

SECTION 5 - MITIGATION STRATEGIES

This section presents mitigation strategies to reduce the potential exposure and losses identified as concerns in the Risk Assessment based on the frequency, severity, and impact of each hazard (Section 4). This section presents:

- (1) Background and past mitigation accomplishments
- (2) The general mitigation planning approach
- (3) The Delaware County Multi-Jurisdictional Study Area mitigation goals and objectives
- (4) Identification, analysis, and implementation of potential mitigation activities for each hazard
- (5) Multi-jurisdictional and multi-hazard mitigation activities
- (6) Next steps

Hazard mitigation reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation activities address a range of impacts, including impacts on the population, property, the economy, and the environment.

Mitigation activities can include activities such as: revisions to and enforcement of building codes, revisions to land-use planning, training and education, and structural and nonstructural safety measures.

This section addresses both mitigation activities that are specific to particular hazards and jurisdictions, and multi-jurisdictional and multi-hazard approaches that apply to multiple towns or hazards.

5.1 Background and Past Accomplishments

Although DMA 2000 does not require a discussion regarding past mitigation activities, an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this plan. In the past, Delaware County and the participating municipalities have undertaken a number of activities that demonstrate a continued and sustained effort to implement hazard mitigation projects. For example, Delaware County has prepared a comprehensive emergency management plan and a post flood recovery and reconstruction plan to address concerns associated with specific hazards. Additionally, Delaware County and the municipalities have started and completed projects to address concerns related to specific hazards, including:

- Twenty-five of 29 municipalities have adopted Comprehensive Plans to guide sustainable development.
- The County Planning Department uses its Town Planning Advisory Service (TPAS) to assist 18 of the 19 towns and 8 of the 10 villages in the County with ongoing, professional planning services to ensure hazard mitigation activities are furthered at the local level.
- Delaware County, in association with FEMA, New York State, and New York City, have instituted two flood buy-out programs (1996, 2005).
- Implementation of the Disaster Recovery Program - a program for implementation of mitigation initiatives after the 1996 floods.
- The Main Street Redevelopment Program encourages development in areas that have existing infrastructure and prevent further corridor development in the floodplain, which tends to be the primary area available for development in local communities.

- Land use reviews to determine if proposed projects are in compliance with local floodplain regulations.
- The County has adopted the Delaware County Action Plan (DCAP) that outlines an integrated approach to watershed management.
- The Delaware County Planning Department is currently working on a County-wide Comprehensive Plan.
- Constructing dams and reservoirs for control of flow velocity through timed release of flow waters as well as controlling the real extent of flooding.

Channel modifications designed to improve flow conditions and increase capacities:

- The Bagley Brook Stabilization Project (DR-1095-1227) in the Town of Hamden, completed in 1999.
- Modifications to vulnerabilities (flood proofing) either structural or non-structural retrofit for disaster resistance mitigation.
- Use of early warning and evacuation systems through grant applications (404 HMGP) for reducing the loss to life and property by giving people time to move personnel property and possessions to safety or to evacuate to safe areas.
- Public education to increase citizen knowledge on disaster plans and how to proceed during an emergency (website, newsletters, etc.).
- Distributing the loss to taxpayers within the loss area and to the homeowners within areas of risk (National Flood Insurance Program participation).
- Conducting Phase I and Phase II construction projects. Phase I projects restore and protect potable water supplies and sewage treatment. Phase II projects are non-emergency retrofits that restore communities to pre-flood conditions that also strengthen the facilities to updated standards.
- Ensure that adequate shelter is available to community residents in the event that a flood event causes displacement.

These past and ongoing activities have contributed to each jurisdiction's and county-wide understanding of mitigation activity needs, costs, and benefits. Also, these efforts provide a foundation for the Steering Committee to use in developing this Multi-Jurisdictional Hazard Mitigation Plan.

5.2 General Mitigation Planning Approach

The general mitigation planning approach used to develop this plan is based on the FEMA publication, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies* (FEMA 386-3) and input provided by NYSEMO. The FEMA document and NYSEMO guidance include four steps, which were used to support mitigation planning. These steps are summarized below and presented in more detail in the following sections.

- **Develop mitigation goals and objectives:** Mitigation goals were developed using the hazard characteristics, inventory, and findings of the risk assessment. By reviewing these outputs and other municipal policy documents, objectives tying to these overarching goals were identified and characterized into similar themes.
- **Identify and prioritize mitigation actions:** Based on the risk assessment outputs, the mitigation goals and objectives, existing literature and resources, and input from the participating entities, alternative mitigation activities were identified for each hazard of concern and across multiple jurisdictions and hazards. The alternative mitigation activities are presented in a series of hazard-specific tables. The potential mitigation activities were qualitatively evaluated against the mitigation goals and objectives and other evaluation criteria. They were then prioritized into three categories: high, medium, and low.
- **Prepare an implementation strategy:** High priority mitigation activities are recommended for first consideration for implementation, as discussed under each hazard description in the following sections. However, based on community-specific needs and goals and available funding and costs, some low or medium priority mitigation activities may also be addressed or could be addressed before some of the high priority activities. Planning meetings during 2006 will support further evaluation and selection of mitigation activities. In addition, input or suggestions from NYSEMO and FEMA will be considered as the activities are evaluated further.
- **Document the mitigation planning process:** The mitigation planning process is documented throughout this plan.

FEMA defines *Goals* as general guidelines that explain what should be achieved. Goals are usually broad, long-term, policy statements, and represent a global vision.

FEMA defines *Objectives* as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible.

FEMA defines *Mitigation Activities* as specific actions that help to achieve the mitigation goals and objectives.

5.3 Mitigation Goals and Objectives

This section presents the mitigation goals identified to reduce or avoid long-term vulnerabilities to the identified hazards. Delaware County and the participating jurisdictions developed these goals and objectives based on the risk assessment results and the existing authorities, policies, programs, resources, and capabilities of the jurisdictions in the study area. The goals and objectives are based on input from the community, research, and meetings of the Steering Committee. Towns and villages have provided jurisdiction-specific input regarding activities that will support the mitigation goals and objectives.

The mitigation goals serve as general guidelines that clarify desired hazard reduction outcomes. The goals are based on the findings of the risk assessment and input from the public and the Steering Committee, and represent a long-term vision for hazard reduction and the enhancement of mitigation capabilities. The goals are compatible with needs and goals expressed in other available community planning documents prepared by the participating communities and Delaware County.

Each goal has a number of corresponding objectives that further define the specific strategies or implementation steps. These objectives were developed by the Steering Committee through its knowledge of the local area, review of past efforts, findings of the risk assessment, qualitative evaluations, and identification of mitigation options.

The four mitigation goals with their respective objectives are presented below:

Goal 1: Protect Life and Property

- *Objective 1-1:* Implement mitigation activities that will assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to hazards.
- *Objective 1-2:* Encourage homeowners and businesses to take preventive actions in areas that are especially vulnerable to hazards.
- *Objective 1-3:* Build upon past efforts to characterize flood events by conducting additional flood studies and creating flood models.
- *Objective 1-4:* Review existing local laws and ordinances, building codes, safety inspection procedures, and applicable rules to help ensure that they employ the most recent and generally accepted standards for the protection of buildings and environmental resources.
- *Objective 1-5:* Ensure that public and private facilities and infrastructure meet established building codes and immediately enforce the codes to address any identified deficiencies.
- *Objective 1-6:* Incorporate hazard considerations into land-use planning and natural resource management.
- *Objective 1-7:* Encourage homeowners, renters, and businesses to purchase insurance coverage for damages caused by hazards.
- *Objective 1-8:* Integrate the recommendations of this plan into existing local and county programs.
- *Objective 1-9:* Implement mitigation activities that encourage environmental stewardship and protection of the environment.

Goal 2: Increase Public Awareness

- *Objective 2-1:* Develop and implement additional education and outreach programs to increase public awareness of the risks associated with hazards and to educate the public on specific, individual preparedness activities.
- *Objective 2-2:* Provide information on tools, partnership opportunities, funding resources, and current government initiatives to assist in implementing mitigation activities.
- *Objective 2-3:* Implement mitigation activities that enhance the technological capabilities of the jurisdictions and agencies in the County to better profile and assess exposure of hazards.

Goal 3: Encourage Partnerships

- *Objective 3-1:* Strengthen inter-jurisdiction and inter-agency communication, coordination, and partnerships to foster hazard mitigation strategies and/or projects designed to benefit multiple jurisdictions.

- *Objective 3-2:* Identify and implement ways to engage public agencies with individual citizens, non-profit organizations, business, and industry to implement mitigation activities more effectively.

Goal 4: Provide for Emergency Services

- *Objective 4-1:* Encourage the establishment of policies at the local level to help ensure the prioritization and implementation of mitigation strategies and/or projects designed to benefit essential facilities, services, and infrastructure.
- *Objective 4-2:* Where appropriate, coordinate and integrate hazard mitigation activities with existing local emergency operations plans.
- *Objective 4-3:* Identify the need for, and acquire, any special emergency services and equipment to enhance response capabilities for specific hazards.
- *Objective 4-4:* Review and improve, if necessary, emergency traffic routes; communicate such routes to the public and communities.

5.4 Identification, Analysis, and Implementation of Mitigation Activities

This subsection discusses the identification, analysis and implementation of mitigation activities for the Delaware County Multi-Jurisdictional Study Area.

Identification

During the planning process, Delaware County and the participating municipalities identified potential loss reduction or mitigation activities for each hazard of concern. These were identified in relation to the goals and objectives discussed in Section 5.3. The mitigation activities include a range of options in line with the six types of mitigation activities described in FEMA guidance (FEMA 386-3), including:

- 1. Prevention:** Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include n:ad3.4(mcipacods, aflood:)in liacl

corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. **Emergency Services:** 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.
6. **Structural Projects:** 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.

