



# Hazard Mitigation Plan

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Trumbull County, Ohio

***Released 2020***

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# **TRUMBULL COUNTY HAZARD MITIGATION PLAN**

**RELEASED 2020**

**FOR THE COUNTY JURISDICTION OF TRUMBULL COUNTY, OHIO AND THE MUNICIPAL  
JURISDICTIONS THEREIN**

# TRUMBULL COUNTY HAZARD MITIGATION PLAN

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## 1.0 INTRODUCTION

### Purpose

The purpose of the mitigation plan is to identify risks and vulnerabilities from hazards that affect Trumbull County, Ohio. With these risks and vulnerabilities identified, local officials can reduce losses of life, injuries, and to limit future damages by developing methods to mitigate or eliminate damages.

### Scope

The *Trumbull County Hazard Mitigation Plan* follows a planning methodology that includes public involvement, a risk assessment for various identified hazards, an inventory of critical facilities and at-risk areas, a mitigation strategy for high-risk hazards, and a method to maintain and update the plan.

### Plan Authority

The *Trumbull County Hazard Mitigation Plan* is “multi-jurisdictional,” meaning that it includes several jurisdictions. Trumbull County stakeholders prepared this plan per federal requirements outlined in the Disaster Mitigation Act of 2000 (DMA2K), which requires communities to formulate a hazard mitigation plan to be eligible for mitigation funds made available through the Federal Emergency Management Agency (FEMA). Section 322 of the Robert T. Stafford Act requires that local jurisdictions develop and submit plans meeting the criteria outlined in 44 CFR Parts 201.6.

When the content of this plan corresponds to a requirement of 44 CFR 201.6, it will include a description of the relevant guidance. The following table lists the requirements of 44 CFR 201.6 and identifies the sections of the plan fulfilling the guidance.

44 CFR 201.6 REQUIREMENTS IN THIS PLAN		
<i>Section</i>	<i>Description</i>	<i>Section in Plan</i>
§ 201.6	Local Mitigation Plans. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the state to provide technical assistance and to prioritize project funding.	Section 1.0 Introduction
§ 201.6(a)(4)	Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.	Section 1.1 The Planning Process



44 CFR 201.6 REQUIREMENTS IN THIS PLAN		
Section	Description	Section in Plan
§ 201.6(b)(1)	An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval	Section 1.1 The Planning Process Section 4.3 Continued Public Involvement
§ 201.6(b)(2)	An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process	Section 1.1 The Planning Process
§ 201.6(b)(3)	Review and incorporate, if appropriate, existing plans, studies, reports, and technical information	Section 1.3 Capabilities Section 1.4 Trends & Predictions Section 4.2 Implementation through Existing Programs
§ 201.6(c)(1)	Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved	Section 1.1 The Planning Process
§ 201.6(c)(2)	A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.	Section 2.0 Risk Assessment
§ 201.6(c)(2)(i)	The risk assessment shall include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.	Section 2.1 Hazards Identification Section 2.3 Hazard Profiles
§ 201.6(c)(2)(ii)	The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008, must also address NFIP insured structures that have been repetitively damaged by floods.	Section 2.3 Hazard Profiles Section 2.4 Hazard Rankings
§ 201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;	Section 2.3 Hazard Profiles
§ 201.6(c)(2)(ii)(B)	The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;	Section 2.3 Hazard Profiles
§ 201.6(c)(2)(ii)(c)	The risk assessment shall provide a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.	Section 1.4 Trends and Predictions
§ 201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.	Section 2.3 Hazard Profiles
§ 201.6(c)(3)	A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.	Section 3.0 Mitigation Strategy
§ 201.6(c)(3)(i)	This section shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.	Section 3.1 Mitigation Goals



44 CFR 201.6 REQUIREMENTS IN THIS PLAN		
Section	Description	Section in Plan
§ 201.6(c)(3)(ii)	This section shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.	Section 3.2 Mitigation Actions
§ 201.6(c)(3)(iii)	This section shall include an action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects and their associated costs.	Section 3.2 Mitigation Actions
§ 201.6(c)(3)(iv)	For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.	Section 3.2 Mitigation Actions
§ 201.6(c)(4)(i)	A plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.	Section 4.1 Monitoring, Evaluating and Updating the Plan
§ 201.6(c)(4)(ii)	A plan maintenance process that includes a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.	Section 4.2 Implementation through Existing Programs
§ 201.6(c)(4)(iii)	A plan maintenance process that includes discussion on how the community will continue public participation in the plan maintenance process.	Section 4.3 Continued Public Involvement
§ 201.6(c)(5)	Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commission, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.	Section 5.0 Appendix 6
§ 201.6(d)(1)	Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.	Section 5.0 Appendix 6
§ 201.6(d)(3)	A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five years in order to continue to be eligible for mitigation project grant funding.	Section 3.1 Mitigation Goals Section 3.2 Mitigation Actions Section 5.0 Appendix 2



## 1.0 INTRODUCTION

### 1.1 Documentation of the Planning Process

§ 201.6(c)(1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Trumbull County, through the direction of the Trumbull County Emergency Management Agency (TCEMA) began the process to update this plan in October of 2018; the TCEMA contracted the services of JH Consulting, LLC, of West Virginia, (the consultant) to aid in the process. The consultant met with TCEMA to layout the process and timeline for the update and determine the agency, department, organization, and jurisdictional representatives who would serve as committee members.

#### 1.1.1 Planning Committee

The following table outlines the committee members that actively participated in the update of this plan. Trumbull County utilized a “steering committee,” and the TCEMA, its consultant, and steering committee members interfaced with the individual participating jurisdictions separately. The steering committee approach allowed for more interaction between committee members and enabled more strategic discussions regarding implementing hazard mitigation and risk reduction in Trumbull County.

STEERING COMMITTEE MEMBERS AND AFFILIATIONS		
<i>Agency/Affiliation</i>	<i>Name</i>	<i>Title</i>
Trumbull County Emergency Management Agency	Linda Biel	Director
Trumbull County Emergency Management Agency	Kayla Grizer	Deputy Director
Trumbull County Engineer's Office	Randy Smith	Engineer
Trumbull County Engineer's Office	Steven Gerberry	Engineer
Trumbull County Combined Health District	Sandy Swann	Director of Nursing
Trumbull County Planning Commission	Nick Coggins	Member
Metropolitan Housing Authority	Don Emerson	Director
Metropolitan Parks District	Zach Svette	Operations Director
Soil and Water Conservation	Amy Reeher	District Administrator
Eastgate Regional Council of Governments	Grant Taylor	Planner
Youngstown-Warren Regional Airport	Afrodite Altieri	Office Manager
Warren City Health District	Bob Pinti	Deputy Health Commissioner



The committee came together six times throughout the process, as described below. See Appendix 1 for agendas, meeting minutes, etc.

#### Committee Meeting 1

January 31, 2019 (In-person, TCEMA Conference Room)

The first committee meeting gave members the opportunity to familiarize themselves with each other and with the plan. The county's consultant explained the requirements of the plan and the steps through which the update would occur. The consultant also laid out the expectations for the committee members for participation in the update. The primary action item for Meeting 1 was to generate goals and objectives for the 2020 update; as such, committee members reviewed and revised the goals from the previous edition.

#### Committee Meeting 2

March 29, 2019 (Online)

The second committee meeting was online via a web conference. There were two main agenda items for this meeting: discussion and approval of the goals and discussion of hazards included in the plan. During Meeting 1, the committee identified a single, over-arching goal for the plan along with three objectives to serve as a "roadmap" toward achieving the goal. The consultant presented an edited version of the goal and the objectives, and the committee approved it.

Then, the discussion turned to updating the hazard list for the plan, which started with the list of hazards from the previous version. The consultant shared his screen with the group and presented the list along with the number of occurrences of each hazard since 2010. The consultant noted a required revision per Ohio EMA (i.e., changing "dam failure" to "dam/levee failure" even though there are no levees in Trumbull County). The consultant also specifically asked several questions. The first was whether to change the title of the "epidemic" profile (from 2010) to the broader "public health emergencies." The committee requested to keep "epidemic" because it conveys rising to a level where a multi-jurisdictional response may be necessary (versus something that ties into business as usual).

The second question regarded splitting the land and mine subsidence discussion into two separate profiles. (They currently comprise a single profile.) The committee suggested that the subsidence profile include subheadings rather than creating multiple profiles. The third question confirmed that the temperature extreme profile should include both extreme heat and cold. The



committee noted that recent responses had included the activation of warming centers during extreme cold incidents.

Finally, the committee noted a preference for keeping “terrorism” listed as a hazard. The group asked the consultant to ensure that various “types” of terrorism are included (e.g., chemical, biological, etc.). Since the mitigation plan is a component of a broader effort to prepare for hazards (writ large), the consultant agreed to include a summary in the risk assessment that addresses the overlaps between mitigation, preparedness, and response, as well as complementary initiatives undertaken by partners (e.g., public health).

### Committee Meeting 3

May 8, 2019 (In-person, TCEMA Conference Room)

The third committee meeting was an in-person meeting. The committee reviewed and discussed the current results of the online public survey. The consultant also recommended in-person opportunities for public involvement, and the discussion then moved toward options. The committee agreed to provide information to the Warren City Health District for inclusion on its agenda at an upcoming community issues meeting.

The consultant then distributed a handout containing the mitigation projects from the previous version of the plan. Committee members took time to review the list and mark updates accordingly. To wrap up the meeting, committee members also took time to review the asset inventory list from the existing plan and marked updates on copies of the list as appropriate.

### Committee Meeting 4

June 10, 2019 (Online)

The fourth committee meeting was an online meeting. The primary agenda items were to discuss the results of the public survey and the community issues forums. The consultant also reviewed the updated project list with attendees along with the edited asset inventory.

### Committee Meeting 5

July 26, 2019 (Online)

The fifth committee meeting was another online meeting. The steering committee again reviewed the community issues forums, though the primary agenda item was to develop the plan maintenance procedure. The committee agreed that a regular meeting schedule would be beneficial. The consultant agreed, and suggested that the committee develop a generalized target



agenda for each year's meeting throughout the planning cycle. The committee developed that schedule, and the meeting closed with discussion of a final in-person planning meeting.

### Committee Meeting 6

October 18, 2019 (In-person, TCEMA Conference Room)

The sixth and final committee meeting was an in-person meeting. The primary agenda item was jurisdictional participation. Whereas the TCEMA, consultant, and steering committee members conducted outreach to cities, villages, and townships individually earlier in the process, this meeting served as an opportunity to come together and discuss issues facing Trumbull County. Those in attendance actively discussed warning capabilities, response agency issues, and impoundments.

Municipal participation was also important. The TCEMA staff and the county's consultant reached out directly to municipal officials to gauge their concerns about the hazards included in the plan, existing project status, and new projects. Several city, village, and township officials completed an online "capability survey." Finally, the sixth planning meeting specifically targeted municipal officials and provided an opportunity to share municipal concerns, project ideas, etc. See the table in Section 1.1.2 below for additional information. The TCEMA requested input from neighboring jurisdictions via email; see Appendix 1 for a copy of the body of the email, sent on February 14, 2019. TCEMA did not receive correspondence in response to that email.

### **1.1.2 Jurisdictional Involvement**

All of the jurisdictions within Trumbull County participated in the update to this plan. All cities, villages, townships, and the county had the opportunity to provide input for the plan in the following ways.

- Attending meetings
- Completing the online capabilities survey
- Updating their mitigation project lists (which could include updating status of existing projects or adding new projects)
- Providing information for the plan to TCEMA or the consultant via phone or email

The following table identifies what activities jurisdictions completed.



TRUMBULL COUNTY HAZARD MITIGATION PLAN (2020 UPDATE) JURISDICTIONAL TASKS								
Community		Attended Planning Meetings	Online Capability Survey	Projects Update	Added New Projects	Provided Info to TCEMA or Consult.	Promoted Public Involve.	Overall Participation Assessment
Trumbull County	County	YES	YES	YES	YES	YES	YES	YES
Cortland	City			YES	YES	YES		YES
Girard	City			YES	YES	YES		YES
Hubbard	City	YES	YES	YES	YES	YES		YES
Niles	City		YES	YES	YES	YES		YES
Warren (County Seat)	City	YES	YES	YES	YES	YES	YES	YES
Lordstown	Village			YES	YES	YES		YES
McDonald	Village			YES	YES	YES		YES
Newton Falls	Village			YES	YES	YES		YES
Orangeville	Village			YES	YES	YES		YES
West Farmington	Village			YES	YES	YES		YES
Yankee Lake	Village			YES	YES	YES		YES

### 1.1.3 Public Involvement

Trumbull County involved the public in two ways: online and in-person. Online, partners promoted a survey that asked residents about their views on hazards, their support for various mitigation actions, and their level of personal preparedness. The steering committee and TCEMA began posting the survey in mid-April 2019; the survey was open until January 31, 2020. In total, 349 individuals completed the survey. The public felt most concerned about severe wind and tornado incidents (214 respondents reported feeling either “concerned” or “very concerned”). Residents also reported concern over winter weather events, with 185 selecting “concerned” or “very concerned,” while 180 respondents selected those options for public health emergency. Residents were the least concerned about dam failures, droughts, and earthquakes. References to the results of the survey appear in subsequent sections below, as applicable to the topic of discussion.

The steering committee also asked the Warren City Health District to distribute a mini-survey to attendees at a community issues forum in early June of 2019. The district received approximately 20 surveys back. The administrator of the health district reported that nothing specifically stood out with those responses; they largely reinforced the data collected by the online survey. Many attendees commented on neighborhood issues like dilapidated homes and cluttered property. During the forum, health district staff frequently had to steer the conversation back to the topic of multi-jurisdictional (i.e., county) hazard vulnerabilities and mitigation activities.

In total, approximately 369 members of the general public (approximately 0.19% of Trumbull County’s estimated 2019 population) participated in the 2020 mitigation plan update.





While that percentage seems (and is) low, it represents a substantial increase over the level of involvement in the two previous planning processes. Thus, local officials consider it a success. See Appendix 4 for the raw data collected by the online survey.

#### **1.1.4 Previous Versions**

This section contains descriptions of the processes used to update previous versions of the plan (i.e., 2005 and 2011).

##### **2011 Update**

The planning process to complete the first five (5)-year update of the plan was much simpler than the process used to originally develop the document. Such a statement was made for two (2) reasons: this was an update and, by nature, less involved and the advent of technology made information sharing without formal meetings much more reliable and efficient.

The update process was completed between September 2010 and April of 2011. It was facilitated through a series of stakeholders and public meetings. The “stakeholders” meetings were sessions with the reconvened Core Planning Committee (CPC) from 2004-2005. The Trumbull County Emergency Management Agency (TCEMA) again utilized the services of a planning consultant (JH Consulting, LLC of West Virginia) to guide the update process. The consultant provided an objective perspective to ensure that the CPC was achieving the goals it had intended to achieve in 2004-2005.

A total of two (2) Core Planning Committee (CPC) meetings and one (1) public meeting were held during the updating process. The first CPC meeting was held on November 3, 2010 at Kent State Trumbull Branch – Technology Building. The Trumbull County Emergency Management Agency (TCEMA) invited members of the CPC to this meeting via memorandum (see Appendix 4 – Public Involvement). The primary topics of discussion were updating the hazard list, discussing any emergencies that had occurred since 2005, updating the asset inventory list, and addressing any new development trends that may have occurred since 2005.

The second CPC/public meeting was held on February 15, 2011, at Kent State Trumbull Branch – Technology Building. The primary topics for discussion at this meeting were updating the goals, objectives and strategies, and how to re-prioritize mitigation projects. CPC members went through the existing project list jurisdiction-by-jurisdiction to ensure that all participating cities and villages (as well as the county) were covered. This discussion allowed committee members to add any projects that had been completed during the 5-year interval (yet were not on the original project list).



This meeting provided the public the opportunity to comment on the existing mitigation plan, as well as the proposed revisions to the document. The meeting was poorly attended by the general public.

Many of the same resources used for research during the original development of the plan were again utilized to update the plan. The consultant compiled all project documents and forwarded them to the TCEMA for draft distribution to CPC members. As such, the CPC could comment on the plan as it was being developed. Further, this allowed participating jurisdictions an on-going opportunity to comment on the plan, which expedited the adoption process (see section 1.1.2.C below).

During the initial stages of the updating process the TCEMA published an advertisement in the local newspaper inviting the public to review the original plan at the Trumbull County Emergency Operations Center (EOC) during regular business hours. A Public Comment Form was developed and distributed by the TCEMA to any member of public that visited the EOC to review the original plan, allowing them to comment on improvements that could be made to the original plan during the update.

Following the compilation of the updated/revised plan, the TCEMA published an advertisement in the local newspaper inviting the public to review the revised Trumbull County Multi-Jurisdictional All-Hazards Mitigation Plan at the Trumbull County Emergency Operations Center (EOC) during regular business hours, Public Comment Form were distributed for the revised/updated plan as well. Copies of the updated/revised plan were also made available for the public online at the TCEMA website, this also allowed neighboring communities, local and regional agencies involved in hazard mitigation activities, businesses representative, academia, nonprofit organizations, and other interested parties a chance to view and comment on the plan. Following FEMA approval and the formal adoption of the plan, the TCEMA notified neighboring county emergency managers of the plans completion via a letter.

Date	Activity	Purpose
January, 2010	Partnerships formed with community.	Establish project partnerships with participating communities.
January, 2010	Core Planning Committee re-formed.	Begin mitigation planning update process.
February, 2010	Proposals submitted to TCEMA to update the existing Hazard Mitigation Plan.	Solicit consultant support for participation on Core Planning Committee to meet multi-jurisdictional plan requirements.
May, 2010	Core Planning Committee reviewed all proposals submitted.	Selection of consultant.
September, 2010	Contract awarded and notification of selected firm.	To commence consultant activities.



October, 2010	Core Planning Committee Meeting.	Preliminary project data collection.
November, 2010	Stakeholders Meeting Invitation sent out via email to all project stakeholders.	Inform Stakeholders of Project Kickoff Meeting.
November, 2010	Stakeholders Meeting at Kent State Trumbull Branch.	Project Kickoff Meeting with consultant, review of hazards, asset inventory, and development trends.
November, 2010	Legal ad ran to encouraging general public to review existing plan.	Advertisement encouraging general public to review and comment on existing plan.
December, 2010	Core Planning Committee Meeting.	Review comments made during Stakeholders Meeting.

## 2005 Development

The original process in 2005 was led by the Hazard Mitigation Core Planning Committee (HMC) and supported by the planning and engineering firm R.D. Zande & Associates, Inc. This current, updated version was compiled by the TCEMA staff, and its Risk Assessment CPC, as well as JH Consulting, LLC of West Virginia.

The Trumbull County Emergency Management Agency (TCEMA) compiled a HMC, known as project stakeholders, to be responsible for the development and implementation of the original plan. The committee included primarily representatives from the cities, villages, and the emergency services organizations within the county (i.e., fire, police, etc.). Other organizations that were involved in the process included township representatives, and county engineering staff.

Members of the HMC reported the actions of the project stakeholders back to the participating jurisdictions. As such, participating jurisdictions and the public were updated as to the status of the plan's preparation and the repercussions of not completing a plan. Further, with respect to the development of an Action Plan, one (1) special HMC meeting and two (2) public review sessions were scheduled to discuss ways in which the county could lessen its susceptibility to the hazards identified in the Hazard Risk Assessment (HRA).

Feedback received from the HMC proved valuable in the development of the original plan. Several comments were received that resulted in the reevaluation of the risks that should be included in the plan. It was found that in addition to the identified natural hazards, secondary hazards, such as the limited access to the remote areas, and tourist attractions of the county, are a concern to county first responders. Further, all governmental jurisdictions in Trumbull County were polled in an effort to gather local opinion on prominent hazards and high-priority mitigative actions. As a result, the plan was tailored to Trumbull County's specific needs, and proved to be a document county resident's felt ownership of, and utilized to make educated decisions that reduced their vulnerability to hazards.



The Hazard Risk Assessment (HRA) phase of the original mitigation plan was completed using a variety of research techniques. Federal Emergency Management Agency (FEMA) GeoHazards, National Oceanic and Atmospheric Administration (NOAA), and other Internet sites were searched for historical hazard event records. R.D. Zande & Associates, Inc. conducted searches of local newspaper archives and existing reports and plans that were on file with the Trumbull County Emergency Management Agency (TCEMA), and the participating jurisdictions to assist in the determination of hazard-susceptibility areas. Interviews and other discussions were conducted with numerous local officials, including first responders, insurance agents, and other emergency services officials to ascertain the risks associated with particular hazards in specific areas of the county. After identifying the areas in which the hazards were most prominent, they were profiled and positioned into a base map of the county. This Geographic Information System (GIS)-based map contains several themes with information regarding the individual hazards. Assets (i.e., structures, utilities etc.) were inventoried and loss estimates were calculated for each of the inventoried assets with respect to the hazards profiled on the GIS-based maps. The general public of Trumbull County was further involved in the planning process as information was gathered from the county's assets to complete loss estimates. The county's contractor contacted representatives from each of these assets, explaining the process and collecting ideas on hazard susceptibility and mitigation actions.

Following the completion of the HRA, the Hazard Mitigation Core Planning Committee (HMC) used information such as hazard profiles and loss estimates to formulate mitigation goals, objectives, and strategies. For this phase of the project, the HMC met separately to discuss baseline strategies. Such an action was reasoned most appropriate, as project stakeholders are individuals that deal with hazard events on a regular basis and will be directly affected by the implementation of the plan. Members of the HMC were notified of the meetings via memoranda and telephone correspondence from the TCEMA. The stakeholders' ideas were used as the starting point for further planning steps.

The baseline mitigation strategies were presented to the public at the public review sessions to ensure fair participation from all sectors of the county. However, the public meetings, which were publicized in the local newspaper, were not well attended. Local media did attend the public meetings, however, and coverage was given to the planning process. As a result of the low attendance, the TCEMA agreed to take public comment at its office throughout the remainder of the planning process. The local media also announced this arrangement.

In an effort to obtain greater public comment, the commission's contractor provided HMC members with "Households Hazard Preparedness" questionnaires to distribute to members of the



general public, as well as civic and governmental organizations throughout the county. These questionnaires allowed members of the public to participate in the process without requiring speaking in front of a crowd. The questionnaires also were a convenient form of participation in terms of work schedules, etc. The questionnaires asked those completing them to rank the hazards to which they felt most vulnerable, and provided space to list potential projects to lessen the effects of those hazards. The TCEMA did receive completed questionnaires for inclusion into the planning process. The results of those questionnaires were integrated into the goals, objectives, and strategies that appeared later in the plan. A summary of the results appears below.

2. How concerned are you about the following disasters affecting Trumbull County? (Please check the box that applies)					
Natural Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	0%	0%	26%	9%	65%
Earthquake	0%	12%	18%	12%	59%
Flood	6%	15%	21%	32%	26%
Heat Wave	0%	12%	32%	12%	44%
Hailstorm	0%	9%	18%	24%	50%
Dam Failure	3%	0%	3%	15%	79%
Landslide/Mine Subsidence	0%	0%	3%	12%	85%
Thunderstorm	6%	12%	24%	12%	47%
Wildfire	0%	9%	15%	24%	53%
Windstorm	3%	18%	21%	21%	38%
Winter Storm	6%	38%	6%	21%	29%
Bomb Threat	3%	15%	18%	15%	50%
Hazmat	15%	9%	32%	15%	29%
Utility Failure	26%	21%	18%	15%	21%
Other _____	0%	0%	0%	0%	0%

Governmental agencies of Trumbull County worked cooperatively to complete the original Multi-Jurisdictional All-Hazards Mitigation Plan through the Hazard Mitigation Core Planning Committee (HMC), and with the help of the Trumbull County Emergency Management Agency (TCEMA). To show each entity's dedication to completing the project, all entities adopted formal resolutions to implement the plan in their jurisdiction. Copies of the adopting documents were included in the plan.

Date	Activity	Purpose
February, 2011	Legal Notice in local paper.	Notification of Stakeholders/ Public Meeting.
February, 2011	Stakeholders/Public Meeting.	Review of existing goals, objectives and strategies, public comment.
February, 2011	Draft Hazard Risk Assessment and maps submitted.	For review by core planning committee.



February, 2011	Core Planning Committee meeting.	To present draft risk assessment and obtain comments.
March, 2011	Draft action Plan and maps submitted.	For review by core planning committee.
March, 2011	Core Planning Committee Meeting.	To present draft action plan and obtain comments.
March, 2011	Legal ad ran to encouraging general public to review updated plan.	Advertisement encouraging general public to review and comment on updated plan.
April, 2011	Final plan and maps submitted.	For review by core planning committee.
April, 2011	Presentation of final plan to county and municipalities.	Adoption of plan by county and municipalities.
April, 2011	Final Plan sent to TCEMA, and OEMA for review.	To obtain local and state comments and approval.
May, 2011	Final plan sent to FEMA Region V.	To obtain federal comments and approval.
May, 2011	Final plan submitted to Trumbull County and OEMA.	Final version with all revisions incorporated.
June, 2011	Final plan uploaded on TCEMA website.	To allow neighboring communities, local and regional agencies, businesses, academia and private and non-profit organization to be involved in the planning process.

## 1.0 INTRODUCTION

### 1.2 Description of the Planning Area

The description of the planning area contextualizes the remainder of this document. It provides the background information on the areas impacted by various hazards and serves as a foundation for mitigation decisions.

#### 1.2.1 Trumbull County Details

This first section provides demographics and other details for Trumbull County. It includes both municipal and unincorporated areas.

##### Geography

Trumbull County was established in July of 1800, and named in honor of Jonathan Trumbull, who was the Governor of Connecticut and owned the land in the region. Trumbull County is one of 88 counties in Ohio, and is located in the northeastern part of the state. It is bordered by Ashtabula County, OH in the north; on the northeast by Crawford County, PA; on the east by Mercer County, PA; on the southwest by Portage County, OH; and on the northwest by Geauga County, OH. Metropolitan cities located within proximity to Trumbull County include Youngstown, OH (2 miles), Cleveland, OH (40 miles), and Pittsburgh, PA (60 miles).

According to the U.S. Census, Trumbull County has a total area of 635 square miles, with approximately 616 square miles of land area, and 19 square miles of water. The county varies in elevation from a low of 800 feet above sea level at the Grand River Basin in Mesopotamia Township, to a high of 1,280 feet above sea level at Trautman Hill in Vernon Township. There are three watersheds in Trumbull County. These include the Grand River Watershed, the Mahoning River Watershed, and the Pymatuning/Shenango Watershed.

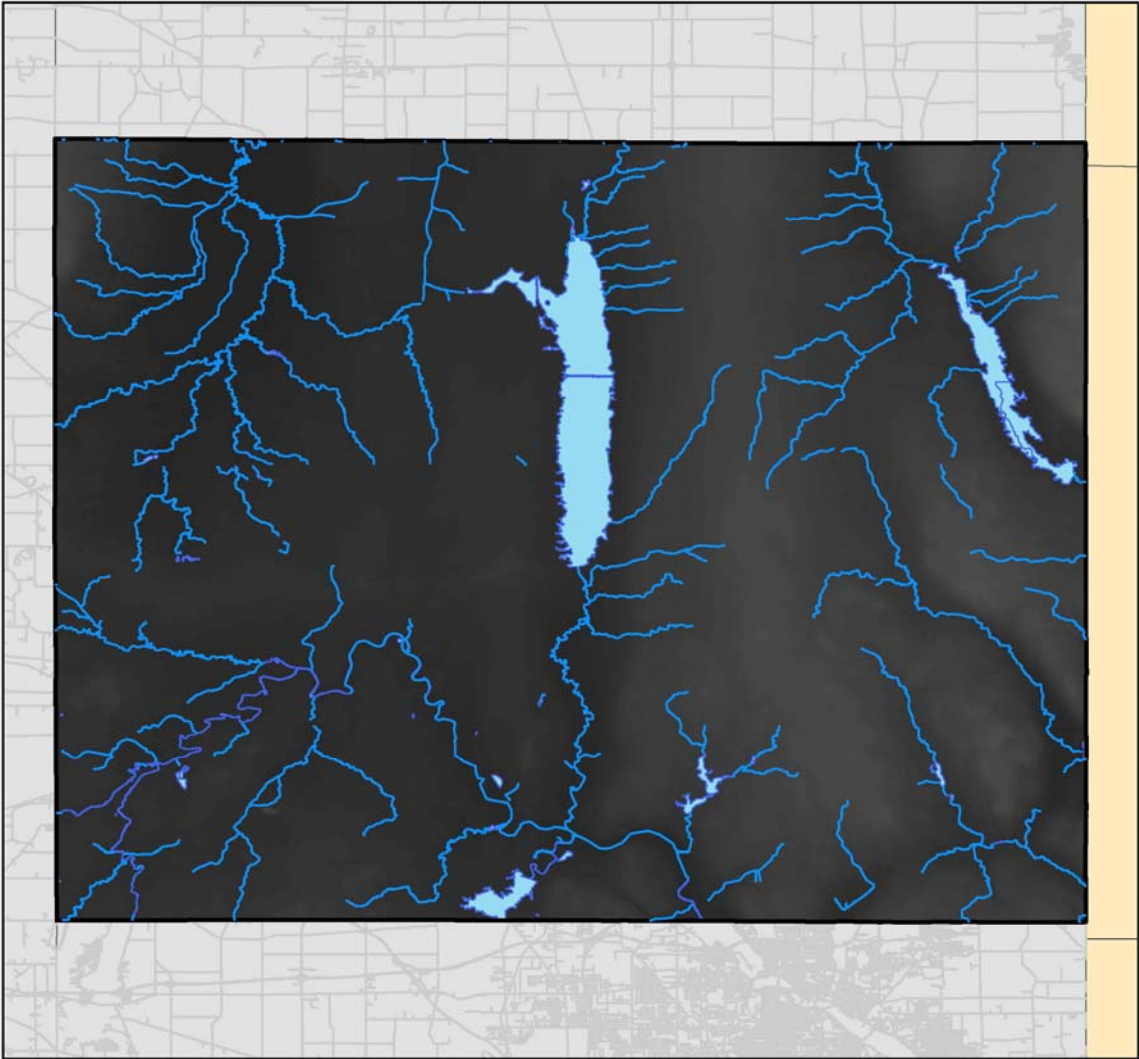
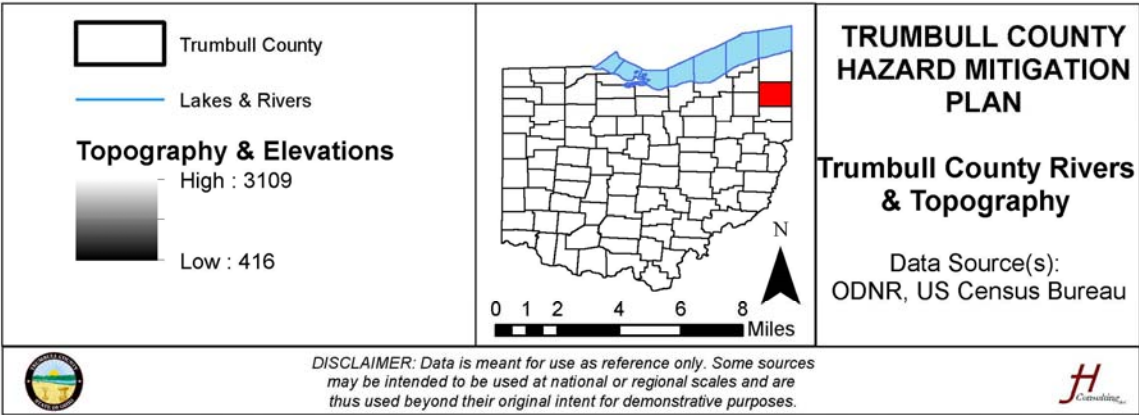
- The **Grand River Watershed** drains a total of 707 square miles and flows through all or part of five counties in northeast Ohio. West Farmington is among the municipalities located in the Grand River Watershed.
- The **Mahoning River Watershed** drains 1,085 square miles in Ohio, and flows through seven counties. The Villages of Newton Falls and McDonald, and the Cities of Warren and Niles are all located in the Mahoning River Watershed.

- The **Pymatuning/Shenango Watershed** covers approximately 1,065 square miles in portions of six counties in Ohio and Pennsylvania. The eastern parts of Trumbull County are located in this watershed.

Trumbull County is located in what are known as the Glaciated Allegheny Plateaus. The topography of the county is characterized as gentle slopes with occasional water gaps.







## Demographics

The following table presents general demographics for Trumbull County and the municipalities therein.

TRUMBULL COUNTY DEMOGRAPHICS											
Criterion	Trumbull County	Cortland City	Girard City	Hubbard City	Warren City	Newton Falls City	Lordstown Village	McDonald Village	Orangeville Village	West Farmington Village	Yankee Lake Village
Population Estimates (2017)	198,627	6,809	9,314	7,461	38,382	4,510	3,266	3,063	175	491	75
White	176,182	6,516	8,588	7,140	25,946	4,361	3,076	2,855	175	486	68
Black or African American	16,685	238	373	201	10,363	0	59	104	0	0	2
American Indian and Alaskan Native	397	0	28	0	77	0	0	0	0	0	0
Asian	1,192	0	76	0	154	50	42	0	0	0	0
Native Hawaiian or Pacific Islander	10	0	0	0	0	0	0	0	0	0	0
Two or More Races	4,171	54	251	112	1,727	59	88	92	0	3	5
Hispanic or Latino	3,774	20	251	112	1,075	54	26	0	0	6	0
Veterans (2013-2018)	15,828	479	739	551	3,027	261	251	181	17	18	10
Foreign born persons	2,979	116	307	97	499	18	49	46	0	0	0
Housing units (2018)	95,695	3,030	4,337	3,218	17,145	2,258	1,493	1,405	70	156	43
Median household income (in 2018)	\$45,975	\$65,082	\$40,811	\$50,487	\$28,173	\$43,493	\$53,483	\$48,203	\$49,444	\$44,444	\$63,750
Persons in poverty	17.6%	12.5%	15.1%	14.2%	35.6%	12.4%	10.6%	8.2%	13.3%	15.7%	3.4%



TRUMBULL COUNTY DEMOGRAPHICS											
Criterion	Trumbull County	Cortland City	Girard City	Hubbard City	Warren City	Newton Falls City	Lordstown Village	McDonald Village	Orangeville Village	West Farmington Village	Yankee Lake Village
Population per square mile (2018)	340.1	1672.3	1695.0	2017.9	2576.9	1954.9	140.7	1,815.1	209.3	559.0	147.8
Land area in square miles (2017)	618.30	4.25	5.88	3.9	16.3	2.31	23.22	1.69	0.84	0.88	0.51

Population density represents people per square mile. Because Trumbull County's boundaries are set and the population is decreasing, the population density is also decreasing. The population density of the incorporated areas of Trumbull County is much higher than in the rural areas. More than 37% of the population of the County lives within 60 square miles (less than 10% of the total land area for Trumbull County). This confirms that the highest concentration (density) of the population is in its cities and villages. Additionally, the southern part of the county has the highest population density, with Cortland, Warren, Newton Falls, Lordstown, Niles, Girard, and Hubbard all located in this area.

### Transportation

Trumbull County's transportation infrastructure is comprised of highway, railway, and air elements. The county contains approximately 12 miles of Interstate Highway, 32 miles of U.S. Highway, and 302 miles of State Highway. Interstate 80 (I-80), U.S. Route 422, and OH State Routes 5 and 11 are the principal arterial routes through the county. Many sections of these roadways are four-lane, divided highway. There are approximately 480 bridges and culverts located throughout Trumbull County, which are vital components of the roadway system. Major highways serving the county include State Routes 82, 87, 88, and 305 which travel east and west, and State Routes 7, 45, 46, 193, and 534 which travel north and south.

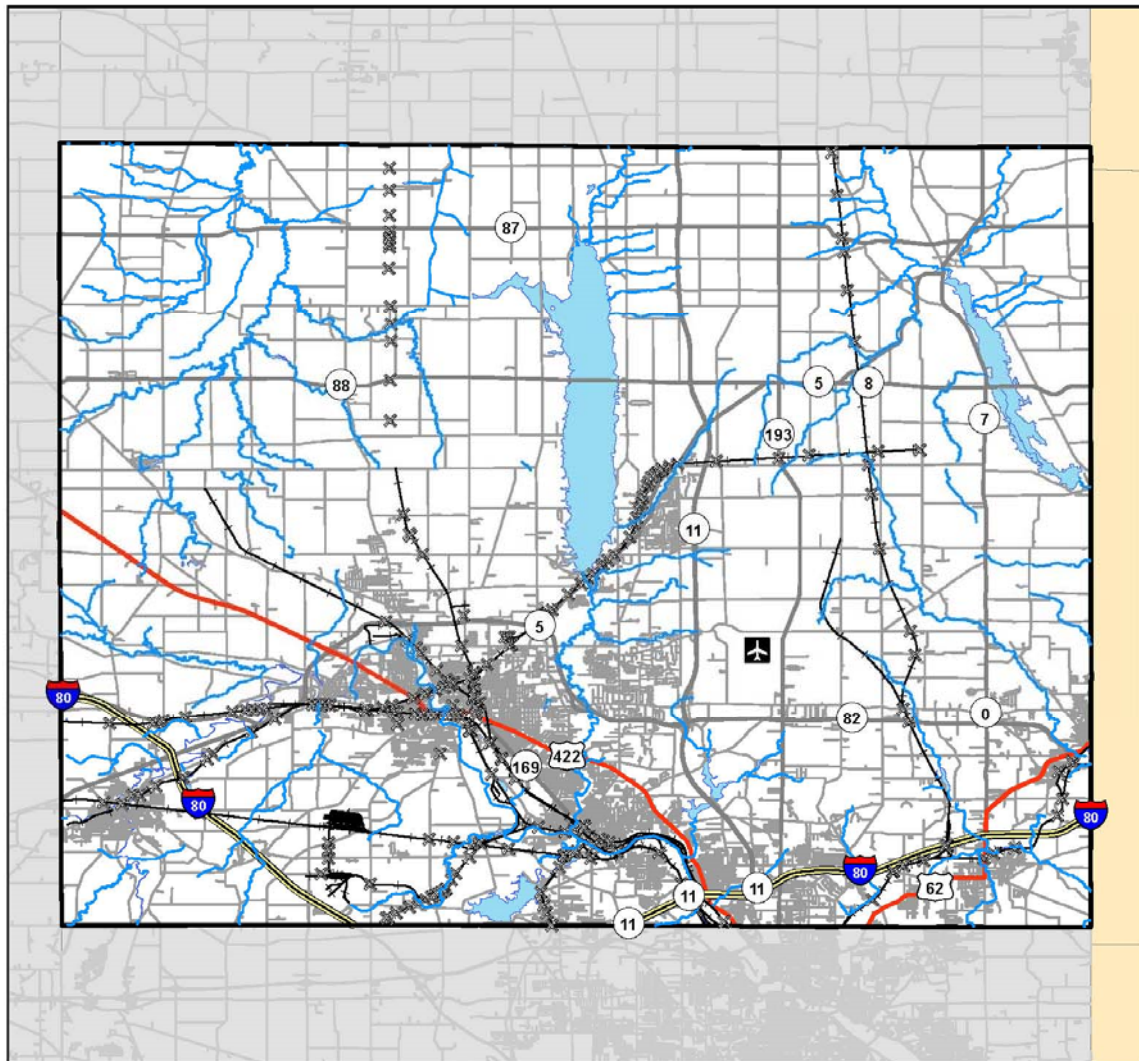
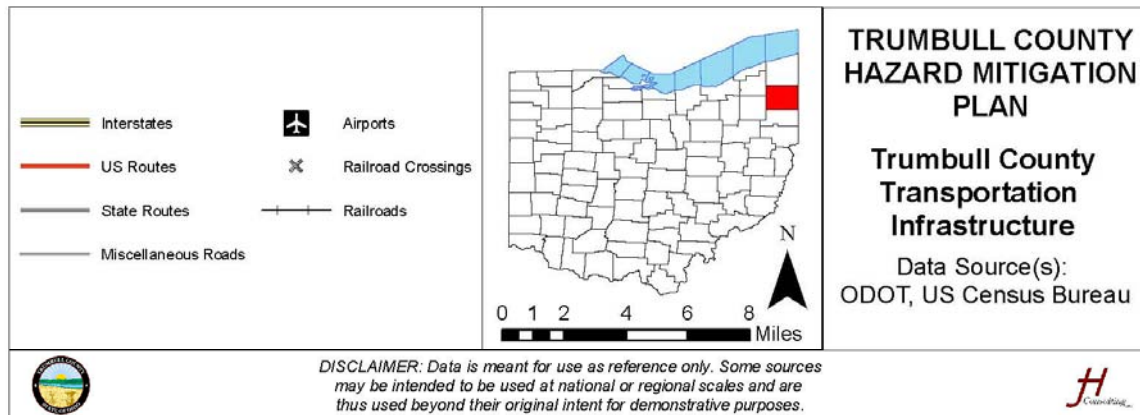
Railway lines are also a part of the county's transportation infrastructure. Genesee & Wyoming Inc. operates three (3) lines in and near the City of Warren. All Warren and Trumbull Railroad-operated lines are owned by the nonprofit Economic Development Rail II Corporation (EDR-II). These rails pass near the Cities of Girard, Hubbard, and several other communities



concentrated along the southern half of the county, and there is a large rail yard located in the Village of Lordstown.

Airways also play a part in the county's transportation system. There are two airports within close proximity to Trumbull County that provide international service, Cleveland Hopkins International Airport (CLE) and Pittsburgh International Airport (PIT). There are two (2) regional airports within close proximity to Trumbull County, including Youngstown-Warren Regional Airport (YNG), and Akron-Canton Regional Airport (CAK). These provide general and commercial aviation. The only regional airport in the county is the Youngstown-Warren Regional Airport, located in Vienna Township. This airport is home to the 910<sup>th</sup> Airlift Wing (AW) of the US Air Force. There is one (1) heliport in the county, which is located in Kirila. There are also several small public and private airstrips throughout the county.





### Economy

Trumbull County has a diverse employment sector. According to 2017 information from the Ohio Department of Development, the largest areas of employment are Manufacturing (with an average employment of 12,440 and total wages of \$868,999,271) and Education and Health Services (with an average employment of 11,188 and total wages of \$410,827,711). The total number of employment is 83,200, with approximately 6,500 (or 7.2%) unemployed. Most people are employed within a 30 minute commute to their place of employment, with 32% having a 15 minute or less commute and 42.6% having a 15-29 minute commute.

Between 2011 and 2016, the total number of private sector establishments decreased by 4.8%. The largest decrease occurred in the Information (-24.4%) and Construction (-8.2%) sectors. The Education and Health Services sector saw an increase of 3.1%, while the Natural Resource Mining sector saw an increase of 41.7%. Notable employers for the County include Delphi Automotive Systems, LLC, Mercy Health, Sears Holdings/Kmart Group, Trumbull County Government, Trumbull Memorial Hospital, Warren City Schools, and Wal-Mart Stores Incorporated.

Trumbull County is the home of several tourist attractions, including the Clarence Darrow octagon house in Kinsman, the W.D. Packard Car Museum, Mosquito Lake State Park, the Western Reserve Greenway, National McKinley Birthplace Memorial Library and Museum, the Basket Making Workshops of Gerald E. Henn, Newton Falls Covered Bridge, and the Trumbull County Historical Society Museum.

### Education

The education system in Trumbull County consists of 76 public schools with 32,943 students and 2,032 teachers, 11 non-public schools at which another 1,773 students attend. There is currently one four-year public college branch (Kent State University at Trumbull) in the city of Warren with a reported enrollment of 2,444 students. The percentage of Trumbull County residents who hold a diploma is currently 89.0%.

