

3.0 MITIGATION STRATEGIES

Sandusky County's planning team developed mitigation goals and strategies to address the identified risks and vulnerabilities for the county as a whole and for individual jurisdictions. While there are similarities in the goals and strategies identified by each jurisdiction, each community included actions designed to address risks and vulnerabilities in their community.

3.1 STATUS OF PAST MITIGATION EFFORTS

The 2015 Sandusky County Hazard Mitigation Plan identified mitigation goals and strategies for each jurisdiction. The current mitigation planning team reviewed these goals and activities to determine their current status, which is described in table 3-1. In the prior plan, mitigation strategies were developed for each township in addition to the county, cities, and villages. For the 2020 update, the planning team determined that township strategies would be included in the Sandusky County strategies.

Table 3-1: 2015 Mitigation Strategies

Strategy	Status
SANDUSKY COUNTY	
1. Sandusky County will accurately and thoroughly identify flood prone areas in the county, including all non-municipal jurisdictions, and identify development practices that allow or facilitate flooding through interference with natural drainage as structures are improved, renovated, and/or built.	Complete
2. Sandusky County will develop and complete structural projects to mitigate against flooding in areas where repetitive loss has occurred or where structures and development have been built on high-risk properties, including acquisition and demolition when appropriate and effective.	Ongoing
3. Sandusky County will conduct public information campaigns to improve and expand property owners' participation in voluntary facilitation of adequate and effective drainage through maintenance of individual and private property.	Completed
4. Sandusky County will collaborate with economic development leaders to ensure that new construction and commercial development includes conservation and mitigation practices to prevent flooding.	Ongoing
5. Sandusky County will maintain and support county-wide communications capabilities to notify and warn county residents of dangers and natural hazards through public warning and mass notification systems that are compatible and functional in concert with new technology such as text messages, electronic mail, social media, and other means to convey information in a timely fashion.	Ongoing
6. Sandusky County will conduct a public awareness campaign that includes information about warning and mass notification methods, evacuation and other protective measures, and response to emergencies and disasters.	Ongoing
7. Sandusky County will conduct a public information campaign to educate the general public about evacuation and shelter locations, safe rooms and storm shelters, community centers, and respite and gathering locations during disasters and emergencies.	Ongoing

Strategy	Status
8. Sandusky County will complete improvements to the county addressing system and mapping capabilities to enhance and improve first responders' ability to rapidly identify and locate specific properties during emergencies.	Completed
9. Sandusky County will establish a shelter and comfort station system that meets the need for a variety of disasters in local jurisdictions including townships, villages, and cities so the centers are readily available to residents during emergencies without significant dangerous travel.	Ongoing
10. Sandusky County will establish a debris management plan that facilitates rapid recovery from severe storms, and facilitates the restoration of utilities as quickly as possible to improve recovery of the community after such an incident.	Ongoing
11. Sandusky County will conduct a public awareness campaign that conveys the critical points of a drought and the need for regular water conservation in preparation for times of severe drought.	Completed
12. Sandusky County will improve the dependability of utilities through establishment of resilient utility lines and delivery systems that withstand the stress of severe storms and disasters.	Ongoing
13. Sandusky County will work to protect and preserve natural resources within the county through conservation practices that include erosion control, sediment management, nutrient management, and waterway maintenance.	Ongoing
14. Sandusky County will advocate, educate, and develop residential building codes for new construction and existing property upgrades and renovations to develop consistent quality of goods and construction in the county.	Completed
BELLEVUE	
1. The City of Bellevue will develop projects to lessen the damages to property from flooding.	Ongoing
2. The City of Bellevue will continue to research, manage, and mitigate the effects of flooding caused by Karst formations in the city.	Ongoing
3. The City of Bellevue will work with utility providers to harden utility services and to prevent excessive outages during storms and inclement weather.	Completed
4. The City of Bellevue will consider development of a comprehensive plan for land use within the jurisdiction, taking into account the consequences of development and the effect on existing properties and businesses, as well as the consequences on the communities downstream.	Deleted
5. The City of Bellevue will work to improve sheltering and protection of residents during severe storms.	Ongoing
6. The City of Bellevue will work to improve communications and warning systems for the protection of residents.	Completed
BURGOON	
1. The Village of Burgoon will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
2. The Village of Burgoon will educate property owners about and advocate for good regular maintenance practices that result in preventing excessive damages to structures during storms, such as ditch bank maintenance, trimming trees, proper disposal of lawn and woody debris, and clearing excessive vegetation from streams and waterways.	Completed

Strategy	Status
3. The Village of Burgoon will develop projects to lessen damages to property from flooding that might include acquisition and relocation, elevation, and/or diversion and retention of water.	Ongoing
4. The Village of Burgoon will work to establish shelters for use during evacuations and severe storms or power outages that will provide respite and safety for residents.	Ongoing
5. The Village of Burgoon will support the construction of safe rooms for mobile home, manufactured home, apartment and condominium, and other structures that lack underground or sub-surface shelter for tornadoes and other weather incidents.	Ongoing
6. The Village of Burgoon will participate in and support outreach education to promote personal preparedness of residents regarding natural disasters and the risks associated with them.	Completed
CLYDE	
1. The City of Clyde will develop projects to lessen the damages to property from flooding, including consideration of acquisition and demolition.	Ongoing
2. The City of Clyde will educate the community about the notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
3. The City of Clyde will establish sites to be used as shelters, comfort stations, and service centers during disasters and will strive to equip these sites with the features necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing
4. The City of Clyde will advocate and support the construction of safe rooms for residents who live in mobile homes, manufactured homes, apartments, condominiums, or other locations where adequate shelter is not available during tornadoes or other wind-related events.	Ongoing
5. The City of Clyde will identify and implement a water supply plan for emergency purposes that supports, supplements, or services in place of a municipal or county water supply in cases of later fires.	Ongoing
FREMONT	
1. The City of Fremont will support and advocate for the creation of safe environments for residents and others during severe weather and inclement situations.	Ongoing
2. The City of Fremont will work to support, provide, and maintain alternate power sources for critical facilities during power outages.	Completed
3. The City of Fremont will establish sites to be used as shelters, comfort stations, and service centers during disasters, and will strive to equip these sites with the features necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing
4. The City of Fremont will maintain and improve storm sewer systems and flood protection structures to adequately manage runoff water for all areas and thus prevent/lessen flooding in residential and/or commercial properties.	Ongoing
5. The City of Fremont will support and implement acquisition, demolition, and relocation for severe and repetitive loss structures.	Ongoing
6. The City of Fremont will advocate, support, and adopt land use management regulations that prevent or lessen damages to property from flooding or other storm related consequences.	Completed