Analysis

The mitigation activities developed for this plan are grouped by hazard and presented in a series of tables in the following sub-sections. Each alternative mitigation activity was evaluated qualitatively using several evaluation criteria including the consideration of social, technical, administrative, political, legal, economic, and environmental (STAPLEE) opportunities and constraints of implementation. Each of these evaluation criteria is summarized below. The evaluation criteria are described in terms of situations that present opportunities for implementation success or as areas that must be considered:

- Social criteria: The public must support the overall implementation strategy and specific mitigation activities; therefore, community acceptance of the proposed mitigation activities must be considered.
- Technical criteria: Such factors as technical feasibility of the proposed mitigation activity to reduce losses in the long term, with minimal secondary impact, must be considered.
- Administrative criteria: Anticipated staffing, funding, and maintenance for each mitigation activity must be considered.
- Political criteria: The political leadership of the communities must support the overall implementation strategy and specific mitigation activities; therefore, decision-maker acceptance of the proposed mitigation activities must be considered.
- Legal criteria: Whether the communities have legal authority to implement the proposed mitigation activities must be considered.
- Economic criteria: Funding needs and budget constraints must be considered.
- Environmental criteria: Environmental impacts that could be caused by implementing specific mitigation activities must be considered.

The tables in this section identify the mitigation goals and objectives driving each mitigation activity and identify the outcome of the evaluation of each mitigation activity against the STAPLEE criteria. The Steering Committee evaluated these criteria, ease of implementation, cost/benefit, and implementation timeframes to prioritize each mitigation activity as a high, medium, or low priority. All mitigation activities presented in the following tables include, to the extent that information was available, an implementation timeline, funding sources, and the jurisdiction responsible for carrying out the actions.

Particular attention was given to those mitigation activities that addressed existing and new buildings. For example, in Section 5.4.1.4 mitigation activities were developed including “survey institutions that have specific needs populations to identify their emergency needs,” and “retrofit critical structures to increase resistance to storm hazards and promote hazard resistant construction of new buildings.” In Section 5.4.1.8 mitigation activities were developed including “ensure that structures (especially places of public assembly) are maintained and comply with any and all applicable fire and safety codes.”

Particular attention also was given to those mitigation activities that address essential facilities and infrastructure. For example, in Section 5.4.1.1 mitigation activities include: “retrofit highways that are currently in the floodplain and have sustained repetitive losses due to flooding.” Section 5.4.1.2 mitigation activities include “retrofit critical facilities with wind resistant designs and construction,” and Section 5.4.1.4 mitigation activities include “obtain funding to purchase backup generators and other redundant utilities for nursing homes and other critical assets that require such emergency power sources.”

The Steering Committee established public information activities and NFIP Community Rating System (CRS) promotion as high priority activities based on their relative affordability, multi-jurisdictional impact, and significant potential benefits. The Steering Committee will promote CRS by providing information on the County website, implementing a mailing to municipal code enforcement officers/NFIP coordinators, and sharing information with the municipal officials’ association. Additionally, the County will communicate with the general public through public meetings and municipalities for the Delaware County Flood Mitigation Program. Not all communities have flood-related zoning ordinances, so one multi-jurisdictional mitigation activity is to promote CRS in Delaware County and provide specific examples of how to address CRS.

Throughout the mitigation planning process, mitigation activities were evaluated at various Steering Committee meetings. Activities were submitted for inclusion by individuals, members of the public, Steering Committee members, and during the brainstorming sessions (for example, a Steering Committee meeting on June 21, 2005). At various intervals, members of the Steering Committee met and communicated via email and telephone to develop and discuss mitigation activities for the hazards identified in this plan based on the criteria listed above, current programs and policies, and the results of the risk and exposure assessments. Each jurisdiction also developed jurisdiction-specific mitigation activities and submitted them to the County Mitigation Coordinator. Additionally, the County Mitigation Coordinator solicited input and mitigation activities from various agencies throughout the county, such as local and county fire and police departments, public works and highway departments, and planning boards. The County Mitigation Coordinator and its consultant reviewed the mitigation activities prior to their inclusion in the plan to ensure the mitigation activities met the goals and objectives of the mitigation plan; addressed the STAPLEE criteria; and were assigned as a high, medium, or low priority.

The Steering Committee determined that any mitigation activity that may help the communities become more disaster resistant should be included in the plan even if funding is not currently available or if a mitigation activity was assigned a lower priority based on the STAPLEE criteria or cost/benefit evaluation. Therefore, most of the mitigation activities identified by the group are included in the following sub-sections. It should be noted that some mitigation activities are applicable to more than one hazard. For example, mitigation strategies related to the removal of tree limbs and the provision of backup generators apply to the severe storm and severe winter storm hazards. Mitigation activities related to compliance with the Phase 2 Stormwater Regulations are applicable to the flood and water supply contamination hazards. The multi-jurisdiction and multi-hazard sub-section focuses on such cross-hazard activities (see Section 5.4.4).

Implementation

Delaware County and the participating jurisdictions prioritized the potential mitigation activities for each hazard of concern and ranked each as a high, medium, or low priority. The priority for each proposed mitigation activity was determined by analyzing the community's vulnerability to each hazard (as presented in Section 4 of this plan), the potential benefits of the mitigation activity, and the feasibility of the mitigation activity based on a review of the STAPLEE criteria. Mitigation activity priorities also are based on "the extent to which benefits are maximized according to a cost/benefit review" (DMA 2000). For example, low cost activities that support cross-jurisdiction and multi-hazard benefits are assigned a high priority in some cases, based on the cost/benefit review. For example, a number of high priority mitigation activities focus on public awareness and education programs or integrating the mitigation plan into current programs because these types of mitigation measures are affordable, achievable, can address multiple hazards, and have an immediate benefit.

The Steering Committee also identified specific mitigation activities that will prevent future losses; however, current funding is not identified for all of these activities at present. The County and participating municipalities have limited resources to take on new responsibilities or projects. The implementation of these mitigation activities is dependent on the approval of each local elected governing body and the ability of the communities to obtain funding from local or outside sources. Where such activities are high priorities, the communities will work together with the County, NYSEMO, and other agencies to secure funds.

In general, mitigation activities ranked as high priorities will be addressed first. However, medium or even low priority mitigation activities will be considered for concurrent implementation. Therefore, the ranking levels should be considered as a first-cut, preliminary ranking and will evolve based on input from each town, the public, NYSEMO, and FEMA as the plan is implemented.

The mitigation activities listed in the following tables are presented in the following order for each hazard high priority, medium priority, and low priority. Within each category, the mitigation activities are then listed in the order in which they were identified.

The tables present the following:

- Mitigation activities for each hazard and for multi-jurisdiction/multi-hazards
- Mitigation goals and objectives supported by each activity
- Jurisdictions for which the mitigation activities apply (to support the multi-jurisdictional component of this plan)
- Potential funding sources for the mitigation activity (grant programs, current operating budgets or funding, or the agency or jurisdiction that will supply the funding; additional potential funding resources are identified in **Table 2-4-1**)
- Estimated budget for the mitigation activity (financial requirements for new funding or indication that the activity is addressed under current operating budgets)
- Time estimated to implement and complete the mitigation activity

- Existing policies, programs, and resources to support implementation of the mitigation activity (additional policies, programs, and resources identified in **Table 2-4-1**)
- Lead agency responsible for the mitigation activity
- Agencies to support the lead agency (additional agencies identified in Section 2)

Users should note that budget estimates for this plan include preliminary estimates based on professional knowledge and Steering Committee input; refined and revised budget estimates will be prepared as activities are moved forward for implementation (for example, to support grant applications). Other budget estimates are more refined based on mitigation activities that have been studied and estimated previously to support other related program efforts. At this stage, resources are not available to prepare detailed budget estimates for each potential mitigation activity but preliminary estimates have been made. Where specific dollar value estimates were not available, the Steering Committee used professional knowledge and judgment to assign the resource needs (budget) for each activity as either low, medium, or high, as summarized below:

- Low – Less than \$10,000
- Medium – \$10,000 to \$100,000
- High – Greater than 100,000

The budget information focuses on the cost to implement activities and not the ability of the municipalities to address the cost. As discussed above, outside funding may be required where municipal funds are not available to support implementation. Potential federal funding sources are identified in Section 2.3 and an extensive list of federal funding opportunities is identified in the document “*Federal Mitigation Programs, Activities, & Initiatives*” (<http://www.fema.gov/doc/fima/fmpai.doc>). This document provides information on various federal programs including the type of available assistance and contact information; a copy is included in Appendix D of this plan. **Table 2-4-1** also includes other existing policies, programs, and resources to support the mitigation activities other than those listed below.

The remainder of this section presents mitigation activities identified and analyzed for each hazard in the same order they are addressed throughout this report (natural hazards, technological hazards, and human-caused hazards). It also presents multi-jurisdictional/multi-hazard activities and recommended next steps.

5.5 Natural Hazards

This section addresses mitigation activities for natural hazards including: (1) flood, (2) severe storm (wind, including hurricane and tornado), (3) ice jam, (4) severe winter storm (snow), (5) extreme temperature (6) ice storm, (7) infestation (agricultural and disease-carrying insects), (8) wildfire, (9) epidemic (agricultural), and (10) drought.

5.5.1 Flood Mitigation Activities

The alternative mitigation activities identified for the flood hazard include the following types of activities: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities.

The Steering Committee applied the qualitative STAPLEE criteria to all of the alternative mitigation activities to identify the preliminary priority for each action (high, medium, or low). Based on the high risk presented by the flood hazard in the study area, a number of high-priority mitigation activities were identified. In addition, the flood hazard is perceived to be a high-priority hazard by the public and political leadership and many of the high-priority mitigation activities that are recommended for implementation are not only technically , but also administratively, feasible.

High-priority mitigation activities are recommended for implementation before lower-priority mitigation activities. The high-priority mitigation activities are presented in **Table 5-1** and generally focus on the following:

- Addressing buildings and infrastructure that has suffered repetitive losses,
- Implementation of the Disaster Recovery Program,
- Increased planning and land-use reviews to prevent further development in floodplains.

Delaware County and the participating jurisdictions will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. In general, all participating jurisdictions have agreed to make a concerted effort to accept responsibility for at least one, high-priority mitigation activity and have agreed to complete that activity within one year from plan adoption, if feasible. As future Steering Committee meetings continue, priorities and accomplishments will be revisited and documented.

The specific timeframes, responsible parties, and existing policies, programs, and resources to support implementation of each mitigation activity are identified in **Table 5-1**, as available.