### Healthcare

Several health care facilities serve Trumbull County. Currently there are 3 registered hospitals with 599 available beds, 19 licensed nursing homes with 1,722 available beds, and 13 licensed residential care facilities with 866 available beds. The Trumbull County Health Department is a public health agency that serves most of the communities and townships in the



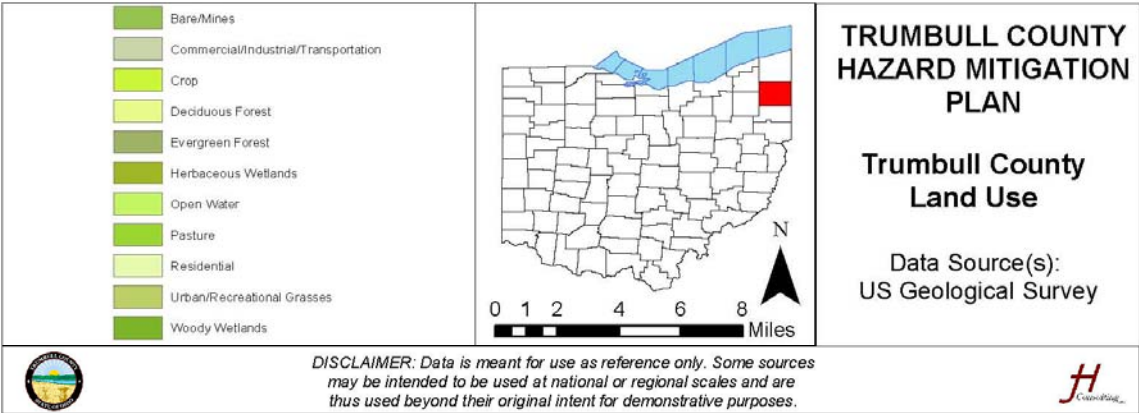
county. The City of Warren also operates a public health clinic that offers some preventative care services.

#### Land Cover / Climate

The majority of Trumbull County's land cover is wooded or forested; approximately 33% of total land cover is forested, followed by cultivated cropland at 22%. There are 888 individual farms operating in Trumbull County, with an average size of 128 acres per farm. Additionally, approximately 19.76% of the county is developed. Most development is located in the southern part of the county in the incorporated areas. The county also includes a small portion of shrub/grasslands (5.09%), wetlands (7.93%), and open water (3.26%).









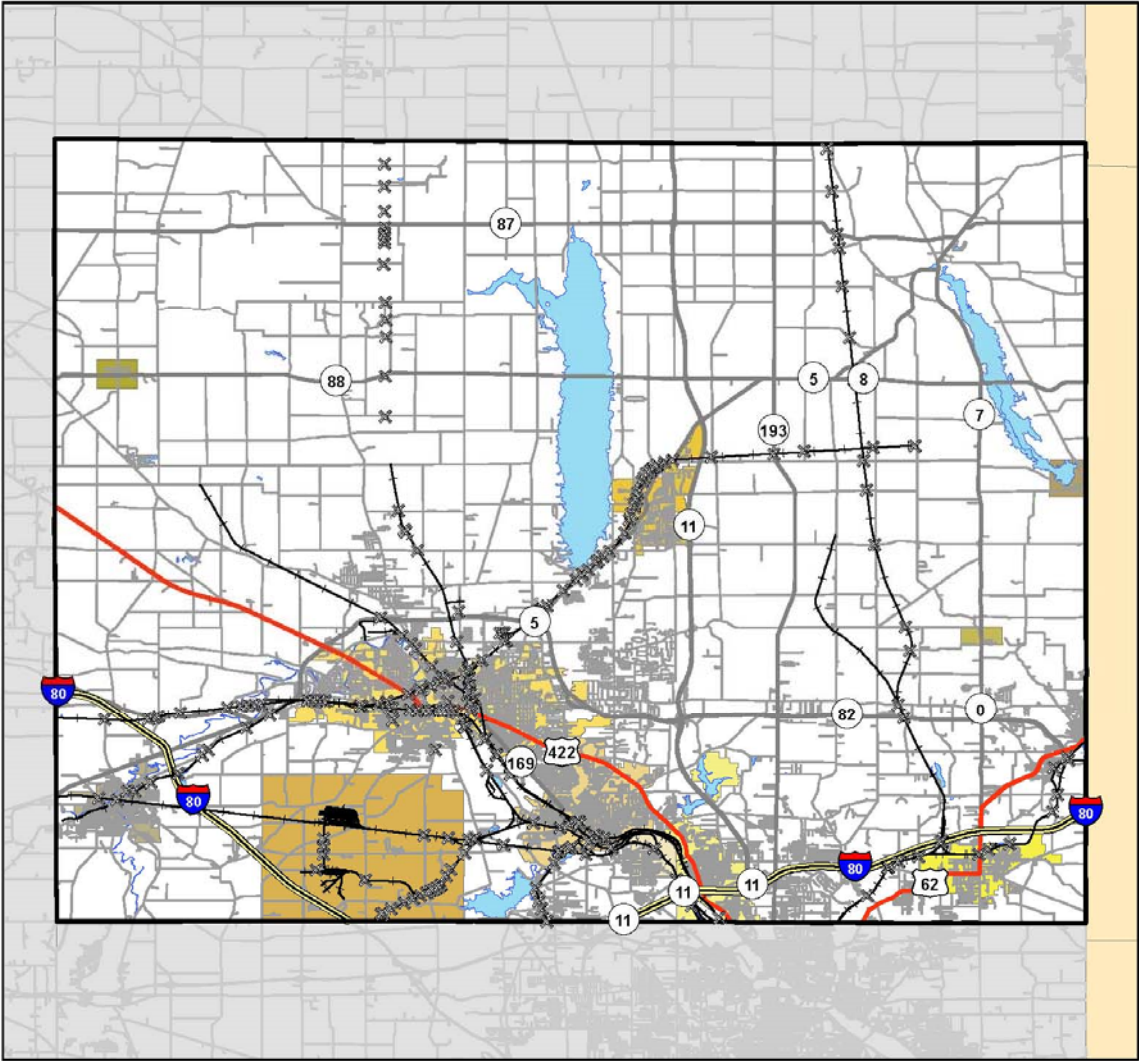
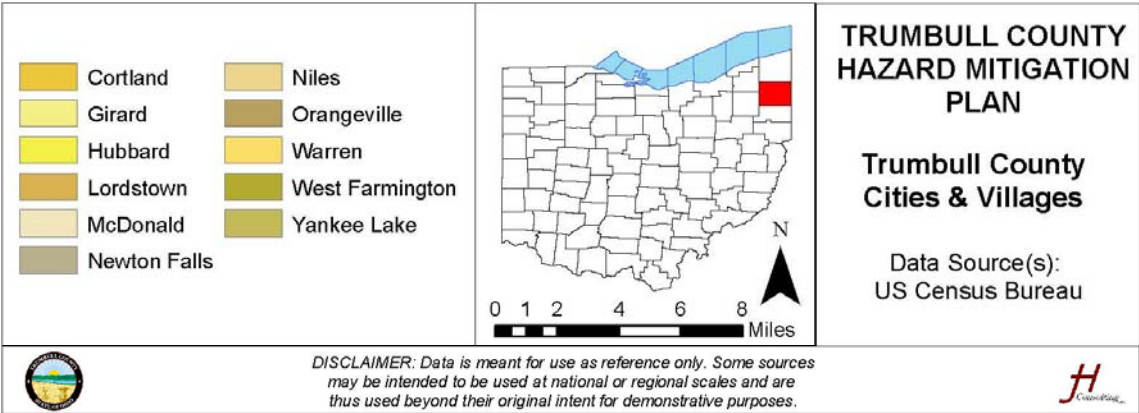
Trumbull County has a continental-type climate, predominantly influenced by air from the west. There is considerable variation in seasonal temperatures, with none of the temperatures being considered severe. The climate of Trumbull County is seasonal in nature, with wet stormy springs, warm summers, colorful falls, and cold snowy winters. The average temperature in January is 32°F; the July average temperature is 78°F, creating a mean average temperature of 55°F. Precipitation is evenly distributed throughout the year, with an annual average of approximately 36 inches. Data from the National Weather Service (NWS) indicate that the area experiences approximately 56 inches of snowfall per year, usually during the December to March winter season.

### Social Vulnerability Indicators

Trumbull County has a diverse population. Of its 203,341 residents, 51.2% are female. Approximately 42,430 are under the age of eighteen, and 40,413 more are over the age of 65. While most residents have a diploma, there are 19,115 who do not. The median household income for the county is \$45,380, and the poverty rate is 17.2%. This exceeds the national poverty rate of 12.3%. Most of the population is white, but there are 16,985 who identify as black or African American, and 4,529 who are two or more races. There are 9,472 residents who primarily speak a language other than English.

### **1.2.2 Municipalities**

This section provides demographics and other general details for each of the following municipalities. The following map shows the location of the cities and villages in Trumbull County.



### Cortland City

The City of Cortland was incorporated in 1980. The city is situated in the central part of Trumbull County, adjacent to the eastern shore of Mosquito Reservoir Lake and State Park, and extends into 3 townships- Bazella, Fowler, and Johnston. The major transportation routes accessing the city include State Routes 5, 11, and 46 running north south, and State Route 305 running east west. The Genesee & Wyoming railroad passes through the western portion of the city. Walnut Creek flows through the central part of the city. There are seven public schools in and near Cortland City.

According to 2017 Census estimates, the City of Cortland has a population of 6,900 with a population density of 1,673 people per square mile. The city contains 3,146 housing units with the highest reported estimated median household income in the county of \$63,728.

### Girard City

Girard City, part of Liberty Township, is located in the southernmost portion of Trumbull County, along the Trumbull-Mahoning county line. The city is served by four major roads: US Route 422 and State Route 11 running north south and Interstate 80 and State Route 304 running east west. The Genesee & Wyoming railroad passes through the western portion of the city. Upper and Lower Girard Lakes are located in the northern part of the city, with both lakes' dams inside Girard's corporate limits. There are four schools that serve the city.

According to 2017 Census estimates, the City of Girard has a population of 9,378. The city contains 5.88 square miles of land area with a population density of 1,695.0 people per square mile, making it a major population center in the county. There are 4,736 housing units in Girard; the estimated median income is \$39,184.

### Hubbard City

The City of Hubbard is situated in the southeastern corner of Trumbull County in Hubbard Township, near the Pennsylvania border. The major highways accessing the village include State Routes 7, 62, and 616 running north south, and State Route 304 running east west. The Genesee & Wyoming railroad travels east west through the northern portion of the city. Mud Run Creek, Yankee Creek, and Harding Lake are located in Hubbard City. There are 4 schools in the city.

The city has a population of 7,604 according to 2017 Census estimates. There are 3.90 square miles of land in Hubbard City, with a population density of 2017.9 people per square mile. There are 3692 housing units in the city, and its estimated median household income is \$47,984.



### Newton Falls City

Newton Falls City is located in the southwestern most corner of Trumbull County in Newton Township. The city is served by State Route 5 running east west through the northern portion of the city, and by State Route 534 running north south. US Interstate 80 passes just east of the city. The Genesee & Wyoming railroad runs east west through the center of the city. The Mahoning River also passes through the city. Newton Falls is served by five schools.

According to the 2017 Census estimates, Newton Falls City has a population of 4,795 and a population density of 2075.8 people per square mile. There are 2,459 housing units in the city, and the median household income was \$40,878.

### Warren City

The City of Warren is located in southern Trumbull County, with portions of the city in Warren and Howland Townships. The municipality is located approximately 14 miles northwest of Youngstown and 15 miles west of the Pennsylvania state line. The city has a vast transportation infrastructure, including portions of US Route 422 and State Routes 45 and 46. The Youngstown Warren Regional Airport lies just east of the city. The Mahoning River and Mosquito Creek flow through portions of Warren City.

Estimates from the Census indicate that the City of Warren has a population of 40,244 and a land area of 16.13 square miles. The population density is 2,494.5 people per square mile, which is the highest of any of the municipalities in Trumbull County. There are 20,383 housing units in the city, and the median household income is \$29,241.

### Lordstown Village

The Village of Lordstown is situated in southwest Trumbull County, along the Trumbull-Mahoning County line. Major transportation routes in Lordstown Village include State Route 45, which runs north south through the center of the village, and a section of Interstate 80 that passes through the southwestern portion of the village. Several miles of the Genesee & Wyoming railroad also traverse the village. Little Duck Creek flows through the north central portion of the village, near the two schools that serve the area.

Lordstown is home to several industrial and commerce sites, including Lordstown Industrial Park, Hays Industrial Park, Ohio Commerce Center, Armil Industrial Park, Allman



Industrial Park, Norfolk Southern Industrial Park, and Henn Industrial Park. The village was previously home to a General Motors production facility.

Estimates from the Census indicate that Lordstown Village has a population of 3,221. There are 23.14 square miles of land in the village, with a population density of 147.7 people per square mile. The village includes 1,493 housing units; the median household income is \$52,351.

#### McDonald Village

McDonald Village is located in south central Trumbull County along the Trumbull-Mahoning County line. The Mahoning River forms the northern border of the county. The Genesee & Wyoming railroad passes east west through the northern section of the village. No major highways serve McDonald Village, but Watson-Marshall Road, Second Street, and Olive Street provide roadway access. There are two schools located in the village.

According to estimates from the Census, the village has a population of 3,130, and 1.69 square miles of land. The population density is 1,930.8 people per square mile, and the median household income is \$45,498.

#### Orangeville Village

The Village of Orangeville is located in east central Trumbull County, along the Pennsylvania border. Transportation infrastructure in Orangeville Village is limited, with State Route 609 being the only major highway to traverse the village.

The Census estimates from 2017 indicate that the population of Orangeville Village is 181. The village has a land area of 0.84 square miles, making the population density 234.5 people per square mile. There are 83 housing units in the Village, and the median household income is \$52,083.

#### West Farmington Village

The Village of West Farmington is situated in northwestern Trumbull County in the Farmington Township. The village is located near the Trumbull-Portage county line along the Grand River. State Route 88 runs east west through the village, and State Route 534 runs north south. West Farmington Village is served by one school.



According to 2017 estimates from the Census, West Farmington has a population of 469, and a land area of 0.88 square miles making the population density 567 people per square mile. There are 170 housing units with a median household income of \$44,444.

#### Yankee Lake Village

The Village of Yankee Lake is located in the Southeastern portion of Trumbull County. State Route 7, which runs north south through the center of the village, is the only major highway serving the village.

Yankee Lake Village is the least populated municipality in Trumbull County, with a population of 87. There are 48 housing units in the village, and the median household income is \$52,875.

### 1.2.3 Asset Inventory

This plan identifies potentially-vulnerable community assets such as critical facilities, critical infrastructure, historic properties, commercial/industrial facilities, etc. “Assets” contribute directly to the quality of life of the community as well as ensure its continued operation.

#### Methodology

This plan categorizes “assets” under the following headings (FEMA, 2013).

- **People:** Areas of great population density, and populations with unique vulnerabilities or diminished response and recovery capabilities. Examples include areas of concentrated populations, areas catering to visiting populations, facilities housing or serving functional or access needs populations, and facilities that provide health or social services.
- **Economy:** Important economic drivers to the community. Examples include major employers and commercial centers.
- **Built Environment:** Existing structures, infrastructure systems, critical facilities, and cultural resources. The following table includes examples of built environment categories.

BUILT ENVIRONMENT ASSETS			
<i>Existing Structures</i>	<i>Infrastructure</i>	<i>Critical Facilities</i>	<i>Cultural Resources</i>
<ul style="list-style-type: none"><li>• Commercial Buildings</li><li>• Industrial buildings</li><li>• Single &amp; multi-family residential buildings</li></ul>	<ul style="list-style-type: none"><li>• Water &amp; wastewater</li><li>• Power utilities</li><li>• Transportation (roads, railways, waterways)</li></ul>	<ul style="list-style-type: none"><li>• Hospitals and medical facilities</li><li>• Police and fire stations</li></ul>	<ul style="list-style-type: none"><li>• Historical assets</li><li>• Museums</li><li>• Unique geologic sites</li><li>• Concert halls</li></ul>



	<ul style="list-style-type: none"> <li>• Communication systems/centers</li> <li>• Energy pipelines and storage</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency operations centers</li> <li>• Evacuation shelters</li> <li>• Schools</li> <li>• Airport/heliports</li> </ul> <p>HIGH POTENTIAL LOSS FACILITIES</p> <ul style="list-style-type: none"> <li>• Nuclear power plants</li> <li>• Dams</li> <li>• Military &amp; civil defense installations</li> <li>• Locations housing hazardous materials</li> </ul>	<ul style="list-style-type: none"> <li>• Parks</li> <li>• Stadia</li> </ul>
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- **Natural Environment:** Resources that are important to community identity and quality of life, as well as those that support the local economy through agriculture, tourism, and recreation. Examples include areas that can provide protective functions that reduce the magnitude of hazard events and critical habitat areas and other important environmental features.

### Asset Inventory

The following table lists the assets considered by Trumbull County's planning committee throughout this plan.

TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
American Red Cross	661 Mahoning Avenue NW	Warren	OH		X	
Animal Welfare League Shelter Admin.	545 Brunsetter Road SW	Warren	OH		X	
Autumn Hill Care Ctr.	2565 Niles Vienna Road	Niles	OH		X	
Badger Elementary/Middle	7119 State Route 7	Kinsman	OH		X	
Badger High School	7119 State Route 7	Kinsman	OH		X	
Baker/Currie Elementary	4095 Sheridan Drive	Vienna	OH		X	
Bascom Elementary	1015 North Leavitt Road	Leavittsburg	OH		X	
Bazetta Twp.	3372 State Route 5 NE	Cortland	OH		X	
Bazetta Twp. FD	300 Warren Meadville Road	Cortland	OH		X	
Bazetta Twp. PD	2671 McCleary Jacoby Road	Cortland	OH		X	
Bloomfield High School	2077 Park Road West	North Bloomfield	OH		X	
Bloomfield Twp.	2063 State Route 87 W	North Bloomfield	OH		X	
Bloomfield Twp. VFD	8870 Park Avenue	North Bloomfield	OH		X	
Bloomfield-Mespo Local	2077 Park Road West	North Bloomfield	OH		X	
Braceville Twp.	4834 State Route 82	Newton Falls	OH		X	
Braceville Twp. FD	582 Braceville Robinson Road	Newton Falls	OH		X	
Briarfield of Cortland	4250 Sodom Hutchings Road	Cortland	OH			X
Bristol Elementary/Middle School	1845 State Route 88	Bristolville	OH		X	
Bristol High School	1845 State Route 88	Bristolville	OH		X	
Bristol Public Library	1855 Greenville Road NW	Bristolville	OH			X
Bristol Twp.	254 North Park Avenue	Bristolville	OH		X	
Bristol Twp. FD	1864 Greenville Road	Bristolville	OH		X	
Brookfield Elementary	614 Bedford Road SE	Brookfield	OH		X	
Brookfield High School	614 Bedford Road SE	Brookfield	OH		X	
Brookfield Local Schools	614 Bedford Road SE	Brookfield	OH		X	
Brookfield Middle School	614 Bedford Road SE	Brookfield	OH		X	
Brookfield Twp.	6844 Strimbu Drive	Brookfield	OH		X	
Brookfield Twp. FD	774 State Route 7 NE	Brookfield	OH		X	
Brookfield Twp. PD	6844 Strimbu Drive	Brookfield	OH		X	
BTMI-Community Busing	1976 Niles Road	Warren	OH		X	
Burghill PO	5010 State Route 7	Burghill	OH		X	
Burghill-Vernon VFD	6915 State Route 88	Kinsman	OH		X	





TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
Chalker High School/Elementary	2482 State Route 534	Southington	OH		X	
Champion Elementary	5759 Mahoning Avenue NW	Warren	OH		X	
Champion High School	5976 Mahoning Avenue NW	Warren	OH		X	
Champion Local BOE	5976 Mahoning Avenue, Suite B	Warren	OH		X	
Champion Local Schools	5759 Mahoning Avenue NW	Warren	OH		X	
Champion Middle School	5435 Kuszmaul NW	Warren	OH		X	
Champion Twp.	149 Center Street E	Warren	OH		X	
Champion Twp. FD	139 Champion Avenue	Warren	OH		X	
Champion Twp. PD	149 Center Street E	Warren	OH		X	
City of Cortland	6333 State Route 46	Cortland	OH		X	
City of Hubbard	220 West Liberty Street	Hubbard	OH		X	
City of Newton Falls	19 North Canal	Newton Falls	OH		X	
City of Niles	14 East State Street	Niles	OH		X	
City of Warren	391 Mahoning Avenue NW	Warren	OH		X	
City of Warren WTP	580 Laird Avenue SE	Warren	OH	X		
City of Warren WWTP	580 Laird Avenue SE	Warren	OH	X		
Clarence Darrow Octagon House	8405 Main Street	Kinsman	OH			X
Clearview Lantern Suites	596 Champion Avenue W	Warren	OH			X
Community Commons Assisted Living	1340 Mahoning Avenue NW	Warren	OH		X	
Community Health Care at the Ridge	3379 Main Street	Mineral Ridge	OH		X	
Cortland City FD	194 Lattin Street	Cortland	OH		X	
Cortland City PD	400 North High Street	Cortland	OH		X	
Cortland Health Care Ctr.	369 North High Street	Cortland	OH		X	
Currie Elementary	3306 Ridge Road NE	Cortland	OH		X	
Delphi Corp.	745 Pine Avenue SE	Warren	OH		X	
E.J. Blott Elementary/Guy Middle	4003 Shady Road	Youngstown	OH		X	
Eastwood Mall	5555 Youngstown-Warren Road	Niles	OH			X
Elm Road Medical Park	2580 Elm Road	Cortland	OH		X	
EMT	421 South Street SE	Warren	OH		X	
Enrichment Ctr.	2035 Van Wye Street Suite 1	Warren	OH		X	
Fairhaven School	45 North Road	Niles	OH		X	
Farmdale PO	5914 Mayburn Barcly Road	Farmdale	OH		X	



TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
Farmington Twp.	251 4th Street	West Farmington	OH		X	
Farmington Twp. FD	151 College Street	West Farmington	OH		X	
Forum Hillside Rehab. Hospital	8747 Squires Lane NE	Warren	OH		X	
Fowler PO	3455 Youngstown Kingsville Road	Fowler	OH		X	
Fowler Twp.	4562 Wilson Sharpsville Road	Cortland	OH		X	
Fowler Twp. PD	PO Box 12	Fowler	OH		X	
Fowler Twp. VFD	3386 Youngstown-Kingsville Road	Fowler	OH		X	
Gillette Nursing Home	3310 Elm Road	Warren	OH		X	
Girard City BOE	100 West Main Street, Suite 2	Girard	OH		X	
Girard City BOE	704 East Propect Street	Girard	OH		X	
Girard City FD	105 E. Liberty Street	Girard	OH		X	
Girard City PD	100 West Main Street	Girard	OH		X	
Girard City Schools Bus Garage	130 West Broadway	Girard	OH		X	
Girard FD	105 East Liberty Street	Girard	OH		X	
Girard High School	1244 Shannon Road	Girard	OH		X	
Girard Intermediate	702 East Prospect Street	Girard	OH		X	
Girard Junior High	1244 Shannon Road	Girard	OH		X	
Girard Library	105 East Prospect Street	Girard	OH			X
Girard Water Service	N/A	Girard	OH	X		
Grace Woods Village	730 Youngstown Road	Niles	OH		X	
Greene Twp.	2077 Kinsman Road NE	North Bloomfield	OH		X	
Greene Twp. VFD	2077 Kinsman Road	North Bloomfield	OH		X	
Gustavus Twp.	N/A		OH		X	
Gustavus Twp. VFD	8750 State Route 193	Farmdale	OH		X	
Guy Middle School	4115 Shady Road	Youngstown	OH		X	
H.C. Mines Elementary	850 Howland-Wilson Road NE	Warren	OH		X	
Hartford PO	6893 State Route 305	Hartford	OH		X	
Hartford Twp.	6901 State Route 305	Hartford	OH		X	
Hartford Twp. PD	6901 State Route 305	Hartford	OH		X	
Horizon Village Nursing & Rehab. Ctr.	2473 North Road NE	Warren	OH		X	
Howland Glen Primary	8000 Bridle Lane	Warren	OH		X	
Howland High School	200 Shaffer Drive NE	Warren	OH		X	



TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
Howland Local Schools	200 Shaffer Drive NE	Warren	OH		X	
Howland Local Schools	8200 South Street SE	Warren	OH		X	
Howland Local Schools	850 Howland-Wilson Road	Warren	OH		X	
Howland Middle School	8100 South Street SE	Warren	OH		X	
Howland Springs Primary	9500 Howland Springs Road	Warren	OH		X	
Howland Twp.	205 Niles Cortland Road NE	Warren	OH		X	
Howland Twp. FD, #30, #31, #32	169 Niles Cortland Road	Warren	OH		X	
Howland Twp. PD	169 Niles Cortland NE	Warren	OH		X	
Hubbard City PD	33 West Liberty Street	Hubbard	OH		X	
Hubbard City VFD	33 West Liberty Street	Hubbard	OH		X	
Hubbard Elementary	150 Hall Avenue	Hubbard	OH		X	
Hubbard Exempted Village BOE	108 Orchard Avenue	Hubbard	OH		X	
Hubbard Exempted Village Schools	150 Hall Avenue	Hubbard	OH		X	
Hubbard Exempted Village Schools	341 Hall Avenue	Hubbard	OH		X	
Hubbard Exempted Village Schools	351 Hall Avenue	Hubbard	OH		X	
Hubbard High School	350 Hall Avenue	Hubbard	OH		X	
Hubbard Middle School	250 Hall Avenue	Hubbard	OH		X	
Hubbard Public Library	436 West Liberty Street	Hubbard	OH			X
Hubbard Twp.	2600 Elmwood Drive	Hubbard	OH		X	
Imperial Skilled Care Ctr.	4121 Tod Avenue NW	Warren	OH		X	
Jefferson K-8	1543 Tod Avenue SW	Warren	OH		X	
John F. Kennedy High School	2550 Central Parkway SE	Warren	OH		X	
John F. Kennedy Lower Campus	3000 Reeves Road	Warren	OH		X	
John Stark Edwards House & Museum	303 Monroe Street	Warren	OH			X
Johnston Twp.	PO Box 693	Cortland	OH		X	
Johnston Twp. FD	4424 Greenville Road	Farmdale	OH		X	
Johnston Twp. PD	5922 Warren Road	Cortland	OH		X	
Joseph Badger Local Schools	7119 State Route 7	Kinsman	OH		X	
Kent State Trumbull Branch	State Route 45	Warren	OH		X	
Kinsman Public Library	6420 Church Street	Kinsman	OH			X
Kinsman Twp.	6346 State Route 87	Kinsman	OH		X	
Kinsman Twp. VFD	8450 Ridge Road	Kinsman	OH		X	



TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
LaBrae High School	1001 North Leavitt	Leavittsburg	OH		X	
LaBrae Intermediate	1001 North Leavitt	Leavittsburg	OH		X	
LaBrae Local Schools	1001 North Leavitt	Leavittsburg	OH		X	
LaBrae Local Schools	1015 N. Leavitt Road	Leavittsburg	OH		X	
LaBrae Middle School	1001 North Leavitt	Leavittsburg	OH		X	
Lakeview Elementary	640 Wakefield Drive	Warren	OH		X	
Lakeview High School	300 Hillman Drive	Cortland	OH		X	
Lakeview Local BOE	300 Hillman Drive	Cortland	OH		X	
Lakeview Middle School	640 Wakefield Drive	Cortland	OH		X	
Lane Life Corp.	1350 N Niles Canfield Road	Mineral Ridge	OH		X	
Laurie Ann Nursing Home	2200 Milton Boulevard	Newton Falls	OH		X	
Liberty High School	1 Leopard Way	Youngstown	OH		X	
Liberty Local Schools	4115 Shady Road	Youngstown	OH		X	
Liberty Twp.	1315 Churchill Hubbard Road	Liberty	OH		X	
Liberty Twp. FD	4001 Logan Way	Youngstown	OH		X	
Lincoln K-8	2253 Atlantic Avenue NE	Warren	OH		X	
Lincoln K-8	3465 Tod Avenue NW	Warren	OH		X	
Lincoln/Jefferson	2253 Atlantic Avenue NE	Warren	OH		X	
Lincoln/Willard	2253 Atlantic Avenue NE	Warren	OH		X	
Lordstown Elementary	1776 Salt Springs Road	Warren	OH		X	
Lordstown High School	1824 Salt Springs Road	Warren	OH		X	
Lordstown Local Schools	1824 Salt Springs Road	Warren	OH		X	
Lordstown Village FD	1595 Salt Spring Road	Warren	OH		X	
Lordstown Village PD	1583 Salt Springs Road	Warren	OH		X	
Mahoning Valley Sanitary District	1181 Ohtown-McDonald Road	Mineral Ridge	OH	X		
Maplewood Elementary	2414 Greenville Road	Cortland	OH		X	
Maplewood Elementary School	4174 Greenville Road	Cortland	OH		X	
Maplewood High School	2414 Greenville Road	Cortland	OH		X	
Maplewood Local Schools	2414 Greenville Road	Cortland	OH		X	
Mathews High School	4429 Warren-Sharon Road	Vienna	OH		X	
Mathews Local BOE	4429 Warren-Sharon Road	Vienna	OH		X	
Mathews Local Schools	4096 Cadwallader-Sonk Road	Cortland	OH		X	



TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
McDonald Elementary	410 W. 7th Street	McDonald	OH		X	
McDonald High School	600 Iowa Avenue	McDonald	OH		X	
McDonald Local Schools	410 West 7th Street	McDonald	OH		X	
McDonald Local Schools	600 Iowa Avenue	McDonald	OH		X	
McDonald PO	500 Ohio Avenue	McDonald	OH		X	
McDonald Village FD	451 Ohio Avenue	McDonald	OH		X	
McDonald Village PD	218 Adam Street	McDonald	OH		X	
McGuffey K-8	3465 Tod Avenue NW	Warren	OH		X	
McGuffey/Willard	2253 Atlantic Avenue NE	Warren	OH		X	
McKinley Birthplace Memorial & Museum	40 North Main Street	Niles	OH			X
McKinley Memorial Library	40 North Main Street	Niles	OH			X
Mecca Twp.	2453 Edgewater Drive	Cortland	OH		X	
Mecca Twp. VFD	6333 State Route 46	Cortland	OH		X	
Med Star EMS & Transport	1600 Youngstown Road SE	Warren	OH		X	
Mesopotamia Twp.	8686 State Route 534 NW	Mesopotamia	OH		X	
Mesopotamia Twp. VFD	8800 State Route 534	Mesopotamia	OH		X	
Mespo Elementary	4466 Kinsman Road	Mesopotamia	OH		X	
Mineral Ridge High School	1334 Seaborn Street	Mineral Ridge	OH		X	
Monroe Center	261 Monroe Street	Warren	OH		X	
Newton Falls Elementary/Middle	909 Milton Boulevard	Newton Falls	OH		X	
Newton Falls Ex Village	907 Milton Boulevard	Newton Falls	OH		X	
Newton Falls Ex Village BOE	909-1/2 Milton Boulevard	Newton Falls	OH		X	
Newton Falls High School	907 Milton Boulevard	Newton Falls	OH		X	
Newton Falls Joint Fire District	19 N Canal Street	Newton Falls	OH		X	
Newton Falls Jr. High	907 1/2 Milton Boulevard	Newton Falls	OH		X	
Newton Falls Jr./Sr. High	905 Milton Boulevard	Newton Falls	OH		X	
Newton Falls PD	19 North Canal Street	Newton Falls	OH		X	
Newton Falls Public Library	204 South Canal Street	Newton Falls	OH			X
Newton Twp.	4410 Newton Falls Bailey Road	Newton Falls	OH		X	
Niles City BOE	102 Water Street	Niles	OH		X	
Niles City BOE	309 Rhodes Avenue	Niles	OH		X	
Niles City FD	15 E State Street	Niles	OH		X	



TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
Niles City PD	15 E State Street	Niles	OH		X	
Niles Intermediate School	120 East Margaret Street	Niles	OH		X	
Niles McKinley High School	616 Dragon Drive	Niles	OH		X	
Niles Middle School	309 North Rhodes Avenue	Niles	OH		X	
Niles Middle School	411 Brown Street	Niles	OH		X	
Niles PO	43 West Park Avenue	Niles	OH		X	
Niles Primary School	960 Frederick Street	Niles	OH		X	
North Road Intermediate	863 North Road, SE	Warren	OH		X	
O'Brien Memorial Nursing Home	563 Brookfield Avenue SE	Masury	OH		X	
Ohio Army National Guard	1436 State Route 534 SW	Newton Falls	OH		X	
Orangeville PO	7401 Stateline Road	Orangeville	OH		X	
Orangeville Village VFD	8276 High Street	Orangeville	OH		X	
Prospect Elementary	700 East Prospect Street	Girard	OH		X	
Red Cross Headquarters Niles Branch	N/A	Niles	OH		X	
Ridgecrest Care Ctr.	1926 Ridge Avenue SE	Warren	OH		X	
Roosevelt Elementary	410 West 7th Street	McDonald	OH		X	
Seaborn Elementary	3800 Niles-Carver Road	Mineral Ridge	OH		X	
Shepherd of the Valley Lutheran Retirement Ser.	4100 North River Road	Howland	OH		X	
Southington Elementary	2482 State Route 534	Southington	OH		X	
Southington Local Schools	2482 State Route 534	Southington	OH		X	
Southington Twp.	3419 State Route 534	Southington	OH		X	
Southington Twp. VFD	4361 State Route 305	Southington	OH		X	
St. Joseph Health Ctr.	667 Eastland Avenue SE	Warren	OH		X	
State Highway Patrol	3424 State Route 422	Southington	OH		X	
TCECSC	6000 Youngstown Warren Road	Niles	OH		X	
TCTC	528 Educational Highway	Warren	OH		X	
Transportation	600 Roanoke SE	Warren	OH		X	
Trumbull County Courthouse	161 High Street NW	Warren	OH		X	
Trumbull County EMA	640 North River Road NW	Warren	OH		X	
Trumbull County Emer. Communications Ctr.	911 Howland Wilson Road	Warren	OH		X	
Trumbull County Engineer	650 North River Road NW	Warren	OH		X	



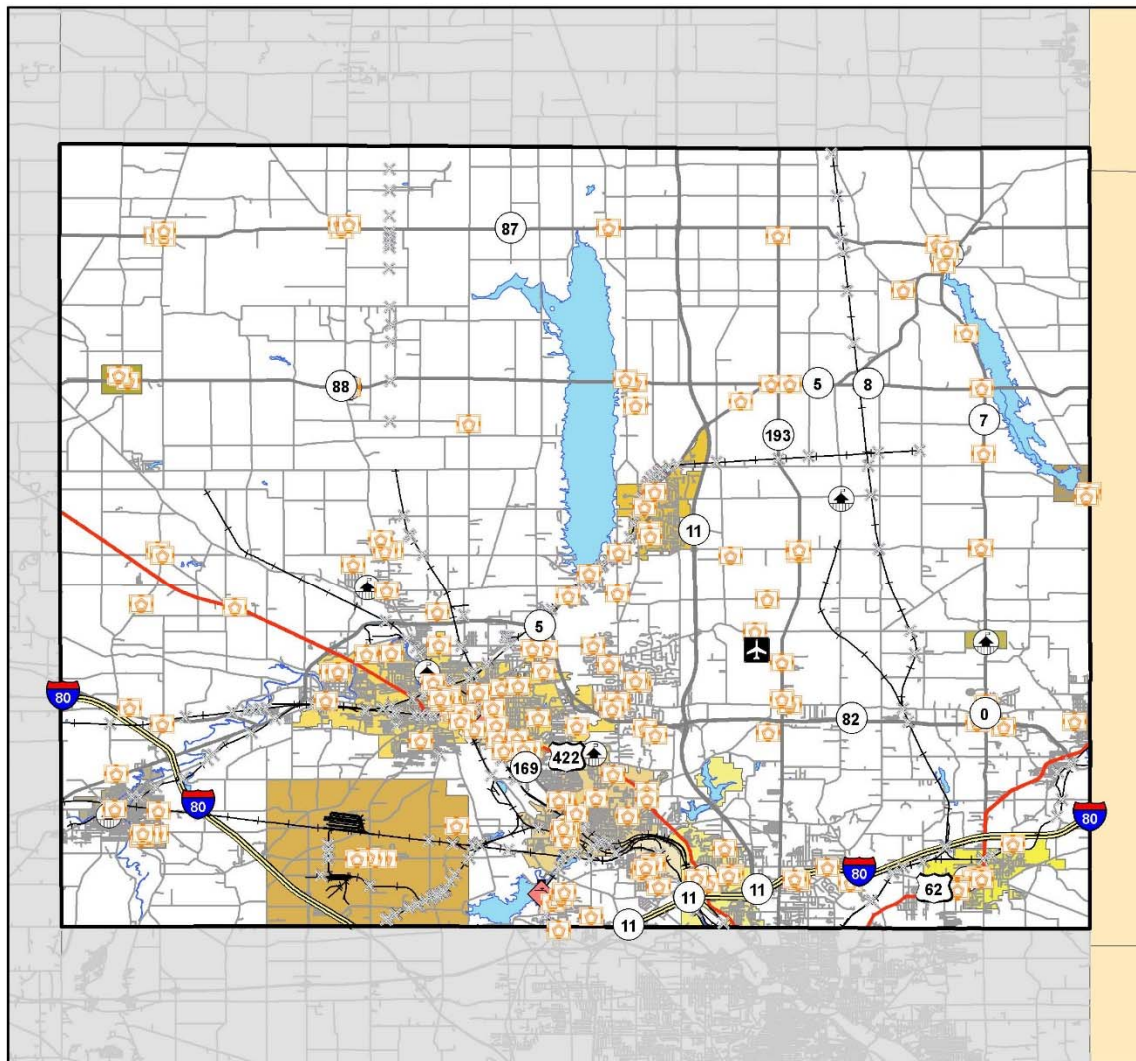
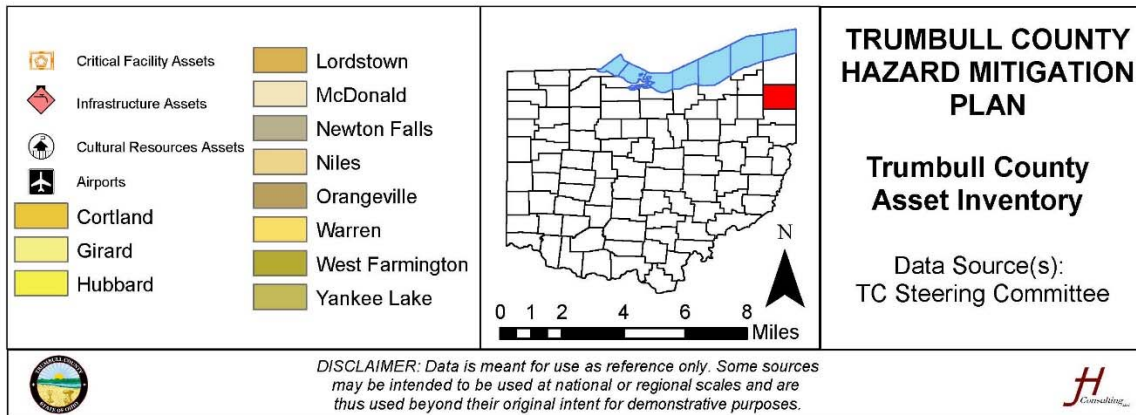
TRUMBULL COUNTY ASSET INTENTORY						
Asset Name	Street Address	City	State	Asset Type		
				Infrastructure	Critical Facilities	Cultural Resources
Trumbull County Sheriff	150 High Street NW	Warren	OH		X	
Trumbull Memorial Hospital	1350 East Market Street	Warren	OH		X	
Vernon Twp.	6160 State Route 7	Kinsman	OH		X	
Vienna Twp.	848 Youngstown Kingsville Road	Vienna	OH		X	
Vienna Twp. FD	833 Youngstown-Kingsville Road	Vienna	OH		X	
Village of Lordstown	1455 Salt Springs Road	Lordstown	OH		X	
Village of McDonald	451 Ohio Avenue	McDonald	OH		X	
Village of Orangeville	N/A	Orangeville	OH		X	
Village of West Farmington	251 Fourth Street	West Farmington	OH		X	
Village of Yankee Lake	N/A	Yankee Lake	OH		X	
W.D. Packard Car Museum	1899 Mahoning Avenue NW	Warren	OH			X
Warren City FD	111 South Street SW	Warren	OH		X	
Warren City PD	141 South Street SE	Warren	OH		X	
Warren FD Northeast Station	1600 Atlantic Avenue	Warren	OH		X	
Warren G. Harding High School	860 Elm Road NE	Warren	OH		X	
Warren Twp.	N/A	Warren	OH		X	
Warren Twp. FD	4750 West Market Street	Leavittsburg	OH		X	
Warren-Trumbull County Public Library	444 Mahoning Avenue NW	Warren	OH			X
Washington Square Nursing Ctr.	202 Washington Street NW	Warren	OH		X	
Weathersfield Local Schools	1334 Seaborn Street	Mineral Ridge	OH		X	
Weathersfield Twp.	1451 Prospect Street	Mineral Ridge	OH		X	
Weathersfield Twp. FD	1451 Prospect Street	Mineral Ridge	OH		X	
Weathersfield Twp. PD	1451 Prospect Street	Mineral Ridge	OH		X	
West Farmington PD	251 Fourth Street	West Farmington	OH		X	
West Farmington PO	226 East Main Street	West Farmington	OH		X	
West Farmington WTP	PO Box 215	West Farmington	OH	X		
Willard K-8	2020 Willard Avenue SE	Warren	OH		X	
Windsor House	101 West Liberty Street	Girard	OH			X
Yankee Lake Ballroom	1814 State Route 7 NE	Brookfield	OH			X
Youngstown Air Reserve Station	3976 King Graves Road	Vienna	OH		X	
Youngstown-Warren Regional Airport	1453 Youngstown Kingsville Road	Vienna	OH		X	



The following map depicts these assets graphically.







## 1.0 INTRODUCTION

### 1.3 Capabilities

§201.6(b)(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

This section examines the existing capabilities of Trumbull County and the participating jurisdictions. Specifically, this section looks at those capabilities that can support the implementation of hazard mitigation efforts. The county's consultant hosted an online survey of jurisdictional representatives to complete a "capabilities assessment." Representatives answered questions about various plans, codes, and ordinances from the perspectives of their home jurisdictions. The following table summarizes jurisdictional capabilities.