Strategy	Status
7. The City of Fremont will support and enhance communications with residents regarding warning, notification, and preparedness for disasters and emergencies.	Completed
8. The City of Fremont will support and install improvements to the first responder and city department emergency communications system. The City will achieve communication system interoperability between all city departments and relevant countywide or other jurisdiction departments	Ongoing
GIBSONBURG	
1. The Village of Gibsonburg will work to lessen the effects of flooding on the village.	Ongoing
2. The Village of Gibsonburg will work to improve construction practices so that new construction does not facilitate damages during storms and disasters.	Deleted
3. The Village of Gibsonburg will support, advocate, and install alternate power sources at critical facilities when funding is available to cover such costs.	Completed
4. The Village of Gibsonburg will support, advocate, and facilitate the use of public structures for sheltering and protective actions for residents.	Ongoing
5. The Village of Gibsonburg will support and implement improvements to warning and notification systems.	Completed
6. The Village of Gibsonburg will advocate, educate, and develop residential building codes for new construction and existing property upgrades and renovations to develop consistent quality of goods and construction in the village.	Deleted
GREEN SPRINGS	
1. The Village of Green Springs will develop projects to lessen the damages to property from flooding.	Ongoing
2. The Village of Green Springs will educate the community about the notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
3. The Village of Green Springs will establish sites to be used as shelters, comfort stations, and service centers during disasters and will strive to equip these sites with the services and equipment necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing
4. The Village of Green Springs will advocate and support the construction of safe rooms for residents who live in mobile homes, manufactured homes, apartments, condominiums, or other locations where adequate shelter is not available during tornadoes or other wind-related events	Ongoing
HELENA	
1. The Village of Helena will work to lessen the effects of flooding on the village and township.	Ongoing
2. The Village of Helena will work to improve construction practices so that new construction does not facilitate damages during storms and disasters.	Deleted
3. The Village of Helena will support, advocate, and install alternate power sources at critical facilities when funding is available to cover such costs.	Completed
4. The Village of Helena will support, advocate, and facilitate the use of public structures for sheltering and protective actions for residents.	Ongoing
5. The Village of Helena will support and implement improvements to warning and notification systems.	Completed
6. The Village of Helena will support and participate in a countywide storm water planning effort to more effectively manage runoff and excessive rainfall	Deleted

Strategy	Status
LINDSEY	
1. The Village of Lindsey will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
2. The Village of Lindsey will work to reduce the effects of flash and riverine flooding.	Ongoing
3. The Village of Lindsey will advocate and support the development and/or maintenance of shelters for residents during tornadoes, windstorms, and other dangerous weather events.	Ongoing
4. The Village of Lindsey will advocate for practices by landowners that cause sustainable resistance of their properties to storm damage.	Completed
WOODVILLE	
1. The Village of Woodville will identify locations and develop plans for community gathering locations throughout the village to provide residents with shelter, information, and respite services during weather related events or extended power outages.	Ongoing
2. The Village of Woodville will work to lessen the effects of flooding and flash flooding on properties in the village and townships.	Ongoing
3. The Village of Woodville will strive to create hardened electrical service to critical facilities through acquisition and installation of alternate power sources.	Completed
4. The Village of Woodville will continue to distribute disaster awareness and preparedness materials to residents and workers to lessen casualties due to disaster impact.	Completed
5. The Village of Woodville will work to harden emergency communications capacity to insure adequate and effective response to disasters.	Ongoing
6. The Village of Woodville will advocate, educate, and develop residential building codes for new construction and existing property upgrades and renovations to develop consistent quality of goods and construction in the village.	Deleted
BALLVILLE TOWNSHIP	
1. Ballville Township will develop projects to lessen the damages to property from flooding.	Ongoing; in county strategies
2. Ballville Township will educate the community about the notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
3. Ballville Township will establish sites to be used as shelters, comfort stations, and service centers during disasters and will strive to equip these sites with the services and equipment necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing; in county strategies
4. Ballville Township will advocate and support the construction of safe rooms for residents who live in mobile homes, manufactured homes, apartments, condominiums, or other locations where adequate shelter is not available during tornadoes or other wind-related events.	Ongoing; in county strategies
5. Ballville Township will work to identify and mitigation shoreline erosion along riverbanks, especially along the Sandusky River, where homes and other structures are put at risk due to deterioration of the property adjacent to the waterway through slope erosion.	Ongoing; in county strategies

Strategy	Status
6. Ballville Township will advocate, educate, and develop residential building codes for new construction and existing property upgrades and renovations to develop consistent quality of goods and construction in the township.	Deleted
7. Ballville Township will advocate and educate its residents about proper maintenance of privately owned waterways, culverts, trees and vegetation, and buildings so storm damages are minimized.	Completed
GREEN CREEK TOWNSHIP	
1. Green Creek Township will develop projects to lessen the damages to property from flooding.	Completed
2. Green Creek Township will educate the community about the notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
3. Green Creek Township will establish sites to be used as shelters, comfort stations, and service centers during disasters and will strive to equip these sites with the services and equipment necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing; in county strategies
4. Green Creek Township will advocate and support the construction of safe rooms for residents who live in mobile homes, manufactured homes, apartments, condominiums, or other locations where adequate shelter is not available during tornadoes or other wind-related events.	Ongoing; in county strategies
JACKSON TOWNSHIP	
1. Jackson Township will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Ongoing; in county strategies
2. Jackson Township will educate property owners about and advocate for proper regular maintenance practices that result in preventing excessive damages to structures during storms, such as ditch bank maintenance, trimming trees, and clearing fallen or dead vegetation from streams and waterways.	Completed
3. Jackson Township will develop projects to lessen damages to property from flooding that might include acquisition and relocation, elevation, and/or diversion and retention of water.	Ongoing; in county strategies
4. Jackson Township will work to establish shelters for use during evacuations and severe storms or power outages that will provide respite and safety for residents.	Ongoing; in county strategies
5. Jackson Township will support the construction of safe rooms for mobile home, manufactured home, apartment and condominium, and other structures that lack underground or sub-surface shelter for tornadoes and other weather incidents.	Ongoing; in county strategies
6. Jackson Township will participate in and support outreach education to promote personal preparedness of residents regarding natural disasters and the risks associated with them.	Completed
MADISON TOWNSHIP	
1. Madison Township will work to lessen the effects of flooding on the village and township.	Ongoing; in county strategies
2. Madison Township will work to improve construction practices so that new construction does not contribute to damages during storms and disasters.	Deleted
3. Madison Township will support, advocate, and install alternate power sources at critical facilities when funding is available to cover such costs.	Completed

Strategy	Status
4. Madison Township will support, advocate, and facilitate the use of public structures for sheltering and protective actions for residents.	Ongoing; in county strategies
5. Madison Township will support and implement improvements to warning and notification systems.	Completed
6. Madison Township will support and participate in a countywide storm water planning effort to more effectively manage runoff and excessive rainfall.	Deleted
RICE TOWNSHIP	
1. Rice Township will investigate and implement means to create and provide safe rooms for residents who live in mobile homes, homes built on concrete slabs, and other structures that lack storm shelters used as protection in wind and other severe storms.	Ongoing; in county strategies
2. Rice Township will advocate and support the development and/or maintenance of shelters for residents during tornadoes, windstorms, and other dangerous weather events.	Ongoing; in county strategies
3. Rice Township will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
4. Rice Township will educate the community about evacuation procedures and how to identify shelter locations, comfort stations, and service centers during disasters	Completed
RILEY TOWNSHIP	
1. Riley Township will work to reduce the effects of flooding and flash flooding in the township.	Ongoing; in county strategies
2. Riley Township will investigate and implement means to create and provide safe rooms for residents who live in mobile homes, homes built on concrete slabs, and other structures that lack storm shelters used as protection in wind and other severe storms.	Ongoing; in county strategies
3. Riley Township will establish sites to be used as shelters, comfort stations, and service centers during disasters, and will strive to equip these sites with the features necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing; in county strategies
4. Riley Township will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
SANDUSKY TOWNSHIP	
1. Sandusky Township will develop projects to lessen the damages to property from flooding.	Ongoing; in county strategies
2. Sandusky Township will educate the community about the notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
3. Sandusky Township will establish sites to be used as shelters, comfort stations, and service centers during disasters and will strive to equip these sites with the services and equipment necessary to adequately serve the community during storms, power outages, and other disasters.	Ongoing; in county strategies
4. Sandusky Township will advocate and support the construction of safe rooms for residents who live in mobile homes, manufactured homes, apartments,	Ongoing; in county strategies