TABLE 5-1. FLOOD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.1.1 Delaware County has instituted two flood buy-out programs (1996, 2005)	Goal 1, Objectives 1-2 and 1-3	H	Delaware County	Federal, State, Local	H	Ongoing	NFIP, Flood mitigation plan	DCPD	FEMA, NYCDEP, NYSDEC
5.1.2 Flood buyout of repetitive loss properties	Goal 1, Objectives 1-2 and 1-3	H	Towns of Colchester, Middletown, Hancock	Federal, State, Local	H	3 years	CEMP, HMGP	DCPD	NYSEMO, Towns
5.1.3 Ensure that adequate shelter is available to community residents in the event that a flood event causes displacement.	Goal 4, Objective 4-2	H	Delaware County	Federal, State, Local	L to M	Ongoing	ARC, DCDES, HMGP	ARC	Towns
5.1.4 Construction of remote town garage in DeLancey to house emergency equipment since the hamlet is cut off during floods on the West Branch	Goal 1, Objective 1-1	H	Town of Hamden	SEMO (HMGP, DR-1095-rejected), O'Connor Foundation (rejected 2005)	H	5 years	Flood Mitigation Initiatives; Flood mitigation plan	Town of Hamden	NYSEMO
5.1.5 Retrofit highways that are currently in the floodplain and have sustained repetitive losses due to flooding.	All Goals, All Objectives	H	All municipalities	Federal, State, County, Local	M to H	Ongoing with revised plan every 5 years	HMGP, Hazard Mitigation Plan, Risk Management	DCDPW	All agencies with data
5.1.6 Update and revise flood control plans throughout the county and educate the public on flood control measures.	All Goals, All Objectives	H	All municipalities	Existing budgets; various Federal agencies as sources (FEMA, NOAA)	L (to identify and pursue)	Ongoing	Flood Mitigation Plan and Existing grant programs	DCDES	NYCDEP, Local
5.1.7 Conduct Village of Walton floodplain analysis.	Goal 1, Objective 1-3	H	Village of Walton	State, Local	L	1 year	SCMP, HMGP	Village of Walton	DCPD, DCSWCD, NYCDEP
5.1.8 Implementation of the Disaster Recovery Program after the 1996 flood.	Goal 1, Objective 1-7	M	Delaware County	Local	Current funding	Ongoing	County comprehensive plan	DCDES	Local Government

TABLE 5-1. FLOOD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.1.9 The Main Street Redevelopment Program encourages development in areas that have existing infrastructure to prevent further corridor development in the floodplain that is the primary area available for development on the fringes of the local communities.	Goal 1, Objective 1-1	M	Delaware County	Local	Current funding	Ongoing	Flood Mitigation Initiatives; watershed study follow-up	DCPD	NYSDOS, NYCDEP, NYSDEC,
5.1.10 Land use reviews to determine if proposed projects are in compliance with local floodplain regulations.	Goal 1, Objective 1-7	M	Delaware County, All municipalities	Federal, State, Local	Grant Based	Ongoing	Comprehensive Plans	DCPD	NYCDEP
5.1.11 Evaluate dams and reservoirs for control of flow velocity through timed release of flow waters as well as controlling the real extent of flooding.	Goal 1, Objective 1-1	M	Delaware County	CIP funding or bonds	H	Ongoing	NFIP, HMGP	USACE	NYSDEC, NYSEMO, FEMA, NYCDEP
5.1.12 Implement physical mitigation activities, as necessary, within appropriate watersheds (including stacked rock walls, installation of riprap, installation of check dams, and vegetation plantings).	Goal 1, Objectives 1-1 and 1-7	M	Delaware County	Federal, State, Local	M to H	Ongoing	Bond Act, Flood Mitigation Plan	DCSWCD	DC , NYSEMO
5.1.13 Channel modifications designed to improve flow conditions and increase capacities.	Goal 3, All Objectives	M	Delaware County	Federal, State, local	M - H	Ongoing	Flood Mitigation Plan, Emergency Management Plan, SCMP	DCSWCD	DC, NYCDEP, NYSEMO, NYSDEC
5.1.14 Develop flood insurance maps for flood control project and downstream areas	Goal 1, Objective 1-4	M	Delaware County	FEMA, State	M to H	2 years	NFIP, FEMA,	NYSDEC	DC, NYSEMO, NYCDEP
5.1.15 Develop a program to ensure the maintenance of stormwater control measures.	Goal 1, Objective 1-4	M	Delaware County	Local	L to M	Ongoing	Phase II Stormwater Regulatory Requirements	NYSDEC	DC, Local
5.1.16 Modifications to vulnerabilities (Flood proofing) either structural or non-structural retrofit for disaster resistance mitigation.	Goal 2, All Objectives	M	Delaware County	State, Local	L	3 years	Flood Mitigation Plan	Towns, developers	DCPD

TABLE 5-1. FLOOD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.1.17 Utilization of early warning and evacuations systems for reducing the loss to life and property by giving people time to move personnel property and possessions to safety or to evacuate to safe areas.	Goal 1, Objective 1-5	M	Delaware County	Grants Based	L	Ongoing	Emergency Management Plan	DCDES, Local Gov'ts.	NYSEMO / FEMA
5.1.18 Public education to increase citizen knowledge on disaster plans and how to proceed during an emergency.	Goal 1, Objective 1-5	M	Delaware County	Existing Funds	L	Ongoing	Site plan review, code enforcement, zoning	DCDES	NYSEMO / FEMA Public Radio, Local
5.1.19 Distributing the loss to taxpayers within loss areas and to the homeowners within areas of risk.	Goal 1, Objective 1-5	M	Delaware County	Federal, State, Local	L	Ongoing	Site plan review, code enforcement, zoning	Local Gov'ts.	NYSEMO
5.1.20 Conducting Phase I and Phase II construction projects. Phase I projects restore and protect potable water supplies and sewage treatment. Phase II projects are non-emergency retrofits that restore communities to pre-flood conditions that also strengthen the facilities to updated standards.	Goal 1, Objective 1-5	M	Delaware County	Federal, State, Local	L to M	Ongoing	CEMP, Site plan review, code enforcement, zoning, NFIP, Emergency Directive	Towns	FEMA, NYSEMO, NYSDEC, NYCDEP, Local
5.1.21 Identify or update existing land use in major stream corridors and floodplains in Delaware County.	Goal 1, Objectives 1-4 and 1-6	M	Delaware County	County	M	Ongoing	Local and County Comprehensive Plans, SCMP	DCPD - GIS	NYCDEP, NYSEMO, DCSWCD
5.1.22 Implement training and public outreach to residents, code officials, and contractors on floodplain management and flood mitigation as well as flood response planning and training.	Goal 2, All Objectives, Goal 3, All Objectives	M	Delaware County	Federal, State, Local	\$2,000/ town	1 year	DCSWCD, NFIP, DC Flood contingency plan	DCCE	DCSWCD, NYCDEP, NYSEMO
5.1.23 Develop a suitable mitigation strategy to address flooding from the creek that joins with Willow Brook in Sidney Center	Goal 1, Objective 1-1	M	Town of Sidney, Sidney Center	State	H	5 years	Flood Mitigation Plan	Town of Sidney and Sidney Center	FEMA, NYSEMO, NYSDEC, USACE

TABLE 5-1. FLOOD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.1.24 Conduct a flood mapping restudy of the Weir Creek flood zone in the Village of Sidney in an effort to identify areas that are NOT believed to be in the flood zone, possibly resulting in misapplied flood fund resources.	Goal 1, Objective 1-3	M	Village of Sidney	State	M	2 years	Flood Mitigation Plan	Village of Sidney	USACE, NYSEMO, FEMA
5.1.25 Pursue a major stream bank stabilization project along the West Branch of the Delaware, particularly near the Octagon Farm.	Goal 1, Objective 1-1	L	Town of Hamden	State	H	5 years	Flood Mitigation Plan	Town of Hamden	NYSDEC, NYCDEP, USACE
5.1.26 Channel cleaning and diking W. Branch Delaware River below covered bridge	Goal 1, Objective 1-1	L	Town of Hamden	NYSEMO (HMGP, DR-1095-rejected)	M/H	3 years	Flood Mitigation Plan	Town of Hamden	NYSEMO, USACE

Notes:

- CEMP Comprehensive Emergency Management Plan
- CIP Capital Improvement Funding
- DCCE Delaware County Code Enforcement
- DCDES Delaware County Department of Emergency Services
- DCPD Delaware County Planning Department
- DCSWCD Delaware County Soil and Water Conservation District
- FEMA Federal Emergency Management Agency
- HMGP Hazard Mitigation Grant Program
- N/A not applicable

5.5.2 Severe Storm (wind, including hurricane and tornado) Mitigation Activities

The alternative mitigation activities identified for the severe storm hazard include the following types of activities: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities.

The qualitative STAPLEE criteria were applied to evaluate the mitigation activities and identify the preliminary ranking priority for each action (high, medium, or low). The severe storm hazard includes a fair amount of warning time and generally, the area is prepared to address severe storm impacts. However, vulnerabilities include utility failures, damage to mobile homes or other vulnerable buildings, elderly and low-income populations that may not be well prepared for such events and transportation accidents that can be associated with these events. The public considers the severe storm hazard as moderately important because it occurs relatively frequently and can have a direct impact on daily routines. Also, in the event of hurricanes, this hazard can also include significant inland rains that could cause cascading impacts (flood events) to occur. Therefore, some of the mitigation activities discussed under flood also will help to mitigate against potential severe storm events that include significant rain.

Based on a preliminary mitigation ranking effort, no high priority activities were identified for the severe storm hazard, other than the flood-specific mitigation activities discussed in Section 5.4.4.1. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-2**, as available.



5.5.3 Ice Jam Mitigation Activities

The alternative mitigation activities identified for the ice jam hazard include public education and awareness, emergency services, and structural project activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-3**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, low) based on information compiled to date and input received from stakeholders.