JURISDICTIONAL CAPABILITIES							
<i>Jurisdiction</i>	Comprehensive Plan	Building Codes	Subdivision or Land Use Ordinance	Zoning Ordinance	Participates in the NFIP	Capital Budget Funds for Mitigation Projects	Public Works Budget for Mitigation projects
Trumbull County	YES	NO	NO	NO	YES	NO	NO
Cortland City	NO	YES	YES	YES	YES	NO	NO
Girard City	YES	YES	NO	NO	YES	NO	NO
Hubbard City	YES	YES	YES	YES	YES	YES	YES <sup>2</sup>
Niles City	N/A	N/A	N/A	N/A	YES	N/A	N/A
Warren City	YES	YES	YES	YES	YES	NO <sup>1</sup>	NO <sup>1</sup>
Lordstown Village	NO	YES	YES	YES	YES	NO	NO
McDonald Village	NO	YES	YES	YES	YES	NO	NO
Newton Falls Village	YES	YES	NO	YES	YES	NO	NO
Orangeville Village	N/A	N/A	N/A	N/A	YES	NO	NO
West Farmington Village	NO	NO	NO	YES	NO	NO	NO
Yankee Lake Village	N/A	N/A	N/A	N/A	NO	NO	NO
Bazetta Township	YES	NO	YES	YES	N/A	NO <sup>1</sup>	NO <sup>1</sup>
Bloomfield Township	N/A	N/A	N/A	N/A	N/A	NO	NO
Braceville Township	YES	YES	N/A	YES	N/A	NO	NO
Bristol Township	YES	NO	NO	YES	N/A	NO	NO
Brookfield Township	YES	YES	NO	NO	N/A	N/A	N/A
Champion Township	YES	YES	YES	YES	N/A	NO <sup>1</sup>	YES <sup>2</sup>
Farmington Township	YES	YES	YES	YES	N/A	NO <sup>1</sup>	NO <sup>1</sup>
Fowler Township	NO	NO	NO	YES	N/A	NO	NO
Greene Township	N/A	N/A	N/A	N/A	N/A	NO	NO
Gustavus Township	NO	NO	NO	YES	N/A	NO	NO
Hartford Township	YES	NO	YES	YES	N/A	NO	NO
Howland Township	YES	YES	YES	YES	N/A	NO <sup>1</sup>	YES <sup>2</sup>

JURISDICTIONAL CAPABILITIES							
<i>Jurisdiction</i>	Comprehensive Plan	Building Codes	Subdivision or Land Use Ordinance	Zoning Ordinance	Participates in the NFIP	Capital Budget Funds for Mitigation Projects	Public Works Budget for Mitigation projects
Hubbard Township	YES	NO	YES	YES	N/A	NO	YES <sup>2</sup>
Johnston Township	YES	YES	NO	YES	N/A	NO	NO
Kinsman Township	YES	NO	NO	YES	N/A	NO	NO
Liberty Township	YES	NO	NO	YES	N/A	NO	NO
Mecca Township	NO	NO	NO	NO	N/A	NO	NO
Mesopotamia Township	NO	NO	NO	NO	N/A	NO	NO
Newton Township	YES	NO	NO	YES	N/A	NO	NO
Southington Township	YES	NO	NO	YES	N/A	NO	NO
Vernon Township	NO	NO	NO	NO	N/A	NO	NO
Vienna Township	YES	NO	NO	YES	N/A	NO <sup>1</sup>	NO
Warren Township	N/A	N/A	N/A	N/A	N/A	NO	NO
Weathersfield Township	YES	NO	YES	YES	N/A	NO	NO

1. Response was, "No, but my jurisdiction would be willing to consider it in future budgets."

2. Response was, "Yes, but it is limited or would be comprised of in-kind services."

### 1.3.1 Existing Plans and Ordinances

Trumbull County itself and the municipalities therein have many capabilities that can support mitigation efforts, including comprehensive plans, building codes, subdivision and land use ordinances, zoning ordinances, and floodplain regulations. Several jurisdictions asked multiple representatives to take this survey. In some cases, respondents differed in their assessments of whether their jurisdiction had ordinances like building or subdivision codes in place. In summary, Trumbull County and the municipalities therein appear to have a "moderate" planning and regulatory capability.

#### Comprehensive Plans

Comprehensive plans promote sound land use and regional cooperation among local governments to address planning issues. These plans serve as the official policy guide for influencing the location, type, and extent of future development by establishing the basic decision-making and review processes on zoning matters, subdivision and land development, land uses, public facilities, and housing needs over time.

Several jurisdictions in Trumbull County maintain comprehensive plans of some sort. Twenty-one (20) of the 23 respondents reported the presence of a comprehensive plan. Only one of the remaining respondents answered "no" to the question; the other two respondents skipped the question. Additionally, the Eastgate Regional Council of Governments serves as a regional

planning and development council representing the governments in Trumbull and other surrounding counties. Eastgate supports a variety of community, economic, and transportation development planning efforts.

### Building Codes

Building codes regulate construction standards for new construction and substantially renovated buildings. Standards can require resistant or resilient building design practices to address hazard impacts common to a given community. Building codes can contribute substantially to hazard mitigation, even if a jurisdiction only adopts codes to the level of the recommended International Building Code (IBC). Ten (47.62%) of the jurisdictional respondents reported having building codes in place, while 11 (52.38%) did not. Two respondents skipped the question. Building codes prompted the most variance amongst respondents from the same jurisdictions. Respondents from Brookfield, Champion, and Howland Townships differed on the answers to the question.

### Subdivision and Land Use Development Ordinances

Subdivision and land development ordinances (SALDOs) regulate the development of housing, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Within these ordinances, guidelines on how to divide the land, the placement and size of roads, and the location of infrastructure can reduce exposure of development to hazard events.

Responses to the SALDO question provided the first “unknown” response, with one respondent selecting the option. Twelve (12) respondents (57.14%) indicated their jurisdiction maintains SALDOs, while eight (38.10%) reported their jurisdictions do not.

### Zoning Ordinances

Zoning ordinances allow for local communities to regulate the use of land to protect the interests and safety of the general public. Zoning ordinances can address unique conditions or concerns within a given community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development, or require land development to consider specific hazard vulnerabilities. The majority of Trumbull County’s respondents reported having zoning ordinances in place (17 “yes” responses [80.95%] with four “no” responses [19.05%]).



### National Flood Insurance Program (NFIP) Participation and Floodplain Management Ordinances

Through the administration of floodplain ordinances, local governments can ensure that all new construction or substantial improvements to existing structures located in the floodplain are flood-proofed, dry-floodproofed, or built above anticipated flood elevations. Floodplain ordinances may also prohibit development in certain areas altogether. The NFIP establishes minimum ordinance requirements in order for that community to participate in the program. However, a community is permitted and encouraged to adopt standards that exceed NFIP requirements. Trumbull County adopted the Flood Damage Reduction Resolution on May 5, 2010, that referenced the most recent flood insurance study (FIS) for the county.

FEMA's *Community Status Book* indicates that all but two jurisdictions in Trumbull County participate in the NFIP. The primary program coordinator for the county is the Trumbull County Planning Commission. Participants manage their participation in the program in similar ways. Many municipalities refer residents to the planning commission or other entities like their municipal building or zoning officers, the county engineer, etc. for general information on floodplain development compliance. Flood insurance rate maps (FIRMs) are typically available on websites (e.g., <http://planning.co.trumbull.oh.us/Floodplains.html>). The Trumbull County Emergency Management Agency, Trumbull County Soil and Water Conservation Agency, Eastgate Regional Council of Governments, and the U.S. Army Corps of Engineers also maintain and provide information on local FIRMs. Currently, no jurisdictions in Trumbull County participate in the Community Rating System (CRS). Monitoring for compliance, particularly at the municipal and township levels, is via building and zoning officers.

Notification to residents about flood insurance and other flooding issues is typically through websites. Public service announcements about the benefits of flood insurance appear regularly. Some local governments in Trumbull County publish this information via social media accounts. A small number of townships reported providing information directly to builders and landowners (particularly those in flood-prone areas).

### **1.3.2 Capability Assessment**

All jurisdictions in the county (i.e., the county, municipalities, and townships) had an opportunity to complete a "capability self-assessment" via an online survey. Representative members of 17 jurisdictions completed a self-assessment for their jurisdiction. In response to the survey questionnaire, local officials classified each of the capabilities as high, moderate, or limited.



### Administrative and Technical Capability

Administrative capability is adequacy of departmental and personnel resources for the implementation of mitigation-related activities. Technical capability relates to an adequacy of knowledge and technical expertise of local government employees or the ability to contract outside resources for this expertise to effectively execute mitigation activities. Fourteen (14) respondent jurisdictions reported having a variety of technical specialists available to them to support hazard mitigation activities. The following table depicts the results.

Technical Specialists	% of Respondents
In-house planners with knowledge of land development/management practices	21.43
Contracted planners with knowledge of LOCAL land development/management practices	14.29
In-house engineers	14.29
Contracted engineers with intimate LOCAL knowledge	35.71
In-house building inspectors	7.14
In-house planners with an understanding of natural and human-caused hazards	14.29
Contracted planners with an understanding of LOCAL natural and human-caused hazards	21.43
Emergency manager(s)	42.86
Floodplain manager(s)	14.29
In-house land surveyor(s)	14.29
Local scientists familiar with hazards in your community (e.g., staff at a nearby/local university)	7.14
In-house staff with education or expertise to assess vulnerability to hazards	7.14
In-house GIS mappers	7.14
Other:	14.29
<ul style="list-style-type: none"> <li>Design engineers for water and sanitary sewer (x1)</li> <li>Trumbull County (x1)</li> </ul>	

### Fiscal Capability

The decision and capacity to implement mitigation-related activities is often strongly dependent on the presence of local financial resources. While some mitigation actions are less costly than others, it is important that money is available locally to implement policies and projects. Financial resources are particularly important if communities are trying to take advantage of state or federal mitigation grant funding opportunities that require local-match contributions. Federal programs which may provide financial support for mitigation activities include, but are not limited to:

- Community Development Block Grant (CDBG),
- Disaster Housing Program,
- Emergency Conservation Program,
- Flood Mitigation Assistance Program,
- Non-Insured Crop Disaster Assistance Program,
- Pre-Disaster Mitigation Program,



- Emergency Management Performance Grants (EMPG),
- Emergency Watershed Protection Program,
- Hazard Mitigation Grant Program (HMGP),
- Repetitive Flood Claims Program (RFC),
- Section 108 Loan Guarantee Programs,
- Severe Repetitive Loss (SRL) Program, and
- Weatherization Assistance Program.

State programs that may support mitigation include (but are not limited to):

- Ohio Department of Development (job-ready sites and CDBG funds for economic development),
- Ohio Department of Natural Resources (land and water conservation efforts),
- Ohio Environmental Protection Agency (loans and capital improvements), and
- Ohio Emergency Management Agency (funds to support emergency preparedness, response, and overall resilience).

Two jurisdictions (Trumbull County and Warren City) reported having grants specialists on their payrolls. One jurisdiction (Hubbard City) noted that its capital budget could support mitigation projects, while six others (Warren City, Bazetta Township, Champion Township, Farmington Township, Howland Township, and Vienna Township) noted they would be willing consider it in future budgets. Public works budgets could also support hazard mitigation activities. Four respondents (Hubbard City, Champion Township, Howland Township, and Hubbard Township) indicated that in-kind public works services could support mitigation while three (Warren City, Bazetta Township, and Farmington Township) will consider mitigation in future public works budgets.

### Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to mitigate hazard events. The adoption of hazard mitigation measures may be seen as an impediment to growth and economic development. In many cases, mitigation may not generate interest among local officials when compared with competing priorities. Therefore, the local political climate must be considered when designing mitigation strategies, as it could be the most difficult hurdle to overcome in accomplishing the adoption or implementation of specific actions.



The following table summarizes the results of the self-assessment survey as a percentage of the responses received.

CAPABILITY SELF-ASSESSMENT			
<i>Capability</i>	<i>High</i>	<i>Moderate</i>	<i>Limited</i>
Administrative & Technical	5.00%	20.00%	75.00%
Fiscal	5.56%	11.11%	83.33%
Political	11.76%	17.65%	70.59%

The 2020 self-assessment also included four questions to gauge community receptiveness to several types of mitigation strategies. The following table details the results.

SELF-ASSESSMENT: PROJECT CONSIDERATIONS					
<i>Sample Mitigation Strategy</i>	<i>Very Willing</i>	<i>Willing</i>	<i>Neutral</i>	<i>Unwilling</i>	<i>Very Much Unwilling</i>
XYZ community guides development away from known hazard areas.	23.53%	47.06%	29.41%	0.00%	0.00%
XYZ community restricts public investments or capital improvements within hazard areas.	17.65%	35.29%	47.06%	0.00%	0.00%
XYZ community enforces local development standards (e.g., building codes, floodplain management ordinances, etc.) that go beyond minimum state or federal requirements.	11.76%	29.41%	52.94%	5.88%	0.00%
XYZ community offers financial incentives (e.g., through property tax credits) to individuals and businesses that employ resilient construction techniques (e.g., voluntarily elevate structures, employ landscape designs that establish buffers, install green infrastructure elements, etc.).	11.76%	17.65%	64.71%	5.88%	0.00%

### 1.3.3 Studies, Reports, and Technical Information

The research conducted for the development of this plan included data from federal, state, and higher education studies, reports, and technical information. Specific sources relative to individual hazards appear in Appendix 5: Citations. Trumbull County's consultant reviewed a number of existing plans and reports to (a) identify any obvious inconsistencies between other development and mitigation efforts, (b) as baseline information for such sections as trends and predictions, and (c) to support discussions surrounding mitigation projects. Those documents included the following.



REFERENCED DOCUMENTS		
<i>Document Type</i>	<i>Document Citation</i>	<i>How Incorporated into Plan</i>
Technical Information	ODNR Division of Soil and Water Conservation. (2014). <i>Rainwater and land development: Ohio's standards for stormwater management land development and urban stream protection</i> , 3 <sup>rd</sup> Ed. State Government: Columbus, OH.	Used to support discussions of site-specific flood mitigation.
Technical Information	USDHS FEMA. (2005). <i>Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning</i> . Federal Government: Washington, DC.	Used as general guidance for incorporating historical property and cultural protection.
Technical Information	USDHS FEMA. (2010). <i>Flood insurance study: Trumbull County Ohio and unincorporated areas</i> . Federal Government: Washington, DC.	Used as a resource for identifying flood-prone areas in the flooding profile.
Technical Information	USDHS FEMA. (2013). <i>Integrating Hazard Mitigation Into Local Planning</i> . Federal Government: Washington, DC.	Used as general guidance on existing plan integration for hazard mitigation
Technical Information	USDHS FEMA. (2013). <i>Local mitigation planning handbook</i> . Federal Government: Washington, DC.	Used as general guidance on revised mitigation planning process
Technical Information	USDHS FEMA. (2013) <i>Mitigation Ideas</i> . Federal Government: Washington, DC.	Used as general guidance for stakeholders and jurisdictions on mitigation ideas
Technical Information	USDHS FEMA. (2016). <i>National Mitigation Framework</i> . Federal Government: Washington, DC.	Used as general guidance on mitigation planning.
Technical Information	USEPA. (2018). <i>Storm smart cities: Integrating green infrastructure into local hazard mitigation plans</i> . Federal Government: Philadelphia, PA.	Outlines ways low-impact development and green infrastructure can support mitigation planning.
Plan	State of Ohio (2019). <i>Enhanced hazard mitigation plan</i> . State Government: Columbus, OH.	Used as general guidance on existing plan integration for hazard mitigation
Plan	Trumbull County Combined Health District. (2017). <i>Communication response plan</i> . Local Government: Warren, OH.	Used as a resource for the epidemic profile; also informed potential project updates for public health emergencies.
Plan	Trumbull County Combined Health District. (2018). <i>Trumbull County Combined Health District (TCCHD) emergency response plan (ERP) basic plan</i> . Local Government: Warren, OH.	Used as a resource for the epidemic profile; also informed potential project updates for public health emergencies. As a document covering both Trumbull County and the City of Warren, the document informed project considerations for both jurisdictions.
Plan	Trumbull County Department of Health. (n.d.). <i>Pandemic influence preparedness plan for Trumbull County</i> . Local Government: Warren, OH.	Used as a resource for the epidemic profile.
Plan	Trumbull County Department of Health. (2015). <i>Chemical, biological, radiological, nuclear and explosive (CBRNE) plan</i> . Local Government: Warren, OH.	Used to frame CBRNE response capabilities specific to public health; also used as a source for justifying the inclusion of the terrorism profile.
Plan	Trumbull County Department of Health. (2015). <i>Epidemiological response plan</i> . Local Government: Warren, OH.	Used to frame epidemic profile information; also used as a resource for identifying sources of disease information.
Plan	Trumbull County Department of Health. (2015). <i>SNS response plan</i> . Local Government: Warren, OH.	Used as a resource for the epidemic profile.
Plan	Trumbull County Department of Health. (2015). <i>Trumbull County public health community containment plan (quarantine plan)</i> . Local Government: Warren, OH.	Used as a resource for the epidemic profile.



REFERENCED DOCUMENTS		
<i>Document Type</i>	<i>Document Citation</i>	<i>How Incorporated into Plan</i>
Plan	Trumbull County Planning Commission. (1999). <i>Farmland preservation plan for Trumbull County</i> . Local Government: Warren, OH.	Used as a resource for the description of the planning area and drought profile.
Manual	Trumbull County Engineers & Trumbull County Soil and Warning Conservation District. (2012). <i>Trumbull County drainage and erosion and sedimentation control manual</i> . Local Government: Warren, OH.	Used as a resource for the flooding and geologic hazards profiles.
Assessment	Eastgate Regional Council of Governments. (2018). <i>Interface: Comprehensive economic development strategy</i> . Local Government: Youngstown, OH.	Used to identify development trends per economic development.
Assessment	USDA Natural Resources Conservation Service. (n.d.). <i>Soil survey of Columbiana County, Ohio</i> . Federal Government: Washington, DC.	Used to support consideration of subsidence and other geologic hazards.
Study	Eastgate Regional Council of Governments. (2019). <i>Multimodal network connectivity study: Mahoning and Trumbull Counties, Ohio</i> . Local Government: Youngstown, OH.	Used to identify development trends per the transportation infrastructure.
Miscellaneous	The Trumbull-Mahoning Green Pact.	Used to inform project considerations for flooding, etc.



## 2.0 RISK ASSESSMENT

A risk assessment analyzes, “the potential for damage, loss, or other impacts created by the interaction of hazards with community assets” (FEMA, 2013). This risk assessment section contains information on identified hazards that threaten Trumbull County and the surrounding region and the vulnerability of the area as it relates to the county’s assets.

## 2.0 RISK ASSESSMENT

### 2.1 Hazard Identification

§201.6(c)(2)(i)	[The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
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The committee spent much of its second meeting discussing the hazards it wished to include in the plan. The discussion started with a list of the hazards from the previous version of the plan. The committee recognized and agreed to the required revision per the Ohio Emergency Management Agency changing “dam failure” to “dam & levee failure” even though there are no levees in Trumbull County. The county’s consultant specifically asked several questions per hazard inclusions. The first was whether to change the title of the “epidemic” profile (from 2010) to the broader “public health emergencies.” The committee requested to keep “epidemic” because it conveys rising to a level where a multi-jurisdictional response may be necessary (versus something that ties into business as usual).

The second question regarded splitting the land and mine subsidence discussion into two separate profiles. They comprised a single profile in the previous version of the plan. The committee suggested that the subsidence profile include subheadings rather than creating multiple profiles. The third question confirmed that the temperature extreme profile should include both extreme heat and cold. The committee noted that recent responses had included the activation of warming centers during extreme cold incidents.

Finally, the committee noted a preference for keeping “terrorism” listed as a hazard. The group asked the consultant to ensure that various “types” of terrorism are included (e.g., chemical, biological, etc.). Since the mitigation plan is a component of a broader effort to prepare for hazards (writ large), the consultant agreed to include a summary in the risk assessment that addresses the overlaps between mitigation, preparedness, and response, as well as complementary initiatives undertaken by partners (e.g., public health).



The following table lists the hazards considered by the remainder of this risk assessment.

HAZARDS IDENTIFICATION	
<i>Hazard</i>	<i>Description</i>
<b>Natural Hazards</b>	
Drought	Existing. This hazard includes meteorological, agricultural, hydrological, and socioeconomic droughts.
Earthquake	Existing.
Epidemic	Existing.
Flooding	Existing. This hazard includes flash flooding.
Hailstorm	Existing.
Infestation	Existing.
Geologic Hazards	Revised. Formerly "Land & Mine Subsidence." The profile still includes those hazards as subsections but also includes erosion, landslides, etc. as appropriate.
Severe Thunderstorm	Existing.
Severe Wind & Tornado	Existing.
Severe Winter Storm	Existing. This hazard includes blizzards, ice storms, and heavy snow.
Temperature Extreme	Revised. Includes extreme cold temperatures as well as extreme heat.
Wildfire	Existing.
<b>Technological Hazards</b>	
Dam & Levee Failure	Revised. Levee failure added to this update.
<b>Human-Caused Hazards</b>	
Terrorism	Revised. Explicit reference to chemical, biological, radiological, nuclear, and explosives incidents. Also, reference specific actions across mitigation, preparedness, and response spectrum. Include mitigation and preparedness actions taken by partner agencies.

In addition to these 14 hazards, there exist other potential hazards this plan does not address. The following list presents those hazards.

- **Avalanche:** Avalanches happen mainly in the western United States and Canada. The terrain and geography of Trumbull County are not rugged or severe enough to have avalanches.
- **Coastal Erosion (and Other Lake Hazards):** Trumbull County does not contain any of the Lake Erie shorelines.
- **Hurricanes:** The Atlantic east coast, where hurricane paths are nearest, is approximately 375 miles away, and the Pacific west coast is approximately 2,200 miles away. Neither would affect Trumbull County. The county may experience wet weather as the remnants of Atlantic hurricanes pass through the area; however, winds would not likely be near a hurricane or tropical storm levels.



- **Sea Level Rise:** Sea level risk occurs in oceans; the Atlantic east coast is approximately 375 miles away, and the Pacific west coast is approximately 2,200 miles away. Neither would affect Trumbull County.
- **Tsunami:** Tsunamis occur in oceans; the Atlantic east coast is approximately 375 miles away, and the Pacific west coast is approximately 2,200 miles away. Neither would affect Trumbull County.
- **Volcano:** The closest monitored volcano is in Yellowstone National Park in Wyoming and is approximately 1,500 miles away. It would not affect Trumbull County.



## 2.0 RISK ASSESSMENT

### 2.2 Hazard Profiles

The following profiles detail each hazard considered by this plan, which includes discussion on how the hazard impacts the area. Within each profile, research and historical data inform the following elements.

- **Hazard Overview:** Defines the hazard and presents a summary table of the hazard.
- **Location and Extent:** Identifies the physical places in the county that are vulnerable to the hazard and the severity of a hazard in a given location.

§201.6(c)(2)(i)	A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
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- **Impact and Vulnerability:** Describes impacts on different topics such as health, the environment, or infrastructure that may result from the hazard as well as specific populations that may be vulnerable.

§201.6(c)(2)(ii)	A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008, must also address NFIP-insured structures that have been repetitively damaged by floods.
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- **Historical Occurrences:** Summarizes significant past events related to the hazard.

§201.6(c)(2)(i)	A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
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- **Loss and Damages:** Outlines the methods used for loss amounts (of deaths, injury, and property damage depending on available information) and estimates based on historical information and vulnerable populations, structures, and infrastructure.

§201.6 (c)(2)(ii)(B)	An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.
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- **Risk Assessment:** Details methods for calculating the probability and severity of each hazard.
- **Maps and Assets:** Graphically shows the geographic locations or populations in the county that are vulnerable to each hazard. This subsection also identifies the assets that fall under the hazard risk area. Although there is not a defined title for this subsection in the profiles, assets and maps appear where they are most fitting within the narrative.

§201.6(c)(2)(ii)(A)	The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
§201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.


Hazard profiles appear in the following alphabetical order.

- 2.2.1 Dam & Levee Failure
- 2.2.2 Drought
- 2.2.3 Earthquake
- 2.2.4 Epidemic
- 2.2.5 Flooding
- 2.2.6 Hailstorm
- 2.2.7 Infestation
- 2.2.8 Geologic Hazards
- 2.2.9 Severe Thunderstorm
- 2.2.10 Severe Wind & Tornado
- 2.2.11 Severe Winter Storm
- 2.2.12 Temperature Extreme
- 2.2.13 Terrorism
- 2.2.14 Wildfire



## 2.0 RISK ASSESSMENT

### 2.2.1 Dam and Levee Failure

A dam is a barrier built across a waterway to control the flow or raise the water level. A dam failure occurs when the barrier constructed does not obstruct or restrain water as designed, which can rapidly result in a large area of completely inundated land. Levees, though similar, are embankments built to prevent the overflow of a river.			
	<b>Vulnerability</b>	<b>Period of Occurrence:</b>	At any time, typically after a period of prolonged precipitation causing damages or a prolonged period of drought causing erosion
		<b>Warning Time:</b>	Over 24 hours
		<b>Probability:</b>	High
		<b>Type of Hazard:</b>	Technological
		<b>Hazard Index Ranking:</b>	Lowest
		<b>State Risk Ranking:</b>	3-Medium
		<b>Severity:</b>	Limited
		<b>Disaster Declarations:</b>	None

#### Hazard Overview

The three main causes of dam failure in the U.S. include overtopping, foundation defects and slope instability, and piping.

- **Overtopping** occurs when water spills over the top of the dam. Overtopping due to inadequate spillway design, debris blockage of spillways, or settlement of the dam crest account for approximately 34% of all dam failures in the U.S.
- **Foundation Defects and Slope Instability**, including settlement, cause approximately 30% of all dam failures.
- **Piping** is the internal erosion caused by seepage. Seepage occurs around hydraulic structures, such as pipes and spillways, through animal burrows, around roots of vegetation, and through cracks in the dam. Piping accounts for another 20% of dam failures in the U.S.

Dam failures can be “sunny day” or “rainy day” failures. Sunny day failures occur during non-flooding situations when reservoirs are at normal levels. Rainy day failures occur during periods of excessive rainfall or flooding and can exacerbate inadequate spillway capacity. Sunny day failures are generally more hazardous due to their unexpected nature and little warning time for evacuation.

Though levees are designed to a certain level of potential flood, the U.S. Army Corps of Engineers (USACE) notes that levees are not subject to consistent design, construction, operations, and maintenance standards. Those under the auspices of the USACE receive regular inspections, but this represents an estimated 15% of the levees in the country (USACE, n.d.). Levees function as part of a system. In other words, a levee in one area may overtop by design to protect larger populations downstream (USACE, n.d.). “Levee failure’ implies that something about the levee failed to prevent flooding on the land side of the levee” (USACE, n.d.). Levee failures can result from overtopping, water flow through or under a levee, erosion, by an object hitting the levee, or by an object on the levee (e.g., tree or building) falling and taking a portion of the structure with it (USACE, n.d.). The USACE also maintains the National Levee Database (NLD). There are no levee systems located in Trumbull County.

#### Location and Extent

Ohio Administrative Code Rule 150:21-13-01 classifies dams in Ohio as Class I, Class II, Class III, or Class IV, based on height and storage volume.

- **Class I:** A storage volume greater than five thousand acre-feet or a height of greater than sixty feet.
- **Class II:** A total storage volume greater than five thousand acre-feet or a height greater than forty feet.
- **Class III:** A total storage volume greater than fifty acre-feet or a height of greater than twenty-five feet.
- **Class IV:** Dams which are twenty-five feet or less in height and have a total storage volume of fifty acre-feet or less.

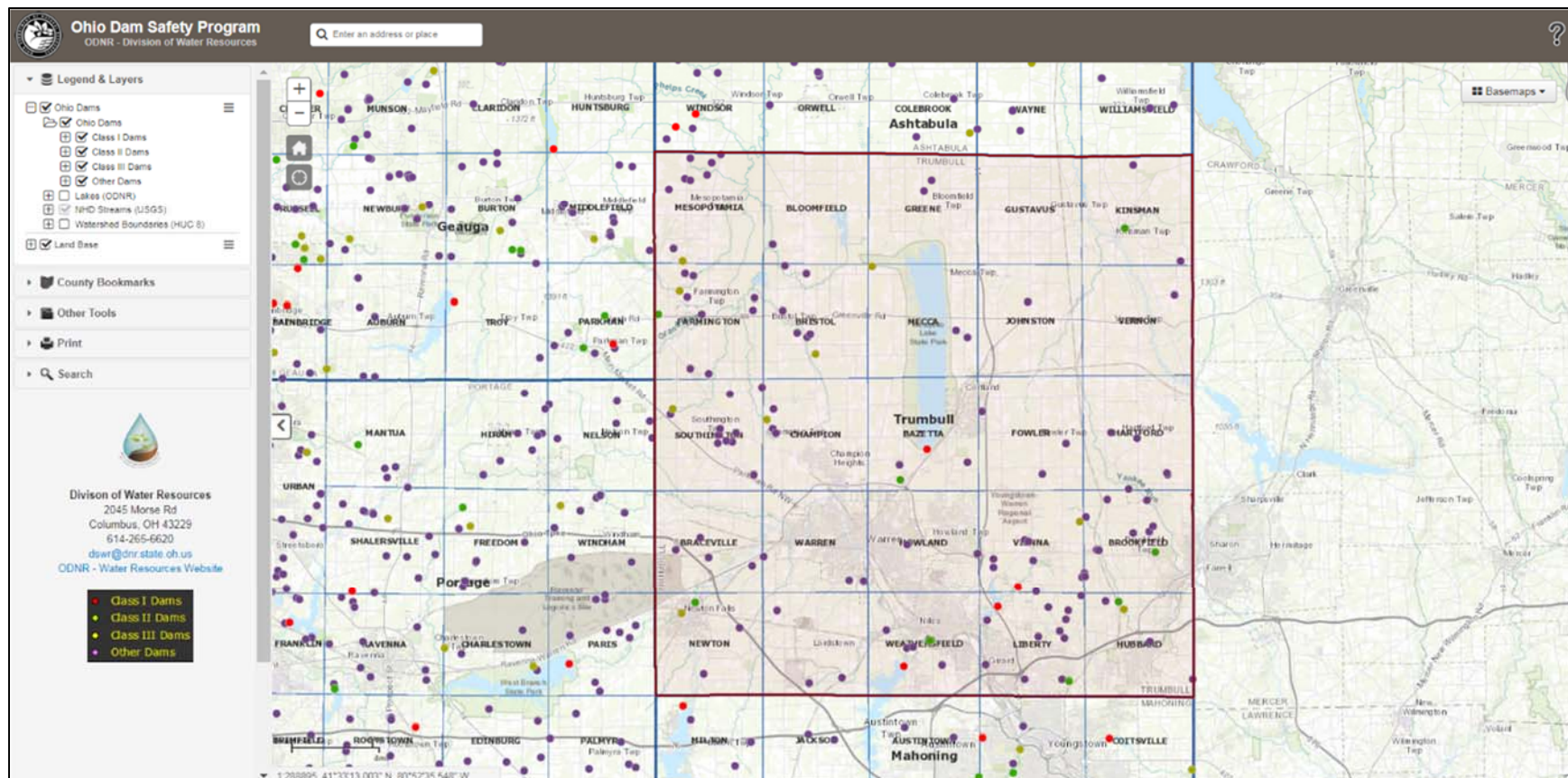
Ohio's Region 3, which includes Trumbull County, contains 163 Class I, 500 Class II and III, 398 Class IV Dams, and 1,506 “other” dams (i.e., proposed, unclassified, exempt, or abandoned structures). The U.S. Army Corps of Engineers (UCACE) maintains the National Inventory of Dams (NID), according to which there are 19 dams in Trumbull County. The Ohio Department of Natural Resources (ODNR) also maintains a database of dams in the state. Trumbull County is home to 124 total dams, per ODNR’s listing, with four Class I, nine Class II, and 10 Class III dams. The 23 “classed” dams in Trumbull County include the list of 19 dams on the NID. The remaining on the ODNR list (not listed below) are “Other Dams” (ODNR).



LIST OF CLASS I-III DAMS IN TRUMBULL COUNTY (Source: ODNR)						
<i>Dam Name</i>	<i>ODNR Hazard Class.</i>	<i>Owner Type</i>	<i>Height (Ft.)</i>	<i>Storage (acre-ft.)</i>	<i>EAP (Y/N)</i>	<i>Also in NID (Y/N)</i>
Mosquito Creek Dam	High (1)	Federal	47	82,400	Exempt (HIRA info w/ county)	Y
Pleasant Valley Lake Dam	High (1)	Private	20.3	73	N	Y
Mineral Ridge Dam	High (1)	Local Government	60	36,342	Y	Y
Upper Girard Lake Dam	High (1)	Local Government	54.6	2,760	Y	Y
Coalburg Lake Dam	Significant (2)	Private	24	350	N	Y
Kirila Pond Dam	Significant (2)	Private	45.7	119.7	Not Appr.	Y
Newton Falls Low Head Dam	Significant (2)	Local Government	17	843.7	Y	Y
Yount Pond Dam	Significant (2)	Private	25.1	48.6	N	Y
Kinsman Lake Dam	Significant (2)	Private	23	47.7	N	Y
Turon Lake Dam	Significant (2)	Private	19.4	66.4	N	Y
Youngstown Country Club Lake Dam	Significant (2)	Private	14.6	21.8	N	Y
Genon Energy North Pond Dam	Significant (2)	Utility	20	Null	Y	Y
Genon Energy South Pond Dam	Significant (2)	Utility	14	Null	Y	Y
Pintail Pond Dam	Low (3)	State	8.2	56	Y	Y
Coppedge Lake Dam	Low (3)	Private	29.7	17	Y	Y
Mease Lake Dam	Low (3)	Private	19	N/A	Exempt	N
Paradise Lakes Campground Lake Dam	Low (3)	Private	21.6	107.6	Y	Y
Rogel Lake Dam No. 1	Low (3)	Private	21.8	N/A	N	N
Rose Island Lakes Dam	Low (3)	Private	12.9	N/A	N	N
Sauer Lake Dam	Low (3)	Private	14	20.6	Y	Y
Thomas Lake Dam	Low (3)	Private	15	N/A	N	N
Chestnut Ridge Lake Dam	Low (3)	Private	11.1	8	Y	Y
West Branch Channel Dam	Low (3)	Local Government	15.5	116	Y	Y

The following graphic shows the locations of dams in Trumbull County (per ODNR data) (SOURCE: <https://gis.ohiodnr.gov/MapView/?config=ohiodams>). NOTE: The graphic below contains dams not listed in the above table (i.e., the “Other” dams)





### Impacts and Vulnerability

The hazard potential of a dam corresponds to its class (noted above), but the hazard potential is different than the impact. Downstream damage characterizes the impact of a dam failure. The table below describes the downstream effects of dam failure.

Class	Downstream Impact
Class I	<ul style="list-style-type: none"> <li>• Probable loss of life</li> <li>• Structural damage to high-value property (i.e., homes, industries, major public utilities).</li> </ul>
Class II	<ul style="list-style-type: none"> <li>• Disruption of a public water supply or wastewater treatment facility, the release of health-hazardous industrial or commercial waste, or other health hazards</li> <li>• Flooding of residential, commercial, industrial, or publicly owned structures</li> <li>• Flooding of high-value property</li> <li>• Damage or disruption to major roads including but not limited to interstate and state highways, and the only access to residential or other critical areas such as hospitals, nursing homes, or correctional facilities as determined by the chief</li> <li>• Damage or disruption to railroads or public utilities</li> <li>• Damage to downstream class I, II or III dams or levees, or other dams or levees of high value.</li> <li>• Damage to dams or levees can include but is not limited to, overtopping of the structure</li> </ul>
Class III	<ul style="list-style-type: none"> <li>• Property losses including but not limited to rural buildings not otherwise described, and class IV dams and levees not otherwise listed as high-value property. At the request of the dam owner, the chief may exempt dams from the criterion of this paragraph if the dam owner owns the potentially affected property</li> <li>• Damage or disruption to local roads including but not limited to roads not otherwise listed as major roads.</li> </ul>
Class IV	<ul style="list-style-type: none"> <li>• Losses restricted mainly to the dam.</li> </ul>

Dams generally appear throughout Trumbull County with concentrations in the southwest region near Pennsylvania. Clusters in Vienna, Liberty, and Brookfield in the southwest, along with groups in Southington and Mesopotamia in the northeast, are mainly “Other” types of dams that pose the least amount of risk.

### **Past Mitigation Efforts: Dam & Levee Failure**

- A notification system with an audible alarm to warn of potential failures is available at the Mosquito Creek Lake Dam.
- Officials breached the Lower Girard Lake Dam to remove older dams prone to flooding.
- County officials coordinate with the ODNR, Dam Safety Engineering Program, to conduct regular safety inspections of existing dams in Trumbull County.

### Historical Occurrences

The National Performance of Dams Program (NPDP) at Stanford University maintains records all modifications, repairs, incidents and their consequences, and inspections for dams in the U.S. and worldwide. Five of Trumbull County’s dams appear on the NPDP incident list.



DAM INCIDENTS IN TRUMBULL COUNTY			
<i>Dam Name</i>	<i>Class</i>	<i>Incident Type</i>	<i>Date</i>
Kirila Pond Dam	Class II	Inadequate Spillway Capacity	5/29/2001
Sauer Lake Dam	Class III	Deterioration	8/9/2000
Turon Lake Dam	Class II	Inadequate Spillway Capacity	6/24/1999
West Branch Channel Dam	Class III	Unknown	1/1/1965
Yount Pond Dam	Class II	Inadequate Spillway Capacity	5/29/2001

### Kinsman Lake Dam Failure, July 2019

The ODNr reported that the dam failed after more than six inches of rain fell within a few hours in the area. More than 60 people evacuated; 20 homes sustained damages (Budd, 2019). Additionally, the situation required reconstruction of a road to approximately 25 homes (Fox, 2019).

### Loss and Damages

The owners of 13 dams in Trumbull County submitted emergency action plans (EAPs) to the Trumbull County Emergency Management Agency. For the high hazard dams in Trumbull County, planners began to estimate losses by using the number of people or structures that could be at risk from a dam failure, as specified in EAPs. In Trumbull County, the average persons per household (per the U.S. Census, 2014-2018 estimate) is 2.30. Planners then utilized figures in the HAZUS database (i.e., 46,852 structures, 72.6% of which are residential, are at risk of flooding) to generate an estimated number of non-residential and critical facilities at risk. Again, using the HAZUS estimate of 46,852 structures *and their total replacement value of \$25,664,605,000* suggest a generalized, rounded amount of \$547,780 per structure. Planners used that figure to calculate loss estimates for each dam. Planners averaged the figures for the high hazard dams into the exposure estimate table that follows. NOTE: The percent composition of structures also comes from HAZUS.

#### Mosquito Creek Lake Dam

- *Estimate of Exposed Persons:* 15,000
- *Residential Structures:* 6,522
- *Non-Residential Structures:* 2,120

#### Mineral Lake Dam<sup>1</sup>

- *Estimate of Exposed Persons:* 8,816
- *Residential Structures:* 3,833
- *Non-Residential Structures:* 592

<sup>1</sup> Data derived from overlapping flood hazard areas, as directed by the dam EAP, onto parcel layers. Planners used the classification of properties to determine residential, non-residential, and critical facility structures.



- *Critical Facilities:* 332
- *Loss Estimate:* \$4,915,777,720
- *Critical Facilities:* 424
- *Loss Estimate:* \$2,656,185,220

#### Upper Girard Lake Dam

- *Estimate of Exposed Persons:* 106
- *Residential Structures:* 46
- *Non-Residential Structures:* 7
- *Critical Facilities:* 0
- *Loss Estimate:* \$29,032,340

#### Pleasant Valley Lake Dam<sup>2</sup>

- *Estimate of Exposed Persons:* 25
- *Residential Structures:* 11
- *Non-Residential Structures:* 0
- *Critical Facilities:* 0
- *Loss Estimate:* \$6,025,580

DAM & LEVEE FAILURE EXPOSURE ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	2,603	\$1,425,871,340
Non-Residential	680	\$372,490,400
Critical Facilities	189	\$103,530,420
<b>TOTALS</b>	<b>3,472</b>	<b>\$1,901,892,160</b>

#### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from dam and levee failures. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding dam and levee failure.

PUBLIC SENTIMENT, DAM & LEVEE FAILURE – TRUMBULL COUNTY					
<i>Hazard</i>	<i>Level of Concern</i>				<i>Total Responses</i>
	<i>Not at All</i>	<i>Somewhat</i>	<i>Concerned</i>	<i>Very</i>	
Dam Failure	249 (72.17%)	70 (20.29%)	18 (5.22%)	8 (2.32%)	345
In the past ten years, do you remember this hazard occurring in your community?				2 (0.58%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				1 (0.30%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				30 (9.55%)	314

<sup>2</sup> Data taken from a 2016 inspection report.



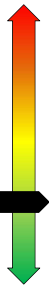
The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

DAM AND LEVEE VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	2	Low	There have been five dam incidents and zero levee failures in Trumbull County since 1999 (for an average of 0.2 incidents per annum).
Response	2	One day	Due to frequent inspections of dams in Trumbull County and minimal recorded historical damage downstream, the response to an event would be expected to be minimal.
Onset	1	Over 24 hours	Because officials frequently inspect dams and their inundation can be predicted based on weather, warning of a critical failure is expected.
Magnitude	1	Localized (Less than 10% of land area affected)	Most dams are in rural areas.
Business	1	Less than 24 hours	Most dams are in rural areas. The county's economy should not be disrupted by either failure.
Human	1	Minimum (minor injuries)	Most dams in the county are Class IV or unclassified. Failure would not cause significant human harm.
Property	1	Less than 10% of property affected	Most dams in the county are Class IV or unclassified, suggesting that property loss would be primarily from the loss of the dam itself and the owner's property.
<b>Total</b>	<b>9</b>	<b>Lowest</b>	



## 2.0 RISK ASSESSMENT

### 2.2.2 Drought

A drought is a period of abnormally dry weather that persists long enough to produce a severe hydrological imbalance.			
	Vulnerability	Period of Occurrence:	At any time, typically after a period of prolonged absence of precipitation
		Hazard Index Ranking:	Low
		Warning Time:	Over 24 hours
		State Risk Ranking:	2 – Low
		Probability:	Possible
		Severity:	Limited
		Type of Hazard:	Natural
		Disaster Declarations:	USDA FSA S3384 USDA FSA S4165

#### Hazard Overview

“Drought” is a period of abnormally dry weather, which persists long enough to produce a severe hydrological imbalance. Drought is a term used in relation to who or what is affected by the lack of moisture. Drought can be a result of multiple causes, including global weather patterns that produce persistent, upper-level high-pressure systems with warm, dry air resulting in less precipitation. Droughts develop slowly; typically, they are already underway when officially identified. There are several types of droughts (Sears, 2017, p.138)

- **Meteorological Drought:** Differences from the streamflow precipitation amounts. Because not every area receives the same amount of rainfall, a drought in one place might not be considered a drought in another.
- **Agricultural Drought:** Moisture deficiency seriously harmful to crops, livestock, or other agricultural commodities. Parched plants may wither and die. Pastures may become insufficient to support livestock. The effects of agricultural droughts are difficult to measure because many variables may impact production during the same growing season.
- **Hydrological Drought:** Reduction in groundwater, lake and reservoir levels, depletion of soil moisture, and a lowering of the groundwater table. Consequently, there is a decrease in groundwater discharge to streams and lakes. Prolonged hydrological drought will affect the water supply.
- **Socioeconomic Drought:** A lack of water that begins to affect people’s daily lives.

Precipitation falls in uneven patterns across the country; the amount of precipitation at a particular location varies from year to year, but over the years, the average amount is reasonably constant. The amount of rain and snow also varies with the seasons. Even if the total amount of rainfall for a year is about average, rainfall shortages can occur during a period when moisture is critically necessary for plant growth, such as in early summer. When little to no rain falls, soils can dry out, and plants can die. When rainfall is less than normal for several weeks, months, or years the water in wells increases. If dry weather persists and water-supply problems develop, the dry period can become a drought (USGS, n.d.).