Strategy	Status
condominiums, or other locations where adequate shelter is not available during tornadoes or other wind-related events.	
5. Sandusky Township will work to identify and mitigation shoreline erosion along riverbanks, especially along the Sandusky River, where homes and other structures are put at risk due to deterioration of the property adjacent to the waterway through slope erosion.	Ongoing; in county strategies
6. Sandusky Township will advocate, educate, and support enforcement of zoning regulations for new construction and existing property upgrades and renovations to ensure proper use of land in the jurisdiction.	Deleted
7. Sandusky Township will advocate and educate its residents about proper maintenance of privately owned waterways, culverts, trees and vegetation, and buildings so storm damages are minimized.	Completed
SCOTT TOWNSHIP	
1. Scott Township will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
2. Scott Township will educate property owners about and advocate for proper regular maintenance practices that result in preventing excessive damages to structures during storms, such as ditch bank maintenance, trimming trees, and clearing fallen or dead vegetation from streams and waterways.	Completed
3. Scott Township will develop projects to lessen damages to property from flooding that might include acquisition and relocation, elevation, and/or diversion and retention of water.	Ongoing; in county strategies
4. Scott Township will work to establish shelters for use during evacuations and severe storms or power outages that will provide respite and safety for residents.	Ongoing; in county strategies
5. Scott Township will support the construction of safe rooms for mobile home, manufactured home, apartment and condominium, and other structures that lack underground or sub-surface shelter for tornadoes and other weather incidents.	Ongoing; in county strategies
6. Scott Township will participate in and support outreach education to promote personal preparedness of residents regarding natural disasters and the risks associated with them.	Completed
TOWNSEND TOWNSHIP	
1. Townsend Township will investigate and implement means to create and provide safe rooms for residents who live in mobile homes, homes built on concrete slabs, and other structures that lack storm shelters used as protection in wind and other severe storms.	Ongoing; in county strategies
2. Townsend Township will advocate and support the development and/or maintenance of shelters for residents during tornadoes, windstorms, and other dangerous weather events.	Ongoing; in county strategies
3. Townsend Townships will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
4. Townsend Township will work to minimize the effects of flooding, including karst flooding, on properties in the township through acquisition, demolition, and relocation projects.	Ongoing; in county strategies
WASHINGTON TOWNSHIP	

Strategy	Status
1. Washington Township will educate the community about notification systems that warn residents of impending disasters and the actions they should take immediately to protect themselves and their property.	Completed
2. Washington Township will work to reduce the effects of flash and riverine flooding.	Ongoing; in county strategies
3. Washington Township will advocate and support the development and/or maintenance of shelters for residents during tornadoes, windstorms, and other dangerous weather events.	Ongoing; in county strategies
4. Washington Township will advocate for practices by landowners that cause sustainable resistance of their properties to storm damage.	Completed
WOODVILLE TOWNSHIP	
1. Woodville Township will identify locations and develop plans for community gathering locations throughout the village to provide residents with shelter, information, and respite services during weather related events or extended power outages.	Ongoing; in county strategies
2. Woodville Township will work to lessen the effects of flooding and flash flooding on properties in the township.	Ongoing; in county strategies
3. Woodville Township will strive to create hardened electrical service to critical facilities through acquisition and installation of alternate power sources.	Completed
4. Woodville Township will continue to distribute disaster awareness and preparedness materials to residents and workers to lessen casualties due to disaster impact.	Completed
5. Woodville Township will work to harden emergency communications capacity to insure adequate and effective response to disasters.	Ongoing; in county strategies
6. Woodville Township will advocate, educate, and develop residential building codes for new construction and existing property upgrades and renovations to develop consistent quality of goods and construction in the township.	Deleted
YORK TOWNSHIP	
1. York Township will develop projects to lessen the damages to property from flooding.	Ongoing; in county strategies
2. York Township will continue to research, manage, and mitigate Karst formation effects that cause flooding of properties in the city and township.	Ongoing; in county strategies
3. York Township will work with utility providers to harden utility services and to prevent excessive outages during storms and inclement weather.	Completed
4. York Township will consider development of a comprehensive plan for land use within the jurisdiction, taking into account the consequences of development and the effect on existing properties and businesses, as well as the consequences on the communities downstream.	Ongoing; in county strategies
5. York Township will work to improve sheltering and protection of residents during severe storms.	Ongoing; in county strategies
6. York Township will work to improve communications and warning systems for the protection of residents.	Completed

3.2 RISK PRIORITIES

The Hazard Identification and Risk Assessment provides a detailed explanation of the hazards and risks identified by Sandusky County. This strategy section builds on that information by identifying mitigation strategies that would reduce vulnerability to the identified hazards. When developing and prioritizing strategies, participants considered actions that would benefit the greatest number of people and considered how the strategy would be funded. In some cases, funding would come from a jurisdiction's general budget while others would require special funding, including state and federal grants. Ultimately, strategies were prioritized based on the hazard rank in the HIRA. The hazards were ranked using a comprehensive process that included frequency, response duration, speed of onset, magnitude, business impact, human impact, and property impact.

For each jurisdiction, a goal related to each specific hazard was developed. Within each goal, multiple mitigation strategies, or objectives, were created based on the proposed actions to reduce vulnerability. When prioritizing the strategies, the planning team considered cost of implementation and feasibility in completing the action. In general, strategies that were less expensive or easier to implement were prioritized higher because they were more likely to be completed. Projects requiring state or federal grant funding, extensive multi-agency collaboration, or other more complicated processes were considered lower priority because they would take more time to complete.

At strategy review meetings and during the final plan review phase, jurisdictions and stakeholders had the opportunity to revise strategies and adjust the prioritization. The final strategies presented in this section reflect those adjustments and revisions.

3.3 MITIGATION GOALS AND STRATEGIES

Mitigation strategies were developed based on input from planning team members, jurisdiction representatives, and stakeholders. This section identifies the mitigation goals and strategies for the county and each incorporated jurisdiction, along with the priority, action type, lead agency, timeline, and potential funding source for to each. While strategies are listed by jurisdiction for planning purposes, a specific strategy may be delegated to another entity, such as a special district, nonprofit organization, or alternate community partner, if it becomes an actionable project.

Strategy Descriptors

When developing strategies, the planning team considered who would be responsible for leading mitigation efforts, how the work would be funded, and in what order jurisdictions would address potential actions. These elements are defined below and identified for each strategy. Some of this information may change over the five-year life of this plan and as strategies are implemented.