TABLE 5-3. ICE JAM MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.3.1 Monitor streams for ice jams to minimize damage to infrastructure (bridges).	Goal 1, Objective 1-1	H/M	Delaware County	County, Local	L	Ongoing	DCCEMP, NYSPIN	DCDES, DCDPW	Local Gov'ts.
5.3.2 Continue programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from ice jams.	Goal 1, Objective 1-1	M	Delaware County	Local	L	Ongoing	NYSEMO and FEMA Programs	DCDES, DCDPW	Local Gov'ts., NYSEMO
5.3.3 Educate and train emergency response personnel throughout the county on measures that can be taken in the event of an ice jam (e.g. ice weakening or breaking, mechanical weakening or removal, thermal weakening, hole drilling, ice excavation, use of tension weirs).	Goal 2, All Objectives; Goal 3, Objective 4-3	H/M	All	County, Local	L/M	2 yrs.	DCCEMP, NYSEMO and FEMA	DCDES	NYSEMO, FEMA
5.3.5 Install environmentally friendly and economically beneficial floating structures or ice control structures upstream from where many ice jams tend to occur (e.g. ice booms)	Goal 1, Objective 1-1; Goal 4, Objective 4-3	M	Delaware County	Local, State	M/H	5 yrs.	NYSEMO and FEMA Programs	DCDPW	USACE
5.3.6 With the help of the USACE, CRREL, establish methods that can be used effectively to reduce the occurrence and effects of ice jams and develop innovative projects to reduce ice jam flooding potential.	Goal 1, Objective 1-1; Goal 4, Objective 4-3	M	All	Local, State	M	2 yrs.	NYSEMO and FEMA Programs	DCDPW	USACE, CRREL
5.3.4 Establish an early warning system through the use of ice motion detectors.	Goal 1, Objective 1-1; Goal 4, Objective 4-3	L	All	Local	M/H	4 yrs.	DCCEMP, NYSEMO and FEMA, NYSPIN	DCDES	Local Gov'ts., NYSEMO, FEMA

TABLE 5-3. ICE JAM MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.3.7 Consider implementing river channel modifications where necessary.	Goal 1, Objective 1-1	L	All	FEMA, CIP funding or bonds, USACE	H	5 yrs.	HMGP, Flood Mitigation Initiatives, Bond Act	USACE	DCSWCD, FEMA, NYSEMO, NYCDEP, DCPD, DCDPW

Notes:

CRREL	Cold Regions Research and Engineering Lab (U.S. Army)	FEMA	Federal Emergency Management Agency
DCCEMP	Delaware County Comprehensive Emergency Management Plan	NYCDEP	New York City Department of Environmental Protection
DCDES	Delaware County Department of Emergency Services	NYSEMO	New York State Emergency Management Office
DCDPW	Delaware County Department of Public Works	NYSPIN	New York State Public Information Network
DCPD	Delaware County Planning Department	TBD	to be determined
DCSWCD	Delaware County Soil and Water Conservation District	USACE	United States Army Corp. of Engineers

5.5.4 Severe Winter Storm (snow) Mitigation Activities

The alternative mitigation activities identified for the severe winter storm hazard include the following types of activities: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities.

The qualitative STAPLEE criteria were applied to evaluate potential mitigation activities to determine the preliminary ranking priority for each action (high, medium, low). The severe winter storm hazard includes a fair amount of warning time and generally, the study area is well-prepared to address the winter storm hazard and its impacts. However, vulnerabilities include utility failures, elderly and low-income populations that may not have adequate heat or food supplies during these events, and transportation accidents and road damage that are often associated with these events. Indirect impacts can include disruption of business and social services if personnel or customers/users are not able to travel. The public considers the severe winter storm hazard as important because it occurs frequently and can have a direct impact on daily routines.

Based on a preliminary mitigation ranking effort, two high-priority mitigation activities are recommended for implementation. The high-priority mitigation activities are presented in **Table 5-4**.

Delaware County and the participating jurisdictions will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. In general, all participating jurisdictions have agreed to make a concerted effort to accept responsibility of at least one high-priority mitigation activity and have agreed to complete that activity within one year from plan adoption, if feasible. As future Steering Committee meetings continue, priorities and accomplishments will be revisited and documented by updates to **Table 5-4**.

The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-4**, as available.

TABLE 5-4. SEVERE WINTER STORM (SNOW) MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.4.1 Inform citizens about winter storm events how to prepare for such events. Indicate locations of shelters and tips for staying at home. Provide advisories to avoid road travel combined with safe travel tips. Provide information on hazards of unheated houses, guidance on the use of portable and standby generators, fire hazards associated with space heaters, protecting plumbing during a winter storm, and coping with power failures.	Goal 2, All Objectives	H	Delaware County	NYSEMO	L	1 year	Mailing pamphlet or page in newspaper, annually. PSAs; FEMA mitigation resources, public education grant	DCDES	CCE, Del Opp, DCDSS, ARC
5.4.2 Maintain and enhance programs to keep trees from threatening lives, property, and public infrastructure during storm events.	Goal 3, Objective 3-1 Goal 4, Objective 4-2	M	Delaware County	Private	M	Ongoing	FEMA Programs	NYSEG / DCEC	DCDPW
5.4.3 Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (including ice storms).	Goal 1, Objective 1-1	M	Delaware County	Federal, State, Local	M	Ongoing	FEMA Programs	DCDPW	DCDES
5.4.4 Survey institutions that have specific needs populations to identify their emergency needs.	Goal 4, All Objectives	M	Delaware County	Federal, State	L	6 years	TBD	DCPHD	DCDSS, ARC
5.4.5 Map and publicize locations around the county that have the highest incidence of severe storms related events.	Goal 1, Objective 1-7	M	Delaware County	State, County	\$10,000	2 years	NOAA and NWS data, HMGP, DCFMP, NYSDOT	DCPD-GIS	Local Gov'ts.
5.4.6 Increase public awareness of storm mitigation activities, including storm warnings and advisories. (See also 5.4.1)	Goal 2, All Objectives	M	Delaware County	State, Local	\$2,000/jurisdiction	Ongoing	Public-private partnerships, Public Outreach programs, Ithaca Journal, PSAs, Radio Stations, PBS, EBS	DCDES	NYSEMO, NWS

**TABLE 5-4. SEVERE WINTER STORM (SNOW) MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.4.7 Minimize the disruption and cost of storm events by maintaining to the extent possible the ability of public works personnel to maintain the safe flow of traffic over streets and highways through DC specific activities such as purchasing additional equipment, securing funds for additional personnel during winter storm events, and purchasing additional road salt.	Goal 4, Objective 4-2	M	Delaware County	Existing Funds	\$100,000	Ongoing	Existing Transportation and Emergency Plans	County and local public works	DCDES, NYDOT
5.4.8 Wherever practicable, coordinate emergency services, public works departments, and public utility responses to winter storm events to ensure efficient use of resources.	Goal 4, Objective 4-2	M	Delaware County	Existing Funds	Current funds	Ongoing	DCDES, local highway agency	DCDES	NYSEMO / FEMA, NYSEG / DCEC
5.4.9 Retrofit critical structures to increase resistance to storm hazards and promote hazard resistant construction of new buildings.	Goal 1, Objective 1-1	L	Delaware County	TBD	L to M	Ongoing	Owners of critical facilities, Code Enforcement Officers	County and local public works, DCCE	Local Gov'ts.
5.4.10 Enhance weather monitoring to attain earlier severe winter and ice storm warnings.	Goal 2, All Objectives	L	Delaware County	State, County, Local	L to M	Ongoing	Weather Monitoring	DCDES	NOAA, NWS, County and local public works

**TABLE 5-4. SEVERE WINTER STORM (SNOW) MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.4.11 Evaluate and develop, as appropriate, a parking ordinance for emergency snow removal.	Goal 4, Objectives 4-2 and 4-3	L	Delaware County	Existing funds	L	Ongoing	Existing zoning policies and procedures	DCPD	Local Gov'ts.

Notes:

ARC	American Red Cross	GIS	Geographic Information Systems
CCE	Cornell Cooperative Extension	HMGP	Hazard Mitigation Grant Program
DCCE	Delaware County Code Enforcement	N/A	not applicable
DCEC	Delaware County Electric Cooperative	NOAA	National Oceanographic and Atmospheric Administration
DCDES	Delaware County Department of Emergency Services	NWS	National Weather Service
DCDSS	Delaware County Department of Social Services	NYSDOT	New York State Department of Transportation
DCDPW	Delaware County Department of Public Works	NYSEG	New York State Electric and Gas
DCPD	Delaware County Planning Department	NYSEMO	New York State Emergency Management Office
DCPHD	Delaware County Public Health Department	PBS	Public Broadcast System
Del Opp	Delaware Opportunities	PSA	Public Service Announcement
EBS	Emergency Broadcast System	TBD	to be determined
FEMA	Federal Emergency Management Agency		

5.5.5 Extreme Temperatures (Cold) Mitigation Activities

Due to the relatively northerly latitude and high elevations of Delaware County, the extreme temperature hazard is generally limited to extreme low temperatures. The alternative mitigation activities identified for the extreme temperature hazard include public education and awareness, emergency services, and structural project activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-5**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, low) based on information compiled to date and input received from stakeholders. Statistically, extreme temperatures disproportionately affect the elderly and low-income residents, who have a greater chance of being exposed to extreme cold temperatures when antiquated or poorly maintained heating systems fail, energy supplies run out or are disconnected, or persons fail to seek appropriate shelter.

5.5.6 Ice Storm Mitigation Activities

The alternative mitigation activities identified for the ice storm hazard include the following types of activities: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities.

The Steering Committee applied the qualitative STAPLEE criteria to evaluate potential mitigation activities to determine the preliminary ranking priority for each action (high, medium, low). The ice storm hazard includes a fair amount of warning time. However, vulnerabilities include utility failures, elderly and low-income populations that may not have adequate heat or food supplies in the event of utility failure, and transportation accidents that are often associated with these events. Indirect impacts can include disruption of business and social services if personnel or customers/users are not able to travel.

The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-6**, as available. As future Steering Committee meetings continue, priorities and accomplishments will be revisited and documented by updates to **Table 5-6**.

**TABLE 5-5. EXTREME TEMPERATURES MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.5.1 Identify the locations of vulnerable populations within the town, including areas where homeless persons may congregate.	Goal 2, Objective 2-1	H	All, particularly Sidney Village and Sidney Center	Local	L	1 year	Community Health Assessment for DC	DCDSS	DCPHD, ARC, Sidney Village and Sidney Center Offices
5.5.2 Work with social support agencies, homeowners associations and the general public to develop and implement appropriate monitoring systems focused on vulnerable populations during extreme cold events.	Goal 3, All objectives	H	All, particularly Sidney Village and Sidney Center	Local	L	2 years	TBD	DCDSS	DCPHD, ARC, Sidney Village and Sidney Center Offices, Homeowner Ass'ns.