### Location and Extent

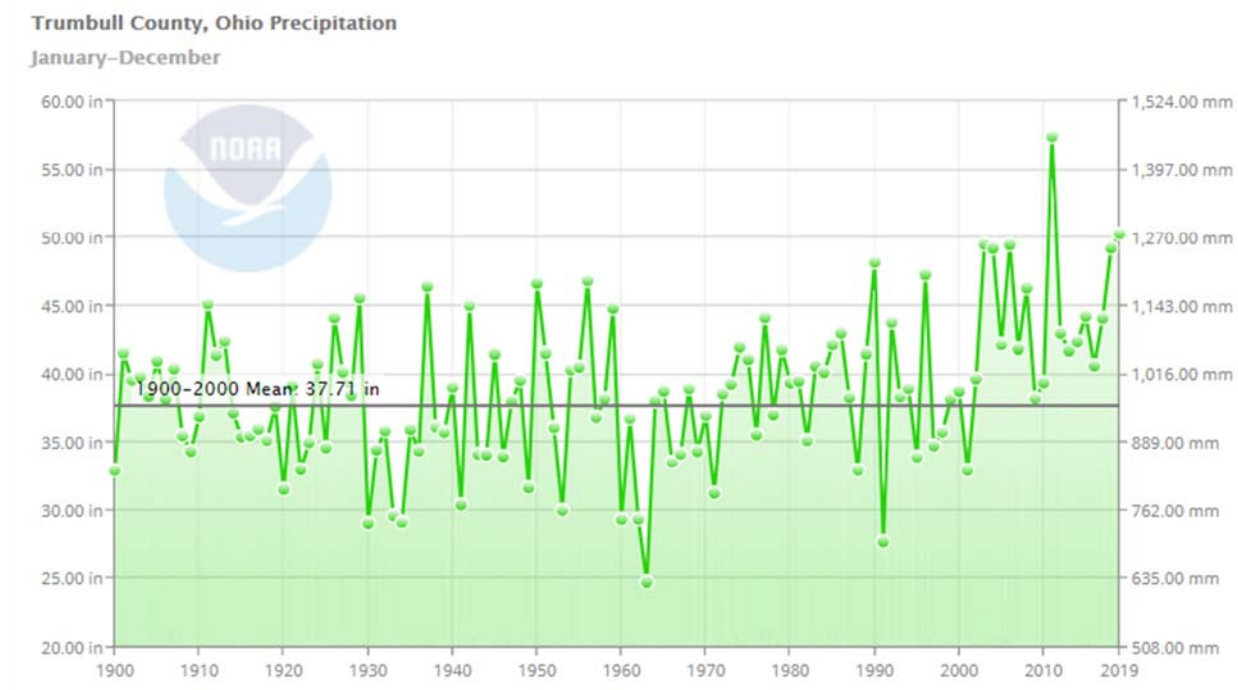
Droughts are region-wide hazards that can affect all areas and jurisdictions within a region. Droughts are widespread events that may extend to several states in varying degrees of severity. Within Trumbull County, the extent of drought would be equal or very similar to neighboring counties, given the region's geography and environmental qualities. A drought can vary in severity throughout the year; what starts as a mild drought can reach severe or extreme drought status and then return to a mild drought. This process could take weeks or even months, and the effects could be felt even months after the drought conditions are over.

The Palmer Drought Severity Index (PDSI) is a measure of drought that widely used to track moisture conditions. The PDSI is "an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically appropriate moisture supply." The range of PDSI is from -4.0 (extremely dry) to +4.0 (excessively wet), with the central half (-0.5 to +0.5) representing the normal or near-normal conditions. In the United States, the USDA, National Drought Mitigation Center at the University of Nebraska-Lincoln, U.S. Department of Commerce, and NOAA developed another measurement of droughts named the U.S. Drought Monitor (USDM). The table above shows the two scales and how they compare.

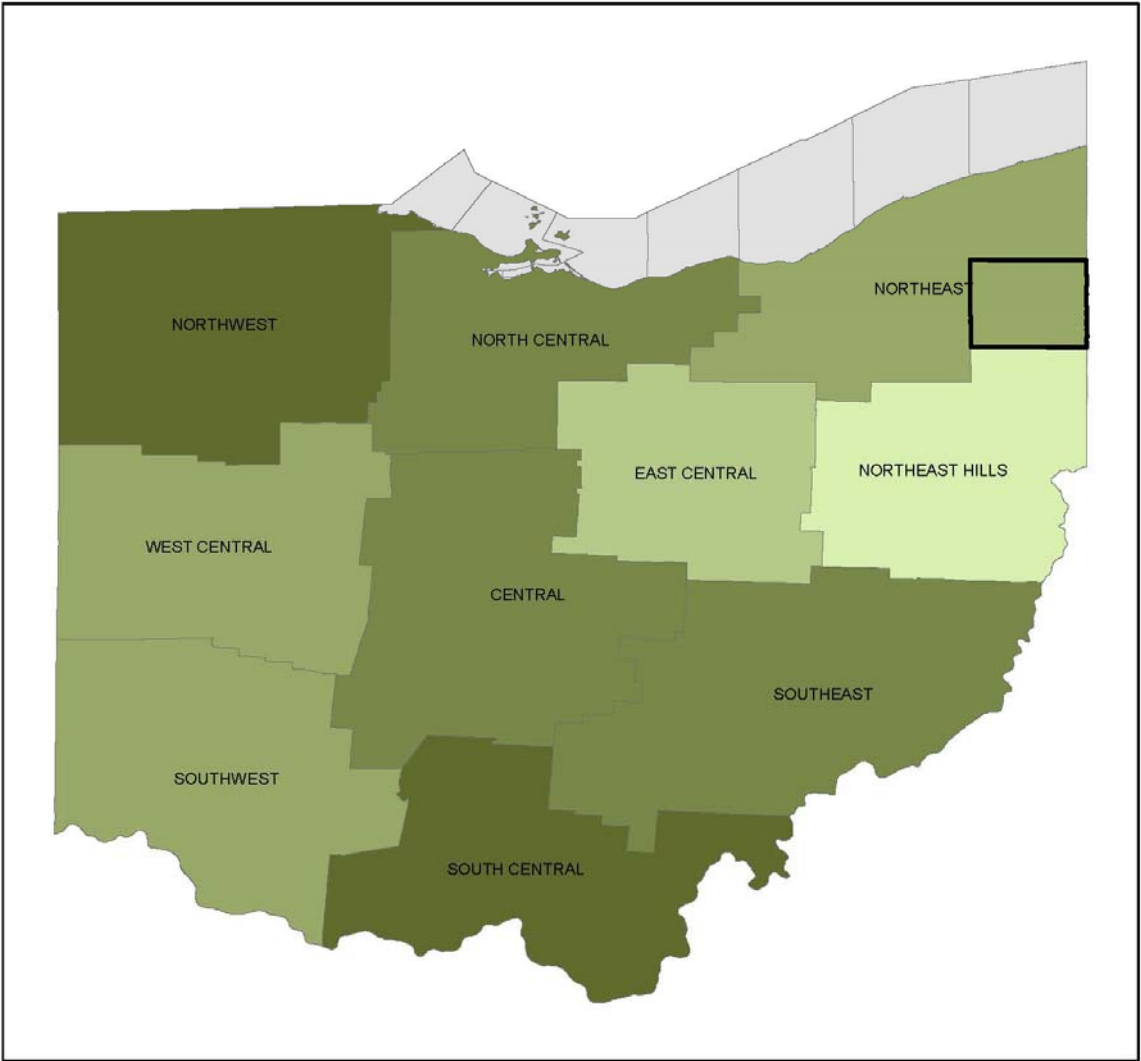
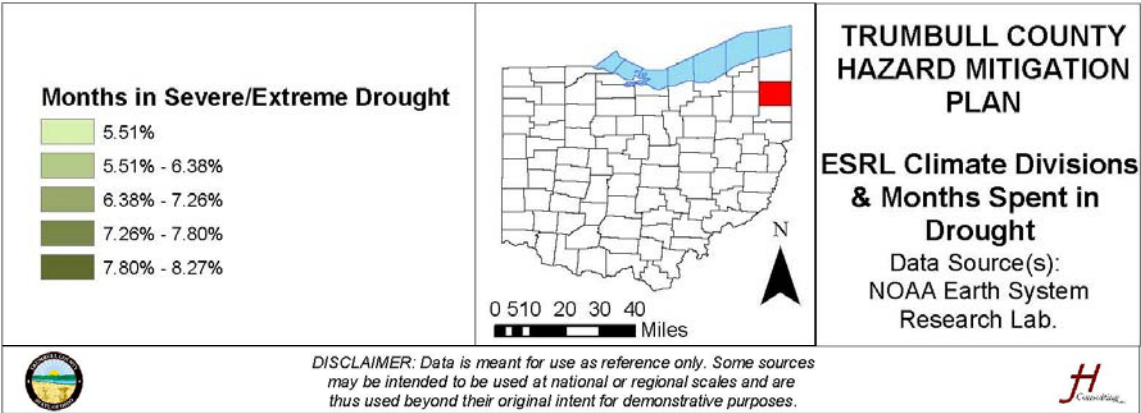
USDM AND PDSI COMPARISON			
U.S. Drought Monitor		Palmer Drought Severity Index	
N/A		> 4.0	Extreme moist spell
		3.0 to 3.99	Very moist spell
		2.0 to 2.99	Unusual moist spell
		1.0 to 1.99	Moist spell
		0.50 to 0.99	Incipient moist spell
		-0.49 to 0.49	Near normal
		-0.5 to -0.99	Incipient dry spell
D0	Abnormally dry	-1.0 to -1.99	Mild drought
D1	Moderate drought	-2.0 to -2.99	Moderate drought
D2	Severe drought	-3.0 to -3.99	Severe drought
D3	Extreme drought	< -4.0	Extreme drought
D4	Exceptional drought	N/A	



The following National Weather Service graphic depicts precipitation levels in Trumbull County from 1900 through 2019. Though precipitation totals often fluctuate, the graphic indicates that precipitation is generally increasing. The “high” totals are greater (beginning in approximately 1990); even recent “low” years (e.g., 2010 and the periods between approximately 2005 and 2013) show generally higher precipitation than previous “low” years.



Though it is difficult to anticipate precisely where drought conditions will occur in the future, Trumbull County can estimate the chances of experiencing drought conditions generally. NOAA’s Earth System Research Laboratory (ESRL) has divided the U.S. into “climate divisions.” ESRL further maintains data for each of these areas, including the historical Palmer Drought Severity Index (PDSI) values for all months between 1895 and 2018. Trumbull County’s climate division, Northeastern Ohio, experienced drought conditions (i.e., incipient, mild, moderate, severe, or extreme drought per the PDSI) in 40.73% of the months between 1895 and 2018. The region experienced severe or extreme drought conditions (defined per the PDSI values in the table above) during 7.26% of the months (i.e., 108 out of 1,488 months). The following map displays this information graphically and compares it to the remainder of Ohio.



### Impacts and Vulnerability

Droughts can impact drinking water both in terms of availability and demand. According to the U.S. Environmental Protection Agency (EPA), as temperatures rise, people and animals need more water to maintain health. Additionally, a large number of economic activities require abundant water sources such as energy production and growing food crops. As droughts reduce available water sources, local officials will need to monitor water usage closely to maintain enough for critical uses. According to the U.S. Drought Monitor, the possible impacts from each level of drought appear in the graphic below.

D0 Abnormally Dry	<p><i>Going into drought:</i></p> <ul style="list-style-type: none"> <li>• short-term dryness slowing planting, growth of crops or pastures</li> </ul> <p><i>Coming out of drought:</i></p> <ul style="list-style-type: none"> <li>• some lingering water deficits</li> <li>• pastures or crops not fully recovered</li> </ul>
D1 Moderate Drought	<ul style="list-style-type: none"> <li>• Some damage to crops, pastures streams, reservoirs, or wells low, some water shortages developing or imminent</li> <li>• Voluntary water-use restrictions requested</li> </ul>
D2 Severe Drought	<ul style="list-style-type: none"> <li>• Crop or pasture losses likely</li> <li>• Water shortages common</li> <li>• Water restrictions imposed</li> </ul>
D3 Extreme Drought	<ul style="list-style-type: none"> <li>• Major crop/pasture losses Widespread water shortages or restrictions</li> </ul>
D4 Exceptional Drought	<ul style="list-style-type: none"> <li>• Exceptional and widespread crop/pasture losses</li> <li>• Shortages of water in reservoirs, streams, and wells creating water emergencies</li> </ul>

### **Past Mitigation Efforts: Drought**

- Consistent vigilance of forecasted conditions, like the prevalence of rainfall, the development and distribution of public awareness materials concerning natural hazard risks, displaying drought information at public events, etc.
- The county updated its website to provide hazard-related information that is easily accessible.

### Historical Occurrences

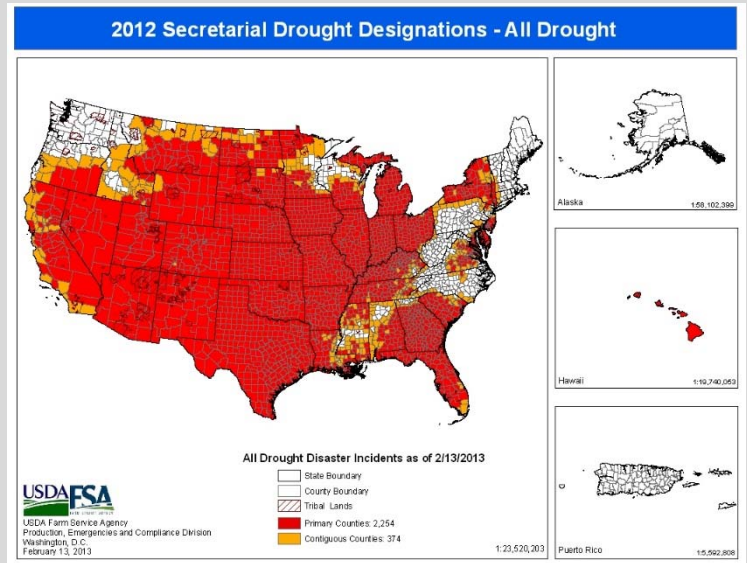
Data sources suggest four droughts have impacted Trumbull County, though the drought of 1999 appears as two of these occurrences. Trumbull County received drought-related disaster declarations from the Secretary of the U.S. Department of Agriculture in 2012 and 2016 (USDA Farm Services Agency, 2019).



## 2012 DROUGHT (Excessive Heat)

### USDA FSA Designation: S3384 (Primary)

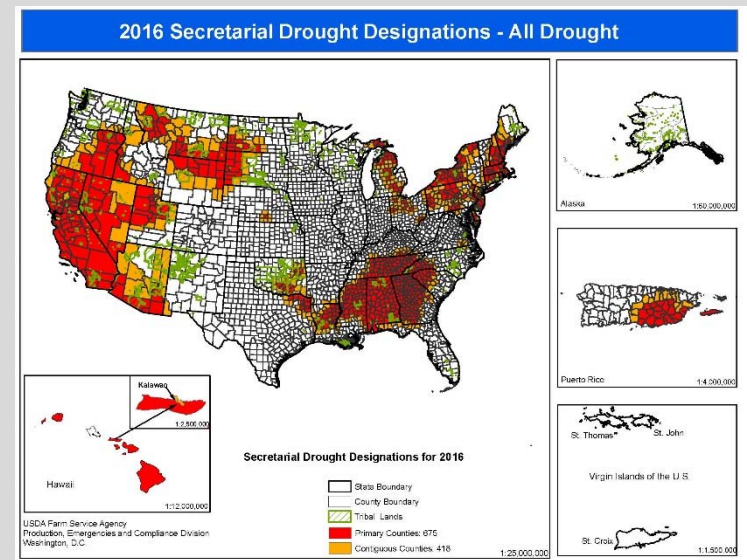
Most locations ended the winter season of 2011-2012 with near-normal precipitation and below-normal snowfall, which led to below-normal snowmelt. March experienced much-above-normal, record-breaking temperatures, which led to above-normal evapotranspiration and an early start to the growing season. This condition, combined with a lack of snowmelt in the winter, led to abnormally dry conditions across the region by the middle of April. Given much-below-normal rainfall in April and May, topsoil preconditioned for drought, and already low streamflow across area streams, rivers, and lakes, drought conditions developed across the Midwest region by May. With high pressure remaining in control outside of some fast-moving low-pressure systems, dry weather ruled the summer months. Record-breaking heat combined and a lack of substantial precipitation brought on devastating drought conditions. By the middle of July, all of the local areas were in at least D2 or severe drought conditions with a large portion of the area in D3 or extreme drought conditions (on a scale from D0 to D4 drought severity). These conditions lasted until the middle of August.



## 2016 DROUGHT

### USDA FSA Designation: S4165 (Contiguous)

Based on the Palmer Drought Index, severe to extreme drought affected approximately 7% of the contiguous United States at the end of July 2016. About 22% of the contiguous U.S. fell in the moderate to extreme drought category. Trumbull County experienced moderate drought conditions. Trumbull County received a secretarial designation on April 5, 2017, for the period of May 1, 2016, through December 10, 2016.

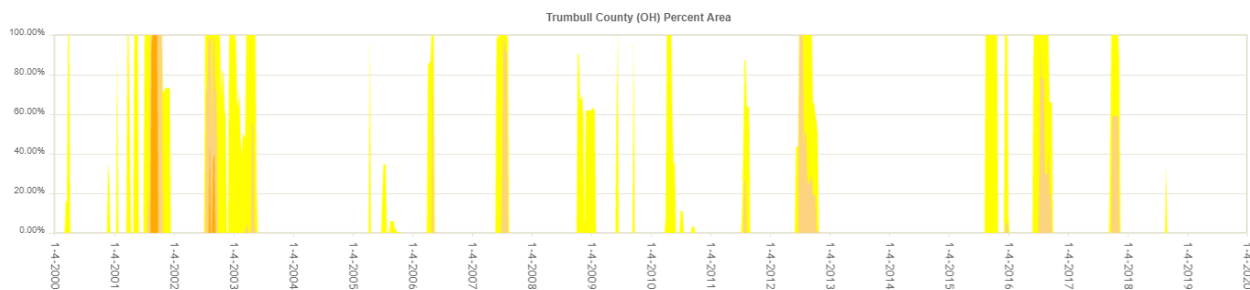


The Storm Events Database from the NOAA National Centers for Environmental Information lists the 1999 historical occurrences.



DROUGHT HISTORICAL OCCURRENCES (Source: NCEI Storm Events Database)				
<i>Begin Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
6/1/1999	0	0	\$0	\$0
9/1/1999	0	0	\$0	\$3M

The U.S. Drought Monitor, kept by the University of Nebraska-Lincoln, provides more detailed information about drought since 2000. The illustration below is a graphical representation of the time and severity of droughts presented in Trumbull County between 2000 and 2019. Data on historical occurrences show one event that resulted in crop damage equal to \$3M in September 1999. During this event, less than two inches of rain fell during September.



### Loss and Damages

The USDA maintains data about agricultural activities through five-year censuses. The following table is from the 2007, 2012, and 2017 efforts. It represents potential economic loss exposure.

USDA CENSUS OF AGRICULTURE DATA – TRUMBULL COUNTY					
<i>Year</i>	<i>Farms</i>	<i>Land in Farms (acres)</i>	<i>Harvested Cropland (acres)</i>	<i>Average Harvested Cropland per Farm (acres)</i>	<i>Market Value of Agricultural Products Sold</i>
2007	970	125,136	80,484	82.97	\$41,561,000
2012	888	113,896	72,250	81.36	\$66,459,000
2017	1,036	123,654	74,890	72.29	\$56,058,000

There can be no correlation drawn between the presence of farms and drought risk; however, the market value of agricultural products sold provides evidence of total agricultural economic activity exposed to losses from droughts (an average of \$4,557,722). For planning purposes, utilizing research on average crop yield losses provides the basis for a mathematical



loss calculation. Kuwayama (2019) focused on corn and soybeans and found that a week of drought in non-irrigating counties results in average crop yield reductions ranging from 0.1% to 1.2%. The average market value of agricultural products sold annually (i.e., across 52 weeks) suggests an average weekly value of approximately \$1,051,782 (for a potential exposure ranging from \$1,052 to \$12,621).

The declared incidents cited above note the length of the 1999 drought as from April through August (three months). The average length of historical droughts (receiving a secretarial designation) in Trumbull County is thus three months (or 12 weeks). Combining these calculations suggests a range of exposure of \$12,624 to \$151,452 per drought. (NOTE: The \$3M loss figure for the 1999 event represents the entire impacted area, not just Trumbull County.)

### Vulnerability Assessment

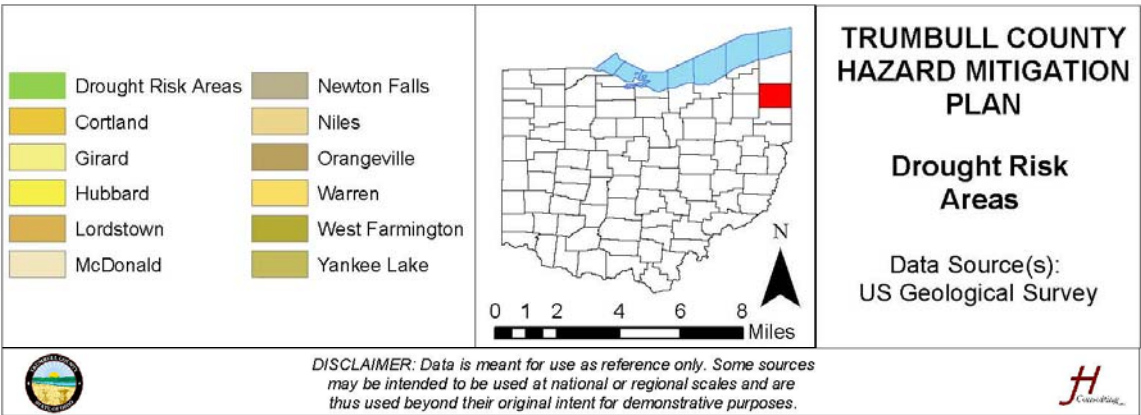
This section summarizes the vulnerability to Trumbull County from drought. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding drought.

PUBLIC SENTIMENT, DROUGHT – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Drought	198 (57.39%)	115 (33.33%)	24 (6.96%)	8 (2.32%)	345
In the past ten years, do you remember this hazard occurring in your community?				53 (15.36%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				22 (6.63%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				66 (21.02%)	314

The following map image graphically depicts potential risk areas in Trumbull County. Risk areas correspond to those with land uses of “crop” and “pasture.”







The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

DROUGHT VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	1	Low	Four events in 20 years (i.e., 1999-2019) yields an estimate of 0.05 incidents per annum.
Response	4	One month	Though the agricultural response may be extensive and much longer, it is a response that is not as acute as many other emergency responses.
Onset	1	Over 24 hours	Drought conditions occur following an extended period of specific hydrological conditions.
Magnitude	3	Critical (25-50% of land area affected)	Trumbull County has a land area of 618 mi <sup>2</sup> (Census 2019) (or 395,520 acres). Given 123,654 acres in farmland (2017 Census of Agriculture), approximately 31.26% of the county's land area is agriculture.
Business	1	Less than 24 hours	Drought is not likely to necessitate business closure.
Human	1	Minimum (minor injuries)	Drought is not likely to result in injuries.
Property	1	Less than 10% of property affected	Though a significant amount of the land area could be impacted, drought conditions do not affect personal property as severely.
<b>Total</b>	<b>12</b>	<b>Low</b>	



## 2.0 RISK ASSESSMENT

### 2.2.3 Earthquake

An earthquake is the movement or shaking of the Earth's tectonic plates.			
	Vulnerability	Period of Occurrence:	At any time
	HIGHEST	Hazard Index Ranking:	Low
	HIGH	Warning Time:	Little to none
	MEDIUM	State Risk Ranking:	2 – Low
	LOW	Probability:	Highly unlikely
	LOWEST	Severity:	Limited
		Type of Hazard:	Natural
		Disaster Declarations:	None

#### Hazard Overview

Earth consists of four layers: the inner core (innermost layer), outer core, mantle, and crust (outermost layer). Further, the crust consists of many tectonic plates that are slowly moving, sliding past, and bumping into one another. Most earthquakes originate along the edges of these tectonic plates, called fault lines. The rough edges of the tectonic plates become lodged against each other. When a plate moves enough, the edges become dislodged, causing an earthquake. The epicenter of the earthquake is the location directly above the ruptured fault.

#### Location and Extent

Earthquake intensity ranges from “small to feel” to violent incidents that cause significant damage. The U.S. Geological Survey (USGS) uses the Modified Mercalli Intensity (MMI) scale to measure the intensity of earthquakes. The MMI scale characterizes the intensity of an earthquake by the severity of ground shaking at a given location and the effects of the shaking on people, human-made structures, and the landscape. Two other common ways to measure earthquakes include the Richter scale and peak ground acceleration (PGA).

- **Richter Scale:** The Richter scale, developed in 1935, measures the severity of an earthquake. The magnitude of an earthquake can range between 0 and 10. The effects of an earthquake can extend far beyond the site of its occurrence.
- **Peak Ground Acceleration (PGA):** PGA is “the maximum ground acceleration that occurred during earthquake shaking at a location. PGA is equal to the amplitude of the

largest absolute acceleration recorded on an accelerogram at a site during a particular earthquake” (Douglas, 2003).

The graphic below outlines the MMI scale and compares it to the Richter (magnitude) scale.

MODIFIED MERCALLI AND MAGNITUDE SCALE COMPARISON		
	<i>Modified Mercalli Scale</i>	<i>Magnitude Scale</i>
I	Felt by few people under especially favorable conditions.	1.5
II	Felt by few persons at rest, especially on upper floors of buildings.	2.0 2.5
III	Felt quite noticeably indoors, especially on upper floors of buildings. Many do not recognize it as an earthquake. Standing vehicles may rock slightly. Vibration feels like passing truck.	3.0
IV	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation of a heavy truck striking building; standing vehicles rock noticeably.	3.5
V	Felt by nearly everyone; many awakened. Some dishes and windows broken. Unstable objects overturned.	4.0 4.5
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	5.0
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by vehicle drivers.	5.5
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse; damage great in poorly built structures; fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. Disturbs	6.0
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. Underground pipes broken.	6.5 7.0
X	Some well-built wooden structures are destroyed; most masonry and frame structures with foundations destroyed; train rails bent.	7.5
XI	Few, if any, masonry structures remain standing. Bridges destroyed. Underground pipelines taken out of service. Train rails bent greatly.	8.0
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level are distorted. Objects thrown into the air.	8.5

The area of most considerable seismic activity in the United States is along the Pacific Coast, in the states of California and Alaska; however, as many as 40 states have moderate earthquake risk. Although most people do not think of Ohio as an earthquake-prone state, at least 170 earthquakes with epicenters in Ohio have occurred since 1776, and 14 of those have caused “minor to moderate” damage. Generally, the number of earthquakes in the central U.S. has increased over the past decade (USGS, n.d.). From 1973 to 2008, there were approximately 25 earthquakes per year of magnitude three or larger. Since 2009, that number has increased to 362 per year. Regulators and researchers have documented earthquakes induced by human activity in the United States, Japan, and Canada (USGS, [https://www.usgs.gov/natural-hazards/earthquake-hazards/induced-earthquakes?qt-science\\_support\\_page\\_related\\_con=4#qt-science\\_support\\_page\\_related\\_con](https://www.usgs.gov/natural-hazards/earthquake-hazards/induced-earthquakes?qt-science_support_page_related_con=4#qt-science_support_page_related_con)). The cause of these human-caused earthquakes was the injection of fluids into deep wells for waste disposal and secondary recovery of oil, and filling large reservoirs for water supplies. Deep mining and nuclear testing can also cause small to moderate quakes. A common misconception is that hydraulic fracturing, or “fracking,” is causing *all* of the induced earthquakes. In reality, fracking “is directly causing a small percentage of the felt-induced earthquakes observed in the United States. Most induced earthquakes in the United States are a result of the deep disposal of fluids (wastewater) related to oil and gas production” (Rubinstein and Mahani, 2015).

### Impacts and Vulnerability

The direct effects of earthquakes include ground movement and ground failure. Cascading effects can include structural damage and utility and communication system outages. The risk of fire also increases after an earthquake due to potentially-damaged gas pipelines and electrical lines. The most significant human risk during an earthquake is structure movement and collapse. Contents within structures may fall or fail and injure or kill the people inside.

### **Past Mitigation Efforts: Earthquake**

- Consideration of building codes, zoning codes, research on liquefaction areas and ground shaking, building retrofitting, non-structural mitigation/tie-downs, public education, drop-cover-and-hold exercises, and public television specials have reduced impacts through education.

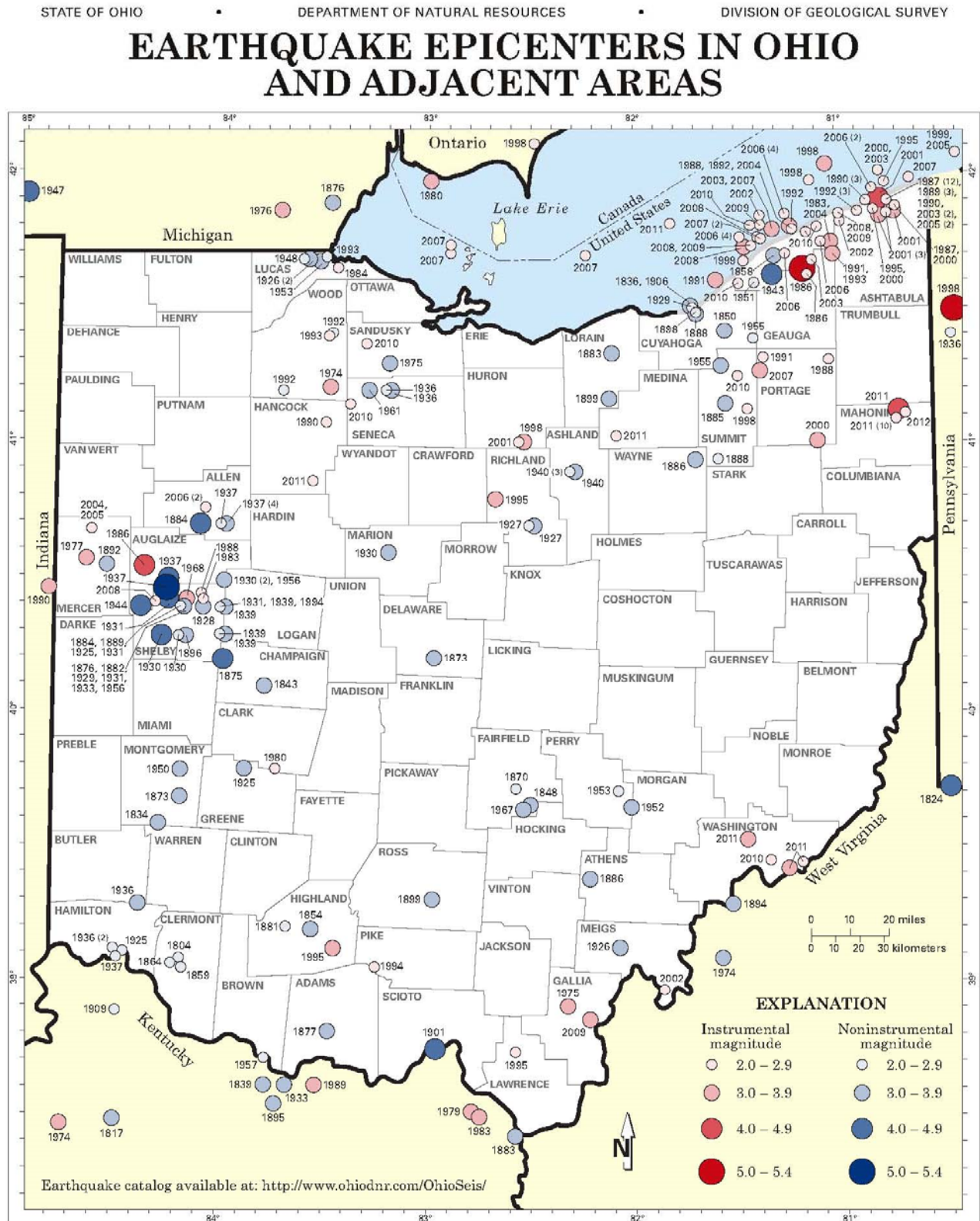


### Historical Occurrences

One earthquake has occurred in Trumbull County, and several have taken place in Mahoning County to the south. The following is a graphic from the ODNR Division of Geological Survey, Ohio Seismic Network, which shows earthquake epicenters in Ohio. The northeastern portion of the state is an area of high earthquake activity.







Recommended citation: Ohio Division of Geological Survey, 2012, Earthquake epicenters in Ohio and adjacent areas—color version: Ohio Department of Natural Resources, Division of Geological Survey Map EG-2, generalized page-size version, 1 p., scale 1:2,000,000.



## **New Madrid Incidents**

On December 16, 1811, and January 23 and February 7, 1812, the largest earthquakes on record in the central United States occurred near New Madrid, Missouri. Residents reportedly felt these earthquakes throughout much of the U.S., including all of Ohio

## **December 2011**

In December of 2011, a series of minor earthquakes hit northeastern Ohio. The most significant in the series was a 4.0 magnitude event originating in McDonald, outside Youngstown. There were reports of feeling these quakes as far away as Trumbull County and parts of western Pennsylvania.

## **Loss and Damages**

Planners utilized the HAZUS-MH program from the Federal Emergency Management Agency to analyze the effects of a potential earthquake striking Trumbull County. The scenario depicts a 5.0 earthquake (the lowest possible magnitude to use in the program) located at Warren, the county seat. The following tables describe the expected building damages by occupancy type and the building-related economic loss estimates.





TRUMBULL COUNTY EXPECTED BUILDING DAMAGE BY OCCUPANCY (HAZUS)										
	None		Slight		Moderate		Extensive		Complete	
	Count	%	Count	%	Count	%	Count	%	Count	%
Agriculture	159.03	0.28	48.28	0.25	53.53	0.48	27.31	0.76	6.85	0.70
Commercial	2156.33	3.84	942.70	4.84	1034.61	9.33	494.08	13.74	139.27	14.31
Education	70.76	0.13	31.87	0.16	36.16	0.33	15.58	0.43	4.63	0.48
Government	73.2	0.13	30.61	0.16	36.09	0.33	14.67	0.41	4.44	0.46
Industrial	684.1	1.22	269.49	1.38	327.11	2.95	175.46	4.88	47.84	4.92
Other Residential	4400.54	7.83	1755.15	9.02	1642.11	14.81	701.04	19.5	159.16	16.36
Religion	260.9	0.46	99.61	0.51	89.22	0.8	43.63	1.21	12.64	1.3
Single Family	48370.25	86.11	16289.21	83.68	7872.67	70.98	2123.8	59.07	598.08	61.47
<b>TOTAL</b>	<b>57,175</b>		<b>19,467</b>		<b>11,092</b>		<b>3,596</b>		<b>973</b>	

TRUMBULL COUNTY HAZUS BUILDING-RELATED ECONOMIC LOSS ESTIMATES (MILLIONS OF DOLLARS)							
Category	Area	Single-Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0	4.8176	100.6599	7.0862	5.0588	117.6225
	Capital Related	0	2.0514	73.8868	5.2848	1.1738	82.3968
	Rental	23.3534	14.4923	37.8419	2.5685	2.7204	80.9765
	Relocation	82.1977	11.8887	69.9014	12.3148	19.9174	196.22
	Subtotal	105.5511	33.25	282.29	27.2543	28.8704	477.2158
Capital Stock Losses	Structural	132.0039	25.7396	96.0147	45.1363	21.4892	320.3837
	Non-Structural	515.9776	142.4918	254.9939	136.8593	60.6942	1,111.02
	Content	209.3047	44.0693	147.0151	97.4629	34.5405	532.3925
	Inventory	0	0	4.049	17.8471	0.2991	22.1952
	Subtotal	857.2862	212.3007	502.0727	297.3056	117.023	1985.9882
<b>TOTAL</b>		<b>962.84</b>	<b>245.55</b>	<b>784.36</b>	<b>324.56</b>	<b>145.89</b>	<b>2463.2</b>

To complete the SHARPP vulnerability assessment, the Ohio EMA's "loss estimate workbook for HAZUS results" provided the figures included in the following table.

EARTHQUAKE LOSS ESTIMATE – SHARPP DATA ENTRY		
Structure Type	Number	Loss Estimate
Residential	10,595	\$2,620,269,200
Non-Residential	4,808	\$2,135,391,000
Critical Facilities	257	\$114,160,000
<b>TOTALS</b>	<b>15,660</b>	<b>\$4,869,820,200</b>

### Vulnerability Assessment

This section summarizes the risk to Trumbull County from earthquakes. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding earthquakes.




PUBLIC SENTIMENT, EARTHQUAKE – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Earthquake	170 (49.71%)	141 (41.23%)	23 (6.73%)	8 (2.34%)	342
In the past ten years, do you remember this hazard occurring in your community?				95 (27.54%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				35 (10.54%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				25 (7.96%)	314

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

EARTHQUAKE VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	2	Low	One incident occurred since 2000, for an average of 0.05 earthquakes per year in Trumbull County.
Response	2	One day	Historical data indicate that earthquakes have caused little to no damage in Trumbull County; thus, the response would be minimal.
Onset	4	Less than 6 hours	Earthquakes occur with little or no warning.
Magnitude	1	Less than 10% of land area affected	One earthquake has occurred in Trumbull County. Earthquakes from surrounding counties affected Trumbull County but resulted in little to no damage.
Business	1	Less than 24 hours	No historical earthquakes disrupted the county's economy.
Human	1	Minimum/minor injuries	Past earthquakes near Trumbull County have been low magnitude and have not caused any human injuries or deaths.
Property	1	Less than 10% of property affected	Earthquakes near Trumbull County have been low magnitude and caused little to no damage.
<b>Total</b>	<b>12</b>	<b>Low</b>	

## 2.0 RISK ASSESSMENT

### 2.2.4 Epidemic

This profile primarily examines two types of public health emergencies, each corresponding to a level of disease presence (defined below): epidemic and pandemic.			
	Vulnerability	Period of Occurrence: At any time	Hazard Index Ranking: Medium
	Warning Time: More than 24 hours	State Risk Ranking: Not Ranked	
	Probability: Likely	Severity: Critical	
	Type of Hazard: Natural	Disaster Declarations: None	

#### Hazard Overview

In 2016, pandemic and infectious diseases accounted for three of the top ten causes of death worldwide. Microorganisms such as bacteria, viruses, fungi, or parasites, cause these diseases and pass directly or indirectly from one person to another (Baylor College of Medicine, n.d.). Humans can also become infected from an infected animal that harbors a pathogenic organism.

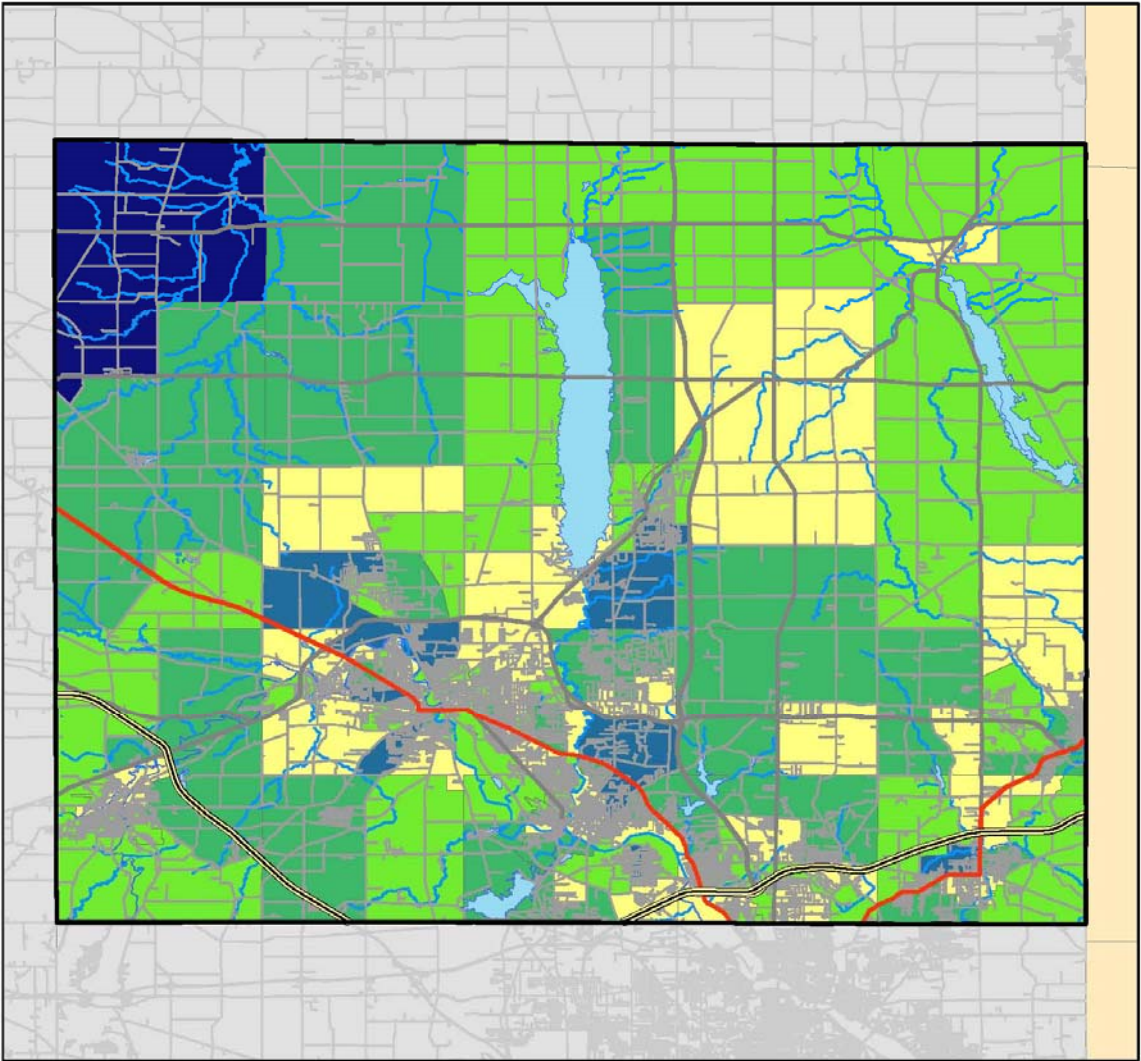
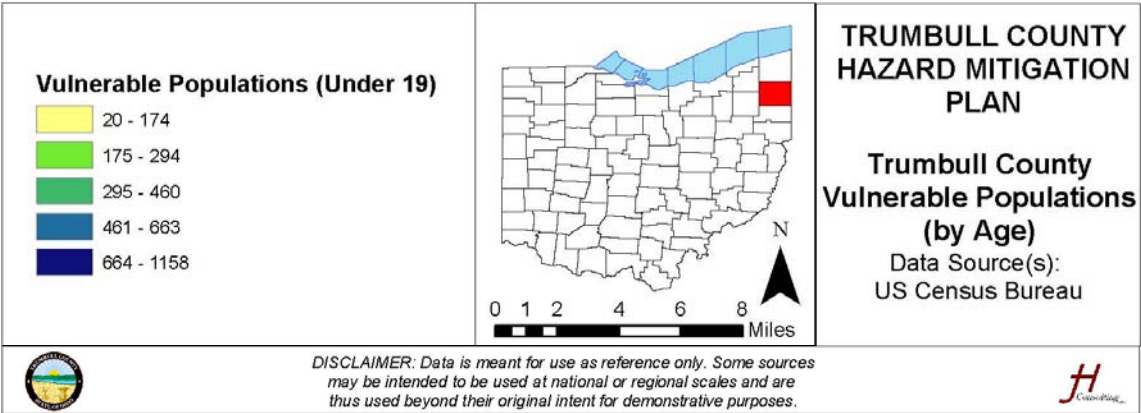
#### Location and Extent

According to the Center for Disease Control and Prevention (CDC), there are three widely accepted “levels” of disease presence.