Priority: Jurisdictions ranked hazards according to local priorities. Goals are listed alphabetically by hazard to simplify use of the plan. Jurisdictions will address strategies in order of priority whenever possible. For example, if flood is the top hazard in a community, flood strategies will be considered the highest priority. Strategies may be completed in any order, however. This is especially likely when outside funding or grants are necessary to execute a project.

Action Type: Each strategy is assigned to a type category based on the activity described:

- Natural Resource Protection – Reduce the impacts of natural hazard by preserving or restoring natural areas
- Prevention – Avoid hazard problems or stop impact from worsening
- Property Protection – Protect structures by modifying or strengthening building to withstand impact
- Public Information – Advise the public about hazards, hazardous areas, and mitigation techniques to protect people and property
- Structurally Engineered Project – Lessen the impact of a hazard by modifying the environment or progression of the hazard event through designed and engineered projects
- Public Safety Enhancement – Improve, enhance, update or expand the services or support of services provided by law enforcement, fire departments and/or emergency medical services

Lead Agency: The entity charged with ensuring that officials look for opportunities to complete the strategy over the five-year planning cycle. This agency may not execute the strategy or provide project oversight but coordinates the overall effort to initiate the activity.

Timeline: The timeframe in which a mitigation strategy could realistically be implemented. The actual time frame may vary from what is described in this plan, depending on funding, grant opportunities, or changes in priorities.

Funding Source: The most likely funding sources for the strategy.

- FMA – Flood Mitigation Assistance Grant
- PDM – Pre-Disaster Mitigation Grant
- HMGP – Hazard Mitigation Grant Program
- SRL – Severe Repetitive Loss Grant
- RFC – Repetitive Flood Claims Program
- ICC – Increased Cost of Compliance (including rate increases or premiums)
- LOC – Local Funds
- ST – State Funds
- Other (including private funds and non-governmental agency funding)

3.3.1 Sandusky County

Table 3-3: Sandusky County Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD: Sandusky County will take action to reduce the effects of all types of flooding.					
1. Construct, modify and/or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, pumps, etc.) to lessen the effects of all types of flooding.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Elevate structures (buildings, roadways, bridges, culverts etc.) to remove them from flood-prone areas and install pumps to facilitate water removal where needed.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
3. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	EMA Director	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
4. Utilize channel diversion or channel modification (deepening or widening) to re-route water or increase capacity and reduce flooding.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
5. Clear debris, fallen trees, excess sediment, and other impediments to water movement from waterways to improve flow.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
6. Manage stream flow through channelization, sedimentation removal, debris and obstruction removal, and stream ecology management practices.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; COG
7. Collaborate with watershed and conservancy districts and other counties that share an interest in common waterways to facilitate cleaning, maintaining, and correcting watershed problems.					
	Natural Resource Protection	Floodplain Manager	06-09-2020	06-08-2025	LOC
8. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	County Engineer	06-09-2020	06-08-2025	LOC
9. Develop methods to clear the Sandusky River of ice jams where concrete rebar posts cause ice to develop, eventually block and jam the river from flowing, and then break off and cause damage to structures within and near the river.					
	Prevention	County Engineer	06-09-2020	06-08-2025	LOC
10. Maintain membership with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Floodplain Manager	06-09-2020	06-08-2025	LOC

Priority	Action Type	Lead	Start Date	End Date	Funding
11. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC
12. Identify repetitive loss and severe repetitive loss structures in the jurisdiction, and advocate for mitigation actions regarding these properties.					
	Prevention	EMA Director	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
13. Conduct a study to understand the flow of storm water in the whole county, and establish and support efforts that result in the design of effective flood prevention utilities.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
14. Work with FEMA to ensure the accuracy of FEMA flood maps so those maps can be used consistently to make appropriate development and construction decisions.					
	Prevention	County Engineer	06-09-2020	06-08-2025	LOC
15. Add rapidly deployable signs to mark flooded roadways quickly.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
16. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
17. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
18. Utilize biotechnical methods (placement of willow posts, hardwood tree plantings, fascines, brush layering, evergreen revetments, log revetments, tree kickers, lunker structures, or placed rocks as examples) to minimize the deterioration or destruction of stream banks due to excessive flow.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
19. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
20. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
21. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
22. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
23. Maintain and improve soil quality through crop rotation, crop residue management, contour buffer strips, contour farming and strip-cropping, use of cover crops, installation of field borders, rotation grazing, pasture planting, establishment of grassy waterways, grade stabilization structures, water and sediment control basins, critical area planting, diversion, terracing, manure storage and runoff control, nutrient management, pest management, well abandonment, riparian buffers, wetland restoration, windbreaks, woodlot management, tree planting, and creation of upland wildlife habitat.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
24. Encourage surface runoff and chemical residue management through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like use of catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
25. Advocate for, support, and implement slope protection actions along waterways and other vulnerable areas with the purpose of protecting not only the shoreline but also the constructed improvements to the property.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; FMA
26. Establish/enforce land use planning standards to manage new development in areas of high risk, such as flood plains and high-risk embankments, to reduce property losses due to natural hazards or the development of brownfields.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND): Sandusky County will take action to reduce the consequences and damages from severe thunderstorms, windstorms, and other severe weather.					
27. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, slab-built homes, etc.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
28. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
29. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
30. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.					
	Prevention	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
31. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC

Priority	Action Type	Lead	Start Date	End Date	Funding
32. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
33. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
	Public Information	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
34. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
35. Educate the community about warnings and notifications and the actions they should take when a one is issued.					
	Public Information	EMA Director	06-09-2020	06-08-2025	LOC
36. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	EMA Director	06-09-2020	06-08-2025	LOC
37. Educate the public about what to do in emergency situations such as tornado/severe thunderstorm/wind storm/earthquake/flood/flash flood/blizzard.					
38. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE: Sandusky County will reduce the effects of various forms of land subsidence including, but not limited to, erosion, water damage, the effects of karst formations, and land that washes away due to water movement.					
39. Provide programs that reduce erosion and sedimentation along shorelines, riverbanks, ditch banks, road berms, and areas that wash away					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
40. Support and implement slope protection actions along waterways and other vulnerable areas where natural occurrences endanger property, structures, or where other geological vulnerabilities exist.					
	Natural Resource Protection	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
41. Develop collaborative efforts with environmental advocates to accurately identify risk to groundwater resources in the county, and collaborate to prevent contamination of the groundwater.					
	Natural Resource Protection	Health Commissioner	06-09-2020	06-08-2025	LOC
42. Implement programs to protect property near karst areas, quarries, and other land formations that can result in flooding, sinkhole formations, landslides, or other physical changes that are incompatible with community development and an owner's use of their property.					
	Property Protection	Floodplain Manager	06-09-2020	06-08-2025	PDM; HMGP
43. Advocate for and support efforts that control erosion and sediment degradation, especially for properties used in agricultural production or that are out in the open and lack fence rows, wooded areas, or vegetative cover to protect topsoil and nutrients from damage.					
	Natural Resource Protection	SWCD Director	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
44. Encourage the development of specific and accurate mapping of karst areas that interface the geologic characteristics with soil types, as well as identifying abandoned and functioning wells and mines of various types to more accurately predict where sink holes or structural problems are likely to occur.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
45. Develop collaborative efforts with environmental and water quality advocates or regulators to accurately determine risk to groundwater resources in the county and work together to effectively prevent contamination of the ground water or existing wells by requiring appropriate capping of unused wells and mitigation of damages to the groundwater through karst openings or sinkholes.					
	Natural Resource Protection	Health Commissioner	06-09-2020	06-08-2025	PDM; HMGP; COG
EARTHQUAKE: Sandusky County will take action to assess and mitigate the effects of potential earthquakes.					
46. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC
47. Identify future development and current management practices that will reduce vulnerability to a less-expected strong earthquake within 25 miles of any part of the county.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS: Sandusky County will take action to prevent, manage and reduce the consequences from spills and leaks of hazardous materials.					
48. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	County Engineer	06-09-2020	06-08-2025	LOC
49. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
50. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC
51. Identify and develop a plan to manage nuclear fallout in the incidence of a nuclear general emergency at a local nuclear power plant.					
		EMA Director	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE: Sandusky County will act to harden, improve, and replace various forms of infrastructure to reduce damages and consequences from storms and disasters.					
52. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs and sidewalks or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
53. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
54. Maintain, repair, and replace dams and upground reservoirs that are structurally compromised or that place the public in danger during a structural failure.					
	Structurally Engineered Project	EMA Director	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
55. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation, including completion of pavement repairs and replacements and subgrade improvements due to soft soils.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
56. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
57. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
58. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
59. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
60. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
61. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
62. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP
63. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; develop vehicle charging stations, and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY: Sandusky County will take action to protect the sources of water so that a safe potable water supply is available for county residents.					
64. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; COG
65. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Health Commissioner	06-09-2020	06-08-2025	PDM; HMGP; COG