**TABLE 5-5. EXTREME TEMPERATURES MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.5.6 Set up public information for the elderly, adult, and child population on the dangers of extreme temperatures	Goals 1,2 and all objectives	M	Delaware County	State, Local,	TBD	1 year	DCCEMP	DCDSS	Del Opp, CCE, ARC, NYSEMO

Notes:

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|--------|---|---------|--|
| ARC | American Red Cross | Del Opp | Delaware Opportunities |
| DCCEMP | Delaware County Comprehensive Emergency Management Plan | FEMA | Federal Emergency Management Agency |
| CCE | Cornell Cooperative Extension | HMGP | Hazard Mitigation Grant Program |
| DCDES | Delaware County Department of Emergency Services | NYSEG | New York State Electric and Gas |
| DCDSS | Delaware County Department of Social Services | NYSEMO | New York State Emergency Management Office |
| DCEC | Delaware County Electrical Cooperative | PSA | Public Service Announcement |
| DCHSCC | Delaware County Human Service Coordinating Council | TBD | to be determined |
| DCPHD | Delaware County Public Health Department | | |

TABLE 5-6. ICE STORM MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.6.1 Inform citizens about ice storm events and how to prepare for such events, particularly with respect to loss of electricity.	Goal 2, All Objectives	H	All Jurisdictions	NYSEMO	L	1 year	Mailing pamphlet or page in newspaper, annually. PSAs; FEMA mitigation resources, public education grant	DCEC / NYSEG	CCE, Del Opp, ARC
5.6.2 Continue programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from ice storms.	Goal 1, Objective 1-1	M	All Jurisdictions	County and Local	M	Ongoing	FEMA Programs	DCDPW	DCDES
5.6.3 Identify, map and publicize locations that have the highest incidence of ice storm related impacts, particularly with respect to loss of critical services (water, sewer) and heat.	Goal 1, Objective 1-7	M	All Jurisdictions	County and Local	L	2 years	TBD	DCPD-GIS	DCDPW, DCDSS
5.6.4 Increase public awareness of ice storm mitigation activities, including ice storm warnings and advisories. (See also 5.2.1)	Goal 2, All Objectives	M	All Jurisdictions	TBD	\$2,000/ jurisdiction	Ongoing	Public-private partnerships, Public Outreach programs, PSAs, Radio Stations, PBS, EBS	DCDES	ARC, NOAA, NWS
5.6.5 Enhance weather monitoring to attain earlier ice storm warnings.	Goal 2, All Objectives	L	All Jurisdictions	TBD	L to H	Ongoing	Weather Monitoring	DCDES	NOAA, NWS, County and local public works

Notes:

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|---------|--|------|--|
| ARC | American Red Cross | EBS | Emergency Broadcast System |
| CCE | Cornell Cooperative Extension | FEMA | Federal Emergency Management Agency |
| DCDES | Delaware County Department of Emergency Services | GIS | Geographic Information Systems |
| DCDPW | Delaware County Department of Public Works | NOAA | National Oceanic and Atmosphere Administration |
| DCDSS | Delaware County Department of Social Services | NWS | National Weather Service |
| DCPD | Delaware County Planning Department | PBS | Public Broadcast System |
| DCPHD | Delaware County Public Health Department | PSA | Public Service Announcement |
| Del Opp | Delaware Opportunities | TBD | to be determined |

5.5.7 Infestation (Agricultural and Disease-Carrying Insects) Mitigation Activities

Due to economic losses experienced by the County from infestations of army worms and moths, the infestation hazard has been included. The alternative mitigation activities identified for the infestation hazard include prevention and public education and awareness. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-7**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, low) based on information compiled to date and input received from stakeholders through January 2006. The high-priority mitigation activities focus on continued and enhanced monitoring of mosquito-borne disease locally and regionally, mosquito spraying programs if deemed appropriate, and public education and outreach programs to increase awareness of the hazard and in the region. The high-priority mitigation activities are recommended for implementation before other alternative mitigation activities. Delaware County will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-7**.

5.5.8 Wildfire Mitigation Activities

The alternative mitigation activities identified for the fire hazard include prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-8**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, low) based on information compiled to date and input received from stakeholders.

The high-priority mitigation activities are recommended for implementation before other alternative mitigation activities. The high-priority mitigation activities focus on conducting a water resources study to support adequate water supply in the case of major fire events.

Delaware County and the participating municipalities will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-8**.

TABLE 5-7. INFESTATION (AGRICULTURAL AND DISEASE-CARRYING INSECTS) MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.7.1 Continue and enhance monitoring of mosquito-borne disease locally and regionally.	Goal 2, Objective 2-3	H	All Municipalities	Local, State	L to M	Ongoing	TBD	DCPHD	AG/MKTS, Agricultural Boards
5.7.2 Consider mosquito spraying programs, as appropriate.	TBD	H	All Municipalities	Local	M	Ongoing	TBD	DCPHD	AG/MKTS, Agricultural Boards
5.7.3 Enhance outreach and education programs to increase awareness of measures people can take to reduce the mosquito hazard.	Goal 2, All Objectives	H	All Municipalities	Local	\$2,000/yr	Ongoing	Current public outreach initiatives	NYSDOH	TBD
5.7.4 Strengthen communication with farmers regarding procedures to prevent the entry of pathogens onto farms.	Goal 2, All Objectives	M	All Municipalities	TBD	L	Ongoing	Agriculture & Farmland Protection Board	DCSWCD,	USDA, NYSCHAP, LF, CCE
5.7.5 Increase coordination with organizations such as NYSCHAP and Northeastern Integrated Pest Management Center (NIPMC).	Goal 3, Objective 3-1	M	All Municipalities	TBD	L	Ongoing	Agriculture & Farmland Protection Board	DCSWCD	DCSWCD, CCE
5.7.6 Distribute NYSCHAP assessment checklist.	Goal 2, All Objectives	M	All Municipalities	TBD	L	2 years	NYSCHAP checklist, local paper, mailer to local farmers	DCSWCD	DCSWCD, LF, CCE
5.7.7 Increase awareness in farming communities of precautions for livestock before shows, fairs, and other events.	Goal 2, All Objectives	M	All Municipalities	TBD	L	Ongoing	See 5.4.11	DCSWCD	LF, CCE, USDA
5.7.8 Increase awareness of precautions against zoonotic diseases, including rabies, ringworm, water-borne pathogens, lyme disease, anthrax, and west nile virus.	Goal 2, All Objectives	M	All Municipalities	TBD	L	Ongoing	See 5.4.11	DCSWCD	LF,CCE, USDA
5.7.9 Include a reference in the Delaware County Soil and Water Conservation District Farm Emergency Management Plan to the DC HMP.	Goal 1, Objective 1-8	M	All Municipalities	TBD	L	1 year	Farm Emergency Management Plan, Multi-Jurisdictional All Hazard Mitigation Plan	DCSWCD	DCPD

TABLE 5-7. INFESTATION (AGRICULTURAL AND DISEASE-CARRYING INSECTS) MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
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**TABLE 5-8. WILDFIRE MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.8.1 Request NYCDEP develop forest and fire management plan for lands acquired under the Land Acquisition Permit.	Goal 1, Objective 1-1	H	Delaware County, watershed municipalities	NYCDEP	M	Ongoing	New York City Filtration Avoidance Determination (Land Acquisition Permit)	NYCDEP	DCWSA
5.8.2 Conduct a study identifying all water resources in the jurisdictions for fire fighting (urban and wildland), map locations, and develop fire fighting strategies based on this data.	Goal 4, Objective 4-2	H	Delaware County	State	L to M	2-5 years	Community Infrastructure Management	DCPD	Local Fire, NY State
5.8.3 Develop and implement a county wide Fire Wise Community by adhering to fire protection standards set fourth by the NFPA.	Goal 1, All Objectives Goal 4, Objective 4-1	H	All municipalities	Existing budget	L to M	1 year for review, longer to integrate	Emergency Management Plan, HMGP	DCDES	Local agency programming
5.8.4 Obtain or create a map of existing and planned fire hydrants throughout the county and identify areas that need fire hydrants.	Goal 1, Objective 1-1	H	Delaware County	Local	L	1 year	Community Technology Initiatives	DCPD - GIS	County and Local Public Works
5.8.5 Enhance emergency services to increase the efficiency of wildfire response and recovery activities.	Goal 4, All Objectives	M	Delaware County	State	M	Ongoing	Community safety	DCDES	Local Fire Dept's.
5.8.6 Encourage development and dissemination of maps relating to the fire hazard to help educate and assist builders and homeowners in being engaged in fire mitigation activities and to help guide emergency services during response.	Goal 2, All Objectives	M	Delaware County	State	L	2 years	Community Technology Initiatives	DCDES	DCPD – GIS, NYSEMO
5.8.7 Enhance outreach and education programs aimed at mitigating fire hazards and reducing or preventing the exposure of citizens, public agencies, private property owners, and businesses to natural hazards.	Goal 2, All Objectives	M	Delaware County	Current funding sources	\$1,000/year	Ongoing	Current public outreach initiatives	County and Local Fire Depts.	ARC, Local Gov't.
5.8.8 Amend county policies to require the use of fire-retardant materials in new construction.	Goal 1, Objective 1-1	M	Delaware County	TBD	L	TBD	Code, zoning, enforcement, engineering	DCCE	Local Code Enforcement

TABLE 5-8. WILDFIRE MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.8.9 Ensure that structures (especially places of public assembly) are maintained and comply with any and all applicable fire and safety codes.	Goal 1, Objective 1-5	M	Delaware County	TBD	L	Ongoing	Code, enforcement and zoning	DCCE	Owners of structures
5.8.10 Retrofit existing critical facilities to bring them up to fire code, if they are not already.	Goal 1, Objective 1-1	M	Delaware County	TBD	M	Ongoing	Code, enforcement, and zoning	DCCE	Owners of critical infrastructure
5.8.11 Investigate and, where feasible, implement programs that would encourage and assist owners of older commercial structures in rehabilitating and improving the fire resistance of their properties.	Goal 1, Objective 1-1	M	Delaware County	TBD	L	Ongoing	Infrastructure management, code, and zoning	DCCE, DCFPB	LF
5.8.12 Identify deficiencies in equipment and training and ensure that local fire departments are adequately equipped to respond safely and effectively to fires.	Goal 4, Objectives 4-2 and 4-3	M	Delaware County	State	L to M	1 year	TBD	County and Local Fire Depts.	DCFPB
5.8.13 Enhance the Delaware County Emergency Management Plan to include an emergency fire relief program (to collaborate between the towns to expedite capabilities to fight fires).	Goal 1, Objectives 1-7 and 1-8	M	Delaware County	Current funding	Current budget	1 year	Procedural changes	DCDES	LF
5.8.14 Educate the public and implement the FIRE WISE community initiative set fourth by the NFPA.	Goal 1, Objectives 1-6 and 1-8, Goal 3, Objective 3-1	M	Delaware County	Grant program	Low if grant program is ongoing	Ongoing	Interagency cooperation	DCFPB	Local and County Fire Depts.
5.8.15 Educate personnel on Federal cost-share and grant programs, Fire Protection Agreements, and other related Federal programs so the full array of assistance available to local agencies is understood.	Goal 3, All Objectives	L	Delaware County	Federal	L	4 years	Interagency cooperation	DCFPB	Local and County Fire Depts.
5.8.16 Inventory alternative firefighting water sources and encourage the development of additional sources.	Goal 4, Objective 4-2	L	Delaware County	TBD	L to M	TBD	TBD	DCFPB	Local and County Fire Depts.