- **Endemic** refers to the baseline level of a particular disease in a population or area. This level is not necessarily the desired level, but the observed level.
- **Epidemic** refers to an increase in the number of cases of a disease above the usual level in that population or area. Epidemics may result from an increase of the disease’s virulence, presence of a disease in a new outbreak, enhanced disease transmission, increased susceptibility among exposed persons, or increased exposure to the disease-causing agent. Note that, while the term “epidemic” originally only included infectious diseases, some non-infectious health conditions (such as obesity and the opioid misuse) have reached epidemic status in the United States.
- **Pandemic** refers to an epidemic that has spread over several countries or continents,

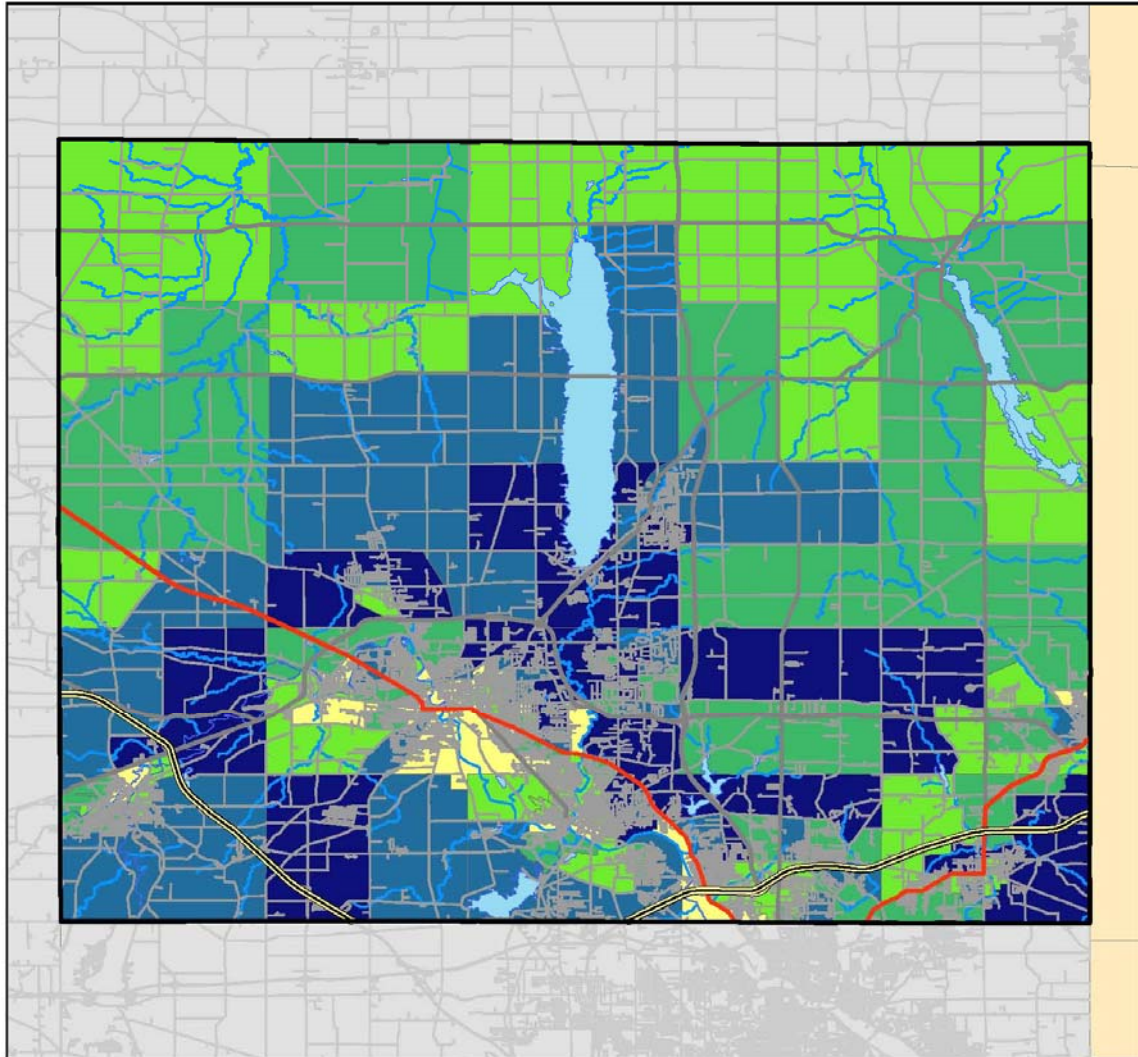
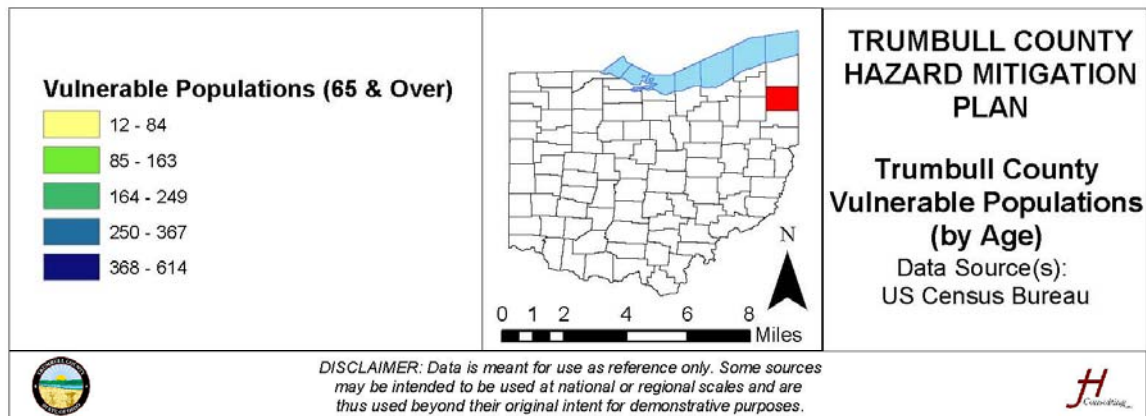
typically affecting a large number of people.

An epidemic or pandemic would affect all areas of Trumbull County, but certain subsections of the population would be more affected than others. Those most vulnerable are children, the elderly, and individuals with chronic illnesses. The following map shows the Census block groups with the highest concentrations of those aged 19 and under.





The following map shows the Census block groups with the highest concentrations of those aged “over 65.”



### Impacts and Vulnerability

The extent of illness caused by a communicable or infectious disease depends on both the person infected and the pathogen infecting them. For example, the influenza virus usually circulates from November to March and affects up to 20% of Americans. Unlike seasonal influenza, pandemic strains of the flu virus are easily circulated and affect healthy individuals.

SEASONAL FLU	FLU PANDEMIC
Outbreaks occur every year, usually in winter.	This occurs only rarely (only four times since 1918).
Caused by influenza viruses that are similar to those already affecting people.	Caused by a new influenza virus that people have not been exposed to before.
Healthy adults usually not at risk for serious complications.	Healthy adults may be at increased risk for serious complications.
Hospitals and healthcare providers can usually meet public needs.	Hospitals and healthcare providers may be overwhelmed and difficult to access.
The vaccine is available at beginning of flu season.	A vaccine would probably not be available in the early stages of a pandemic.
It causes an average of 36,000 deaths each year in the United States.	The number of deaths could be significantly higher. In the 1918 pandemic, approximately 675,000 people died in the United States.
Generally does not have a severe impact on daily life.	May have a severe impact on daily life, including widespread restrictions on travel, closings of schools and businesses, and cancellation of public events.

Pandemics are further exacerbated by the fact that healthcare resources can become scarce during an event. An increased number of cases and a reduced number of caregivers can overload jurisdictions or healthcare systems. Furthermore, preventative measures, such as vaccinations or prophylactic medication, may be in short supply or unavailable.

Fortunately, there are vaccines for several communicable diseases. The State of Ohio does not provide vaccination reports at the county level, but does provide information concerning vaccinations of children between 19 and 35 months in age.



OHIO VACCINATION RATES 2010-2017									
<i>Vaccine</i>	<i>Dose</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
DTP/DTaP	4+	84.3%	85.2%	83.3%	75.8%	85.1%	80.9%	78.6%	81.1%
Polio	3+	94.9%	94.7%	92.5%	90.4%	94.6%	91.8%	86.6%	88.2%
MMR	1+	93.6%	93.3%	90.3%	86.0%	95.6%	88.1%	87.4%	88.3%
Hib	3+	92.2%	96.6%	91.2%	90.3%	92.9%	78.6%	79.0%	76.7%
Hepatitis B	3+	94.8%	95.8%	89.4%	87.4%	92.3%	92.3%	88.0%	89.5%
Varicella (Chickenox)	1+	89.7%	93.4%	90.8%	85.4%	92.9%	86.2%	85.5%	85.5%
PCV7 or PCV13	4+	81.8%	83.8%	83.8%	71.6%	83.3%	79.1%	81.0%	78.8%
<i>Series</i>	<i>–</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
4•3•1•3•3•1	–	76.0%	80.6%	72.1%	69.7%	73.6%	–	–	–
4•3•1•3•3•1:4	–	73.8%	74.7%	66.8%	61.7%	68.1%	68.1%	68.0%	66.4%

Vaccination rates in infants and toddlers in Ohio have fluctuated since 2010, but has consistently remained in the upper 50<sup>th</sup> percentile. However, it typically requires vaccination rates above 85% to provide sufficient community (i.e., herd) immunity to those who are not vaccinated.

#### Past Mitigation Efforts: Epidemic

- The Trumbull County General Health District has taken many steps to ensure a base level of preparedness for epidemic and pandemic conditions. Initiatives surrounding general preparedness for Avian flu (beginning in 2006), and most recently for H1N1 (swine flu) have led other local governments to create and adopt business continuity plans.
- Health departments also administered approximately 16,000 H1N1 vaccinations in 2010, and has identified two points of dispensing sites (PODs).
- Health departments continually conduct disease surveillance, and maintains an adequate supply of vaccinations.
- Health departments have also developed the following plans in a continuing effort to remain prepared for epidemic outbreaks: pandemic preparedness plan, bioterrorism plan, and epi plan.
- At the time this plan was submitted to the Ohio Emergency Management Agency for approval, local authorities were participating in the response to the COVID-19 pandemic.

#### Historical Occurrences

Four pandemic influenza events have occurred in the last century. The 1918 Spanish Influenza outbreak remains the worst-case pandemic on record, with the number of deaths dramatically decreasing with each event.





PREVIOUS WORLDWIDE PANDEMIC EVENTS		
<i>Date</i>	<i>Pandemic Name/Subtype</i>	<i>Worldwide Deaths</i>
1918-1920	Spanish Flu / H1N1	50 million
1957-1958	Asian Flu / H2N2	1-3 million
1968-1969	Hong Kong Flu / H3N2	1 million
2009-2010	Swine Flu / A/H1N1	25,174

### **H1N1 Epidemic of 2009**

The most recent pandemic influenza event was the H1N1 (swine flu) epidemic in 2009. The CDC monitored the spread of the disease on a near-daily basis. The H1N1 flu was relatively mild for most people, but the virus spread with unprecedented speed; more than 700 schools in the United States closed, and many hospitals quarantined infected individuals. H1N1 was almost entirely responsible for total anomalies resolved as health events for 2009 (70%) in Trumbull county.

The ODH keeps records of certain notifiable diseases reported within the state. The following table presents reported cases of select notifiable diseases for Trumbull County from 1997 to 2019.

COMMUNICABLE DISEASES, TRUMBULL COUNTY 1997-2019																							
Disease	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
AIDS	4	4	7	6	1	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Anaplasma phagocytophilum	–	–	–	–	–	–	–	–	–	–	–	1	–	0	–	1	0	0	0	0	0	0	0
Botulism, foodborn	0	0	0	2	–	–	–	0	–	–	0	0	0	0	0	0	–	0	0	–	–	–	–
Botulism, infant	–	–	0	0	0	1	0	0	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Campylobacteriosis	15	14	15	21	17	18	18	26	23	10	21	15	20	20	11	15	11	12	15	13	16	12	16
Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25	14
Chlamydia, total	171	233	311	267	303	351	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Coccidioidomycosis	–	–	–	–	–	–	–	–	–	–	1	0	0	0	1	0	0	0	0	1	0	0	0
Creutzfeldt-Jakob Diseases (CJD)	–	–	0	0	0	1	0	0	0	0	0	0	–	0	0	0	0	1	1	0	0	0	0
Cryptosporidiosis	1	0	0	0	1	0	7	21	9	11	8	8	27	24	26	18	17	6	6	11	4	12	8
Cytomegalovirus (CMV), congenital	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	1	–	–	–	–	–	–
Dengue	0	0	–	0	–	0	0	0	0	0	0	0	1	–	0	0	0	0	0	0	0	1	0
E. Coli O157:H7	0	0	2	0	1	0	0	2	1	1	1	2	0	0	0	1	0	0	0	0	0	0	2
E. Coli Shiga toxin producing (not O157:H7)	–	–	–	0	0	0	0	0	2	0	0	0	0	2	1	0	2	0	3	0	0	0	0
E. Coli Shiga toxin producing, serotype unknown)	–	–	–	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0
Ehrlichiosis, Ehrlichia chaffeensis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	0	0	0	0	0
Encephalitis, La Crosse	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
Encephalitis, other viral	1	0	0	1	1	–	–	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Encephalitis, post infection	1	0	0	0	0	0	0	1	0	0	0	0	–	–	–	–	–	–	–	–	–	–	–



COMMUNICABLE DISEASES, TRUMBULL COUNTY 1997-2019																							
Disease	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
Encephalitis, primary	–	–	–	0	0	0	0	1	0	0	0	1	–	–	–	–	–	–	–	–	–	–	–
Encephalitis, West Nile	–	–	–	0	0	2	3	0	0	0	0	–	0	0	2	1	1	0	1	0	0	4	–
Giardiasis	10	17	12	9	5	12	12	7	8	15	10	9	7	5	11	14	6	6	4	0	6	2	0
Gonorrhea, total	143	122	151	185	233	188	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H. Influenza, invasive disease	1	0	0	1	1	0	3	2	2	6	4	3	2	3	4	3	4	1	6	3	4	2	8
Hemolytic Uremic Syndrome (HUS)	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	–
Hepatitis A	3	3	11	1	2	11	2	0	3	0	0	1	0	0	0	0	3	0	1	0	0	18	7
Hepatitis B (including acute & chronic)	1	0	3	0	4	5	10	15	16	12	58	28	16	21	1	9	5	0	57	44	–	–	–
Hepatitis, Non A-Non B (includes Hepatitis C, past & present)	1	0	0	0	0	0	70	84	137	106	182	123	116	72	0	0	2	276	320	485	–	–	–
Herpes, congenital	0	0	0	1	0	0	0	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
HIV	–	–	3	7	6	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Influenza-associated hospitalization	–	–	–	–	–	–	–	–	–	–	–	–	33	6	23	40	67	68	56	89	306	349	109
Influenza A virus, novel human infection	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	0	0	0	0	0	–	–	–
Kawasaki Disease	0	0	3	2	0	0	0	1	1	2	0	0	–	–	–	–	–	–	–	–	–	–	–
Legionnaires' Disease	4	1	0	0	1	0	0	1	0	6	6	3	0	4	7	5	8	5	8	9	9	17	9
Listeriosis	1	0	2	2	1	2	3	2	0	1	1	1	0	1	1	0	0	0	0	0	1	0	0
Lyme Disease	2	1	2	1	3	2	1	6	2	2	1	2	1	3	0	0	2	1	3	1	7	6	5
Malaria	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis, aseptic	16	5	2	6	6	12	6	2	42	6	7	6	10	12	31	8	6	7	3	6	5	7	5
Meningitis, other bacterial	0	0	0	0	1	1	2	1	1	1	0	0	1	1	12	6	1	2	0	2	2	0	1



COMMUNICABLE DISEASES, TRUMBULL COUNTY 1997-2019																							
<i>Disease</i>	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
Meningitis, Streptococcal (Group B)	–	–	1	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Meningococcal Disease	1	1	0	1	0	0	1	1	2	2	0	1	0	0	1	0	1	0	0	1	1	0	0
Mumps	1	1	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Outbreaks, foodborne	1	4	3	2	0	1	1	1	0	2	0	0	0	1	1	2	1	2	0	0	1	1	–
Outbreaks, healthcare-associated	–	–	–	–	–	–	–	–	–	–	–	–	1	0	0	0	0	2	0	0	0	0	–
Outbreaks, Institutional	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	0	–
Outbreaks, unspecified	–	–	–	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Outbreaks, waterborne	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Pertussis	1	0	0	5	2	5	0	3	2	1	0	12	28	15	20	12	2	16	6	1	9	8	1
Psittacosis	0	9	0	0	–	–	–	–	–	0	–	–	–	0	–	–	–	–	–	–	–	–	–
Rabies, animal	11	0	5	2	1	0	2	0	1	0	0	3	0	1	1	1	8	2	3	2	0	1	–
Rheumatic fever	0	18	0	–	0	0	0	0	0	–	0	0	–	–	–	–	–	–	–	–	–	–	–
Rocky Mountain Spotted Fever (RMSF)	0	17	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salmonellosis	16	0	26	20	26	24	21	14	18	18	21	19	17	20	15	18	12	18	19	22	16	15	13
Shigellosis	41	1	3	2	0	1	0	0	1	0	0	13	17	0	0	0	4	2	18	9	0	0	1
Staphyococcal skin infections	–	–	–	–	–	–	–	–	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Streptococcal disease, invasive, (Group A)	4	0	3	4	2	4	6	5	1	6	6	6	4	4	2	8	0	5	3	9	17	5	10
Streptococcal disease in newborn, (Group B)	2	0	0	1	0	1	0	1	2	1	0	1	1	0	2	2	2	1	0	0	0	2	0
Streptococcal Toxic Shock Syndrome (STSS)	1	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



COMMUNICABLE DISEASES, TRUMBULL COUNTY 1997-2019																							
Disease	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19
Streptococcus Pneumoniae, Invasive Disease (ISP)	-	-	-	37	23	33	26	24	23	22	34	38	34	29	25	27	19	23	20	26	21	23	15
Syphilis, primary and secondary	1	0	0	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Syphilis, all other stages	-	-	0	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toxic Shock Syndrome (TSS), Staphylococcal	0	0	0	0	0	1	0	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0
Tuberculosis	5	0	2	9	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Typhoid Fever	0	4	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	1	0	0	-
Vancomycin- Resistant Enterococcal Disease (VRE)	-	-	-	71	58	71	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Varicella zoster virus (Chickenpox)	-	-	32	9	0	87	39	1	6	428	82	58	81	38	25	19	20	5	4	4	12	6	3
Vibriosis	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yersiniosis	0	0	0	0	0	1	2	0	0	0	0	2	0	1	0	0	1	0	0	1	2	1	1
TOTALS	460	465	600	676	709	850	264	224	304	663	443	356	421	285	225	210	207	462	557	741	440	522	229



In the table above, planners omitted diseases that either had zero or no reported cases from the beginning of the reported years. Diseases not reported in Trumbull County (but reportable elsewhere) appear in the table below.

REPORTABLE DISEASES NOT REPORTED IN TRUMBULL COUNTY	
<i>Disease</i>	<i>Cause</i>
Amebiasis	Disease contracted by ingesting contaminated food or water. Caused by the parasite <i>Entamoeba histolytica</i> .
Brucellosis	Disease contracted by ingesting unpasteurized milk or undercooked meat from and infected animal.
Cyclosporiasis	Intestinal illness contracted by ingesting contaminated food or water. Caused by <i>Cyclospora cayetansis</i> .
Ehrlichiosis, Human Granulocytic (HGE)	Former name of Anaplasmosis.
Ehrlichiosis, Human Monocytic (HME)	Former name of Anaplasmosis.
Hepatitis B, perinatal	Hepatitis B that is passed from mother to infant.
Leprosy (Hansen's Disease)	Disease caused by <i>Mycobacterium leprae</i> that can result in nerve damage, crippling of the hands and feet, paralysis, and blindness.
Leptospirosis	Disease caused by the bacteria <i>Leptospira</i> that can result in kidney damage, meningitis, liver failure, respiratory distress, and death.
Measles, imported	Measles contracted outside of the United States.
Measles, indigenous	Measles contracted within the United States.
Q Fever	Disease caused by the bacteria <i>Coxiella burnetii</i> that can be transmitted by contact with animal waste.
Reye Syndrome	Cause is unknown, but is symptoms often begin shortly after a viral infection. Survivors are often left with brain damage.
Scabies	Infestation of human skin by the human itch mite ( <i>Sarcoptes scabiei</i> ) and is spread by skin contact.
Syphilis, congenital	Sexually transmitted disease that can be passed from mother to infant in utero.
Tetanus	Infection caused by the bacteria <i>Clostridium tetani</i> that causes "lockjaw."
Toxoplasmosis, congenital	Disease caused by ingesting food contaminated by the parasite <i>Toxoplasma</i> ; passed from mother to infant in utero.
Trichinosis	Disease caused by ingesting raw or undercooked meat infected with the parasite <i>Trichinella</i> .
Tularemia	Disease caused by contact with animals or water infected by <i>Francisella tularensis</i> .
Typhus, murine	Disease caused by the bacteria <i>Rickettsia typhi</i> and is spread by fleas.
Vibrio Parahaemolyticus infection	<i>Vibrio</i> illness caused by ingesting shellfish and other seafood infected <i>V. parahaemolyticus</i> .
Vibrio Vulnificus infection	<i>Vibrio</i> illness caused by an open wound coming into contact with shellfish or water infected <i>V. Vulnificus</i> . Severe infections can lead to necrotizing fasciitis.

### Loss and Damages

Major concerns during a public health emergency include the ability of local healthcare providers to give medical attention to everyone who becomes ill, and the ability to identify the source of illness in the population. Cascading effects of public health emergencies can include:

- illness or death,

- civil disturbance,
- distrust of government,
- poor water quality, and
- temporary loss of income.

Of the diseases experienced in Trumbull County, there are vaccines for chickenpox, pertussis, and Hepatitis B. Because most children in Trumbull County received vaccinations, the number of cases of these diseases should not significantly increase.

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from the epidemic hazard. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding epidemics.

PUBLIC SENTIMENT, EPIDEMIC – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Epidemic	40 (11.56%)	126 (36.42%)	126 (36.42%)	54 (15.61%)	346
In the past ten years, do you remember this hazard occurring in your community?				22 (6.38%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				21 (6.33%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				29 (9.24%)	314

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.




EPIDEMIC VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	5	Excessive	Trumbull County can expect a seasonal outbreak of infectious disease every year. Significantly, though, even when considering the 2020 COVID-19 pandemic, large-scale disaster situations would likely occur 0.05 times per year.
Response	3	One week	Pandemic responses, like the H1N1 response and the on-going COVID-19 response, far exceed one month in duration; however, the response to other outbreaks occurs more quickly. Planners thus selected the median option for this category.
Onset	1	Over 24 hours	While one person can become ill in less than a day, the onset of a pandemic is slow and takes place over weeks or months.
Magnitude	1	Less than 10% of land area affected	An epidemic would affect less than 10% of land area in Trumbull County. Its impacts are limited to human health.
Business	3	At least two weeks	For this category, planners again averaged potential impacts. A "normal" outbreak would not likely impact business operations. However, a pandemic response (e.g., COVID-19) would disrupt business operations for 30 or more days.
Human	2	Some injuries	Though many people may become ill, most recover from communicable diseases.
Property	1	Less than 10% of property affected	Epidemic events primarily affect human health, not property.
<b>Total</b>	<b>16</b>	<b>Medium</b>	





## 2.0 RISK ASSESSMENT

### 2.2.5 Flooding

A flood is a general or temporary condition of partial or complete inundation of normally dry land areas or the rapid accumulation of runoff surface waters from any source. A flash flood is a sudden local flood, typically due to heavy rain.			
 HIGHEST HIGH MEDIUM LOW LOWEST	<b>Vulnerability</b>	<b>Period of Occurrence:</b> At any time, typically after prolonged periods of precipitation	<b>Hazard Index Ranking:</b> High
		<b>Warning Time:</b> 12-24 hours	<b>State Risk Ranking:</b> 4 – High
		<b>Probability:</b> Highly likely	<b>Severity:</b> Critical
		<b>Type of Hazard:</b> Natural	<b>Disaster Declarations:</b> DR 870 (1990) DR 951 (1992) DR 1484 (2003) DR 1556 (2004)

#### Hazard Overview

Floods are the most prevalent hazard in the United States. Each year, floods cause more property damage in the U.S. than any other type of natural disaster, killing an average of 150 people a year. According to NOAA, some of the possible causes for flooding include the following.

- **Excessive Rainfall:** This is the most common cause of flooding. Water accumulates quicker than the soil can absorb, resulting in flooding.
- **Snowmelt:** It occurs when the primary source of water involved is melting snow. Unlike rainfall that can reach the soil almost immediately, the snowpack can store the water for an extended amount of time until temperatures rise above freezing, and the snow melts.
- **Ice or Debris Jams:** Common during the winter and spring along rivers, streams, and creeks. As ice or debris moves downstream, it may get caught on obstructions to the water flow. When this occurs, water can be held back, causing upstream flooding. When the jam finally breaks, flash flooding can occur downstream.
- **Dam Breaks or Levee Failure:** Dams can overtop, have excessive seepage, or have a structural failure. For more information, see Section 2.2.1 Dam and Levee Failure.

#### Location and Extent

Floods are described by their horizontal extents, the depth of the floodwaters, and the probability of occurrence. Unfortunately, meteorological officials historically have expressed the likelihood of occurrence in terms such as a “100-year flood”, which the general public logically

assumes means a flood that happens once in 100 years. The probability of occurrence is interpreted best as a percent chance of occurring. So, a 100-year flood is that flood level that has a 1% chance of occurring in any given year. The 100 year, or 1% flood, is often a function of risk planning. Smaller floods are more likely to occur; thus, a 10-year flood has a 10% chance of occurring in any given year.

When structures experience more than one flooding event, they can become “repetitive loss” or “severe repetitive loss” properties. The Flood Mitigation Assistance (FMA) grant and the National Flood Insurance Program (NFIP) define repetitive loss and severe repetitive loss slightly differently. The table below outlines both definitions.

REPETITIVE LOSS AND SEVERE REPETITIVE LOSS DEFINITIONS		
Program	Repetitive Loss	Severe Repetitive Loss
Flood Mitigation Assistance (FMA) Grant	<i>A repetitive loss (RL) property is a structure covered by a contract for flood insurance made available under the NFIP that:</i> Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25% of the market value of the time of each such flood event; At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.	(a) Is covered under a contract for flood insurance made available under the NFIP; and (b) Has incurred flood-related damage i. For which <u>4 or more separate claims payments</u> (includes building and contents) have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claim's payments exceeding \$20,000, or ii. For which <u>at least 2 separate claims payments</u> (includes only building) have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.
National Flood Insurance Program (NFIP)	A repetitive loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period since 1978.	A single-family property (consisting of one to four residences) that is covered under flood insurance by the NFIP and has incurred flood-related damage for which four or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding \$5,000 and with cumulative amount of such claims payments exceeding \$20,000; or for which at least two separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.



The following table outlines NFIP policies in force throughout Trumbull County.

<b>NFIP POLICIES IN FORCE, TRUMBULL COUNTY</b>			
<i>Community Name (Number)</i>	<i>Policies in Force</i>	<i>Total Coverage (\$)</i>	<i>Total Written Premium + FPF (\$)</i>
Cortland City (390823)	8	\$2,730,000	\$3,365
Girard City (390536)	10	\$3,301,000	\$31,075
Hubbard City (390537)	11	\$1,625,800	\$5,788
Lordstown Village (390812)	2	\$427,000	\$1,470
Newton Falls Village (390539)	6	\$1,801,000	\$3,690
Niles City (390540)	95	\$16,557,800	\$97,210
Trumbull County (390535)	233	\$39,308,300	\$204,102
Warren City (390541)	55	\$12,684,400	\$94,926

There are 40 repetitive loss properties in Trumbull County, with 105 combined losses. There are no severe repetitive loss properties in the county.

<b>REPETITIVE LOSS PROPERTIES, TRUMBULL COUNTY</b>							
<i>Community Name (Jurisdiction)</i>	<i>Community Number</i>	<i>Occupancy</i>	<i>Zone</i>	<i>Building Payments</i>	<i>Contents Payments</i>	<i>Total Paid</i>	<i>Average Payment</i>
Trumbull County (Warren Twp.)	390535	Single Family	B	\$69,041.45	\$0.00	\$69,041.45	\$13,808.29
Trumbull County (Liberty Twp.)	390535	Single Family	X	\$79,982.22	\$29,440.85	\$109,423.07	\$18,237.18
Warren, City of	390541	Single Family	A	\$65,060.25	\$16,158.62	\$81,218.87	\$16,243.77
Girard, City of	390536	Single Family	AE	\$25,489.72	\$979.04	\$26,468.76	\$6,617.19
Hubbard, City of	390537	2-4 Family	C	\$24,684.51	\$0.00	\$24,684.51	\$8,228.17
Trumbull County (Braceville Twp.)	390535	Single Family	A	\$28,898.45	\$0.00	\$28,898.45	\$14,449.23
Trumbull County (Warren Twp.)	390535	Single Family	B	\$28,448.83	\$4,196.15	\$32,644.98	\$16,322.49
Trumbull County (Braceville Twp.)	390535	Single Family	A	\$4,143.36	\$0.00	\$4,143.36	\$2,071.68
Trumbull County (Girard Twp.)	390535	Single Family	X	\$31,695.48	\$723.75	\$32,419.23	\$16,209.62
Trumbull County (Braceville Twp.)	390535	Single Family	A	\$47,722.39	\$22,254.60	\$69,976.99	\$34,988.5
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$30,478.24	\$0.00	\$30,478.24	\$15,239.12
Trumbull County (Warren Twp.)	390535	Single Family	A	\$3,917.65	\$1,372.02	\$5,289.67	\$1,763.22
Trumbull County (Champion Twp.)	390535	Other Resident	X	\$90,991.14	\$0.00	\$90,991.14	\$45,495.57
Trumbull County (Farmington Twp.)	390535	Single Family	X	\$40,427.75	\$35,656.97	\$76,084.72	\$38,042.36



REPETITIVE LOSS PROPERTIES, TRUMBULL COUNTY							
Community Name (Jurisdiction)	Community Number	Occupancy	Zone	Building Payments	Contents Payments	Total Paid	Average Payment
Trumbull County (Girard Twp.)	390535	2-4 Family	C	\$6,747.96	\$600.51	\$7,348.47	\$3,674.24
Trumbull County (Warren Twp.)	390535	Single Family	X	\$37,850.35	\$24,118.23	\$61,968.58	\$30,984.29
Trumbull County (Warren Twp.)	390535	Single Family	AE	\$78,288.12	\$0.00	\$78,288.12	\$39,144.06
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$28,659.19	\$8,773.92	\$37,433.11	\$18,716.56
Trumbull County (Warren Twp.)	390535	Single Family	AE	\$20,048.68	\$0.00	\$20,048.68	\$10,024.34
Trumbull County (Warren Twp.)	390535	Single Family	A02	\$12,557.96	\$1,298.01	\$13,855.97	\$6,927.99
Trumbull County (Warren Twp.)	390535	Single Family	AE	\$5,195.61	\$0.00	\$5,195.61	\$2,597.81
Trumbull County (Warren Twp.)	390535	Single Family	X	\$40,265.46	\$0.00	\$40,265.46	\$8,053.09
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$3,033.75	\$3,446.32	\$6,480.07	\$3,240.04
Trumbull County (Warren Twp.)	390535	Single Family	A	\$111,383.29	\$2,554.72	\$113,938.01	\$37,979.34
Trumbull County (Hubbard Twp.)	390535	Other-Nonresident	AE	\$49,300.00	\$110,800.00	\$160,100.00	\$8,0050
Trumbull County (Howard Twp.)	390535	Other-Nonresident	C	\$140,894.42	\$36,493.39	\$177,387.81	\$59,129.27
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$22,241.35	\$0.00	\$22,241.35	\$11,120.68
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$5,381.82	\$0.00	\$5,381.82	\$2,690.91
Trumbull County (Liberty Twp.)	390535	2-4 Family	B	\$25,375.92	\$0.00	\$25,375.92	\$8,458.64
Trumbull County (Brookfield Twp.)	390535	Other-Nonresident	C	\$0.00	\$58,392.12	\$58,392.12	\$29,196.06
Trumbull County (Warren Twp.)	390535	Single Family	A06	\$63,500.00	\$0.00	\$63,500.00	\$3,1750
Trumbull County (Brookfield Twp.)	390535	Single Family	C	\$20,391.70	\$0.00	\$20,391.70	\$5,097.93
Warren, City of	390541	Single Family	AE	\$32,815.14	\$0.00	\$32,815.14	\$10,938.38
Warren, City of	390541	Single Family	X	\$21,432.27	\$11,710.07	\$33,142.34	\$16,571.17
Warren, City of	390541	Single Family	A	\$31,853.33	\$0.00	\$31,853.33	\$15,926.67
Warren, City of	390541	Single Family	B	\$66,093.61	\$721.22	\$66,814.83	\$13,362.97
Warren, City of	390541	Single Family	X	\$44,371.83	\$6,924.25	\$51,296.08	\$17,098.69
Warren, City of	390541	Other-Nonresident	X	\$6,752.38	\$0.00	\$6,752.38	\$3,376.19
Warren, City of	390541	Single Family	A	\$10,939.01	\$0.00	\$10,939.01	\$5,469.51



REPETITIVE LOSS PROPERTIES, TRUMBULL COUNTY							
Community Name (Jurisdiction)	Community Number	Occupancy	Zone	Building Payments	Contents Payments	Total Paid	Average Payment
Warren, City of	390541	Other- Nonresident	A06	\$3,808.14	\$0.00	\$3,808.14	\$1,904.07

### Impacts and Vulnerability

Impacts from flooding can be primary or secondary. Primary effects are those that occur due to contact with water. Secondary effects occur because of flooding, such as disruption of services and changes in the position of river channels.

EFFECTS OF FLOODING	
Type	Description
Primary Impacts	<ul style="list-style-type: none"> <li>With higher velocities, streams are able to transport larger particles as suspended load. Such large particles include not only rocks and sediment, but, during a flood, could include such large objects as automobiles, houses, and bridges.</li> <li>Massive amounts of erosion can be accomplished by floodwaters. Such erosion can undermine bridge structures, levees, and buildings causing their collapse.</li> <li>Water entering human-built structures cause water damage. Even with minor flooding of homes, furniture is ruined, floors and walls are damaged, and anything that comes in contact with the water is likely to be damaged or lost. Flooding of automobiles usually results in damage that cannot easily be repaired.</li> <li>The high velocity of floodwaters allows the water to carry more sediment as suspended load. When the floodwaters retreat, velocity is generally much lower and sediment is deposited. After retreat of the floodwaters, everything is usually covered with a thick layer of stream deposited mud, including the interior of buildings.</li> <li>Flooding of farmland usually results in crop loss. Livestock, pets, and other animals are often carried away and drown.</li> <li>Humans that get caught in the high-velocity floodwaters are often drowned by the water.</li> <li>Floodwaters can concentrate garbage, debris, and toxic pollutants that can cause the secondary effects of health hazards.</li> </ul>
Secondary Impacts	<p>Disruption of services -</p> <ul style="list-style-type: none"> <li>Drinking water supplies may become polluted, especially if sewerage treatment plants are flooded. This may result in disease and other health effects, especially in underdeveloped countries.</li> <li>Gas and electrical service may be disrupted.</li> <li>Transportation systems may be disrupted, resulting in shortages of food and clean-up supplies. In underdeveloped countries, food shortages often lead to starvation.</li> </ul>
Long-Term (Tertiary) Impacts	<ul style="list-style-type: none"> <li>Location of river channels may change as the result of flooding, new channels develop, leaving the old channels dry.</li> <li>Sediment deposited by flooding may destroy farmland (although silt deposited by floodwaters could also help to increase agricultural productivity).</li> <li>Jobs may be lost due to the disruption of services, destruction of business, etc. (although jobs may be gained in the construction industry to help rebuild or repair flood damage).</li> <li>Insurance rates may increase.</li> <li>Corruption may result from misuse of relief funds.</li> <li>Destruction of wildlife habitat.</li> </ul>



### **Past Mitigation Efforts: Flooding**

- Require applications for floodplain development permits for all development activities located within, or in contact with, an identified special flood hazard area. Such application shall be made by the owner of the property or his/her authorized agent, prior to the actual commencement of such construction. Where it is unclear whether a development site is in a special flood hazard area, the Floodplain Administrator may require an application for a floodplain development permit to determine the development's location. It shall be unlawful for any person to begin construction or other development activity, including but not limited to, filling; grading; construction; alteration, remodeling, or expanding any structure; or alteration of any watercourse wholly within, partially within or in contact with any identified special flood hazard area, until a floodplain development permit is obtained.
- Conducted buyouts or property acquisition and relocation projects in several areas, and have conducted flood elevation adjustments to several facilities.
- Several jurisdictions have designated an "NFIP Coordinator". The NFIP Coordinator maintains the jurisdiction's floodplain ordinance and ensures that development is compliant with that ordinance (and, consequently, the NFIP).
- Worked with FEMA and the Ohio Emergency Management Agency (OEMA) on the Map Modernization Program to improve FIRMs (i.e., flood insurance study [FIS] dated June 2010).
- Working with the municipalities to update all outdated floodplain ordinances.
- Floodplain information now appears on zoning maps.
- Collecting updated information of the number and location of all repetitive loss properties throughout the county and the municipalities.
- Identifying owners of repetitive loss properties who are interested in participating in future property acquisition and relocation projects.
- The distribution of letters to all property owners in the county regarding potential flood hazards as required for participation in the Community Rating System (CRS).
- The development and distribution of public awareness materials concerning flood hazard risks, and updating the county's website to provide hazard related information that is easily accessible.
- Miscellaneous culvert and bridge projects designed to more efficiently move stormwater and keep it from pooling.



### Historical Occurrences

There have been 29 floods and 33 flash floods in Trumbull County since 1996, for an average of 1.3 floods and 1.4 flash floods per year. These events have caused a combined \$89.42 million in damage. The following table outlines the instances of flooding.

<b>HISTORICAL OCCURRENCES – FLOOD (Source: NCEI Storm Events Database)</b>						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull (Zone)	3/20/1996	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	5/11/1996	Flood	0	0	55.00K	0.00K
Trumbull (Zone)	5/11/1996	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	12/12/1996	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	6/2/1997	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	1/9/1998	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	4/17/1998	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	1/24/1999	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	4/8/2000	Flood	0	0	0.00K	0.00K
Trumbull (Zone)	7/19/2001	Flood	0	0	50.00K	0.00K
Trumbull (Zone)	6/12/2003	Flood	0	0	300.00K	0.00K
Trumbull (Zone)	6/13/2003	Flood	0	0	50.00K	0.00K
Trumbull (Zone)	7/21/2003	Flood	0	0	32.000M	0.00K
Trumbull (Zone)	7/23/2003	Flood	0	0	100.00K	0.00K
Trumbull (Zone)	8/6/2003	Flood	0	0	100.00K	0.00K
Trumbull (Zone)	9/9/2004	Flood	0	0	250.00K	0.00K
Trumbull (Zone)	9/17/2004	Flood	0	0	325.00K	0.00K
Trumbull (Zone)	1/1/2005	Flood	0	0	425.00K	0.00K
Trumbull (Zone)	8/30/2005	Flood	0	0	100.00K	0.00K
Phalanx	2/28/2011	Flood	0	0	600.00K	0.00K
Leavittsburg	5/12/2011	Flood	0	0	0.00K	0.00K
Sodom	5/25/2011	Flood	0	0	0.00K	0.00K
McDonald	5/27/2011	Flood	0	0	0.00K	0.00K
Albion	9/10/2011	Flood	0	0	20.00K	0.00K
Mineral Ridge	6/30/2015	Flood	0	0	80.00K	0.00K
Niles	1/12/2017	Flood	0	0	0.00K	0.00K
Leavittsburg	4/16/2018	Flood	0	0	30.00K	0.00K
Braceville	1/24/2019	Flood	0	0	0.00K	0.00K
Five Points	6/1/2019	Flood	0	0	0.00K	0.00K
<b>TOTALS</b>			<b>0</b>	<b>0</b>	<b>34.485M</b>	<b>0.00K</b>

<b>HISTORICAL OCCURRENCES – FLASH FLOOD (Source: NCEI Storm Events Database)</b>						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
County Wide	4/23/1996	Flash Flood	0	0	0.00K	0.00K
Southern Half	5/11/1996	Flash Flood	0	0	10.00K	0.00K
County Wide	6/7/1996	Flash Flood	0	0	0.00K	0.00K
Liberty Township	6/24/1996	Flash Flood	0	0	0.00K	0.00K
County Wide	7/16/1996	Flash Flood	0	0	0.00K	0.00K
Warren	8/23/1996	Flash Flood	0	0	0.00K	0.00K



<b>HISTORICAL OCCURRENCES – FLASH FLOOD (Source: NCEI Storm Events Database)</b>						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
County Wide	12/11/1996	Flash Flood	0	0	5.00K	0.00K
Kinsman	6/12/1997	Flash Flood	0	0	0.00K	0.00K
Brookfield	9/10/1997	Flash Flood	0	0	0.00K	0.00K
County Wide	1/7/1998	Flash Flood	0	0	0.00K	0.00K
Niles	4/16/1998	Flash Flood	0	0	0.00K	0.00K
County Wide	1/23/1999	Flash Flood	0	0	0.00K	0.00K
County Wide	7/28/1999	Flash Flood	0	0	50.00K	0.00K
County Wide	7/21/2003	Flash Flood	1	0	12.000M	0.00K
County Wide	7/21/2003	Flash Flood	0	0	25.000M	0.00K
County Wide	7/22/2003	Flash Flood	0	0	500.00K	0.00K
South Portion	7/27/2003	Flash Flood	0	0	6.000M	0.00K
County Wide	8/29/2003	Flash Flood	0	0	250.00K	0.00K
County Wide	9/8/2004	Flash Flood	0	0	4.200M	0.00K
Green Center	9/8/2007	Flash Flood	0	0	25.00K	0.00K
Oakfield	5/13/2011	Flash Flood	0	0	20.00K	0.00K
Braceville	5/14/2011	Flash Flood	0	0	0.00K	0.00K
North Bloomfield	5/14/2011	Flash Flood	0	0	10.00K	0.00K
Newton Falls	7/10/2013	Flash Flood	0	0	200.00K	0.00K
Newton Falls	8/8/2013	Flash Flood	0	0	2.500M	0.00K
Kinsman	7/27/2014	Flash Flood	0	0	60.00K	0.00K
Girard	8/2/2014	Flash Flood	0	0	30.00K	0.00K
Cortland	8/2/2014	Flash Flood	0	0	15.00K	0.00K
Champion	6/14/2015	Flash Flood	0	0	180.00K	0.00K
McKinley Heights	9/3/2018	Flash Flood	0	0	5.00K	0.00K
Lockwood	6/5/2019	Flash Flood	0	0	125.00K	0.00K
Kinsman	7/20/2019	Flash Flood	0	0	3.000M	0.00K
Barclay	7/20/2019	Flash Flood	0	0	750.00K	0.00K
<b>TOTALS</b>			<b>0</b>	<b>0</b>	<b>54.935M</b>	<b>0.00K</b>

### July 21, 2003, Flood and Flash Flood

Heavy rain caused the Mahoning River to flood. At its height, the river crested to 17.16 feet at Leavittsburg. Three cities, Leavittsburg, Niles, and Warren, were all evacuated and sustained extensive damage. In total, 753 homes were damaged by the floodwaters, with 90 homes being destroyed or declared uninhabitable. A further 1,400 homes sustained basement flooding, and dozens of roads, culverts, and driveways were damaged. Damage to roads, government or public buildings, parks, and recreational areas reached \$4 million.