Priority	Action Type	Lead	Start Date	End Date	Funding
66. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	PDM; HMGP; COG
67. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					
	Structurally Engineered Project	County Engineer	06-09-2020	06-08-2025	PDM; HMGP; COG
68. Support the implementation of measures to manage distressed watersheds in the county and advocate for support programs to help farmers implement these regulations and measures while maintaining the agricultural economic well-being.					
	Natural Resource Protection	SWCD Director	06-09-2020	06-08-2025	PDM; HMGP; COG
DROUGHT/EXTREME HEAT: Sandusky County will take steps to improve resilience to the effects of drought and extreme temperatures.					
69. Develop plans to distribute potable bottled water and bulk water supplies for periods of water shortages or if a large-scale contamination of raw water supplies were to occur.					
	Property Protection	Health Commissioner	06-09-2020	06-08-2025	LOC
INVASIVE SPECIES: Sandusky County will take action to reduce the incidence of invasive species and to mitigate the negative consequences of them on property and natural resources.					
70. Develop and implement public information procedures to alert property owners and residents to invasive species, including plants, insects, vermin, aquatic organisms, and undesirable fish, and the risks to personal property that occur.					
	Property Protection	Health Commissioner	06-09-2020	06-08-2025	LOC
71. Establish plans that outline roles and responsibilities of government entities responding to an invasive species that endangers the public welfare or property.					
	Property Protection	Health Commissioner	06-09-2020	06-08-2025	LOC
SEVERE WINTER STORMS: Sandusky County will take action to mitigate the negative effects and consequences of severe winter storms and blizzards.					
72. Establish locations to be used as warming centers during periods of extreme cold, utility outages, or other interruptions of heat.					
	Property Protection	EMA Director	06-09-2020	06-08-2025	LOC

3.3.2 Bellevue

Table 3-4: Bellevue Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
3. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
4. Manage stream flow through channelization, sedimentation removal, debris and obstruction removal, and stream ecology management practices.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
5. Collaborate with watershed and conservancy districts and other counties that share an interest in common waterways to facilitate cleaning, maintaining, and correcting watershed problems.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
6. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	LOC
7. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
8. Add rapidly deployable signs to mark flooded roadways quickly.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
9. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
10. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
11. Utilize biotechnical methods (placement of willow posts, hardwood tree plantings, fascines, brush layering, evergreen revetments, log revetments, tree kickers, lunker structures, or placed rocks as examples) to minimize the deterioration or destruction of stream banks due to excessive flow.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
12. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
13. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
14. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
15. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
16. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
17. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
18. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
19. Support implementation of construction standards that address wind resistant building materials and roofing types for structures.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
20. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC

Priority	Action Type	Lead	Start Date	End Date	Funding
21. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
22. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
23. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
24. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	LOC
25. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE					
26. Provide programs that reduce erosion and sedimentation along shorelines, riverbanks, ditch banks, road berms, and areas that wash away.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
27. Support and implement slope protection actions along waterways and other vulnerable areas where natural occurrences endanger property, structures, or where other geological vulnerabilities exist.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
28. Implement programs to protect property near karst areas, quarries, and other land formations that can result in flooding, sinkhole formations, landslides, or other physical changes that are incompatible with community development and an owner's use of their property.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
EARTHQUAKE					
29. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
30. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
31. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
32. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
33. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
34. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
35. Maintain, repair, and replace dams and upground reservoirs that are structurally compromised or that place the public in danger during a structural failure.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
36. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
37. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
38. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
39. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
40. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
41. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
42. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
43. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
44. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
45. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
46. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
47. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
48. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.3 Burgoon

Table 3-5: Burgoon Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Elevate structures (buildings, roadways, bridges, culverts etc.) to remove them from flood-prone areas.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
3. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
4. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
5. Collaborate with watershed and conservancy districts and other counties that share an interest in common waterways to facilitate cleaning, maintaining, and correcting watershed problems.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	LOC
6. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
7. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
8. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
9. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
10. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
	12. Maintain and improve soil quality through crop rotation, crop residue management, contour buffer strips, contour farming and strip-cropping, use of cover crops, installation of field borders, rotation grazing, pasture planting, establishment of grassy waterways, grade stabilization structures, water and sediment control basins, critical area planting, diversion, terracing, manure storage and runoff control, nutrient management, pest management, well abandonment, riparian buffers, wetland restoration, windbreaks, woodlot management, tree planting, and creation of upland wildlife habitat.				
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
	13. Encourage surface runoff and chemical residue management through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like use of catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.				
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
	14. Adopt, support, and enforce zoning and building codes that prevent construction in flood zones, and that support construction practices that mitigate damage due to flood for structures built in vulnerable areas.				
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
	15. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	16. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	17. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
	18. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.				
	Prevention	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	19. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	20. Advocate for businesses to carry adequate and appropriate insurance to cover disaster losses to the business proprietor or owner.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
	21. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.				
	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	22. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.				
	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	23. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE/EROSION/LANDSLIDE					

Priority	Action Type	Lead	Start Date	End Date	Funding
24. Provide programs that reduce erosion and sedimentation along ditch banks, road berms, and areas that wash away.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
25. Develop collaborative efforts with environmental advocates to accurately identify risk to groundwater resources in the county, and collaborate to prevent contamination of the groundwater.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	LOC
EARTHQUAKE					
26. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
27. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
28. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
29. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
30. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
31. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
32. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
33. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
34. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
35. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
36. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
37. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
38. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; COG
39. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.4 Clyde