**TABLE 5-8. WILDFIRE MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.8.17 Increase communication, coordination, and collaboration between wildland/urban interface property owners, local and county planners, and fire prevention crews and officials to address risks, existing mitigation activities, and Federal assistance programs.	Goal 2, All Objectives	L	Delaware County	TBD	L	TBD	Public Private Partnerships	DCFPB	Public, Local and County Fire Depts.
5.8.18 Undertake vegetation management activities to reduce potential fuel for a wildfire (activities could include tree pruning, selective planting, and establishing vegetative setback distances).	Goal 1, Objective 1-7	L	Delaware County	TBD	M	TBD	TBD	DCFPB	NYCDEP
5.8.19 Maintain and update mutual aid agreements with the surrounding communities.	Goal 1, Objectives 1-6 and 1-8, Goal 3, Objective 3-1	L	Delaware County	TBD	L to M	3 years	Interagency cooperation	DCDES	ARC
5.8.20 Review ordinances and zoning laws and revise to help prevent future development in areas prone to wildland fire hazard and retrofit existing houses in these areas with additional fire fighting capabilities.	Goal 1, Objective 1-1	L	Delaware County	TBD	L	Ongoing	Code, Enforcement, Zoning	DCCE	Owners of critical infrastructure

Notes:

DC	Delaware County	N/A	not applicable
DCCD	Delaware County Code Enforcement	NFPA	National Fire Protection Association
DCDES	Delaware County Department of Emergency Services	NYCDEP	New York City Department of Environmental Protection
DCFPB	Delaware County Fire Protection Bureau	NYSDEC	New York State Department of Environmental Conservation
DCWSA	Delaware County Department of Watershed Affairs	NYSEMO	New York State Emergency Management Office
FPB	Fire Prevention Bureau	TBD	to be determined
HMGP	Hazard Mitigation Grant Program		
GIS	Geographic Information Systems		

5.5.9 Epidemic (Agricultural) Mitigation Activities

The mitigation activities identified for the epidemic (agricultural) hazard include focused public education and awareness and emergency services planning activities. These proposed mitigation activities address various objectives under goals 1 through 3, as shown in **Table 5-9**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (low, medium, or high), relative to the risk assessment results presented in Section 4. Based on the significance of agriculture and farming in Delaware County, however the limited history of occurrences and losses, this hazard was ranked as moderate against the other hazards examined in this plan. Impacts are localized to particular jurisdictions where the agricultural and pasture activities are prevalent.

Based on the controls currently in place and standard agricultural practices, none of the proposed alternative mitigation activities were found to be a high priority. Several of the mitigation activities were found to be medium priority, and if resources allow, could be implemented after high priority mitigation activities for other hazards.

**TABLE 5-9. EPIDEMIC (AGRICULTURAL) MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.9.4 Increase collaboration between government and community organizations including NYSCHAP, CLEAR, DCDES and DCPHD regarding containment and response plans for epidemic events involving animals.	Goal 3, Objectives 3-1, 3-2	M	All Municipalities	State, county	L to M	Ongoing	DC, Agriculture & Farmland Protection Board	DCSWCD	DCPHD, USDA, CLEAR, CCE
5.9.2 Participate in the integrated disease prevention program with the New York State Cattle Health Assurance Program (NYSCHAP)	Goal 1, Objective 1-1	M	All Municipalities	State, county	M	Ongoing	Disease prevention programs	DCSWCD, CLEAR	NYSCHAP, LF
5.9.3 Strengthen communication with farmers regarding procedures to prevent the entry of pathogens onto farms.	Goal 2, All Objectives	M	All Municipalities	State, county	L	Ongoing	DC, Agriculture & Farmland Protection Board	DCSWCD, CLEAR	NYSCHAP, LF, CCE
5.9.4 Distribute NYSCHAP assessment checklist.	Goal 2, All Objectives	M	All Municipalities	State, county	L	2 years	NYSCHAP checklist, local paper, mailer to local farmers	DCSWCD	CLEAR, LF, CCE
5.9.5 Distribute guidelines and specific procedures to prevent Johnes Disease and Foot and Mouth Disease.	Goal 2, All Objectives	M	All Municipalities	State, county	L	1 year	local paper, mailer to local farmers	DCSWCD	CLEAR, LF, CCE
5.9.6 Increase awareness of precautions against zoonotic diseases, including rabies, ringworm, water-borne pathogens, lyme disease, anthrax, and west nile virus.	Goal 2, All Objectives	M	All Municipalities	State, county	L	Ongoing	DC, Agriculture & Farmland Protection Board	DCSWCD	DCPHD, CLEAR, LF, CCE, USDA
5.9.7 Enhance public safety through awareness, by releasing timely public service announcements via various media (television, radio).	Goal 2, All Objectives	L	All Municipalities	Current funding	N/A	Ongoing	PSAs, PBS	DCSWCD	CCE

Notes:

CCE Cornell Cooperative Extension
 CLEAR Cortland League for Environmental Agricultural Responsibility
 DCDES Delaware County Department of Emergency Services
 DCPHD Delaware County Public Health Department
 DCSWCD Delaware County Soil and Water Conservation District

LF Local Farmers
 NYSCHAP New York State Cattle Health Assurance Program
 PBS Public Broadcasting System
 PSA Public Service Announcement
 USDA United States Department of Agriculture

5.5.10 Drought Mitigation Activities

The alternative mitigation activities identified for the drought hazard include prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-10**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, low) based on information compiled to date and input received from stakeholders.

The high-priority mitigation activities are recommended for implementation before other alternative mitigation activities. The high-priority mitigation activities focus on implementing water conservation practices, monitoring, and fostering public awareness.

Delaware County and the participating municipalities will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-10**.

TABLE 5-10. DROUGHT MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.10.1 Implement water conservation practices	Goal 1, all objectives	H	All Municipalities	DC, NYSEMO	L-M	1 year	CEMP, HMGP	DCSWCD	NYCDEP
5.10.2 Increase monitoring of precipitation and ground/surface water supplies.	Goal 1, all objectives	H	All Municipalities	DC, NYCDEP	L	Ongoing	DC water conservation, NYCDEP drought management plan	NYCDEP	DCSWCD
5.10.3 Conduct Source Water Assessments at the village level containing drought-response components;	Goal 1, all objectives	H	Delaware County, all Villages	DC, NYCDEP	M	3 Years	DC water conservation, NYCDEP drought management plan	DCSWCD	NYCDEP
5.10.4 Participate in regional water basin management programs (DRBC)	Goal 1, Objectives 1-9; Goal 3, All Objectives	H	All Municipalities	DC, NYCDEP	M	3 Years	DC water conservation, NYCDEP drought management plan	DCSWCD	DRBC
5.10.5 Increase public information on drought mitigation	Goals 1 and 2 all objectives	M	All Municipalities	Local	L	1 year	CEMP	DCSWCD	NYSEMO, FEMA
5.10.6 Maintain partnership with NYCDEP for drought mitigation efforts	Goal 3, all objectives	M	All Municipalities	DC, NYCDEP	L	Ongoing	NYCDEP drought management plan, DCHMGP	DCSWCD	NYCDEP
5.10.7 Conduct a study on developing drought frequency data to provide to local governments.	Goals 1, Objectives 1-1	M	All Municipalities	DC, NYCDEP	L	2 Years	DC water conservation, NYCDEP drought management plan	DCSWCD	NYCDEP, local

TABLE 5-10. DROUGHT MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdiction	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.10.8 Provide education and training to the public on proper drought mitigation principles and practices for when a drought occurs or if there is a potential risk of a drought occurring.	Goals 1 & 2, all objectives	M	All Municipalities	Local	L	1 Year	CEMP	DCSWCD	NYSEMO, FEMA
5.10.9 Provide sufficient levels of staffing to implemented Drought mitigation planning and projects.	Goal 1, Objective 1-1	M	All Municipalities	DC, NYCDEP	M	2 Years	DC water conservation, NYCDEP drought management plan	DCSWCD	NYCDEP
5.10.10 Evaluate worst-case drought scenarios within Delaware County for possible further action.	Goal 1, Objective 1-1	M	All Municipalities	DC	M	3 Years	CEMP	DCDES	NYSEMO
5.10.11 Publish and distribute pamphlets on water conservation techniques and agricultural drought management strategies.	Goals 1 & 2, all objectives	M	All Municipalities	Local	L	1 Year	CEMP	DCSWCD	NYSEMO, FEMA

Notes:

CEMP Comprehensive Emergency Management Plan
 DC Delaware County
 DCDES Delaware County Department of Emergency Services
 DCSWCD Delaware County Soil and Water Conservation
 DRBC Delaware River Basin Commission

FEMA Federal Emergency Management Agency
 NYCDEP New York City Department of Environmental Protection
 NYSEMO New York State Emergency Management Office

5.6 Technological Hazards

This section presents mitigation activities for the technological hazard of dam failure. DMA 2000 does not currently require that technological hazards be addressed in local hazard mitigation plans; however, the Steering Committee selected the dam failure hazard for further evaluation based on its importance to the study area.

5.6.1 Dam Failure Mitigation Activities

The alternative mitigation activities identified for the dam failure hazard include prevention, property protection, public education and awareness, emergency services, and structural project activities.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each (high, medium, or low), relative to the risk assessment results presented in Section 4. There is a cascading relationship between other hazards and dam failure, that is other hazards such as severe storms and flooding tend to cause dam failures. Therefore, mitigation activities for these hazards will also help to reduce dam failure in some cases.