In the southeast area of Trumbull County, over seven inches of rain fell within a few hours. Floodwaters up to five feet deep were reported in Brookfield, and evacuations were ordered for both Brookfield and portions of Hubbard. The Trumbull County 911 Center in Howland was evacuated around 9:00 p.m. after floodwaters collapsed a basement wall.





## July 20, 2019, Flash Flood

A cold front originating in the Great Lakes caused storms to drop five to six inches of rain on Kinsman Lake. Runoff overwhelmed an earthen dam that eventually eroded and failed. Downstream, agricultural fields sustained significant erosion, a basement wall collapsed, and a bridge washed out, leaving 55 people in 21 homes stranded. Damages reached \$3 million.

### Loss and Damages

Floods have caused \$34.5 million in damages in Trumbull County since 1996, and flash floods have generated an additional \$54.9 million in damages in that same time. These figures give a combined loss per year of \$3.9 million per year or \$1.4 million per event. Further, FEMA can estimate losses from flood to buildings in Trumbull County through the HAZUS-MH program. The program calculates the expected losses to buildings from a 100-year flood event. The following tables outline the expected building damages by occupancy and type and the building-related economic losses. The following table describes the expected damages by occupancy.

EXPECTED BUILDING DAMAGE BY OCCUPANCY												
Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Ct.	%	Ct.	%	Ct.	%	Ct.	%	Ct.	%	Ct.	%
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	2	14	9	64	2	14	0	0	0	0	1	7
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	1	100	0	0	0	0	0	0	0	0	0	0
Industrial	3	18	11	65	3	18	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	139	20	277	40	141	20	64	9	38	5	40	6
<b>TOTAL</b>	<b>145</b>		<b>297</b>		<b>146</b>		<b>64</b>		<b>38</b>		<b>41</b>	

EXPECTED BUILDING DAMAGE BY BUILDING TYPE												
Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Ct.	%	Ct.	%	Ct.	%	Ct.	%	Ct.	%	Ct.	%
Concrete	1	17	4	67	1	17	0	0	0	0	0	0
Manufactured Housing	0	0	3	14	1	5	0	0	3	14	14	67
Masonry	16	19	42	49	18	21	6	7	4	5	0	0
Steel	3	18	11	65	3	18	0	0	0	0	0	0
Wood	124	21	237	40	123	21	58	10	31	5	26	4

Building-related losses include the building itself, its contents, the inventory, income, relocation costs, rental income losses, and lost wages.

BUILDING-RELATED ECONOMIC LOSS ESTIMATES (MILLIONS OF DOLLARS)						
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss	Building	85.23	26.95	33.34	5.36	150.89
	Content	44.32	81.26	88.70	25.27	239.54
	Inventory	0.00	2.01	13.89	0.09	16.00
	Subtotal	129.55	110.22	135.94	30.72	406.42
Business Interruption	Income	3.14	46.59	5.17	9.00	63.90
	Relocation	25.69	14.24	3.65	4.48	48.07
	Rental Income	11.25	9.98	0.96	0.60	22.78
	Wage	7.43	65.34	4.32	48.58	125.67
	Subtotal	47.51	136.15	14.10	62.66	260.42
TOTAL		177.06	246.37	150.03	93.38	666.84

The Ohio EMA coordinated with the U.S. Army Corps of Engineers' Silver Jackets program to complete Level 2 HAZUS analyses for various counties in Ohio, including Trumbull. The Level 2 analysis presents a list of the structures that could suffer losses during a flood event (and displays them on a structure-by-structure basis). The following table is a summary of the Level 2 analysis.

HAZUS LEVEL 2 SUMMARIES, TRUMBULL COUNTY (Source: OEMA)							
Occupancy	Total Cost	25-yr. Flood Building Loss	25-yr. Flood Contents Loss	25-yr. Flood Inventory Loss	100-yr. Flood Building Loss	100-yr. Flood Contents Loss	100-yr. Flood Inventory Loss
AGR1	\$14,680,700	\$820,489.50	\$2,509,832	\$3,098,940	\$820,489.50	\$2,509,832	\$3,098,940
COM1	\$2,514,300	\$234,262.40	\$669,783.20	\$739,604.30	\$231,899.70	\$669,783.20	\$739,604.30
COM2	\$1,249,300	\$42,434.54	\$152,456.80	\$184,609.70	\$42,434.54	\$152,456.80	\$184,609.70
COM3	\$8,465,600	\$1,003,451	\$4,330,165	\$0	\$1,003,451	\$4,330,165	\$0
COM4	\$3,344,300	\$381,669	\$533,591.80	\$0	\$381,669	\$533,591.80	\$0
COM6	\$1,111,100	\$180,964.20	\$307,623.10	\$0	\$180,964.20	\$307,623	\$0
COM8	\$3,273,900	\$244,483	\$925,307.30	\$0	\$244,483	\$925,307.30	\$0
COM10	\$83,600	\$918.34	\$1,683.61	\$0	\$918.34	\$1,683.61	\$0
GOV1	\$80,035,700	\$4,109,702	\$22,692,790	\$0	\$4,109,702	\$22,692,790	\$0
IND1	\$2,890,500	\$695,891.50	\$1,794,501	\$1,274,711	\$695,891.50	\$1,794,501	\$1,274,711
IND2	\$7,549,600	\$1,624,252	\$4,128,721	\$3,187,555	\$1,624,252	\$4,128,721	\$3,187,555
IND3	\$561,900	\$118,205.70	\$424,584.10	\$322,275	\$118,205.70	\$424,584.10	\$322,275
IND6	\$746,800	\$360,572	\$458,609.70	\$498,214.50	\$360,572	\$458,609.70	\$498,214.50
REL1	\$1,024,400	\$76,335.41	\$542,232.70	\$0	\$76,335.41	\$542,232.70	\$0
RES1	\$56,455,400	\$11,682,818	\$5,512,850	\$0	\$11,682,818	\$5,512,850	\$0
RES2	\$7,301,500	\$477,776.50	\$169,413.50	\$0	\$477,776.50	\$169,413.50	\$0
RES3A	\$1,202,000	\$114,395	\$79,455.55	\$0	\$114,395	\$79,445.55	\$0
RES3C	\$297,700	\$22,711.89	\$16,990.72	\$0	\$22,711.89	\$16,990.72	\$0
RES3E	\$2,681,500	\$653,767.50	\$378,978.60	\$0	\$653,767.50	\$378,978.60	\$0
RES3F	\$234,500	\$34,032.98	\$18,782.87	\$0	\$34,032.98	\$18,782.87	\$0



To complete the SHARPP vulnerability assessment, the Ohio EMA's "loss estimate workbook for HAZUS results" provided the figures included in the following table.

<b>FLOODING EXPOSURE ESTIMATE – SHARPP DATA ENTRY</b>		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	4,405	\$2,408,788,000
Non-Residential	1,820	\$998,822,000
Critical Facilities	332	\$185,645,000
<b>TOTALS</b>	<b>6,556</b>	<b>\$3,593,245,000</b>

Another means of calculating flood losses is via the NFIP records of claims paid. The following table shows the total amount of claims paid in each municipality, according to the NFIP Consumer Insurance Service (CIS).

<b>FLOODING CLAIMS PAID, TRUMBULL COUNTY</b>		
<i>Community</i>	<i>Participation Status</i>	<i>Total Amount of Paid Claims</i>
Cortland City	Participating	\$0
Girard City	Participating	\$37,420
Hubbard City	Participating	\$56,453
Lordstown Village	Participating	\$0
McDonald Village	Participating	\$2,994
Newton Falls Village	Participating	\$8,618
Niles City	Participating	\$112,022
Trumbull County	Participating	\$2,671,831
Unknown	N/A	\$25,798
Warren City	Participating	\$557,646
Youngstown City (the portion in Trumbull Co.)	Participating	\$11,955

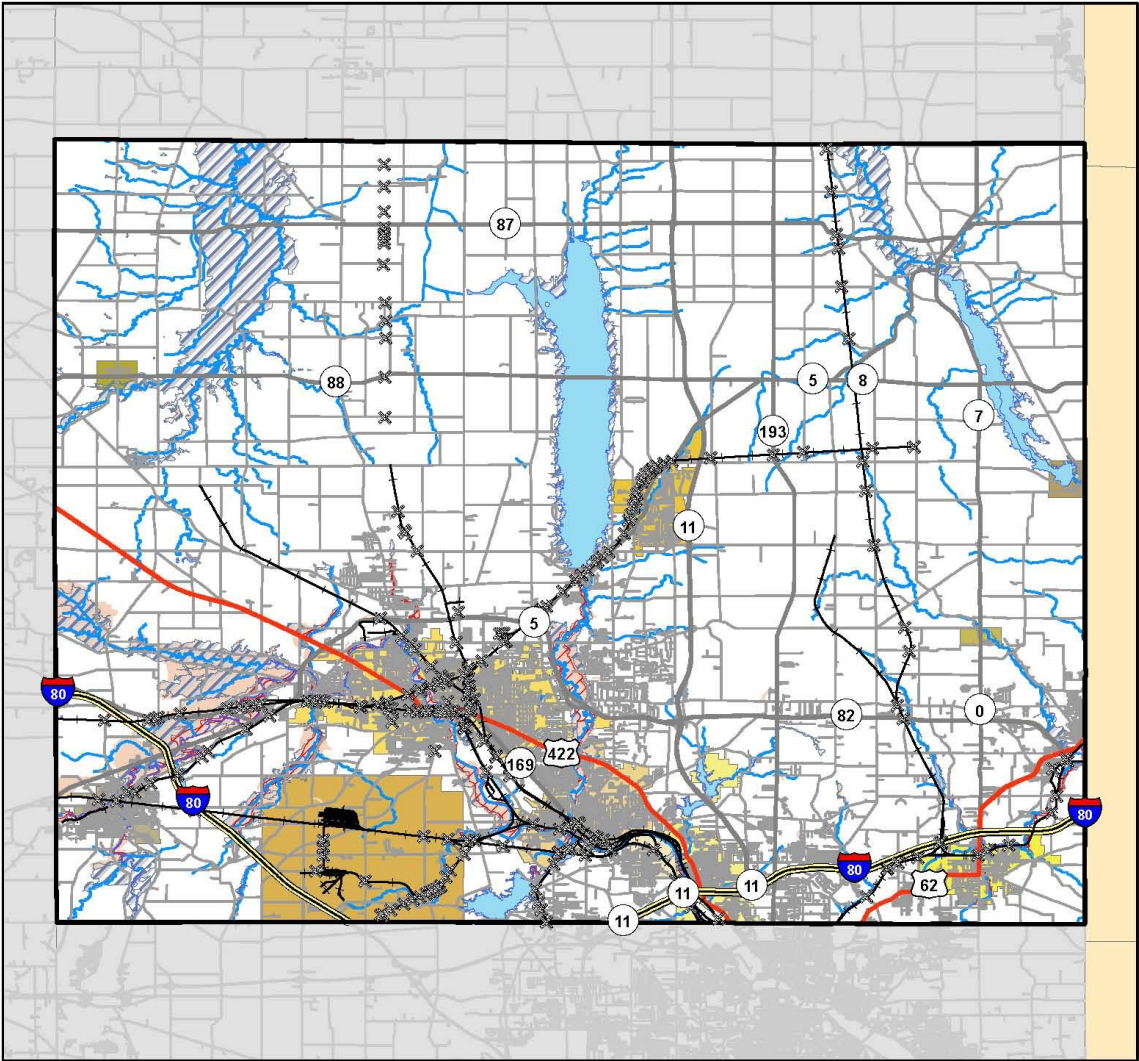
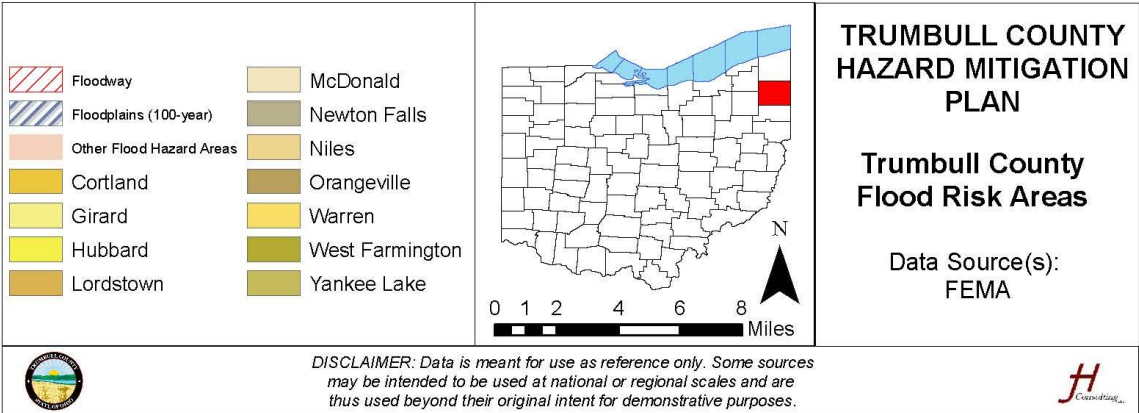
### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from flooding. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding flooding.

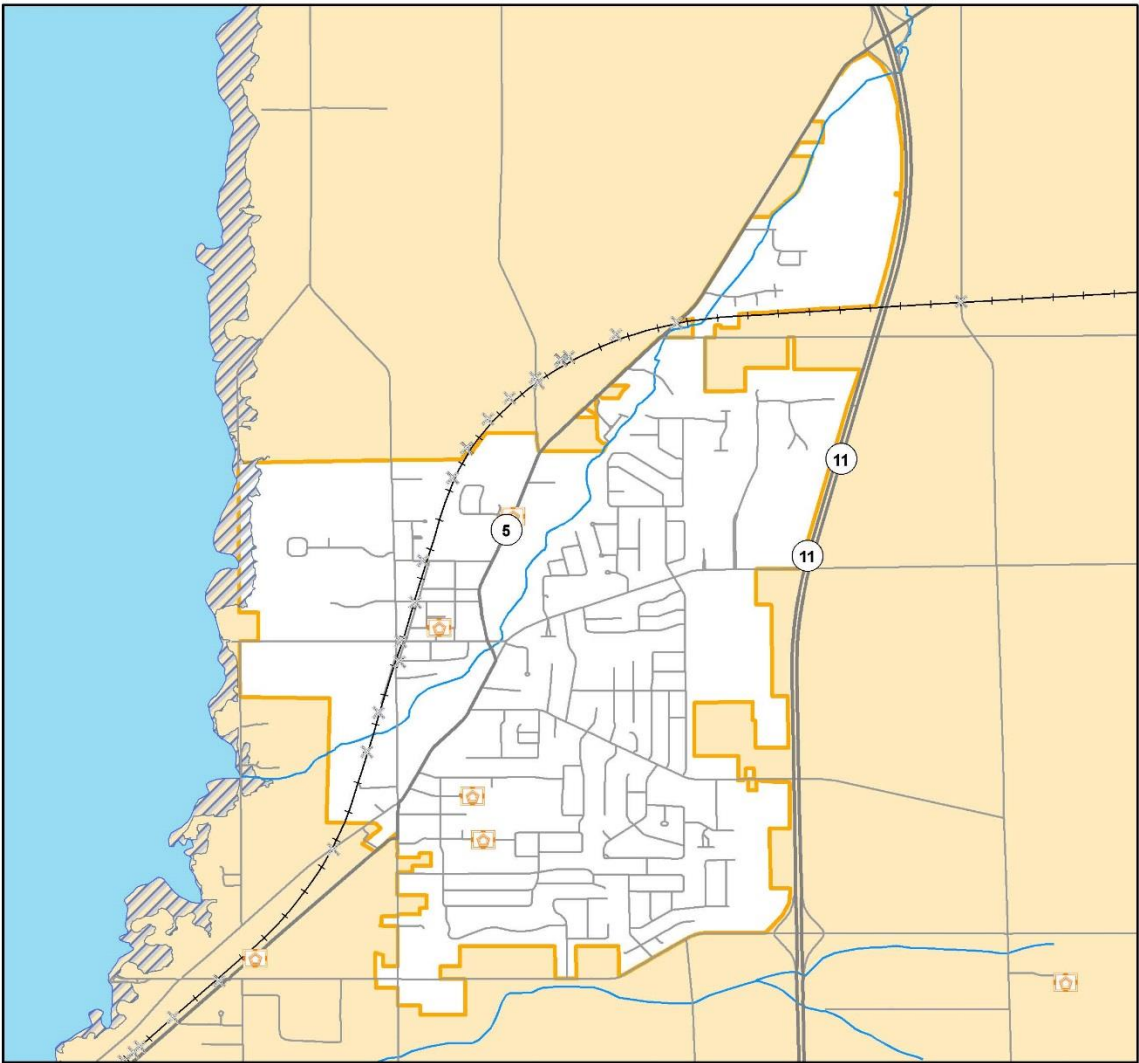
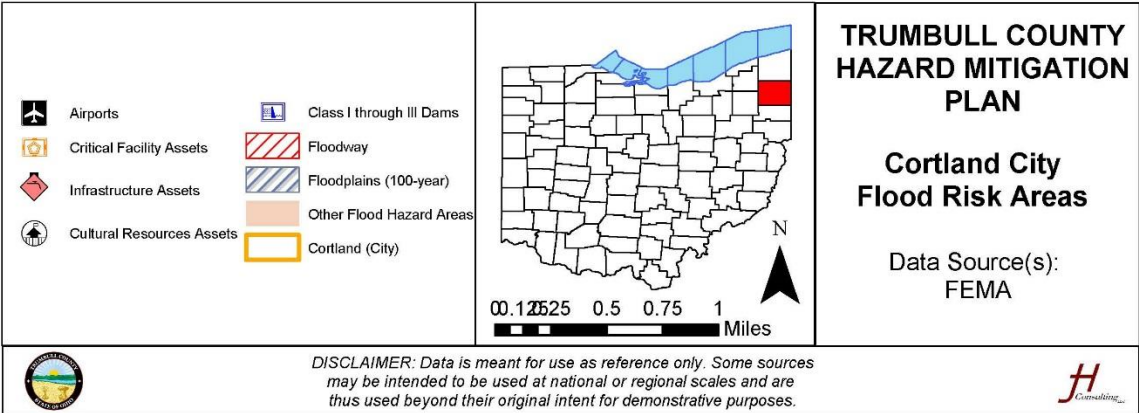
PUBLIC SENTIMENT, FLOODING – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Flooding	71 (20.52%)	128 (36.99%)	99 (28.61%)	48 (13.87%)	346
In the past ten years, do you remember this hazard occurring in your community?				228 (66.09%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				152 (45.78%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				8 (2.55%)	314

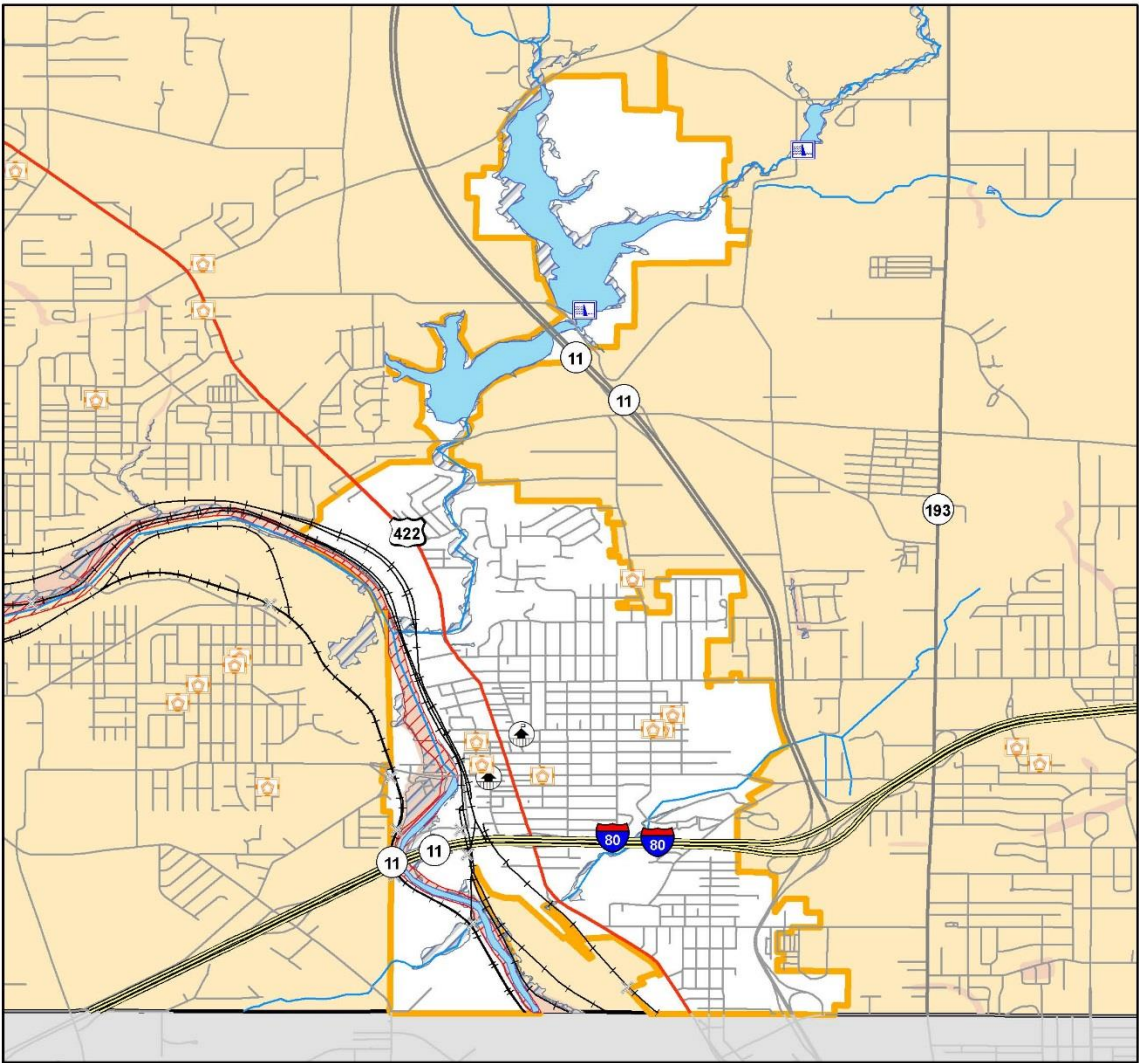
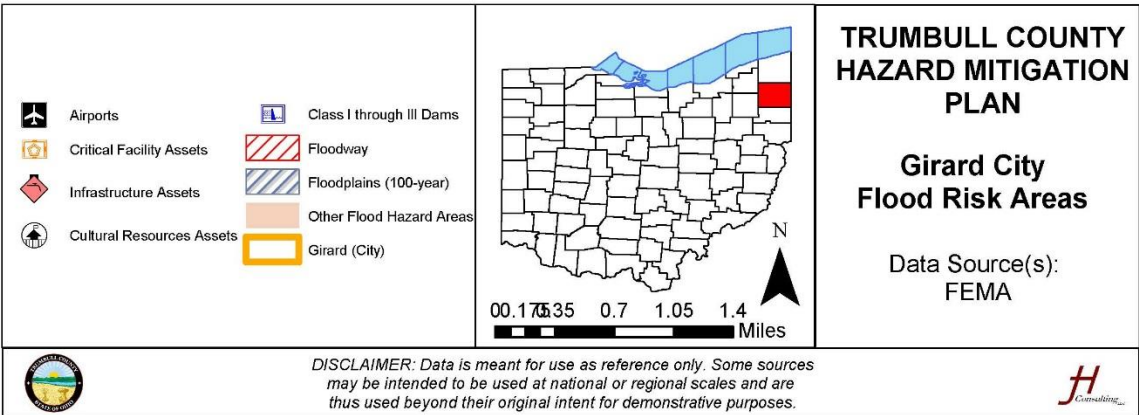
The map images graphically depict potential risk areas in Trumbull County. The first image is countywide; the remaining images are by city and village and show both the 100-year floodplain and community assets.

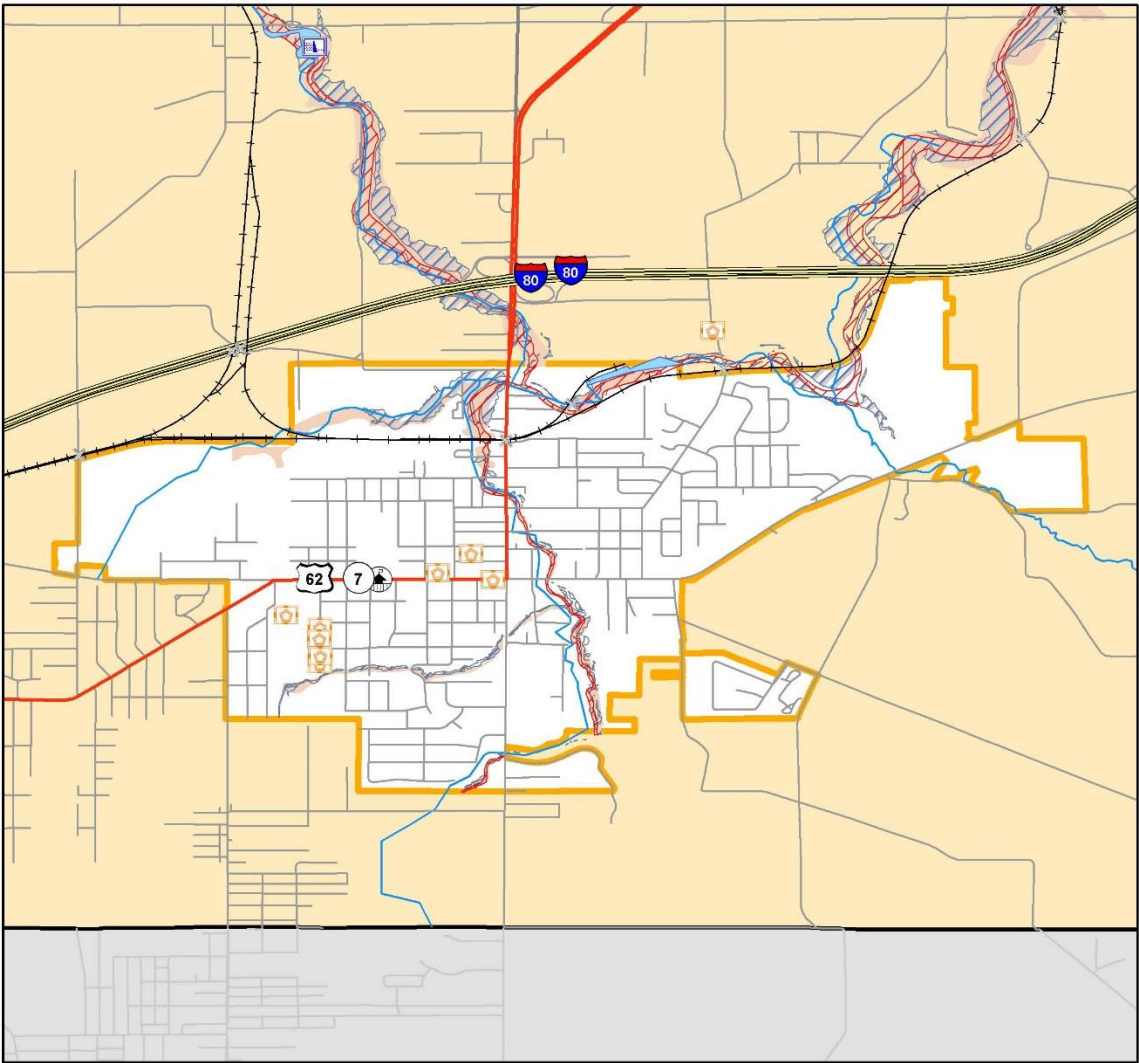
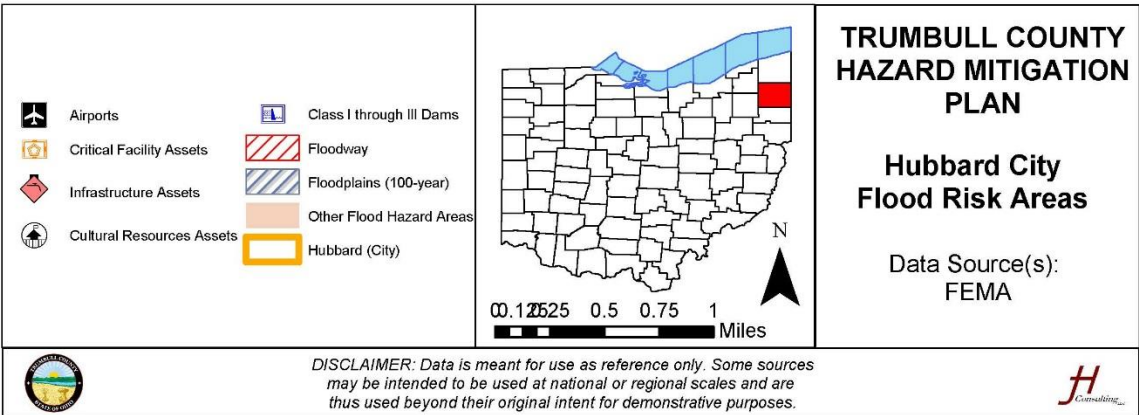




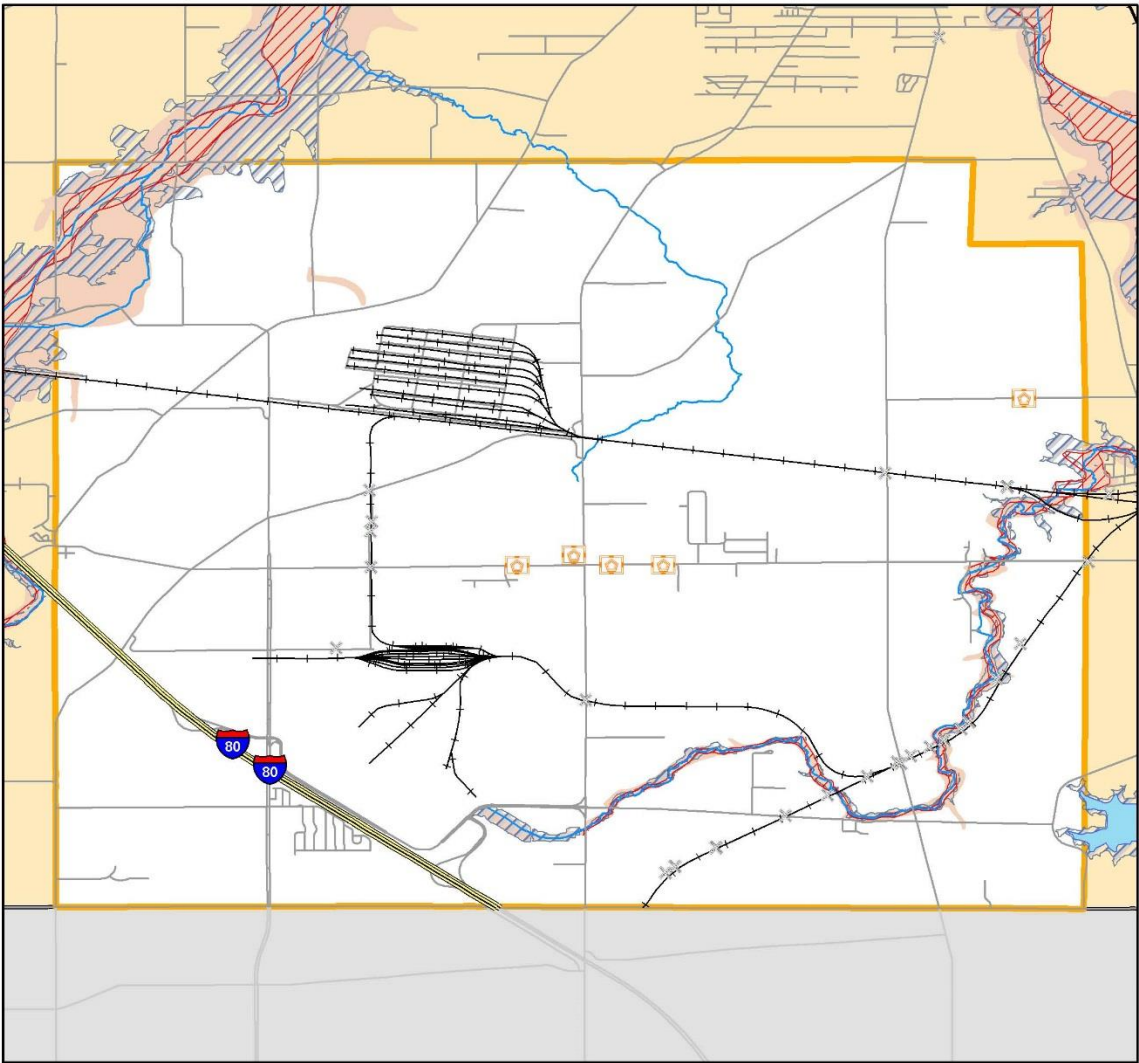
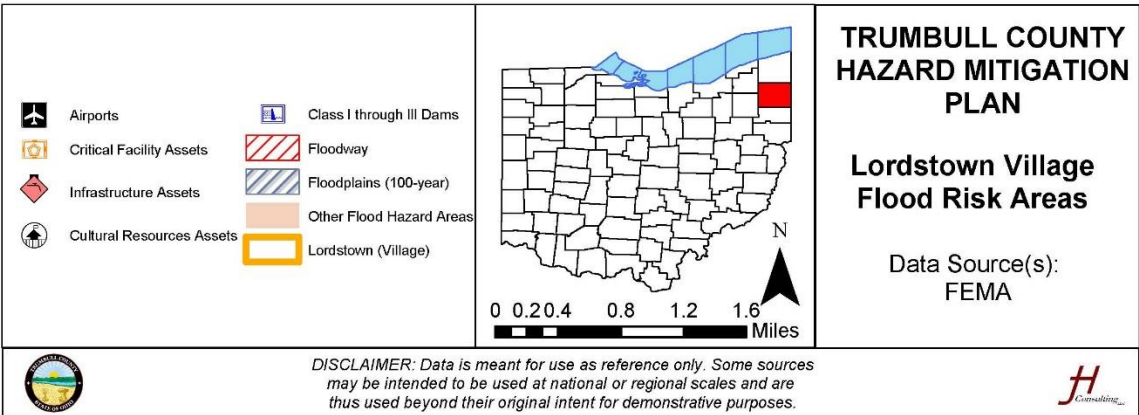


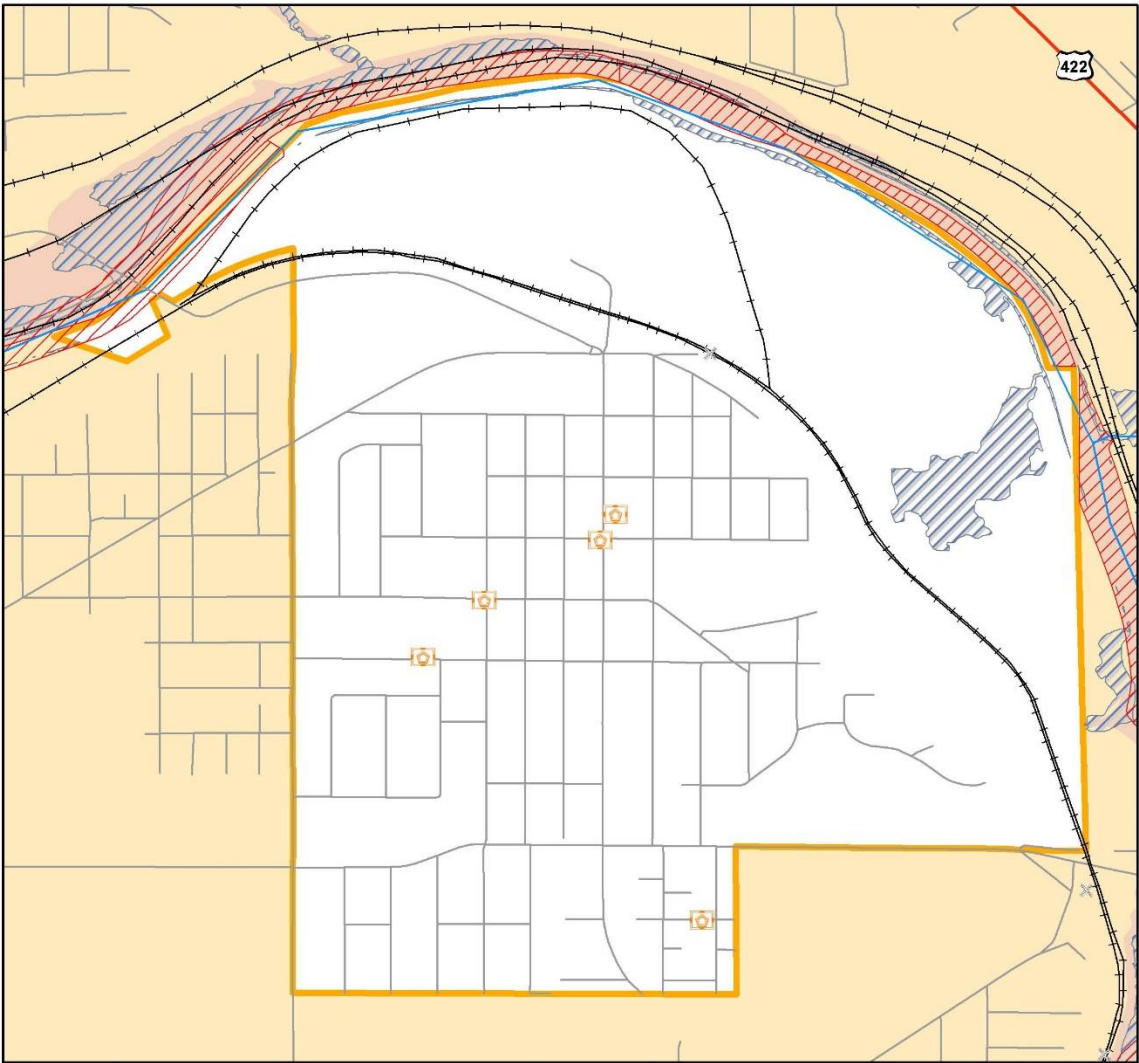
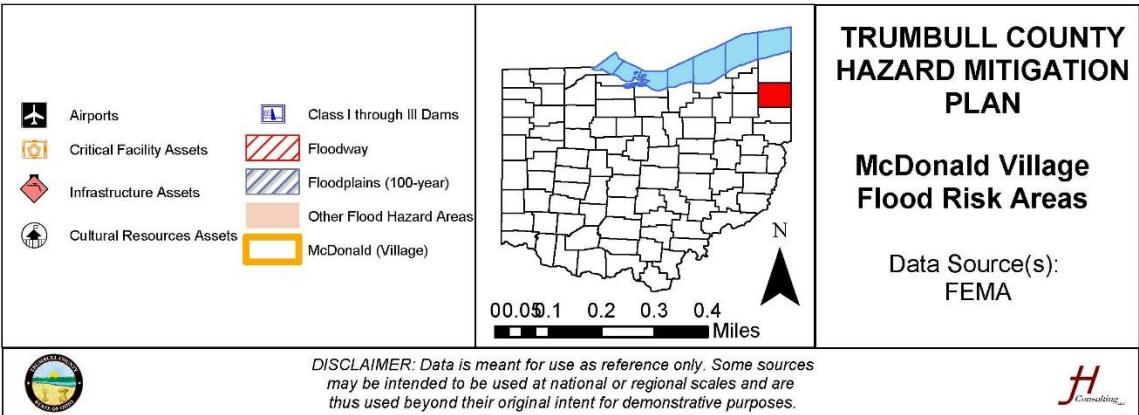


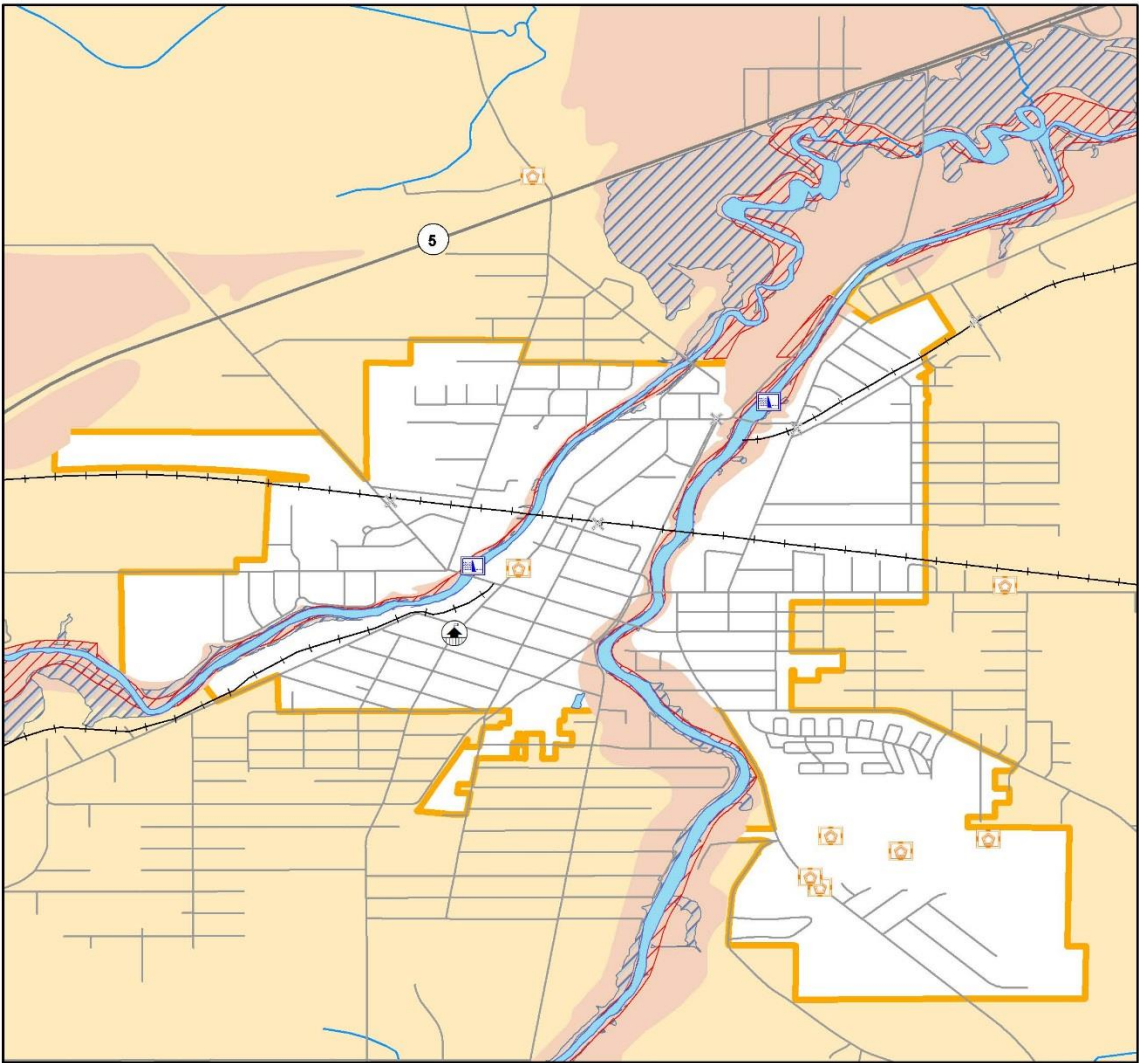
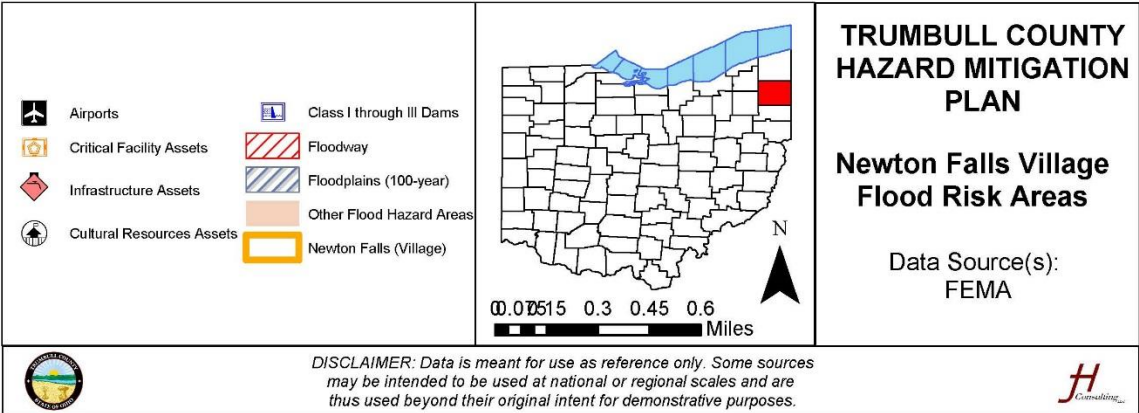




