mitigation action is proposed in the plan update.

Table 9.2-10. Potential Flood Losses to Critical Facilities

Name	Type	Exposure			Complies with NYS Standards	Addressed by Proposed Action
		1% Event		0.2% Event		
		A-Zone	V-Zone			
None Identified						

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 6.4 (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, the Erie County Water Authority 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 hazards for the Erie County Water Authority.



The Erie County Water Authority has reviewed the county hazard risk/vulnerability risk ranking table and provided input to 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 Erie County Water Authority indicated agreement with the derived hazard ranking.

9.2.9 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 2014 HMP. Actions that are carried forward as part of this plan update are included in the updated mitigation strategy table (Table 9.2-13). 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 9.2-12. Status of Previous Mitigation Actions

Project #	Project Name	Hazard(s) Addressed	Responsible Party	Brief Summary of the Original Problem and the Solution (Project)	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if complete)	Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 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 has identified the following mitigation projects/activities that have also been completed but were not identified in the previous 2015 Hazard Mitigation Plan.

- Substantial security upgrades were installed at many different ECWA facilities.

Proposed Hazard Mitigation Initiatives for the HMP Update

The Erie County Water Authority participated in a mitigation action workshop in June 2020 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Flood prone 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 9.2-1. Analysis of Mitigation Actions by Hazard and Category

Table with 11 columns: Hazard, FEMA (LPR, SIP, NSP, EAP), and CRS (PR, PP, PI, NR, SP, ES). Rows include Coastal Erosion, Cyber Attack, Earthquake, Expansive Soils, Extreme Temperature, Flood, Hazardous Materials, Landslide, Pandemic, Severe Storm, Severe Winter Storm, Utility Failure, and Wildfire.

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

Table 9.2-13 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 (Mitigation Strategy), fourteen criteria are used to evaluate and prioritize each proposed mitigation action. A numeric factor is assigned (-1, 0, or 1) to each criterion to provide a relative indication of the opportunities and constraints of each action. A numerical sum of the input provides the basis of the prioritization of actions wherein each action is assigned a category of Low, Medium, or High to indicate an implementation hierarchy. A High priority action indicates the jurisdiction will prioritize its implementation and apply for funding, if needed, as opportunities become available during the plan period of performance. This does not prevent the jurisdiction from implementing other ranked actions; however, this provides a snapshot of implementation priority at the time of this plan update.



Table 9.2-14 provides a summary of the evaluation and prioritization for each proposed mitigation initiative. Refer to the action worksheets at the end of this annex for more details on the high-ranked hazards identified first for implementation.



Table 9.2-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
2021-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
2021-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 Protection communication tower.</p> <p>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</p>	Yes	No	Within 3 years	ECWA	\$500,000	Continuity of water services	HMGP, BRIC, ECWA budget, WIFIA	High	SIP	PR



Table 9.2-13. 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
				revetment of the currently unprotected shoreline including the area immediate to the communication tower.										
2021-ECWA-003	Critical roadway access to ECWA facilities with fuel powered generators	1	Flood	<p>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 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>	Yes	No	Within 6 months	ECWA	TBD per engineering assessment	Continuity of water service during extended power outages	ECWA budget	High	LPR	ES
2021-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> <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>	Yes	No	Within 1 year	ECWA	\$100,000	Mitigating cyber security vulnerabilities and making necessary security improvements to ensure delivery of water to the public	ECWA	High	LPR	ES



Table 9.2-14. 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
2021-ECWA-001	Erie County Water Authority surveillance and security enhancement	1	1	1	1	1	0	1	0	1	1	0	1	1	1	11	High
2021-ECWA-002	Erie County Water Authority – Sturgeon Pt WTP Shoreline Stabilization	1	1	1	1	1	0	1	0	1	1	1	1	1	0	11	High
2021-ECWA-003	Critical roadway access to ECWA facilities with fuel powered generators	1	0	0	1	1	1	1	1	1	1	0	1	1	1	11	High
2021-ECWA-004	Cyber security assessment	1	1	1	1	0	1	0	1	1	1	0	1	1	1	11	High

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



9.2.10 Proposed Mitigation Action Types

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

9.2.11 Staff and Local Stakeholder Involvement in Annex Development

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 with input from Water Authority staff. The Authority was represented by Security staff 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. The ECWA contributed to 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 Erie County Water Authority's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meeting Documentation).

9.2.12 Hazard Area Extent and Location

The Erie County Water Authority owns and manages facilities throughout Erie County, hazard area extent and location maps at the County level are available in Section 5 (Hazard Profiles).



Action Worksheet			
Project Name:	Erie County Water Authority surveillance and security enhancement		
Project Number:	2021-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:	SIP
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:	2021-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	0	
Fiscal	1	
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Erie County Water Authority – Sturgeon Point Water Treatment Plant Shoreline Stabilization		
Project Number:	2021-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:	\$500,000.00	Mitigation Action Type:	SIP
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 USACOE (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:	2021-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	0	
Fiscal	1	
Environmental	0	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	0	
Total	11	
Priority (High/Med/Low)	High	