Seven dam-specific mitigation activities were identified as high priorities during the initial ranking process. Largely, these focus on assuring that dam safety measures (inspections, emergency management plans, maintenance and repairs) are being addressed and kept current. The high-priority mitigation activities are presented in **Table 5-11**. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-11**.

TABLE 5-11. DAM FAILURE MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.11.1 Provide sufficient levels of staffing to implement Dam Failure mitigation planning and projects	Goal 1, Objective 1-1	H	All municipalities	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.2 Assign staff to implement the Dam Safety program and administer the Dam Safety fund.	Goal 1, Objective 1-1	H	All municipalities	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.3 Conduct a meeting with DCDES, NYCDEP, USACE and NYSEMO to discuss dam safety issues, emergency plans and planning, and inspection coordination.	Goal 1, Objective 1-1	H	All municipalities	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.4 Update the Dam Inspection Report and develop an inspection strategy with timelines for all High and Moderate Hazard dams that are past due.	Goal 1, Objective 1-1	H	All municipalities	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.5 Develop a comprehensive and prioritized list of dam repair, upgrade and retrofit activities, including timelines and completion strategies (funding sources, grant application, permitting, etc.).	Goal 1, Objective 1-1	H	All municipalities	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.6 Identify deficiencies in equipment and training and ensure that local emergency responders are adequately equipped to respond safely and effectively to a dam failure.	Goal 4, Objectives 4-3 and 4-4	H	All municipalities	DC, Dam Safety Fund	L	1 Year	TBD	DCDES	Local Police and Fire Departments
5.11.7 With the assistance of the NYC DEP, establish specific dam safety measures for Cannonsville and Downsville dams to ensure the protection of the water supply for the county and NYC.	Goal 1, Objective 1-1	H	Town and Village of Deposit, Town of Colchester, Town and Village of Hancock	DC, Dam Safety Fund	L	1 Year	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC

**TABLE 5-11. DAM FAILURE MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.11.8 Conduct dam-break analysis and risk assessment of all high and moderate hazard dams, identifying areas of inundation and human and property losses.	Goal 1, Objective 1-1	M	All municipalities	DC, Dam Safety Fund	M	2 Years	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.9 Provide mapping of dam failure flood inundation areas (From previous MS) for all high hazard dams for the purpose of informing the county residents on what areas would be affected by a collapse and can plan warnings and other mitigation actions.	Goal 1, Objective 1-1	M	Town and Village of Deposit, Town of Colchester, Town and Village of Hancock, Town and Village of Sidney	DC, Dam Safety Fund	L	3 Years	CEMP	DCPD-GIS	DCDES, NYSEMO, NYCDEP, USACE, NYSDEC
5.11.10 Develop and distribute custom Dam Safety Manuals for DC, with data specific for each town and village.	Goal 1, Objective 1-1	M	All municipalities	DC, Dam Safety Fund	L	3 Years	CEMP	DCDES	NYSEMO, NYCDEP, USACE, NYSDEC
5.11.11 Develop and distribute custom GIS "Vulnerability Assessment Tools" for the county, with the goal of selecting a short list of most vulnerable properties for acquisition and/or protection.	Goal 1, Objective 1-1	M	All municipalities	DC, Dam Safety Fund	L	3 Years	CEMP	DCPD-GIS	DCDES, NYSEMO, NYCDEP, USACE, NYSDEC

Notes:

CEMP Comprehensive Emergency Management Plan
 DC Delaware County
 DCDES Delaware County Department of Emergency Services
 DCPD Delaware County Planning Department
 GIS Geographic Information Systems

NYCDEP New York City Department of Environmental Protection
 NYSDEC New York State Department of Environmental Conservation
 NYSEMO New York State Emergency Management Office
 USACE United States Army Corps of Engineers

5.7 Man-Made Hazards

This section presents mitigation activities for human-caused hazards of water supply contamination. DMA 2000 does not currently require that man-made hazards be addressed in local hazard mitigation plans; however, the Steering Committee selected the water supply contamination hazard for further evaluation based on its importance to the study area.

5.7.1 Water Supply Contamination Mitigation Activities

The alternative mitigation activities identified for the water supply contamination hazard include prevention, property protection, public education and awareness, natural resource protection, and emergency services activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-12**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each mitigation activity (high, medium, or low). Based on the low frequency of water supply contamination events and existing prevention and response procedures and plans, four proposed alternative mitigation activities were found to be of high priority. Several of the mitigation activities were found to be medium priority and, if resources allow, could be implemented after the high priority mitigation activities for other hazards. Because portions of the study area rely on surface water, while other areas rely on groundwater, mitigation activities focus on protecting both of these types of supply sources.

The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-12**.

**TABLE 5-12. WATER SUPPLY CONTAMINATION MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.12.1 Implement Source Water Assessment Plans (SWAPs) which address protection of public water supplies. The Villages of Margaretville and Fleischmanns have plans as does the hamlet of Roxbury. As funding permits, similar plans for other public water supplies within Delaware County will be completed.	Goal 3, Objective 3-1; Goal 4, Objective 4-1	H	All Municipalities	NYSDOS, EPA, Local	H	Ongoing	Comprehensive plans and local land use regulations, DCAP	DCPHD	Public Water Suppliers, NYSDOH, DCSWCD
5.12.2 Facilitate the partnership with NYCDEP in protecting the water supply throughout the county.	Goal 1, Objectives 1-1, 1-6, and 1-9	H	All NYC watershed municipalities	DC, Local	L	Ongoing	DCAP, SWAP	DCWSA	All Watershed Partners
5.12.3 Increase collaboration between government and community organizations regarding containment, response and cleanup plans.	Goal 1, Objectives 1-1, 1-6, and 1-9	H	All Municipalities	Local, DC,	L	Ongoing	DCAP, SWAP	DCDES	Local, NYSDOH
5.12.4 Identify and plan for use of backup water supply for the community, should the primary water supply become contaminated.	Goal 1, Objectives 1-1, 1-6, and 1-9	H	All Municipalities	Local, NYSDOH	M	Ongoing	SWAP	Loca HDI	DCPHD, NYSDOH
5.12.5 Incorporate stormwater management and erosion and sedimentation control planning requirements in both site plan and subdivision review so as to reduce contaminant loads to streams.	Goal 1, Objectives 1-8	M	All Municipalities	Local	L	Ongoing	DCAP, Site Plan and Subdivision Review, Stormwater Regulations	DCSWCD	DCPD, NYCDEP, NYSDEC
5.12.6 Identify appropriate protection measures for public drinking water systems.	Goal 1, Objectives 1-1, 1-6, and 1-9	M	All Municipalities	Local, NYSDOS	M	Ongoing	SWAP, Comprehensive plans and local land use regulations	DCPHD, public water suppliers	NYSDOH, DCSWCD
5.12.7 Implement training and public outreach to residents, code officials, and contractors about water supply contamination and response planning and training.	Goal 2, All Objectives, Goal 3, All Objectives	M	All Municipalities	Local, NYSDOS	L	Ongoing	SWAP	DCPD	NYSDOH, water suppliers NYSDOS

**TABLE 5-12. WATER SUPPLY CONTAMINATION MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Jurisdictions	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.12.8 Enhance public safety through awareness, by releasing timely PSAs via various media (television, radio).	Goal 2, All Objectives	M	All Municipalities	Local, grant	L)	Ongoing	DCAP, SWAP		

5.8 Multi-Jurisdictional and Multi-Hazard Mitigation Activities

Previous sub-sections of this mitigation strategy have focused on hazard-specific mitigation activities for the study area and for specific jurisdictions. Those mitigation activities will help to reduce the damages and losses associated with specific hazard events. However, some mitigation activities will support reduced risk across hazards and jurisdictions. This sub-section focuses on these types of activities.

The alternative multi-jurisdictional and multi-hazard mitigation activities identified for this study area include prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural project activities. These proposed mitigation activities address various objectives under each of the four stated goals, as shown in **Table 5-13**.

The qualitative STAPLEE criteria were applied to evaluate mitigation activities to determine the priority of each. Based on public perception, political considerations, technical and administrative feasibility, and economic and environmental considerations, many of the alternative mitigation activities were found to be of high priority. Additionally, many of these mitigation activities are high priority because they address considerations across multiple hazards and across jurisdictional boundaries.

The high priority mitigation activities are recommended for implementation before lower priority mitigation activities. The high priority mitigation activities are presented in **Table 5-13** and generally focus on the following:

- Review and coordination with existing programs and plans, especially evacuation plans
- Refinement of inventory, GIS, mapping, and other general mitigation planning data and resources
- Communication programs to educate the public regarding hazards and mitigation

Delaware County and the participating municipalities will implement the high-priority mitigation activities by leveraging existing funds and seeking new funding sources. The specific timeframes; responsible parties; and existing policies, programs, and resources to support implementation of each high-priority mitigation activity are identified in **Table 5-13**.

**TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES
DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK**

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.1 25 of 29 municipalities have adopted Comprehensive Plans to guide sustainable development. These are updated regularly.	All Goals and Objectives	H	All municipalities	Local, NYSDOS, Grants	L	Ongoing	Local land use regulations	Towns and Villages	DCPD, NYSDOS
5.13.2 Planning Department uses Town Planning Advisory Service (TPAS) to assist towns and villages in the County with ongoing, professional planning services to ensure hazard mitigation activities are furthered at the local level.	All Goals and Objectives	H	Delaware County, 18 of 19 towns, 8 of 10 villages	Local	L	Ongoing	Comprehensive plans, local land use regulations	DCPD	Towns and Villages
5.13.3 The County has adopted the Delaware County Action Plan (DCAP) that outlines an integrated approach to watershed management.	All Goals and Objectives	H	All municipalities	Local, EPA, USACE	H	Ongoing	Comp plans, land use regs, SCMP, AEM, HMPs, AgFarmland Plan	DCSWC D	Local, NYCDEP, NYSDEC, EPA, NYSDOH
5.13.4 Complete and implement the Delaware County Comprehensive Plan.	All Goals and Objectives	H	Delaware County	Local, NYSDOS, Grants	M	Ongoing	DCAP, SCMP, local land use regs, NFIP, HMGP	DC Planning Board / DCPD	NYSDOS, municipalities
5.13.5 Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs.	Goal 4, Objective 4-2	H	All municipalities	Federal, state, local	L to M	1 year	DC, NYSEMO	DCDES	PD, FD
5.13.6 Develop, enhance and implement education programs aimed at mitigating hazards and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.	Goal 2, All Objectives	H	All municipalities	Local, grant	L to M	3 years	Public/Private Partnerships, NFIP, CRS	DCPD	BOCES, Local
5.13.7 Implement new building codes for new mobile homes throughout the county.	Goal 1, Objectives 1-7 and 1-8	H	All municipalities	Existing budget	L	1 year	Section 2 of the Mitigation Plan	DCCE	Local Code Enforcement

TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.8 Continue to develop inventory of at-risk buildings and infrastructure.	Goal 1, Objective 1-1	H	All municipalities	Local	L to M				

TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.25 Equip emergency responders throughout Delaware County with internet-based mapping services (such as ArcGIS) so they can easily obtain maps and topographic data when responding to an emergency related event.	Goal 2, Objective 2-3; Goal 4, Objective 4-4	M	All municipalities	Federal, state, local	H	Ongoing	CEMP	DCDES	FD, PD,
5.13.26 Develop and maintain an emergency management website for Delaware County that would provide information for public officials, emergency responders, and residents.	Goal 2, All Objectives; Goal 4, Objectives 4-2 and 4-4	M	Delaware County	Federal, state, local	M	2 years	CEMP	DCDES	Local
5.13.27 Develop an outreach program to encourage homeowners to buy hazard insurance to protect belongings when feasible.	Goal 2, All Objectives	M	All municipalities	Federal, local	L to M	3 years	NFIP, HMGP	DCPD	Municipalities
5.13.28 Identify, improve and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk from hazards.	Goal 3, All Objectives	M	All municipalities	Existing budgets	L	Ongoing	Interagency Cooperation, Public-Private Partnerships, insurance programs for hazard mitigation, NFIP, CRS	DCPD	Local
5.13.29 Increase communication and cooperation to improve relationship between County and local public works and highway departments so emergency response is more efficient and coordinated.	Goal 4, Objectives 4-2 and 4-4	M	All municipalities	TBD	L	Ongoing	Interagency Coordination, HMPs	DCDES, DCDPW	Local Highway Departments
5.13.30 Conduct an annual review of the capital improvement plan for each jurisdiction and the county for actions that may require hazard mitigation in their design.	Goal 1, Objective 1-8	M	All municipalities	Federal, local	L	Ongoing	Capital Improvement Plan, Comprehensive Plan, HMP	DCPD	Local governments

TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.31 Include a reference in the Delaware County Comprehensive Emergency Management plan Risk Reduction Section to this Hazard Mitigation Plan.	Goal 1, Objective 1-8	M	Delaware County	Local	L	1 year	CEMP, HGMP	DCDES	DCPD
5.13.32 Design a safety publication that contains important information regarding personal preparedness and disaster loss prevention.	Goal 2, All Objectives	M	Delaware County	Grants	\$40,000	1 year	CEMP	DCDES	DCPD, NYSEMO, FEMA
5.13.33 In conjunction with the Emergency Planning Committee, design an emergency preparedness and response presentation for the Delaware County Fair.	Goal 2, All Objectives	M	All municipalities	Local	L to M	1 year	CEMP	DCDES	ARC, DCPD
5.13.34 Implement a multi-jurisdictional, geographically based telephone Emergency Notification System.	Goal 2, All Objectives	M	All municipalities	Local	\$80,000	2 years	CEMP	DCDES	NYSEMO, FEMA
5.13.35 Enhance agreement with local radio stations and public access cable channels for emergency broadcasts.	Goal 2, All Objectives	M	All municipalities	Local	L	1 year	Emergency Broadcasting	DCDES	SUNY Delhi, radio and cable providers
5.13.36 Promote the use of NOAA's All Hazards radios for early warning and post event information.	Goal 2, All Objectives	M	All municipalities	Grants	\$55/radio	1 year	DC	DCDES	Sheriff, DCPD
5.13.37 Investigate participation into the Small Business Administration Pre-Disaster Mitigation Loan Program.	Goal 1, Objective 1-8	M	All municipalities	Federal, local	L	3 years	SBA Pre-Disaster Mitigation Loan Program	DCPD	DCCOC, DCIDA
5.13.38 Develop a program to promote retrofits and safety precautions for mobile homes for flood and severe wind events.	Goal 1, Objectives 1-2 and 1-3, and Goal 2, All Objectives	M	DC	Federal, state, local	L to M	TBD	CEMP, NFIP	DCDES	FEMA, NYSEMO, Local code enforcement

TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.39 Improve the drainage and base of Towns maintained portions so that routes are reliable as an emergency detour.	Goal 1, Objectives 1-1 and 1-5; Goal 4, Objective 4-4	M	DC	Fed, State, Local	M to H	Ongoing	Community Infrastructure Improvement	DCPD	USACE, County and Local
5.13.40 Identify additional locations to be emergency shelters as necessary. Enhance the ARC shelter database, esp. about small shelters (not schools) in rural towns.	Goal 4, All Objectives	M	All municipalities	ARC	\$15/day/person	Ongoing	ARC	ARC	All jurisdictions
5.12.41 Use technical knowledge of natural ecosystems, natural hazards, and other hazards to link natural resource management and land use organizations to mitigation activities and technical assistance.	Goal 1, Objective 1-7 Goal 3, Objective 3-1	L	All municipalities	Federal, state, local	L	1 year	Land use, Natural Resource Management	DCPD	DCSWCD, NYCDEP, NYSDEC, local government
5.12.42 Create centralized library of all documents used and required for the mitigation plan.	All Goals, All Objectives	L	Delaware County	Local	Current	1 year	Local government, all agencies	DCPD	TBD
5.12.43 Maintain County debris clearance plan.	Goal 1, Objective 1-1	L	All municipalities	County, local	L	Ongoing	CEMP	DCDES	DCDPW, NYS DOT
5.13.44 Support the Delaware County Human Needs Task Force	Goal 1, Objective 1-8	L	All municipalities	County, local	L	Ongoing	CEMP	DCPHD	ARC
5.13.45 Identify areas and specific residents who would need evacuation assistance, including residents who lack transportation, and develop evacuation assistance plans.	Goal 1, Objective 1-1; Goal 4, Objective 4-3	L	All municipalities	Local	L	2 years	CEMP	DCDES	ARC, DCPHD
5.13.46 Purchase/upgrade the following equipment: bucket truck, road barriers, flashing beacon lights, work zone signs, PPE vests, flagger signs, hand tools.	Goal 4, Objective 4-3	L	All municipalities	Federal, state, local	\$80,000	1 year	Plan revisions	DCDPW	Local public works, PD, FD, Sheriff

TABLE 5-13. PROPOSED MULTI-JURISDICTIONAL AND MULTI-HAZARD MITIGATION ACTIVITIES

DELAWARE COUNTY MULTI-JURISDICTIONAL STUDY AREA, NEW YORK

Mitigation Activity	Evaluation Against Goals and Objectives	Priority	Multi-Jurisdictional Focus Area	Funding Source	Budget	Implementation Timeline	Existing Policies, Programs, and Resources to Support Implementation	Lead Agency	Support Agency
5.13.47 Incorporate victim tracking and counseling as part of the 3-year full-scale emergency response exercise to train first responders. Exercises should be coordinated and collaborative, and could benefit from a county-wide exercise development team.	Goal 3, All Objectives; Goal 4, Objectives 4-1	L	All municipalities	Federal, state, local	\$40,000	3 years	Full scale emergency response exercises, DC, first responder training	DCDES	DCPHD, DCPD, Sheriff, local police and fire departments
5.13.48 Purchase 360 degree night visibility vests with reflective strips.	Goal 4, Objective 4-3	L	Delaware County	Local	\$1,500	1 year	Equipment upgrading	DCDES	Local government
5.13.49 Install HAZUS software and become familiarized with its use.	Goal 2, Objective 2-3; Goal 3, Objective 3-1	L	All municipalities	Local	L	1 year	HMP	DCPD-GIS	DC, FEMA

Notes:

ARC	American Red Cross	N/A	not applicable
AEM	Agricultural Environmental Management	NFIP	National Flood Insurance Program
CEMP	Comprehensive Emergency Management Plan	NOAA	National Oceanic and Atmospheric Administration
CRS	Community Rating System	NYCDEP	NY City Dept. of Environmental Protection
DCAP	Delaware County Action Plan	NYSDEC	NYS Dept. of Environmental Conservation
DCCOC	Delaware County Chamber of Commerce	NYSDOH	New York State Department of Health
DCDES	Delaware County Department of Emergency Services	NYSDOS	New York State Department of State
DCDPW	Delaware County Department of Public Works	NYSDOT	New York State Department of Transportation
DCIDA	Delaware County Industrial Development Agency/Economic Development	NYSEMO	New York State Emergency Management Office
DCPD	Delaware County Planning Department	PD	Police Department
DCPHD	Delaware County Public Health Department	SCMP	Stream Corridor Management Plan
DCSWCD	Delaware County Soil and Water Conservation District	SBA	Small Business Administration
EPA	Environmental Protection Agency	SUNY	State University of New York
FD	Fire Department	TBD	to be determined
GIS	Geographic Information System	TPAS	Town Planning Advisory Service
HMGP	Hazard Mitigation Grant Program	USACE	United States Army Corps of Engineers
ICS	Incident Command System		

5.9 Next Steps

This draft plan was first submitted for NYSEMO review in October 2005. The towns and county also have reviewed and provided input to a previous version of this plan, as have other members of the Steering Committee. The mitigation plan development effort will continue through a number of ongoing efforts that will continue through plan finalization in February 2006. Activities will include:

- The plan will be provided for NYSEMO input and input and suggestions for revisions will be incorporated.
- Public input will be obtained and incorporated.
- Additional historic cost data and refinement of mitigation activities based on input from the public, NYSEMO, and the Steering Committee, towns, and county.
- Subsequent Steering Committee meetings and meetings with NYSEMO will be held, as necessary as the plan is revised and finalized.
- Finally, the team will discuss the process for regular evaluation and reprioritization of the mitigation activities and documentation of implementation and accomplishments.

The input of all parties will be reviewed by the Steering Committee, documented, discussed, and used to prepare a final plan acceptable for adoption by all of the participating jurisdictions and approval by NYSEMO as a compliant, hazard mitigation plan meeting the state and federal requirements for mitigation planning.