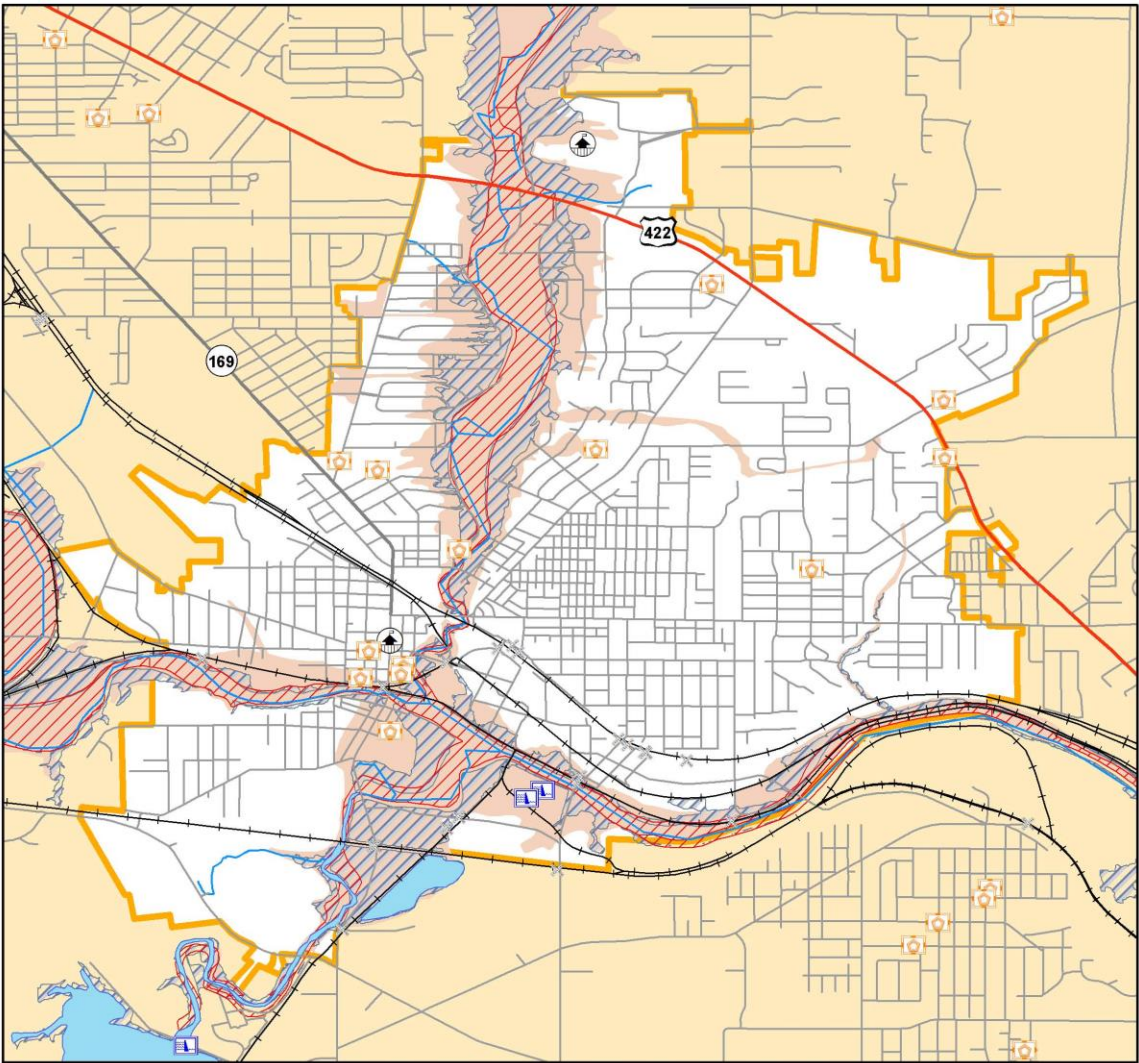
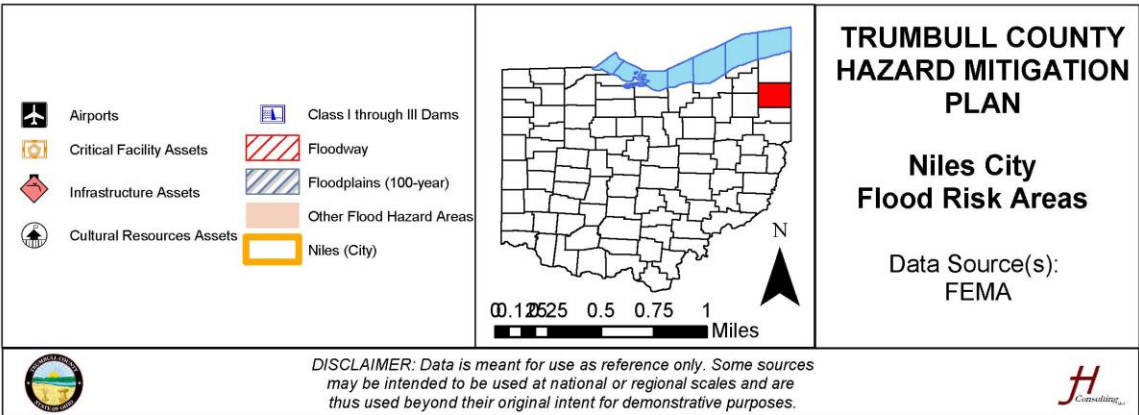


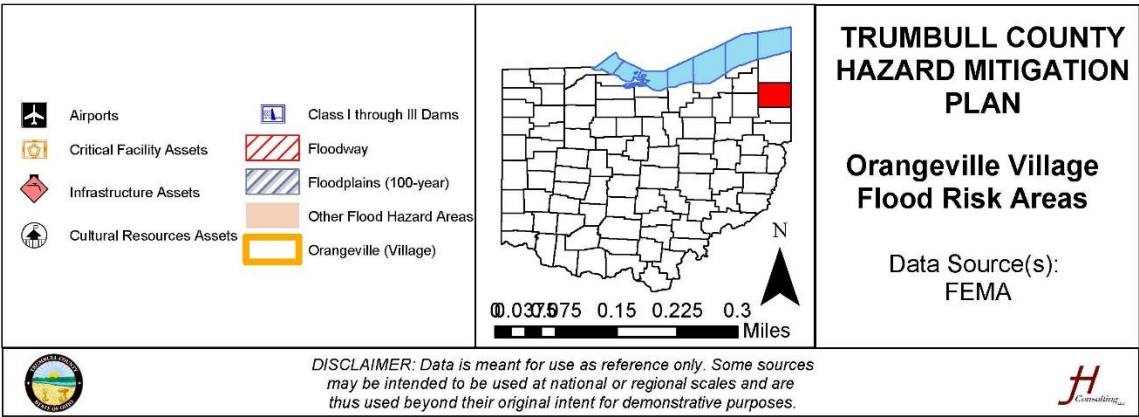




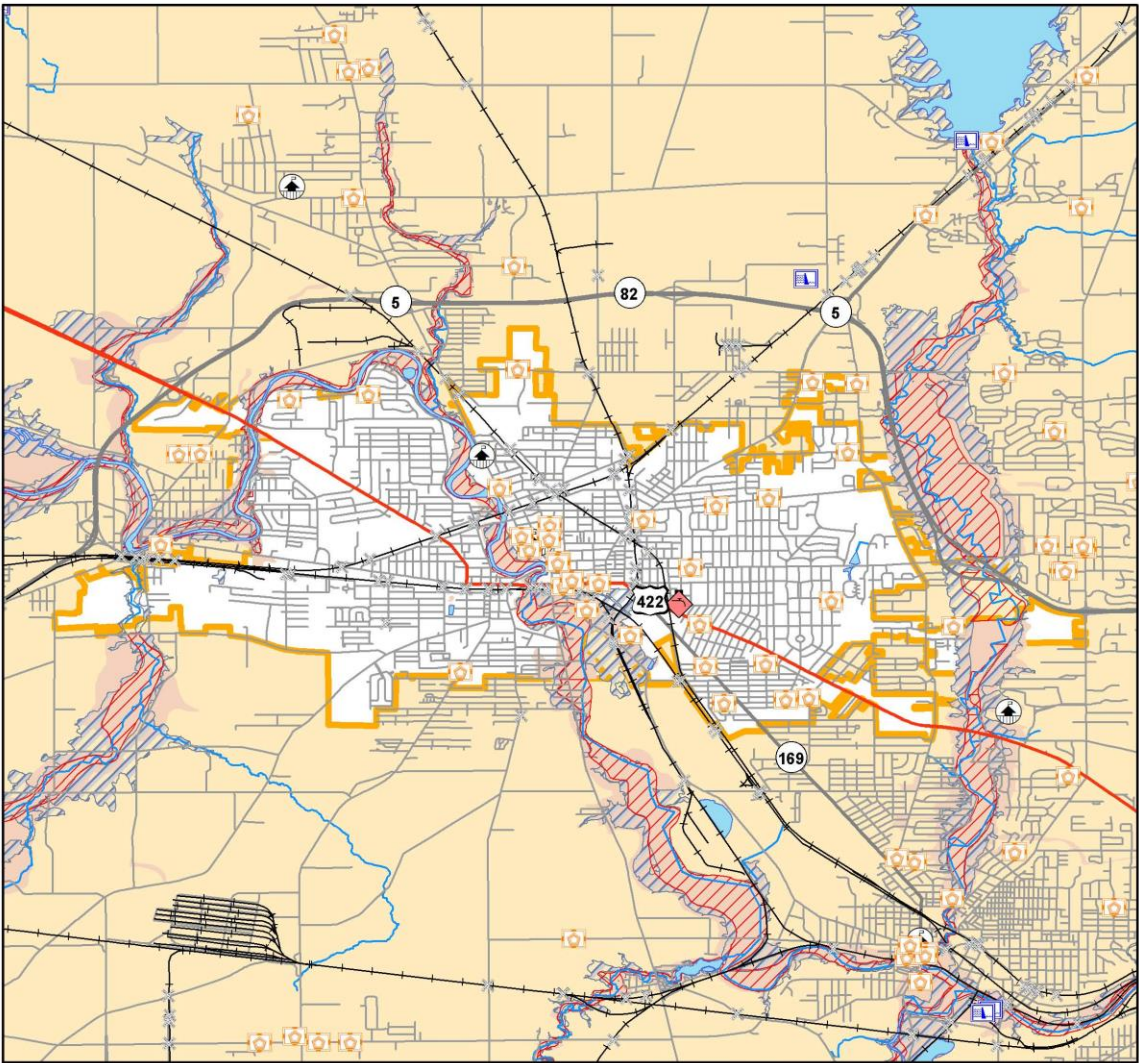
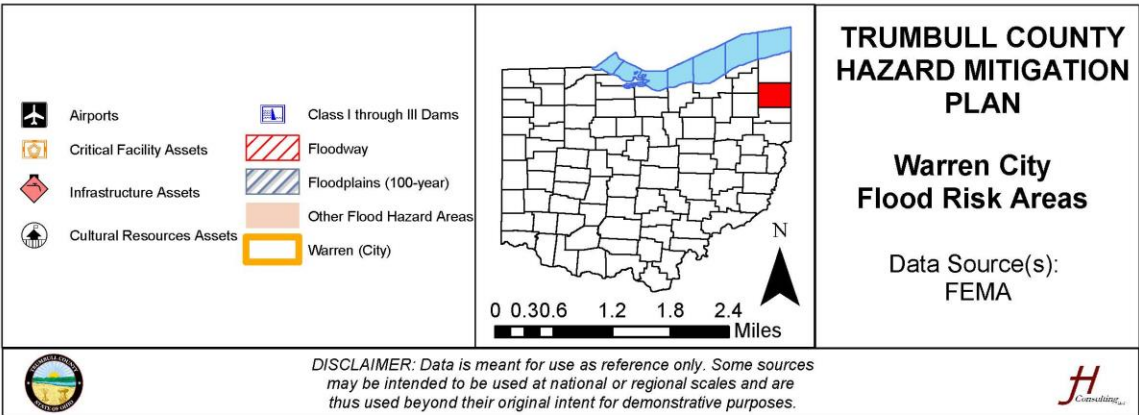


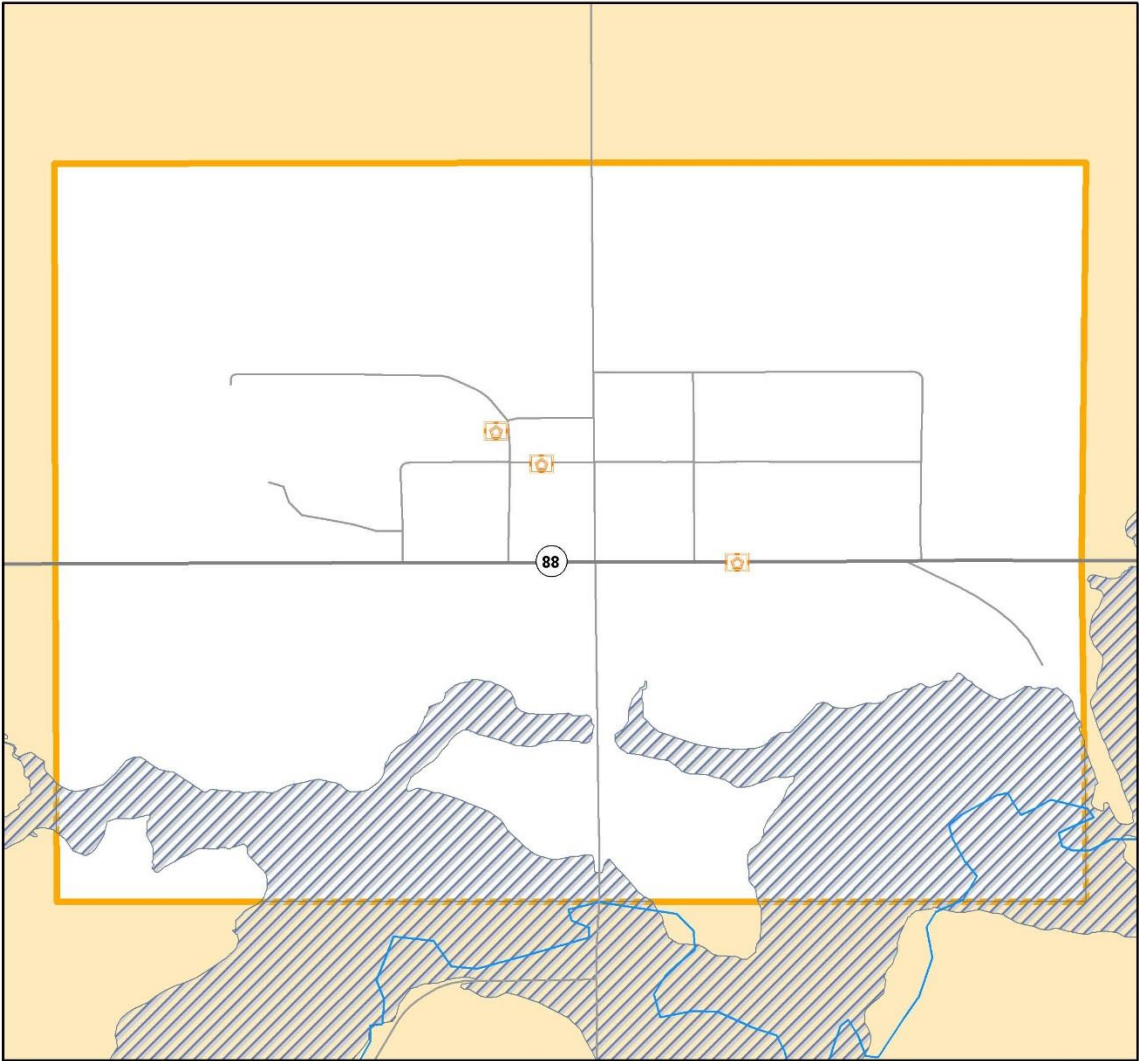
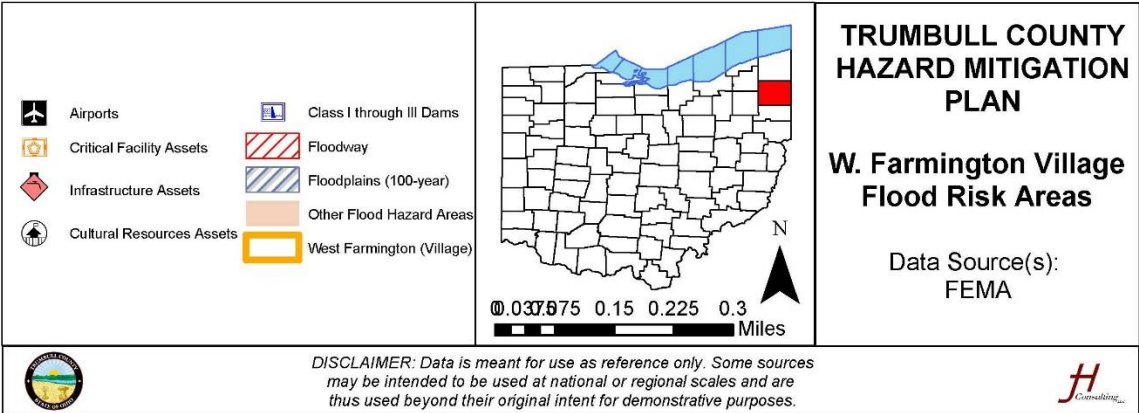


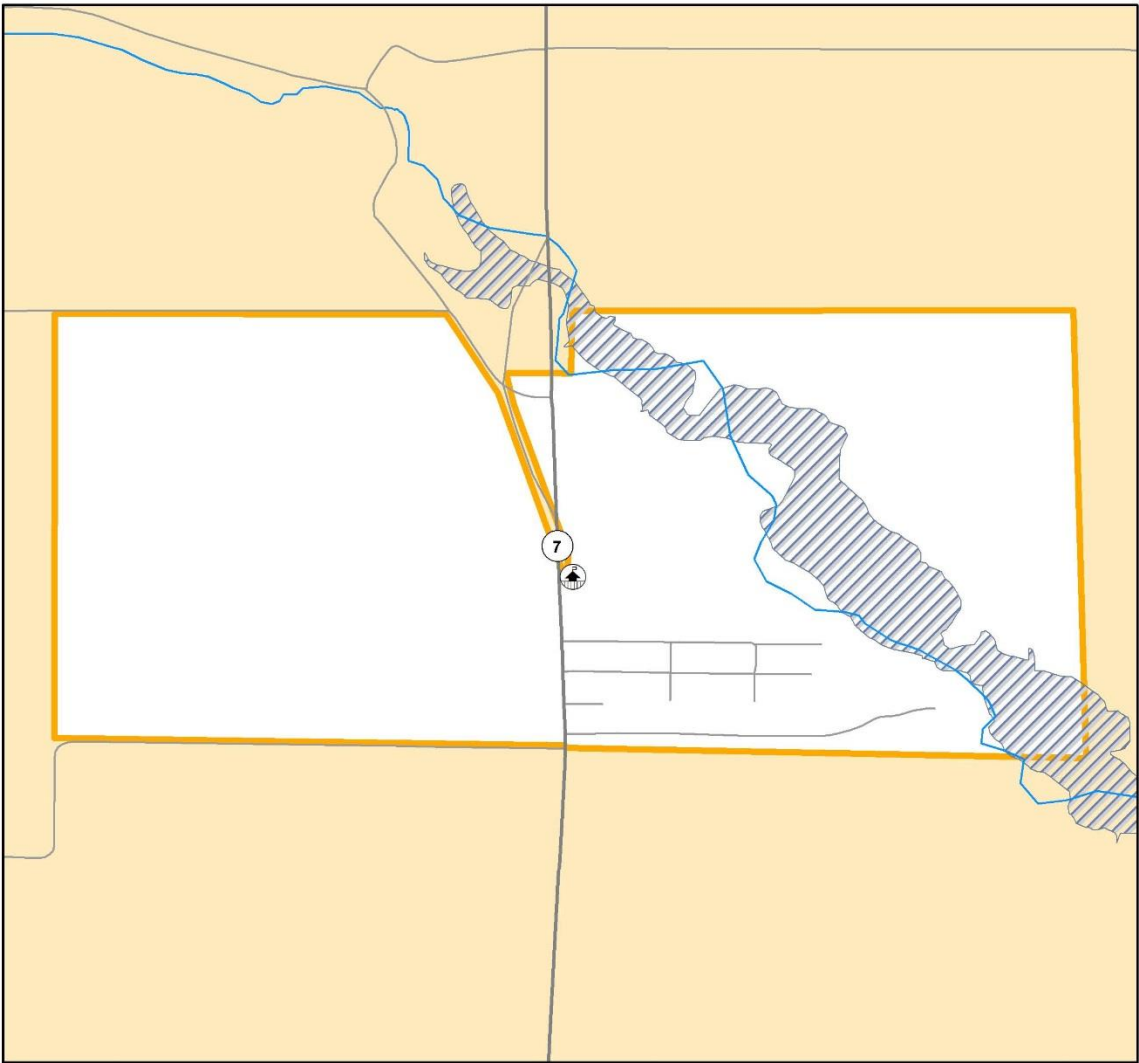
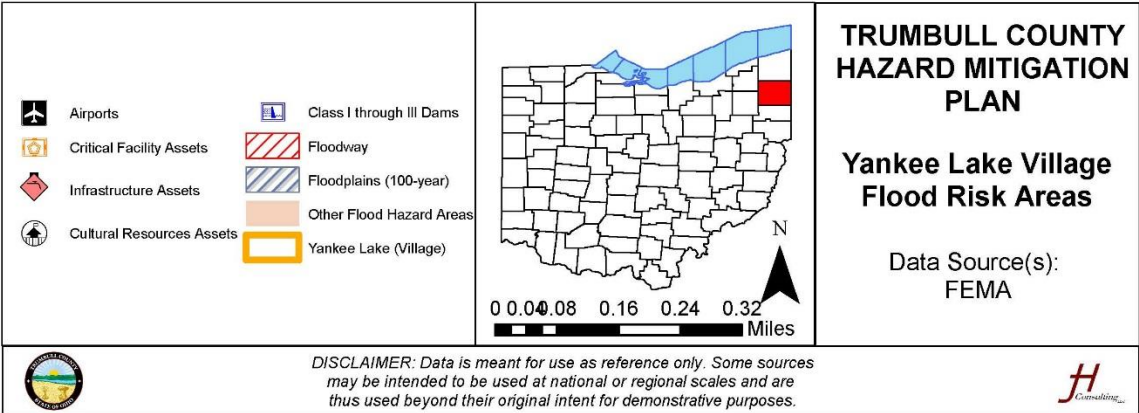














The following table identifies the assets located in flood risk areas. Those listed in red (i.e., floodway) and orange (i.e., 100-year floodplain) are in higher risk areas.

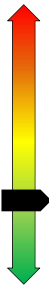
ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Niles McKinley High School	616 Dragon Drive	Niles		X	
Transportation	600 Roanoke SE	Warren		X	
Niles City BOE	102 Water Street	Niles		X	
Niles Middle School	411 Brown Street	Niles		X	
Braceville Twp. FD	582 Braceville Robinson Road	Newton Falls		X	
Delphi Corp.	745 Pine Avenue SE	Warren		X	

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

FLOODING VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	5	Excessive	Based on historical data, there have been 62 flood-related incidents in 24 years, for an average of 2.7 per year.
Response	4	One month	The recovery to large-scale floods can take several weeks.
Onset	2	12-24 Hours	The NWS typically issues flood watches and warnings within 12-24 hours of anticipated conditions.
Magnitude	5	N/A	Although flooding is a localized event, it can have devastating effects on the communities it reaches.
Business	2	One week	The HAZUS-MH analysis indicates that several commercial/industrial structures are vulnerable to flooding conditions; as such, the general economy of the county could feel impacts for up to one week.
Human	2	Low (some injuries)	There have not been any recorded injuries or deaths associated with floods in Trumbull County. However, flooding is capable of producing injury.
Property	1	Less than 10%	Historical data indicates that the average property damage per event is \$1.4 million, which is less than 10% of potentially-impacted property in the county.
<b>Total</b>	<b>21</b>	<b>High</b>	

## 2.0 RISK ASSESSMENT

### 2.2.6 Hailstorm

Severe hail is often a product of severe storms, producing hailstones of one inch in diameter or larger.			
	<b>Vulnerability</b>	<b>Period of Occurrence:</b>	At any time, typically during the summer months
	<b>HIGHEST</b>	<b>Warning Time:</b>	12-24 hours
	<b>HIGH</b>	<b>State Risk Ranking:</b>	4-High
	<b>MEDIUM</b>	<b>Probability:</b>	Likely
	<b>LOW</b>	<b>Type of Hazard:</b>	Natural
	<b>LOWEST</b>	<b>Severity:</b>	Limited
		<b>Disaster Declarations:</b>	None

#### Hazard Overview

Hail is a form of precipitation that occurs when updrafts from a thunderstorm carry raindrops upward into colder temperatures. The drops of water freeze together in the cold upper regions of the thunderstorm clouds. Hailstones grow by colliding with super-cooled water droplets. When a hailstone is heavy enough, or the updraft weakens, the hailstone falls to the ground.

The TORRO Hailstorm Intensity Scale (Voss Law Firm, n.d.) measures hail, H0-H10, based on diameter. The TORRO scale and reference objects appear in the table below.

TORRO HAILSTORM INTENSITY SCALE			
<i>TORRO Intensity</i>	<i>Intensity Category</i>	<i>Diameter (mm)</i>	<i>Reference Object</i>
H0	Hard Hail	5	Pea
H1	Potentially Damaging	5-15	Mothball
H2	Significant	10-20	Marble, Grape
H3	Severe	20-30	Walnut
H4	Severe	25-40	Pigeon's egg > Squash ball
H5	Destructive	30-50	Golf ball > Pullet's egg
H6	Destructive	40-60	Hen's egg
H7	Destructive	50-75	Tennis ball > Cricket ball
H8	Destructive	60-90	Large orange > Softball
H9	Super Hailstorms	75-100	Grapefruit
H10	Super Hailstorms	>100	Melon

### Location and Extent

Hail can affect all areas of the county. These events can last up to hours and can range in size from a few acres to an area of 10 miles wide by 100 miles long.

### Impacts and Vulnerability

The impacts of hail include injury and even death. Hail can damage vegetation and infrastructure. Most hail damage affects vehicles and structures. The table below outlines the typical impacts of a hailstorm.

Intensity (TORRO Scale)	Typical Damage Impacts
H0	No Damage
H1	Slight damage to plants, crops
H2	Significant damage to fruit, crops, vegetation
H3	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Widespread glass damage, vehicle bodywork damage
H5	The wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Bodywork of grounded aircraft dented, brick walls pitted
H7	Severe roof damage, risk of serious injuries
H8	Severe damage to aircraft bodywork
H9	Extensive structural damage. Risk of severe or fatal injuries to persons caught in the open
H10	Extensive structural damage. Risk of severe or fatal injuries to persons caught in the open

### **Past Mitigation Efforts: Hailstorm**

- Develop and distribute public awareness materials concerning hailstorms.
- Utilize local media for the distribution and publication of hazard information.
- Conduct National Weather Service Storm Spotter classes.

### Historical Occurrences

Trumbull County has experienced 63 severe hail events on 39 days since 1975. This rate is an average of 1.4 severe hailstorms per year. These events appear in the table below.

HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
Location	Date	Magnitude (in.)	Report Source	Deaths	Injuries	Property Damage	Crop Damage
Trumbull County	7/24/1975	1	N/A	0	0	\$0.00	\$0.00
Trumbull County	5/6/1986	1	N/A	0	0	\$0.00	\$0.00



HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
<i>Location</i>	<i>Date</i>	<i>Magnitude (in.)</i>	<i>Report Source</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull County	8/1/1986	1	N/A	0	0	\$0.00	\$0.00
Trumbull County	5/15/1988	1	N/A	0	0	\$0.00	\$0.00
Trumbull County	8/28/1990	1	N/A	0	0	\$0.00	\$0.00
Countywide	6/21/1995	1	N/A	0	0	\$5,000.00	\$0.00
Countywide	7/15/1995	1.75	N/A	0	0	\$0.00	\$0.00
East Half	5/1/1996	1.75	N/A	0	0	\$100,000.00	\$0.00
NorthWest Portion	8/15/1996	1	N/A	0	0	\$0.00	\$0.00
Farmington	6/2/1998	1	Trained Spotter	0	0	\$0.00	\$0.00
Girard	6/2/1998	1	Trained Spotter	0	0	\$0.00	\$0.00
Southington	4/15/2002	1	Trained Spotter	0	0	\$10,000.00	\$0.00
Braceville	4/15/2002	1.75	Trained Spotter	0	0	\$50,000.00	\$0.00
Warren	4/15/2002	1	Trained Spotter	0	0	\$15,000.00	\$0.00
Niles	4/15/2002	1	Trained Spotter	0	0	\$25,000.00	\$0.00
Vienna	8/22/2002	1	Newspaper	0	0	\$5,000.00	\$0.00
Hubbard	8/4/2003	1.75	Trained Spotter	0	0	\$20,000.00	\$0.00
Hubbard	6/24/2004	1	Trained Spotter	0	0	\$0.00	\$0.00
Bristolville	7/14/2004	1	Trained Spotter	0	0	\$0.00	\$0.00
Newton Falls	5/1/2007	1	Trained Spotter	0	0	\$0.00	\$0.00
Lordstown	6/21/2008	1	Trained Spotter	0	0	\$0.00	\$0.00
Bristolville	7/22/2008	1.75	Trained Spotter	0	0	\$150,000.00	\$0.00
Greene Center	7/22/2008	1.75	Fire Department/ Rescue	0	0	\$150,000.00	\$0.00
Cortland	8/7/2008	1	Public	0	0	\$0.00	\$0.00
Bristolville	8/7/2008	1	Public	0	0	\$0.00	\$0.00
Bristolville	5/7/2010	1	Trained Spotter	0	0	\$0.00	\$0.00
West Farmington	5/7/2010	1	Trained Spotter	0	0	\$0.00	\$0.00
Bristolville	5/7/2010	1	Trained Spotter	0	0	\$0.00	\$0.00



HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
<i>Location</i>	<i>Date</i>	<i>Magnitude (in.)</i>	<i>Report Source</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Hubbard	5/7/2010	1	Law Enforcement	0	0	\$0.00	\$0.00
Leavittsburg	9/7/2010	1.5	Law Enforcement	0	0	\$10,000.00	\$0.00
Warren	5/12/2011	1	Storm Chaser	0	0	\$10,000.00	\$0.00
Warren	5/12/2011	1	Public	0	0	\$5,000.00	\$0.00
Vienna	5/23/2011	1.75	Trained Spotter	0	0	\$50,000.00	\$0.00
Youngstown Municipal	5/23/2011	1	ASOS	0	0	\$0.00	\$0.00
Warren	5/25/2011	1.75	Public	0	0	\$100,000.00	\$0.00
Newton Falls	6/7/2011	1	Public	0	0	\$0.00	\$0.00
Burghill	6/16/2011	2	Public	0	0	\$100,000.00	\$0.00
Newton Falls	8/19/2011	1	Public	0	0	\$0.00	\$0.00
Braceville	9/13/2011	1	Law Enforcement	0	0	\$0.00	\$0.00
Braceville	9/13/2011	1	Trained Spotter	0	0	\$0.00	\$0.00
Newton Falls	11/14/2011	1	Public	0	0	\$0.00	\$0.00
Warren	11/14/2011	1	Public	0	0	\$0.00	\$0.00
Mineral Ridge	11/14/2011	1	Storm Chaser	0	0	\$0.00	\$0.00
Hubbard	11/14/2011	1	Public	0	0	\$0.00	\$0.00
Cortland	5/7/2012	1	Public	0	0	\$0.00	\$0.00
Vienna	5/7/2012	1	Trained Spotter	0	0	\$0.00	\$0.00
Hubbard	5/7/2012	1.25	Public	0	0	\$15,000.00	\$0.00
Bristolville	5/29/2012	1	Public	0	0	\$0.00	\$0.00
Bristolville	5/29/2012	1	Trained Spotter	0	0	\$0.00	\$0.00
Mecca	5/29/2012	1	Law Enforcement	0	0	\$0.00	\$0.00
Niles	5/29/2012	1.25	Public	0	0	\$5,000.00	\$0.00
Vienna	5/29/2012	1	Public	0	0	\$0.00	\$0.00
Cortland	7/3/2012	1	Public	0	0	\$0.00	\$0.00
Farmdale	7/4/2012	1	Trained Spotter	0	0	\$0.00	\$0.00
Howland Corners	7/4/2012	1	Law Enforcement	0	0	\$0.00	\$0.00
Mecca	6/16/2013	1	Broadcast Media	0	0	\$0.00	\$0.00
Kinsman	5/21/2014	1.5	Broadcast Media	0	0	\$5,000.00	\$0.00
Niles	8/21/2017	1	Public	0	0	\$0.00	\$0.00



HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
<i>Location</i>	<i>Date</i>	<i>Magnitude (in.)</i>	<i>Report Source</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Fowler	7/26/2018	1	Social Media	0	0	\$0.00	\$0.00
Kinsman	6/1/2019	1	Broadcast Media	0	0	\$0.00	\$0.00
Lockwood	6/1/2019	1	Trained Spotter	0	0	\$0.00	\$0.00
Kinsman	8/17/2019	1	Trained Spotter	0	0	\$0.00	\$0.00
Barclay	8/17/2019	1.25	Trained Spotter	0	0	\$0.00	\$0.00
TOTALS				0	0	\$830,000	\$0.00

### Loss and Damages

Hailstorms have caused significant damage in Ohio, with \$187,455,392 in costs over the past ten years, or approximately \$18 million per year. Trumbull County's annual damage from hail is roughly \$18,863.64, or \$10.70 per person, per year. Trumbull County's average annual per capita loss from hail is significantly higher than that of Ohio's Region 3, which is \$1.37 per person per year.

For SHARPP data entry, planners utilized the historical worst-case scenario loss of \$150,000. Planners considered the entire building stock as exposed and used the worst-case scenario Trumbull County event as the representative historical occurrence for completion of the following table.

SEVERE THUNDERSTORMS AND HAIL LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	1	\$108,800
Non-residential	1	\$35,500
Critical Facility	1	\$5,700
TOTALS	3	\$150,000

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from hail. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding hail. For the following table, data includes both severe thunderstorms and hail, as those hazards appeared combined in the survey.




PUBLIC SENTIMENT, HAIL – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Hail	43 (12.46%)	117 (33.91%)	116 (33.62%)	69 (20.00%)	346
In the past ten years, do you remember this hazard occurring in your community?				162 (46.96%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				32 (9.64%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				9 (2.87%)	314

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

HAIL VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	5	Excessive	There has been an average of 3.7 occurrences of hail every year since 1974, but less than half of all events result in hail 1 inch or more in diameter.
Response	1	Less than half a day	Responses will be minimal, and most damage will be repaired in one week or less.
Onset	2	12-24 hours	Thunderstorms that could produce hail can be predicted up to 24 hours in advance.
Magnitude	4	More than 50% of land area affected	Hail could affect more than half of the county's land area within a single event; however, damage would be minimal.
Business	1	Less than 24 hours	Businesses would not typically close for a thunderstorm or hailstorm. Damages from a significant storm may cause a short (less than 24 hour) disruption of services.
Human	1	Minor	There are no reported injuries or deaths due to hail greater than 1 inch in diameter in the past. While injury and death are possible, it is unlikely that thunderstorms or hailstorms would cause significant human injuries.
Property	1	Less than 10%	Hailstorms are localized events and would not cause significant property damage.
<b>Total</b>	<b>15</b>	<b>Low</b>	

## 2.0 RISK ASSESSMENT

### 2.2.7 Infestation

Species that are both non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health are considered invasive. An infestation is to swarm or overcome in an intrusive manner.				
	Vulnerability	Period of Occurrence:	Invasive species can occur at any time	Hazard Index Ranking: Medium
	HIGH	Warning Time:	None	State Risk Ranking: 8
	LOW	Probability:	Likely	Severity: Non-critical
	LOWEST	Type of Hazard:	Natural	Disaster Declarations: N/A









#### Hazard Overview








The National Invasive Species Council defines invasive species as “both non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health” (ODNR, 2020). Human actions are the primary cause of invasive species transfer. There are four main types of invasive species: aquatic species, plants, animals, and microbes (USDA, n.d.). An invasive species can be any living organism, amphibian, plant, insect, fish, fungus, bacteria, and seed or egg (National Wildlife Federation, n.d.). Ohio has a large number of invasive plants and animals. A description of each type of invasive organism, as well as control measures, appears below.

#### **Invasive Terrestrial Plants**

Invasive terrestrial plants are those that displace or crowd native plant species, impact wildlife, which relies on native plant communities for food, shelter and breeding habitat, and for monoculture plant communities, which reduces biological diversity.



INVASIVE PLANT SPECIES, ODNR	
Common Name	Distribution
<p><b>Honeysuckles:</b> Amur, Morrow's and Tatarian bush honeysuckles are upright, deciduous shrubs that range from 6 to 15 feet in height at maturity. These honeysuckles fruit prolifically and are highly attractive to birds, which widely disseminate seeds across the landscape. Deer also disperse seeds. Cut stems will resprout vigorously. These shrubs shade native vegetation since they leaf out earlier in the spring and drop their leaves later in the fall than native plants. It has been documented that birds nesting in honeysuckle suffer greater nest predation than those nesting in native shrubs.</p>	<p><b>AMUR HONEYSUCKLE</b> <b>MORROW'S HONEYSUCKLE</b></p>  <p>2010</p>  <p>2010</p> <p><b>TATARIAN HONEYSUCKLE</b></p>  <p>2010</p>
<p><b>Japanese Honeysuckle:</b> Japanese honeysuckle is a vine with entire (sometimes lobed), oval-oblong, opposite leaves from 1 ½ -3 inches long. In Ohio, the plants are semi-evergreen with leaves persisting into late winter or early spring. Japanese honeysuckle thrives in disturbed areas such as roadsides, fencerows, forest edges, and forest gaps. Areas of special concern are woodland edges, early successional forests, and riparian corridors. Although preferring sunny areas, both are shade tolerant and can live in marginal habitats until favorable conditions arise.</p>	<p><b>JAPANESE HONEYSUCKLE</b></p>  <p>2010</p>
<p><b>Common and Glossy Buckthorns:</b> Glossy and common buckthorns are woody shrubs or small trees that can attain a height of 20 feet. Glossy and common buckthorns tend to form dense, even-aged thickets (of seedlings, saplings, or sprouts), crowding and shading out native shrubs and herbs, often completely displacing them.</p>	<p><b>GLOSSY BUCKTHORN</b> <b>COMMON BUCKTHORN</b></p>  <p>2010</p>  <p>2010</p>
<p><b>Garlic Mustard:</b> Garlic mustard is a biennial herb that emits a garlic-like odor from crushed leaves. Garlic mustard prefers some shade in mesic upland and floodplain forests, savannas, pastures, lawns, and along fencerows and roadsides. It invades forest edges and progresses into the interior along streams and trails.</p>	 <p>2010</p>
<p><b>Purple Loosestrife:</b> Purple loosestrife is an erect perennial with opposite or whorled leaves. The thick taproot supports thirty to fifty stems that can attain a height of 3-6 feet. Purple loosestrife thrives in wetlands, including marshes, fens, wet meadows, stream and river banks, lake shores and ditches. It can also survive in drier conditions.</p>	 <p>2010</p>

<p><b>Common Reed Grass (Phragmites):</b> Common reed grass is a tall, perennial wetland grass, 5-10 feet in height. Both native and introduced Phragmites are found in the state. The introduced Phragmites forms a dense network of rhizomes with deep roots. Common reed grass is found in brackish and freshwater marshes, river edges, shores of lakes and ponds, roadsides, fens, swamps, wet meadows, and disturbed moist/wet areas.</p>	
<p><b>Reed Canary Grass:</b> Reed canary grass is a large, coarse grass that attains a height of 2 to 7 feet. The erect, hairless stem supports rough-textured, tapering leaves of 3 ½ to 10 inches long and 1/4 to 3/4 inch wide. Reed canary grass grows best on fertile, moist organic soils in full sun. It can grow in standing water by producing special roots along the submersed portion of the stem. It also grows on dry soils in upland sites and under partial shade.</p>	
<p><b>Autumn-Olive:</b> Autumn-olive and are deciduous shrubs or small trees that grow to a height of 30 feet. Autumn-olive has nitrogen-fixing root nodules, which allow them to adapt to many poor soil types including bare mineral substrates. Autumn-olive is found throughout Ohio, occurring in various open to semi-shaded habitats including old fields, grasslands, barrens, woodlands, savannahs, alvars (limestone prairies), roadsides, reclaimed strip-mined areas, and open disturbed sites.</p>	
<p><b>Multiflora Rose:</b> Multiflora rose is a thorny shrub with arching stems (canes). The compound leaves are divided into 5-11 sharply-toothed leaflets. Multiflora rose prefers sunny to semi-shaded habitats with well-drained soils, but can tolerate a wide range of habitats including mesic upland and flood plain woods, forest edges, old fields, savannas, prairies, fens, roadsides, fencerows and lawns.</p>	
<p><b>Narrow-leaved and Hybrid Cattail:</b> Narrow-leaved cattail is an introduced species which hybridizes with the native common cattail (<i>T. latifolia</i>). Cattails can be found in damp soil or shallow water where sufficient nutrients are available. They are commonly found along expressways, in artificial ditches and shallow ponds, at the edges of calm waters, in consistently damp patches of rural and suburban yards, in marshes as well as brackish and polluted waters to a depth nearing 3 feet. These taxa also invade fens, wet meadows, wet prairies, and beach swales.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>NARROW-LEAVED CATTAIL</b></p>  </div> <div style="text-align: center;"> <p><b>HYBRID CATTAIL</b></p>  </div> </div>
<p><b>Moneywort:</b> Also called pennywort and creeping jenny, moneywort is a member of the primrose family that was once used as an ornamental form of ground cover. It grows close to the ground and forms a thick mat up to two feet long and up to four inches tall.</p> <p>Moneywort spreads rapidly by creeping stems and dispersing seeds. Seeds can be spread by floodwaters or human activity.</p>	<p style="text-align: center;">Ohio Distribution</p> 

Of the top ten invasive plant species listed by ODNR, nine appear in Trumbull County. Invasive plants can spread in numerous ways. Three methods of control (mechanical, chemical, and biological) can help abate the spread of these plants, but some methods work better than others.