Table 3-6: Clyde Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Utilize channel diversion or channel modification (deepening or widening) to re-route water or increase capacity and reduce flooding.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
3. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
4. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	City Manager	06-09-2020	06-08-2025	LOC
5. Support the creation of permits, approvals and other programs that include a cost-recovery fee to support the mitigation efforts being enforced.					
	Prevention	City Manager	06-09-2020	06-08-2025	LOC
6. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	City Manager	06-09-2020	06-08-2025	LOC
7. Develop and implement a storm water management program to minimize the storm related damages to properties and improvements in the jurisdiction.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
8. Conduct proper maintenance of storm sewer systems to facilitate timely and effective drainage in all areas.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
9. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
10. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
12. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
13. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
14. Encourage surface runoff and chemical residue management through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like use of catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
15. Advocate for, support, and implement slope protection actions along waterways and other vulnerable areas with the purpose of protecting not only the shoreline but also the constructed improvements to the property.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; FMA
16. Adopt, support, and enforce zoning and building codes that prevent construction in flood zones, and that support construction practices that mitigate damage due to flood for structures built in vulnerable areas.					
	Prevention	City Manager	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
17. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
18. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
19. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
20. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.					
	Prevention	City Manager	06-09-2020	06-08-2025	PDM; HMGP
21. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
22. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
23. Support the hardening of all utilities so that heat, electricity, communication, and other lifeline services are maintained during a disaster.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
24. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Public Information	City Manager	06-09-2020	06-08-2025	PDM; HMGP
25. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	City Manager	06-09-2020	06-08-2025	PDM; HMGP
26. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	City Manager	06-09-2020	06-08-2025	LOC
27. Work to provide necessary services to populations with functional needs during disasters.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
28. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE					
29. Provide programs that reduce erosion and sedimentation along shorelines, riverbanks, ditch banks, road berms, and areas that wash away.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
30. Encourage the development of specific and accurate mapping of karst areas that interface the geologic characteristics with soil types, as well as identifying abandoned and functioning wells and mines of various types to more accurately predict where sink holes or structural problems are likely to occur.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
31. Develop collaborative efforts with environmental and water quality advocates to accurately determine risk to groundwater resources in the county and work together to effectively prevent contamination of the ground water or existing wells.					
	Natural Resource Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; COG
EARTHQUAKE					
32. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
33. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
34. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
35. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	City Manager	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
36. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
37. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
38. Maintain, repair, and replace dams and upground reservoirs that are structurally compromised or that place the public in danger during a structural failure.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
39. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
40. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
41. Advocate and require where possible that electrical lines and other above-ground utility installation to be converted to underground utilities for resistance to wind, ice and other storm damage.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
42. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
43. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
44. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
45. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
46. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP
47. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
48. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; COG
49. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	City Manager	06-09-2020	06-08-2025	PDM; HMGP; COG
50. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					
	Structurally Engineered Project	City Manager	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.5 Fremont

Table 3-7: Fremont Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
3. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
4. Manage stream flow through channelization, sedimentation removal, debris and obstruction removal, and stream ecology management practices.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
5. Collaborate with watershed and conservancy districts and other counties that share an interest in common waterways to facilitate cleaning, maintaining, and correcting watershed problems.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
6. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	LOC
7. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	LOC
8. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
9. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
10. Utilize biotechnical methods (placement of willow posts, hardwood tree plantings, fascines, brush layering, evergreen revetments, log revetments, tree kickers, lunker structures, or placed rocks as examples) to minimize the deterioration or destruction of stream banks due to excessive flow.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
12. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
13. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
14. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; FMA
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
15. Adopt, support, and enforce zoning and building codes that prevent construction in flood zones, and that support construction practices that mitigate damage due to flood for structures built in vulnerable areas.					
	Prevention	Safety Service Director	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
16. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
17. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
18. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
19. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
20. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
21. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
22. Educate the community about warnings and notifications and the actions they should take when a one is issued.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	LOC
23. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	Safety Service Director	06-09-2020	06-08-2025	LOC
24. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE					
25. Provide programs that reduce erosion and sedimentation along shorelines, riverbanks, ditch banks, road berms, and areas that wash away.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
26. Support and implement slope protection actions along waterways and other vulnerable areas where natural occurrences endanger property, structures, or where other geological vulnerabilities exist.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
EARTHQUAKE					
27. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
28. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
729. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
30. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
31. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
32. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
33. Maintain, repair, and replace dams and upground reservoirs that are structurally compromised or that place the public in danger during a structural failure.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
34. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
35. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
36. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
37. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
38. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
39. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
40. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
41. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
42. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
43. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
44. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
45. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
46. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					
	Structurally Engineered Project	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG
47. Support the implementation of measures to manage distressed watersheds in the county and advocate for support programs to help farmers implement these regulations and measures while maintaining the agricultural economic well-being.					
	Natural Resource Protection	Safety Service Director	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.6 Gibsonburg

Table 3-8: Gibsonburg Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
2. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
3. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
4. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
5. Require flood insurance coverage be purchased by owners for properties that lay within identified flood zones or flood plains.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
6. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
7. Add rapidly deployable signs to mark flooded roadways quickly.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
8. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
9. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
10. Utilize biotechnical methods (placement of willow posts, hardwood tree plantings, fascines, brush layering, evergreen revetments, log revetments, tree kickers, lunker structures, or placed rocks as examples) to minimize the deterioration or destruction of stream banks due to excessive flow.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
12. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
13. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
14. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
15. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
16. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
17. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
18. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
19. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
20. Educate the community about the protective actions they should take when an emergency notice is issued.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Public Information	Village Administrator	06-09-2020	06-08-2025	LOC
21. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE/EROSION/LANDSLIDE					
22. Implement programs to protect property near karst areas, quarries, and other land formations that can result in flooding, sinkhole formations, landslides, or other physical changes that are incompatible with community development and an owner's use of their property.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
EARTHQUAKE					
23. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
24. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
25. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
26. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
27. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
28. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
29. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
30. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
31. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
32. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
33. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
34. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
35. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
36. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
37. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
38. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
39. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
40. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
41. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
42. Support the implementation of measures to manage distressed watersheds in the county and advocate for support programs to help farmers implement these regulations and measures while maintaining the agricultural economic well-being.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.7 Green Springs

Table 3-9: Green Springs Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
22	Prevention	Mayor	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
2. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
1	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
3. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
9	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
4. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
8	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
5. Support implementation of construction standards that require wind resistant building materials and roofing types for structures such as industry and critical structures.					
10	Prevention	Mayor	06-09-2020	06-08-2025	PDM; HMGP
6. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					
2	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
7. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
7	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
8. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
3	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
9. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
4	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
10. Educate the community about the protective actions they should take when an emergency notice is issued.					
5	Public Information	Mayor	06-09-2020	06-08-2025	LOC
11. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
6	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
12. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
19	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
13. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					

Priority	Action Type	Lead	Start Date	End Date	Funding
20	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
14. Develop training collaboration with entities like railroads that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
21	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
15. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
11	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
16. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
12	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
17. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
14	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
18. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
13	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
19. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
15	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
20. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
16	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
21. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
17	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
22. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
18	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP

3.3.8 Helena

Table 3-10: Helena Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Elevate structures (buildings, roadways, bridges, culverts etc.) to remove them from flood-prone areas.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
3. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
4. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
5. Collaborate with watershed and conservancy districts and other counties that share an interest in common waterways to facilitate cleaning, maintaining, and correcting watershed problems.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	LOC
6. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
7. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
8. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
9. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
10. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Advocate the use of green materials and practices in development, such as green parking policies, green roof materials, and alternate paving materials that promote absorption instead of runoff.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
	12. Maintain and improve soil quality through crop rotation, crop residue management, contour buffer strips, contour farming and strip-cropping, use of cover crops, installation of field borders, rotation grazing, pasture planting, establishment of grassy waterways, grade stabilization structures, water and sediment control basins, critical area planting, diversion, terracing, manure storage and runoff control, nutrient management, pest management, well abandonment, riparian buffers, wetland restoration, windbreaks, woodlot management, tree planting, and creation of upland wildlife habitat.				
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
	13. Encourage surface runoff and chemical residue management through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like use of catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.				
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; FMA
	14. Adopt, support, and enforce zoning and building codes that prevent construction in flood zones, and that support construction practices that mitigate damage due to flood for structures built in vulnerable areas.				
	Prevention	Mayor	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
	15. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	16. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	17. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
	18. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.				
	Prevention	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	19. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.				
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	20. Advocate for businesses to carry adequate and appropriate insurance to cover disaster losses to the business proprietor or owner.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
	21. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.				
	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	22. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.				
	Public Information	Mayor	06-09-2020	06-08-2025	PDM; HMGP
	23. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.				
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE/EROSION/LANDSLIDE					

Priority	Action Type	Lead	Start Date	End Date	Funding
24. Provide programs that reduce erosion and sedimentation along ditch banks, road berms, and areas that wash away					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
25. Develop collaborative efforts with environmental advocates to accurately identify risk to groundwater resources in the county, and collaborate to prevent contamination of the groundwater.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	LOC
EARTHQUAKE					
26. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
27. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
28. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
29. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					
	Property Protection	Mayor	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
30. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
31. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
32. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
33. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
34. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
35. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
36. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	Mayor	06-09-2020	06-08-2025	PDM; HMGP
37. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
38. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; COG
39. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Mayor	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.8 Lindsey

Table 3-10: Lindsey Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
2. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
3. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
4. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
5. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
6. Add rapidly deployable signs to mark flooded roadways quickly.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
7. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
8. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
9. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA

Priority	Action Type	Lead	Start Date	End Date	Funding
	10. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.				
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
	11. Maintain and improve soil quality through crop rotation, crop residue management, contour buffer strips, contour farming and strip-cropping, use of cover crops, installation of field borders, rotation grazing, pasture planting, establishment of grassy waterways, grade stabilization structures, water and sediment control basins, critical area planting, diversion, terracing, manure storage and runoff control, nutrient management, pest management, well abandonment, riparian buffers, wetland restoration, windbreaks, woodlot management, tree planting, and creation of upland wildlife habitat.				
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
	12. Encourage surface runoff and chemical residue management through techniques such as installation of grassy waterways, creation of infiltration basins and trenches, porous pavement installation, filtration techniques like use of catch basin inserts, sand and organic filters, rain gardens and vegetated filter strips.				
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
	13. Establish/enforce land use planning standards to limit/prohibit new development in areas of high risk, such as flood plains and high-risk embankments, to reduce property losses due to natural hazards.				
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
	14. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.				
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
	15. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.				
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
	16. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.				
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
	17. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.				
	Prevention	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
	18. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.				
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC

Priority	Action Type	Lead	Start Date	End Date	Funding
19. Research and identify resources for affordable debris disposal after storms, possibly through creation of special funding to pay for landfill fees or finding facilities that will receive debris for reduced rates.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
20. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
21. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
22. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	LOC
23. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
LAND SUBSIDENCE/EROSION/LANDSLIDE					
24. Provide programs that reduce erosion and sedimentation along shorelines, riverbanks, ditch banks, road berms, and areas that wash away					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
25. Support and implement slope protection actions along waterways and other vulnerable areas where natural occurrences endanger property, structures, or where other geological vulnerabilities exist.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
EARTHQUAKE					
26. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
27. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
28. Advocate for funding and conducting additional first responder training to cover not only highway hazardous materials incidents but also pipeline and intermodal systems.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
29. Develop training collaboration with entities that bring new substances to communities through construction of additional highways, railroads, or pipelines.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
30. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
31. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
32. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
33. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
34. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
35. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
85. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
36. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved or redundant capabilities to communicate at all times.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
37. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
38. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					

Priority	Action Type	Lead	Start Date	End Date	Funding
39. Advocate for improvements to water treatment plants to include enhanced testing and monitoring, and to improve treatment capabilities.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
40. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
41. Support the implementation of measures to manage distressed watersheds in the county and advocate for support programs to help farmers implement these regulations and measures while maintaining the agricultural economic well-being.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG

3.3.8 Woodville

Table 3-10: Woodville Mitigation Strategies

Priority	Action Type	Lead	Start Date	End Date	Funding
FLOOD					
1. Construct or maintain water control structures (reservoirs, retention/detention ponds, dams, levees, dikes, floodwalls, etc.) in new or existing property to lessen the effects of flash and storm sewer back up flooding.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
2. Elevate structures (buildings, roadways, bridges, culverts etc.) to remove them from flood-prone areas.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
3. Utilize acquisition, demolition, and relocation for properties that suffer repetitive flood loss and/or experience repeated damage to structures from all types of flooding.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA; SRL; RFC
4. Clear debris, fallen trees, excess sediment, etc. from waterways to improve flow.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
5. Adopt and/or enforce floodplain, zoning, and building regulations to manage development in areas without regulations or standards; and take part in revision of flood maps, monitoring the need for local construction regulation and maintaining adequate efforts to reduce vulnerability through management of development.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
6. Maintain membership, join, or resolve sanctions with NFIP; establish CRS participation; engage in federal floodplain activities to support flood prevention.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
7. Advocate for all property owners and renters to carry adequate replacement insurance and casualty coverage for their properties even if not located in a floodplain or flood zone.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
8. Add rapidly deployable signs to mark flooded roadways quickly.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
9. Identify and implement means to collect crop debris in runoff water and manage it before it clogs ditches, streams, culverts, and other waterways.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
10. Protect waterway banks and land near waterways from deterioration due to rapid or excessive flow by planting vegetation, installing dormant woody stakes and posts, planting trees, shrubs and grasses along banks and berms, or using deflectors to prevent deterioration, or other similar methods to accomplish the same.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
11. Utilize natural habitats and/or vegetative buffers inside waterways to slow the rapid flow of floodwater and/or hold excess storm water.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
12. Utilize stream bank protection measures such as gabion revetments, riprap revetments, and crib walls, and other structural methods to protect the banks and berms as well as current use of the areas.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
13. Require developers and/or construction crews in urban development zones to use tools such as chemical stabilization, compost blankets, geotextiles to control soil deterioration, mulching of new plantings, seeding and sodding of areas highly vulnerable to rapid surface runoff, installation of grass lined channels, slope diversion for surface runoff, and other methods to reduce the damages to land and property due to heavy and rapid surface runoff or drainage from rainfall or other precipitation or draining water.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; FMA
14. Establish/enforce land use planning standards to limit/prohibit new development in areas of high risk, such as flood plains and high-risk embankments, to reduce property losses due to natural hazards.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
15. Adopt, support, and enforce zoning and building codes that prevent construction in flood zones, and that support construction practices that mitigate damage due to flood for structures built in vulnerable areas.					
	Prevention	Village Administrator	06-09-2020	06-08-2025	LOC
SEVERE STORMS (THUNDERSTORM, TORNADO, WIND)					
16. Support the construction of safe rooms for single- and multi-family homes and areas such as mobile home parks, campgrounds, apartment complexes, condominium neighborhoods, etc.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
17. Repair or retrofit public properties with wind-resistant materials (i.e. metal roofing, siding, wind-resistant glass, etc.) to decrease damage due to wind or other storms.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
18. Maintain trees and vegetation on public property, and remove dead or diseased trees that are vulnerable to wind damage.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
19. Support implementation of construction standards that require wind resistant building materials and roofing types for structures.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
20. Develop agreements for safety shelters to be used for a variety of disaster-related purposes during severe storms and/or evacuations, including areas like stadiums and parks used for recreation, public gatherings, or other assemblies.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
21. Improve and/or maintain warning and notification systems to warn the public about impending dangers and threats.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	LOC; PDM; HMGP
22. Enhance warning and notification systems through improvements to digital technology and other hardware and software used in the operation of warning and notification systems.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
23. Educate the community about warnings and notifications and the actions they should take when a one is issued.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	LOC
24. Educate the community about the protective actions they should take when an emergency notice is issued.					
	Public Information	Village Administrator	06-09-2020	06-08-2025	LOC
25. Work to develop affordable and functional county-wide public safety communication system with the capability for multi-discipline and multi-jurisdictional communication.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; LOC
LAND SUBSIDENCE/EROSION/LANDSLIDE					
26. Develop collaborative efforts with environmental advocates to accurately identify risk to groundwater resources in the county, and collaborate to prevent contamination of the groundwater.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	LOC
EARTHQUAKE					
27. Identify the structures and infrastructure in the county that would likely be damaged or destroyed in an earthquake of moderate to severe magnitude.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
HAZARDOUS MATERIALS					
28. Ensure that signage on highways and roadways is clear and easy to follow to decrease the likelihood of vehicle accidents due to unsure routes of travel.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC
INFRASTRUCTURE					
29. Maintain, repair, upgrade, and/or replace storm sewers and wastewater management systems; add street curbs or replace deteriorating ones; repair or replace stormwater basins.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
30. Ensure that high hazard and classified dams have current emergency plans that identify inundation areas and facilitate emergency actions in the event of a failure					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP

Priority	Action Type	Lead	Start Date	End Date	Funding
31. Maintain, repair, and replace dams and upground reservoirs that are structurally compromised or that place the public in danger during a structural failure.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
32. Improve and repair roadways that are damaged by rapid runoff and heavy precipitation.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
33. Advocate and support improvements to utility systems (distribution lines, generating plants, pumps, filters, and other system components) that result in more dependable, resilient infrastructure for the purpose of maintaining lifelines during disaster response and recovery.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
34. Advocate and require where possible that electrical lines and other above-ground utility installation to be converted to underground utilities for resistance to wind, ice and other storm damage.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
35. Identify alternate/back-up utility resources for use when a primary energy source is compromised (generators, redundant suppliers, etc.).					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
36. Conduct hydrology and hydraulics, storm water and sewer, inundation, and other studies to determine the root cause of flooding and water management problems and vulnerable populations and property.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
37. Maintain, repair, upgrade and or replace water treatment and distribution systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
38. Replace, improve, or create sanitary sewer systems for neighborhoods, subdivisions or jurisdictions to replace septic systems or outdated sewer systems.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
39. Repair, replace, retrofit, or upgrade communications equipment including towers, transmission lines, distribution lines, receivers and transmitters to provide improved ability to communicate at all times.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
40. Replace roadways and streets with deteriorating pavement due to heavy drainage; replace worn bridges and culverts and increase size and span as appropriate.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
41. Develop infrastructure redundancy through the addition of generators, development of alternate power, water, and fuel supplies; and addition of alternate vendors for service and products like portable generators, fuel supplies, bottled water, etc.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP
WATER QUALITY					
42. Advocate for enhanced testing by water treatment plants to improve treatment capabilities.					

Priority	Action Type	Lead	Start Date	End Date	Funding
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
43. Advocate and support continuing research into all causes of water quality issues, including analysis of practices by industrial, personal, manufacturing, and agricultural communities.					
	Natural Resource Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
44. Work for early and pro-active collaboration between jurisdictions regarding spills or leaks into the water supply that will eventually affect water quality in the county.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	PDM; HMGP; COG
45. Develop inter-connected and redundant water systems that are able to switch over when one is contaminated to provide a safe water supply for the population.					
	Structurally Engineered Project	Village Administrator	06-09-2020	06-08-2025	PDM; GMGP; COG
DROUGHT/EXTREME HEAT					
46. Develop plans to distribute potable bottled water and bulk water supplies for periods of water shortages.					
	Property Protection	Village Administrator	06-09-2020	06-08-2025	LOC

3.4 IMPLEMENTATION

The identified mitigation strategies are general actions to reduce the negative impact of disasters and large-scale emergencies. For a strategy to become an actionable item, it must be converted to a specific project with funding, action steps, timelines, and project goals. For example, a project to acquire and demolish a repetitive loss property begins by identifying the specific property to be acquired and securing funding for the project. The property owner must agree to participate in the program and the jurisdiction must accept its share of cost, planning responsibility, and project management roles. Only when all of these pieces are in place can the project become a reality. A similar process must be followed for any of the strategies identified here to become projects.

In some situations, an entity other than the jurisdiction may be the most appropriate organization to initiate, manage, or administer a mitigation project. These entities could include, but are not limited to, park districts, sewer district, water districts, school districts, colleges/universities, non-profit organizations, property owners' associations, and others. In these situations, the jurisdiction and alternate entity can work together to determine the best process to implement the mitigation project, from grant application through project completion. Throughout the project, all codes, requirements, and regulations will be followed regardless of the entity leading the project.

The EMA will monitor progress on these strategies through ongoing communication with jurisdiction officials and stakeholders. When mitigation grants or other funding sources become available, reasonable efforts will be made to notify stakeholders and jurisdiction officials of the funding opportunity so that applications can be submitted. Jurisdictions will also work to identify local funding sources that can be used to address disaster vulnerability. When funding is secured, a detailed project timeline will address the steps necessary to complete the project. Upon completion, the jurisdiction will evaluate project effectiveness and share that information with the EMA and planning team for consideration in developing future projects.

For stakeholders in Sandusky County, the collaboration that occurred while developing these strategies was the most valuable part of the mitigation planning process. The planning process required stakeholders to evaluate hazards and risks in their community through extensive discussion and analysis. The mitigation goals and actions that resulted from these discussions were developed to maximize benefit to the community while minimizing cost. The process required whole community involvement so that all sectors of the community were represented in the planning process. Ultimately, Sandusky County developed comprehensive, relevant, and effective solutions to their unique risks and vulnerabilities. Given the availability of funding, personnel, and support, Sandusky County and its jurisdictions are positioned to move forward and implement these strategies and accomplish their goal of making the county more disaster resilient.