- **Mechanical control methods** involve cutting, digging, burning, or otherwise physically removing the plant. Mechanical control methods are labor-intensive and ultimately unsuccessful at eradicating invasive plants long-term.
- **Chemical control methods** involve herbicides that target specific plant species while protecting native species. Some herbicides are non-selective and have the ability to kill or contaminate the surrounding ecosystem.
- **Biological control methods** involve introducing natural enemies that destroy the invasive plant species. Care is necessary so that the introduced species does not itself become a problem for the area in which they are introduced.

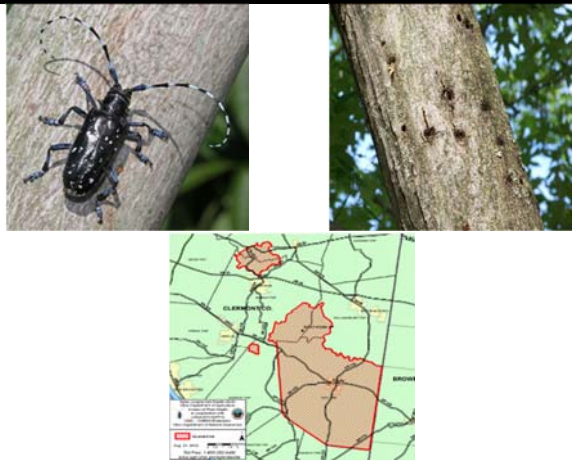
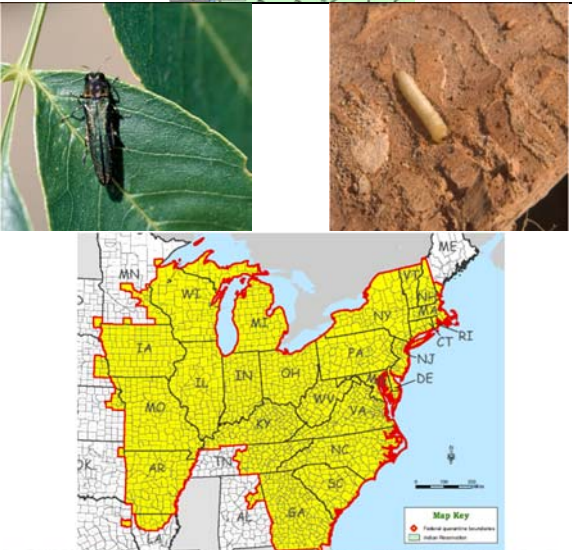

### **Invasive Terrestrial Wildlife**

Invasive terrestrial wildlife are animals or other organisms that evolved to live on land rather than aquatic habitats; these organisms cause damage to important habitat that other wildlife depends on. In Ohio, the primary invasive terrestrial animal is the feral hog. Originally introduced to the United States in 1539, these animals were once domestic pigs that escaped, bred with Eurasian wild boars, and are now present in 35 states. These animals can weigh up to 200 pounds and cause significant damage to crops and property. Litter size varies depending on the lineage of the pig, with descendants of domestic breeds producing up to ten piglets whereas descendants of Eurasian boars produce on average four to five piglets. Each lineage can have up to two litters per year under ideal conditions. Typical control methods for feral hogs include open-season hunting, poisons, or trapping.


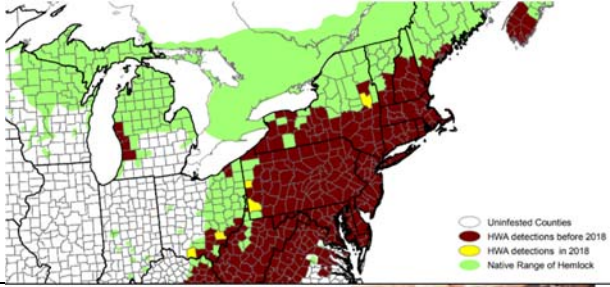

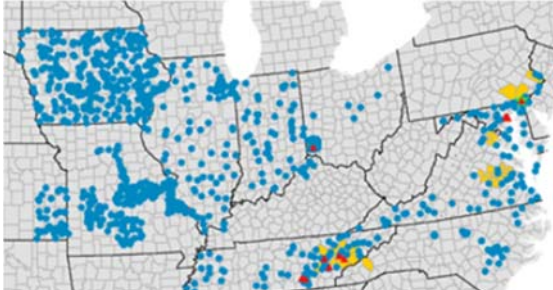
### **Invasive Insects and Diseases**

Invasive insects and diseases are other tiny organisms that can cause a great deal of damage to plant, forest, and wildlife health. Non-native insects, fungus and microbes can cause significant damage to forests and other wildlife. The spread of these organisms, such as the emerald ash borer, can be controlled by taking care not transporting firewood long distances. Below are the most prominent invasive species of insects and diseases in Ohio.









INVASIVE INSECTS AND DISEASES, ODNR	
Common Name	Description
<p><b>Asian Longhorned Beetle:</b> The Asian Longhorned Beetle (ALB) is native to Japan, Korea, and southern China. Experts believe that the beetle "hitchhiked" to the U.S. during the early 1990s in solid wood packing or crating materials on a cargo ship arriving from China. When the eggs hatch, the beetle grubs bore into hardwood trees. Once they mature, they chew exit holes in branches and trunks. The larvae eventually burrow deep enough to damage the living portion of the trunk, ultimately killing the tree.</p> <p>In Ohio, the Asian Longhorn Beetle is quarantined to Clermont County and firewood cannot be transported from the area.</p>	
<p><b>Emerald Ash Borer:</b> The Emerald Ash Borer is a small, wood-boring beetle native to Asia. These beetles affect all species of ash tree by eating the living portion of the tree directly underneath the bark. Adult beetles are dark metallic green and up to half an inch long. Larvae are about an inch long and carve S-shaped tunnels while feeding, which kills the tree.</p> <p>The Emerald Ash Borer has spread across much of the East Coast. As of September 8, 2010, all of Ohio has been quarantined.</p>	
<p><b>Gypsy Moth:</b> The gypsy moth, native to Europe, Asia, and North Africa, was established in North America in 1869 when they were brought to Massachusetts in an unsuccessful attempt to cross breed them with silk worms. Caterpillars are dark gray or brown and grow to about 2.5 inches long. Adult male moths are gray-brown while female moths are whitish with brown markings. Caterpillars feed on the leaves of trees and cause mass defoliation.</p> <p>The gypsy moth has an expansive quarantine zone that encompasses much of Ohio.</p>	











INVASIVE INSECTS AND DISEASES, ODNR	
Common Name	Description
<p><b>Hemlock Woolly Adelgid:</b> The hemlock woolly adelgid (HWA) is a small, aphid-like insect that feeds on stored nutrients in young hemlock branches. Young adelgids cover themselves with a white substance until they mature into adults. Adults are black and all females that can lay up to 300 eggs twice a year. Juveniles attach themselves to the tree in one spot for and feed continuously for the rest of their lives, disrupting the flow of nutrients to the rest of the branch. This eventually kills the tree.</p>	 
<p><b>Walnut Twig Beetle:</b> The walnut twig beetle are very small insects, about the size of a flea, which act as a vector a fungus that causes Thousand Cankers Disease in walnut trees. The fungus grows around the pupal chambers of walnut twig beetle larvae. The fungus causes openings, called cankers, in the living tissue of the walnut tree that can be over two inches in length. As the tree dies, more beetles are attracted to it and more cankers are formed. Repeated attacks ultimately kill the tree.</p> <p>The fungus has been confirmed in Butler County, and the Ohio Department of Agriculture is monitoring Butler, Hamilton, and Warren counties. Transportation of firewood helps the beetle and fungus spread to new areas.</p>	 



## Aquatic Invasive Species





Aquatic invasive species are plants and animals living in and degrading the quality of waterways. In many cases, the spread of these organisms can be abated by taking care to wash recreational water equipment before transportation. Additionally, residents should avoid the release of plants and animals from personal aquariums.

AQUATIC INVASIVE SPECIES, PLANTS, ODNR		
Common Name	Description	
<p><b>Brittle Naiad:</b> Also called brittle water nymph, brittle naiad is a submerged aquatic herb native to Europe. Brittle naiad prefers to grow in calm waters, but may be found in streams and rivers.</p> <p>Brittle naiad spreads both by seeds and fragmentation. Fragments may cling to boats, jet skis, and fishing gear. Seeds may also be carried by waterfowl.</p>		<p>Ohio Distribution</p> 
<p><b>Eurasian Watermilfoil:</b> A feathery submerged aquatic plant that was sold as an aquarium plant. It forms thick mats that cause harm to shallow areas to lakes and rivers. The plant is very hardy and can survive a wide range of temperatures, still or flowing water, and even under ice.</p> <p>Eurasian Watermilfoil reproduces by fragmentation. Pieces break off and float to new locations or are transported by boats, trailers, and fishing gear.</p>		<p>Ohio Distribution</p> 
<p><b>Fanwort:</b> A submerged freshwater plant that is persistent, aggressive, and competitive with the potential to take over waterways. It is very resilient and grows in slow-moving waters. Fanwort can overwinter in frozen lakes.</p> <p>Fanwort is fragile and fragments easily. Fragments float to new locations and take root, growing into new plants. It is believed that Fanwort has spread through the intentional and unintentional release of aquarium plants.</p>		<p>Ohio Distribution</p> 



AQUATIC INVASIVE SPECIES, INVERTEBRATES, ODNR		
Common Name	Description	
<p><b>Asian Clam:</b> Also called the Asiatic clam, pygmy clam, or gold clam, the Asian clam is a small freshwater clam that rarely grow more than an inch in diameter. The shell is typically yellowish green to brown. The clams can be found in streams, rivers, ponds, lakes, and canals, but prefer running waters with a sand or gravel bed. It is capable of self-fertilization and can release up to thousands of young a day that are then spread by currents and human activity.</p> <p>The Asian clam was originally introduced to the west coast of the US, but has spread to the eastern US. They attach themselves to boating, fishing, and scuba diving equipment and their young can be transferred by buckets or live wells.</p>		<p>Ohio Distribution</p> 

AQUATIC INVASIVE SPECIES, INVERTEBRATES, ODNR		
Common Name	Description	
<p><b>Mystery Snails:</b> Large freshwater snails commonly sold for freshwater aquariums and garden ponds. They can outcompete native snails in their habitat. Mystery snails tend to live in lakes, marshes, rivers, ponds and slower portions of rivers.</p> <p>Due to its popularity, the mystery snail has spread across the United States. The snail can continue to spread by recreational water activities, water holds on boats, and bait buckets,</p>		
<p><b>Red Swamp Crayfish:</b> A large and aggressive crayfish native to northern Mexico, Florida, and southern Illinois. They are dark red and typically range from two to five inches long. They can live in a wide variety of environments including those with low oxygen levels, extreme temperatures, pollution, and areas with fluctuating water levels. Red swamp crayfish prefer to live in slow-moving waters, ponds, and marshes where there is plentiful organic debris.</p> <p>The popularity of red swamp crayfish as aquarium animals and a food source have caused the animal to easily spread to new areas. They are also capable of traveling long distances over land at night or during wet weather.</p>		
<p><b>Rusty Crayfish:</b> A large, aggressive crayfish that outcompetes native species. They are typically three to five inches long and are usually grayish green or reddish brown in color. Rusty crayfish are pollution tolerant and prefer areas with adequate cover. They can survive in lakes, ponds, and streams.</p> <p>Rusty crayfish are used as fishing bait and can be accidentally introduced to new areas. They are capable of hybridization and it is not necessary to have both a male and female rusty crayfish in the same area to begin new invasions.</p>		 <p>Orange - Invasive    Green - Native Blue - Both Native &amp; Invasive</p>

AQUATIC INVASIVE SPECIES, INVERTEBRATES, ODNR		
Common Name	Description	
<p><b>Zebra Mussel:</b> Small freshwater mollusks that attach to hard surfaces including other mussels and crayfish. They can be found in lakes, rivers, reservoirs, ponds, and quarries. Zebra mussels require environments rich in calcium to aid in shell production and waters above 50°F to reproduce. Young zebra mussels float for up to five weeks before settling.</p> <p>The control and removal of zebra mussels costs billions of dollars. They have quickly spread across North America and have become one of the most intrusive, prolific, and costly aquatic alien species. Once established in open-water environments, they are virtually impossible to eradicate.</p>		

AQUATIC INVASIVE SPECIES, FISH, ODNR		
Common Name	Description	
<p><b>Common Carp:</b> The common carp is the largest member of the minnow family. It can live up to 50 years and has a voracious appetite. They can grow up to 22 inches long and weigh up to ten pounds, but some can reach 48 inches long and weigh 40 pounds or more. They tend to live in lakes, ponds, and calmer rivers.</p> <p>Common carp can spread through connected bodies of water once they've been established in a waterway. Juvenile carp are used as bait and can be released by anglers or escape into new territories.</p>		
<p><b>Goldfish:</b> Goldfish are a freshwater species of carp that was originally introduced to North America as an ornamental fish in the 1600s. They can grow up to 23 inches long and weigh almost seven pounds, but are typically up to eight inches long and weigh less than a pound. Goldfish prefer muddy water with thick vegetation, but are tolerant to pollution, fluctuating temperatures, and otherwise murky waters.</p> <p>Goldfish are intentionally introduced to lakes, ponds, and fountains as ornamental fish. They are also popular pets and are used as bait. Sometimes these animals are released by owners or anglers without them realizing the potential environmental impact.</p>		



AQUATIC INVASIVE SPECIES, FISH, ODNR		
Common Name	Description	
<p><b>Grass Carp:</b> The grass carp, or white amur, was originally introduced into the ecosystem to control aquatic weed growth. However, these fish voraciously feed on different animals and other plant life. They typically vary between 65-80 pounds. They prefer to live in shallow waters of lakes, ponds, and backwaters.</p> <p>Grass carp are intentionally stocked in private ponds to control aquatic vegetation, but only sterilized triploid grass carp can be stocked or owned within Ohio. If they are released or escape into other waterways, they can easily spread into tributaries, waterways, river systems, canals, and dams.</p>		

### Impacts and Vulnerability

Invasive species can harm wildlife in several different ways. When a species enters an ecosystem, it can breed or spread quickly and take over an area if it has no natural predators. Native species may not be able to defend their habitats from the invasive species. Native species may also become prey or have to compete for food. Invasive species can carry disease, prevent native species from reproducing or kill native species offspring (National Wildlife Federation, 2018).

There are also indirect results of an alien species moving into a new habitat. Invasive species can change the food web in an ecosystem by destroying or replacing native food sources. Though a new species may become an optional food source, it may not produce enough to supply the wildlife around it. Some species can completely reconstruct an ecosystem; aggressive plant species can take over ecosystems and replace every plant with a form of itself (National Wildlife Federation, 2018).

Though the tables above list invasive species that directly impact Trumbull County, many surrounding counties harbor many different animals and plants that could eventually inhabit the area. Feral hogs have been confirmed Ashtabula County and many other plants, fish, and invertebrates are confirmed in all counties bordering Trumbull County.

### **Past Mitigation Efforts: Infestation**

- The Ohio Division of Forestry disseminated public information encouraging Ohio residents to not move firewood, in an effort to slow the spread of the emerald ash borer.

- Research is also studying controlling and stemming the spread of the ash borer through insecticides and other treatments, including the introduction of predators, such as a wasp native to China.
- The Ohio Division of Forestry has also strategically placed pheromone traps throughout Trumbull County, in an effort to reduce the European strain of gypsy moth population.

### Historical Occurrences

Most invasive species have been introduced due to human intervention, whether intentionally or accidentally. In almost all cases, once an invasive species is introduced they are a continuous issue due to the difficulty in not only eliminating, but also eradicating them from the area.

### Loss and Damages

Invasive species can put human health and economies at risk. These organisms can threaten the livelihoods of people who depend on agriculture for financial stability by destroying crops and decreasing the availability of water. The cost of repairing damages or controlling populations can drain budgets whereas the cost of lost crops can harm farmers.

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from infestation. The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.



INFESTATION VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	5	Excessive	There are 31 known species of invasive organisms in Trumbull County. Once introduced, invasive species are difficult to remove.
Response	5	More than one month	Invasive species do not generally warrant a traditional emergency response; however, the response measures put into place are long term.
Onset	1	Over 24 hours	Once introduced to a new area, invasive species need time to establish an infestation.
Magnitude	2	Limited (10-25% of land area affected)	The most notable invasive species in Trumbull County, the EAB, has affected ash trees. Loss of these trees has caused destabilization of streambanks.
Business	1	Less than 24 hours	Typically, the economy would not be interrupted by an invasive species.
Human	1	Minimum (minor injuries)	Invasive species does not pose a direct threat to human health at this time.
Property	1	Less than 10% of property affected	Invasive species in Trumbull County would not affect significant amounts of property. Losses and damages are primarily limited to land area and the environment.
<b>Total</b>	<b>16</b>	<b>Medium</b>	



## 2.0 RISK ASSESSMENT

### 2.2.8 Geologic Hazards

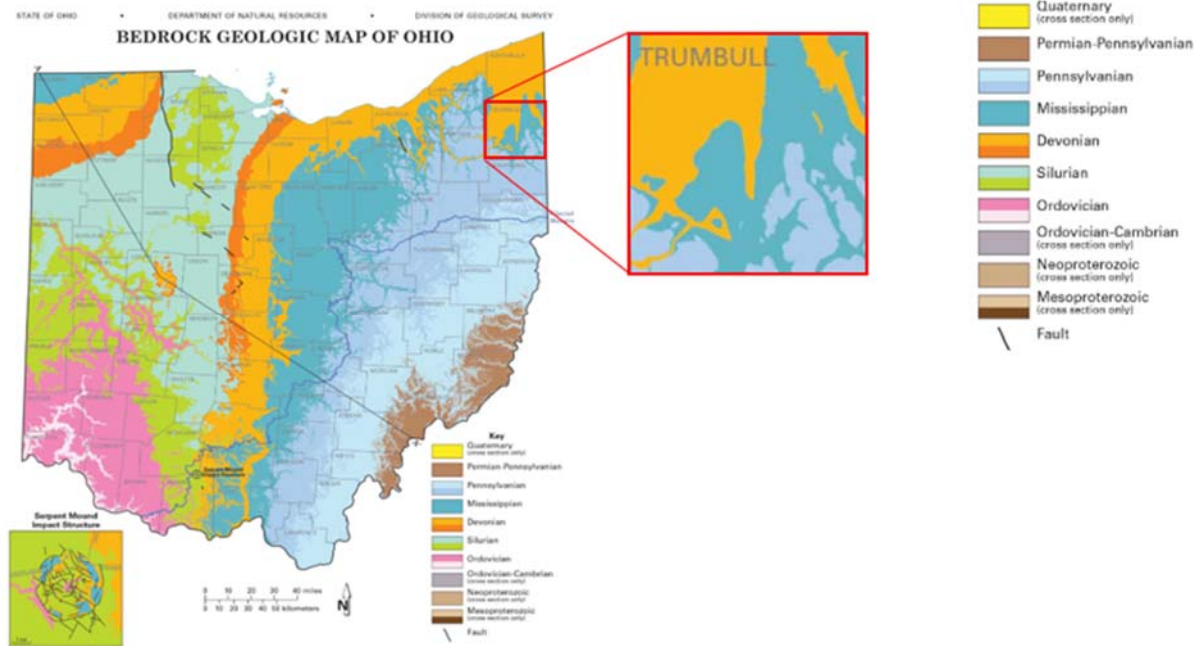
A geologic hazard is one of several types of adverse geologic conditions capable of causing damage or loss of property and life that consist of sudden and slow phenomena.			
	Vulnerability	Period of Occurrence:	At any time
		Hazard Index Ranking:	Lowest
		Warning Time:	Weeks to minutes
		State Risk Ranking:	4
		Probability:	Remote
		Severity:	Critical
		Type of Hazard:	Natural and human-caused
		Disaster Declarations:	None

#### Hazard Overview

Land subsidence is a general term for a variety of collapses in the earth's surface. Some can be rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Subsidence, in the context of underground mining, is the lowering of the Earth's surface due to collapse of bedrock and unconsolidated materials (i.e., sand, gravel, silt, and clay) into underground mined areas.

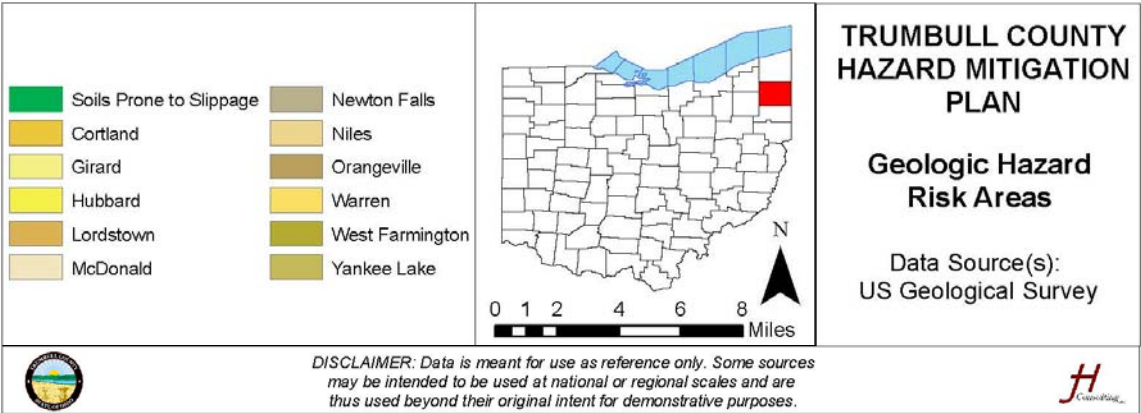
There are two types of subsidence: (1) pit, also called sinkhole or pothole, and (2) sag or through. (The term "sinkhole" more properly refers to solution collapse features in limestone). Pit subsidence is an abrupt sinking of the surface resulting in a circular, steep-sided, craterlike feature that has an inward drainage pattern. It is often associated with the roof collapse of mines that have total overburden (overlying unconsolidated material and rock) of less than 165 feet, weak roof rock of shale or mudstone, and a ratio of unconsolidated-material thickness to rock thickness of less than 1:2. Sag subsidence is a gentle, gradual settling of the surface. It is associated with pillar crushing or pillar punching in deeper mines (overburden of more than 75 feet). Sag subsidence features may fill with water if the surface of the subsidence intersects the water table.

The State of Ohio has a variety of bedrock types; in Trumbull County, the most predominant is the Devonian and Mississippian, with some Pennsylvanian (as seen in the map below). Devonian bedrock consists of shale, sandstone, and limestone. Pennsylvanian bedrock consists of sedimentary rocks, mainly shale, sandstone, siltstone, mudstone, limestone, and some coal. The Mississippian is similar and also contains conglomerate.



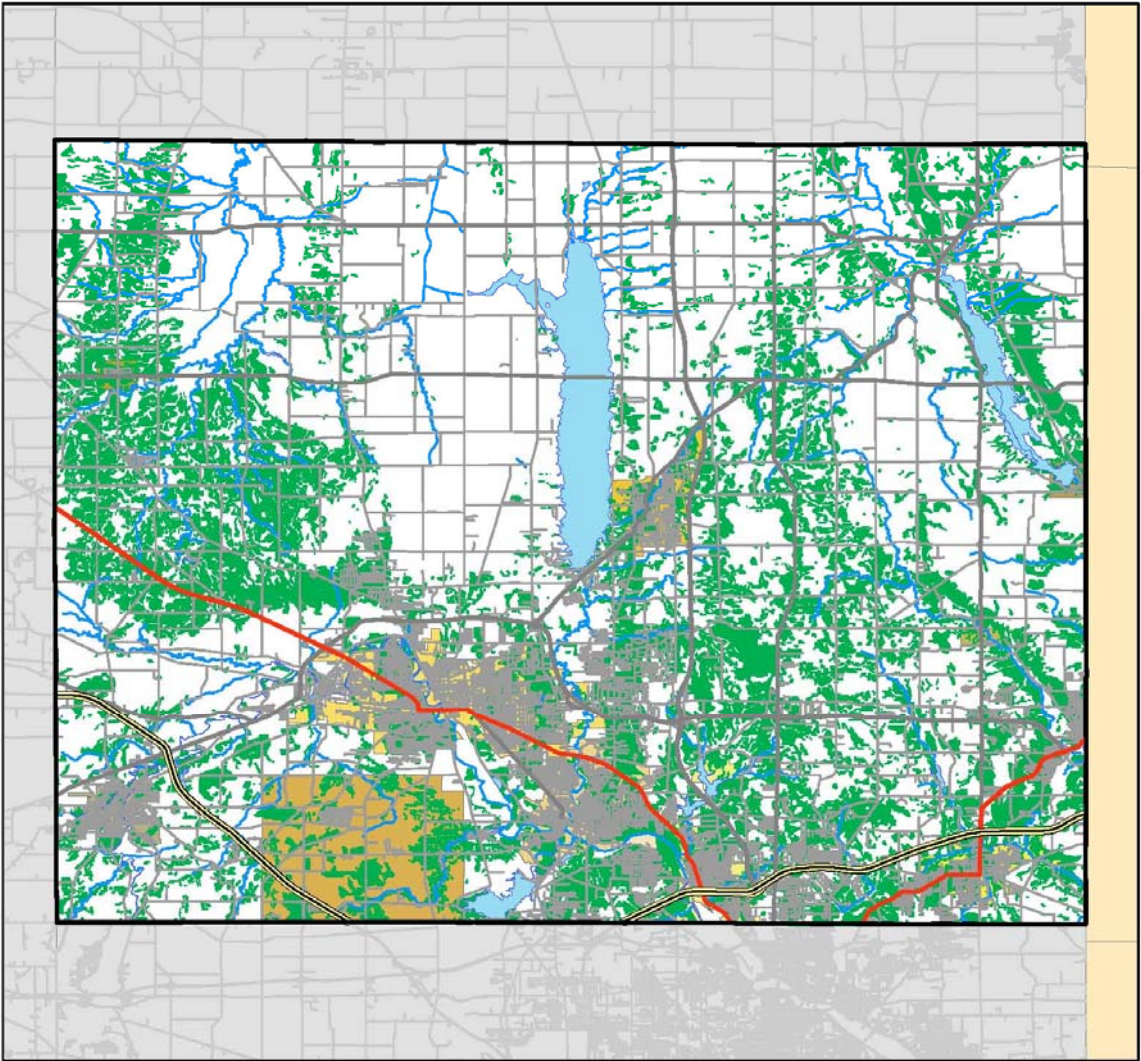
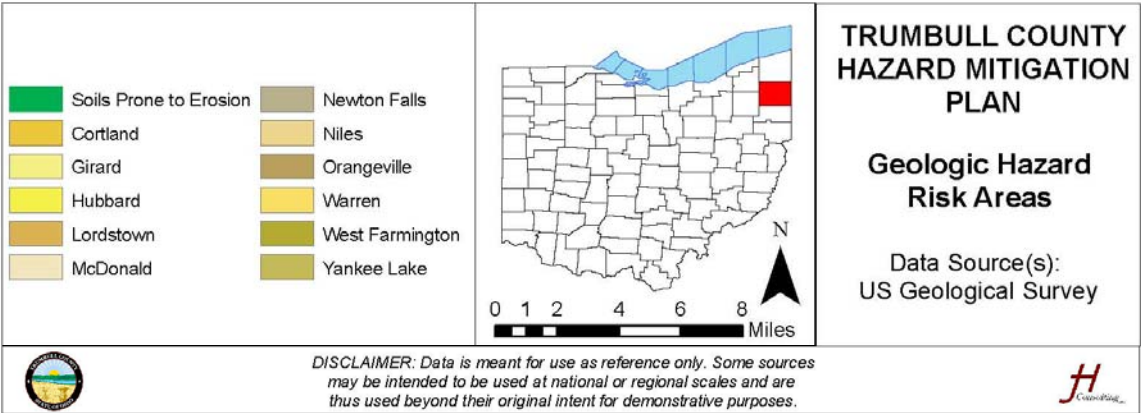
### Location and Extent

Due to the lack of steep slopes and lack of failure-prone geologic units, traditional landslides are almost non-existent in most of Ohio. As shown in the map below, there are few soil types (USGS, 1992) prone to slippage. Most of these areas are in the northwestern and southeastern corners of the county.



Other types of geologic hazards affect the state, though. Mine subsidence can strike with little or no warning and can result in very costly damage. However, unlike earthquakes, mine subsidence affects very few people but does have the ability to affect many lives and business if the ground was to subside in the middle of a town or on major roadways. Repairs for such events can take months and cost millions of dollars (ODNR, 1995). With potential damages to the foundations of structures, underground utilities, and the possible impact on human life, mine subsidence can be devastating (OEMA, 2019). The following image presents soil types that are prone to erosion, as per the county's latest soil survey (USGS, 1992).

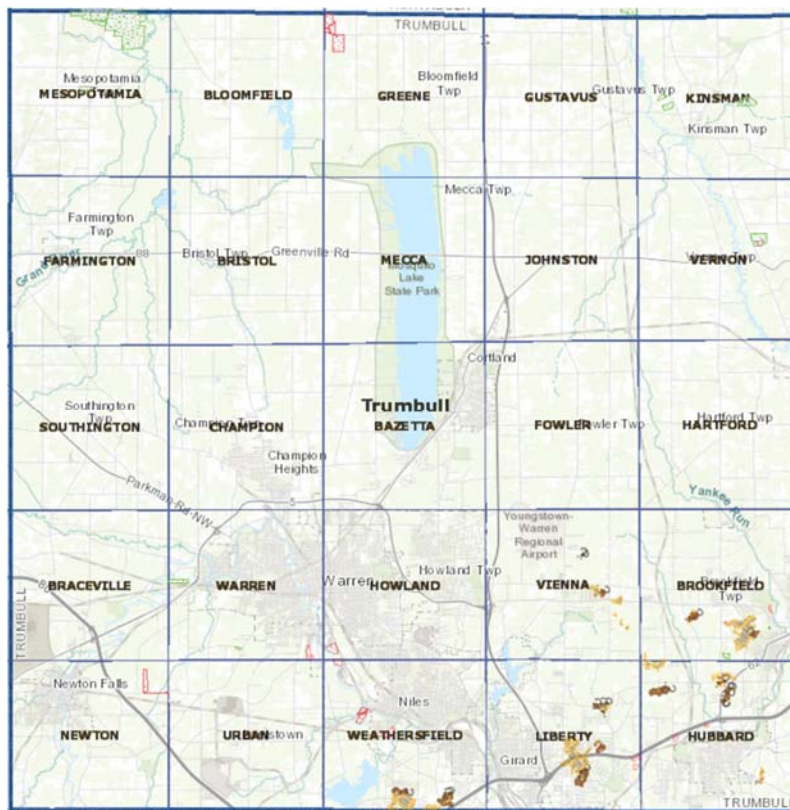






Abandoned underground mines are in 41 of the 88 counties in Ohio. In 2004, the ODNR Division of Geological Survey partnered with the Ohio Mine Subsidence Insurance Underwriting Association and the ODF Division of Mineral Resources Management and created a website for property owners, developers, and transportation officials to determine the locations of mines underneath of their properties. The resultant map was to improve public access to abandoned underground mine records. Along with the area of the mines, the information includes the hazard potential, the commodity mined, past operator, and any records of roofs collapsing (ODNR, 2010).

The image below displays all mapped mines in Trumbull County. There are many abandoned mines in the southeastern portion of Ohio existing in Weathersfield, Liberty, Hubbard, Vienna, and Brookfield counties. The bounds of these abandoned mines are largely unknown. Most surface mines located in Trumbull County are in northern Mesopotamia (ODNR, 2018).



### Impacts and Vulnerability

Land subsidence causes many problems including changes in elevation and slope of streams, canals, and drains; damage to bridges, roads, railroads, electric power lines, storm drains, sanitary sewers, canals, and levees; damage to private and public buildings; failure of well casings from forces generated by compaction of fine-grained materials in aquifer systems. Safety

problems for residents caused by sinkholes and subsidence initiated by abandoned underground mines are a growing concern.

Mine subsidence, like an earthquake, is a geologic hazard that can strike with little or no warning and can result in catastrophic and costly damages. Unlike an earthquake, mine subsidence normally only affects few people. However, if a mine collapses under an interstate highway, several lives and industries are subjected to potential damage. Mine subsidence can also cause foundation damage to buildings, disrupt underground utilities, and be a potential risk to human life.

### **Past Mitigation Efforts: Geologic Hazards**

- Local officials have reviewed existing regulations, comprehensive plans, and capital improvement plans to ensure adequacy in reducing the amount of future development in areas identified as prone to land and mine subsidence.
- The ODNR developed GIS-based online mapping which illustrates the undermined areas in Trumbull County.

### **Historical Occurrences**

In October of 2018, officials noted two sinkholes along Saddlebrook Lane in Bazetta Township (DiPaulo, 2019). The sinkholes were a result of a collapsed metal sewer line and affected 40 of the 64 properties in the area. The sewer lines were part of a drainage district constructed in 2001.

On December 3, 2018, motorists traveling on Mahoning Avenue in Warren reported a sinkhole. At the surface, the sinkhole was 30 inches wide, but the hole was actually eight feet deep and between ten and 12-feet wide. A collapsed clay pipe combined with stormwater runoff were determined to be the cause (Shiller, 2019).

Abandoned mines have been problematic for the Mineral Ridge area in Trumbull County. Between 1997 and 2008, subsidence crews visited the area four times to fill voids with rock and cement. Tracing the extent of these mines has been difficult due to the lack of accurate maps of the mine shafts. During the Depression, people would remove coal from abandoned shafts to heat their homes. Additionally, Ohio did not require companies to file maps of their mines until 1874. A loophole existed in the rule which stated that if a mine employed less than ten people, it did not have to share information to inspectors (The Columbus Dispatch, 2008).

### **Loss and Damages**



According to the *State of Ohio's Enhanced Hazard Mitigation Plan* (OEMA, 2019), abandoned mine liability insurance is mandatory in Trumbull County. This insurance covers the lesser of \$300,000 or the amount of insurance coverage for the building.

The state's mitigation plan also notes that Trumbull County is in ODOT Region 3, which contains the most area that is susceptible to landslide. Despite this, Trumbull is the third-lowest county for potential monetary impact due to landslides. There are eight total exposed critical facilities and no facilities in high incidence areas (OEMA, 2019). The total replacement value of those facilities equals \$1,052,544.

To complete the SHARPP vulnerability assessment, the Ohio EMA's "loss estimate workbook for HAZUS results" provided the figures included in the following table.

GEOLOGICAL HAZARDS EXPOSURE ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	2	\$763,300
Non-Residential	1	\$249,300
Critical Facilities	1	\$39,900
<b>TOTALS</b>	<b>4</b>	<b>\$1,052,500</b>

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from geological hazards. The following table identifies the assets located in geologic hazard risk areas.

ASSET	ADDRESS	CITY	ASSET TYPE		
			<i>Infrastructure</i>	<i>Critical Facilities</i>	<i>Cultural Resources</i>
Animal Welfare League Shelter Admin.	545 Brunsetter Road SW	Warren		X	
Baker/Currie Elementary	4095 Sheridan Drive	Vienna		X	
Bazetta Twp.	3372 State Route 5 NE	Cortland		X	
Bazetta Twp. FD	300 Warren Meadville Road	Cortland		X	
Bazetta Twp. PD	2671 McCleary Jacoby Road	Cortland		X	
Braceville Twp. FD	582 Braceville Robinson Road	Newton Falls		X	
Brookfield Twp.	6844 Strimbu Drive	Brookfield		X	
Brookfield Twp. PD	6844 Strimbu Drive	Brookfield		X	

ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Champion Elementary	5759 Mahoning Avenue NW	Warren		X	
Champion High School	5976 Mahoning Avenue NW	Warren		X	
Champion Local BOE	5976 Mahoning Avenue, Suite B	Warren		X	
Champion Local Schools	5759 Mahoning Avenue NW	Warren		X	
Champion Middle School	5435 Kuszmaul NW	Warren		X	
Champion Twp.	149 Center Street E	Warren		X	
Champion Twp. FD	139 Champion Avenue	Warren		X	
Champion Twp. PD	149 Center Street E	Warren		X	
City of Hubbard	220 West Liberty Street	Hubbard		X	
Clarence Darrow Octagon House	8405 Main Street	Kinsman			X
Clearview Lantern Suites	596 Champion Avenue W	Warren			X
Community Health Care at the Ridge	3379 Main Street	Mineral Ridge		X	
Cortland City FD	194 Lattin Street	Cortland		X	
Cortland City PD	400 North High Street	Cortland		X	
Cortland Health Care Ctr.	369 North High Street	Cortland		X	
Currie Elementary	3306 Ridge Road NE	Cortland		X	
E.J. Blott Elementary/Guy Middle	4003 Shady Road	Youngstown		X	
Farmington Twp.	251 4th Street	West Farmington		X	
Farmington Twp. FD	151 College Street	West Farmington		X	
Forum Hillside Rehab. Hospital	8747 Squires Lane NE	Warren		X	
Fowler Twp.	4562 Wilson Sharpsville Road	Cortland		X	
Fowler Twp. VFD	3386 Youngstown-Kingsville Road	Fowler		X	
Gillette Nursing Home	3310 Elm Road	Warren		X	
Girard City BOE	704 East Propect Street	Girard		X	
Girard City FD	105 E. Liberty Street	Girard		X	
Girard FD	105 East Liberty Street	Girard		X	



ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Girard High School	1244 Shannon Road	Girard		X	
Girard Intermediate	702 East Prospect Street	Girard		X	
Girard Junior High	1244 Shannon Road	Girard		X	
Girard Library	105 East Prospect Street	Girard			X
Grace Woods Village	730 Youngstown Road	Niles		X	
Guy Middle School	4115 Shady Road	Youngstown		X	
H.C. Mines Elementary	850 Howland-Wilson Road NE	Warren		X	
Horizon Village Nursing & Rehab. Ctr.	2473 North Road NE	Warren		X	
Howland Glen Primary	8000 Bridle Lane	Warren		X	
Howland Local Schools	8200 South Street SE	Warren		X	
Howland Local Schools	850 Howland-Wilson Road	Warren		X	
Howland Middle School	8100 South Street SE	Warren		X	
Howland Springs Primary	9500 Howland Springs Road	Warren		X	
Howland Twp.	205 Niles Cortland Road NE	Warren		X	
Howland Twp. FD, #30, #31, #32	169 Niles Cortland Road	Warren		X	
Howland Twp. PD	169 Niles Cortland NE	Warren		X	
Hubbard Elementary	150 Hall Avenue	Hubbard		X	
Hubbard Exempted Village BOE	108 Orchard Avenue	Hubbard		X	
Hubbard Exempted Village Schools	150 Hall Avenue	Hubbard		X	
Hubbard Exempted Village Schools	341 Hall Avenue	Hubbard		X	
Hubbard Exempted Village Schools	351 Hall Avenue	Hubbard		X	
Hubbard High School	350 Hall Avenue	Hubbard		X	
Hubbard Middle School	250 Hall Avenue	Hubbard		X	
Hubbard Public Library	436 West Liberty Street	Hubbard			X
Hubbard Twp.	2600 Elmwood Drive	Hubbard		X	
Jefferson K-8	1543 Tod Avenue SW	Warren		X	
John F. Kennedy Lower Campus	3000 Reeves Road	Warren		X	



ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Kinsman Public Library	6420 Church Street	Kinsman			X
Kinsman Twp.	6346 State Route 87	Kinsman		X	
Kinsman Twp. VFD	8450 Ridge Road	Kinsman		X	
Lakeview High School	300 Hillman Drive	Cortland		X	
Lakeview Local BOE	300 Hillman Drive	Cortland		X	
Liberty High School	1 Leopard Way	Youngstown		X	
Liberty Local Schools	4115 Shady Road	Youngstown		X	
Liberty Twp. FD	4001 Logan Way	Youngstown		X	
Lincoln K-8	2253 Atlantic Avenue NE	Warren		X	
Lincoln K-8	3465 Tod Avenue NW	Warren		X	
Lincoln/Jefferson	2253 Atlantic Avenue NE	Warren		X	
Lincoln/Willard	2253 Atlantic Avenue NE	Warren		X	
Lordstown Elementary	1776 Salt Springs Road	Warren		X	
Lordstown High School	1824 Salt Springs Road	Warren		X	
Lordstown Local Schools	1824 Salt Springs Road	Warren		X	
Mathews High School	4429 Warren-Sharon Road	Vienna		X	
Mathews Local BOE	4429 Warren-Sharon Road	Vienna		X	
Mathews Local Schools	4096 Cadwallader-Sonk Road	Cortland		X	
McDonald Elementary	410 W. 7th Street	McDonald		X	
McDonald High School	600 Iowa Avenue	McDonald		X	
McDonald Local Schools	410 West 7th Street	McDonald		X	
McDonald Local Schools	600 Iowa Avenue	McDonald		X	
McDonald PO	500 Ohio Avenue	McDonald		X	
McDonald Village FD	451 Ohio Avenue	McDonald		X	
McDonald Village PD	218 Adam Street	McDonald		X	
McGuffey K-8	3465 Tod Avenue NW	Warren		X	
McGuffey/Willard	2253 Atlantic Avenue NE	Warren		X	
Med Star EMS & Transport	1600 Youngstown Road SE	Warren		X	
Mesopotamia Twp. VFD	8800 State Route 534	Mesopotamia		X	
Mespo Elementary	4466 Kinsman Road	Mesopotamia		X	



ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Newton Falls Jr./Sr. High	905 Milton Boulevard	Newton Falls		X	
Niles City BOE	309 Rhodes Avenue	Niles		X	
Niles Middle School	309 North Rhodes Avenue	Niles		X	
Niles Middle School	411 Brown Street	Niles		X	
O'Brien Memorial Nursing Home	563 Brookfield Avenue SE	Masury		X	
Orangeville Village VFD	8276 High Street	Orangeville		X	
Prospect Elementary	700 East Prospect Street	Girard		X	
Ridgecrest Care Ctr.	1926 Ridge Avenue SE	Warren		X	
Roosevelt Elementary	410 West 7th Street	McDonald		X	
Seaborn Elementary	3800 Niles-Carver Road	Mineral Ridge		X	
Shepherd of the Valley Lutheran Retirement Ser.	4100 North River Road	Howland		X	
St. Joseph Health Ctr.	667 Eastland Avenue SE	Warren		X	
TCTC	528 Educational Highway	Warren		X	
Trumbull Memorial Hospital	1350 East Market Street	Warren		X	
Vernon Twp.	6160 State Route 7	Kinsman		X	
Village of McDonald	451 Ohio Avenue	McDonald		X	
Village of West Farmington	251 Fourth Street	West Farmington		X	
Warren FD Northeast Station	1600 Atlantic Avenue	Warren		X	
Weathersfield Twp.	1451 Prospect Street	Mineral Ridge		X	
Weathersfield Twp. FD	1451 Prospect Street	Mineral Ridge		X	
Weathersfield Twp. PD	1451 Prospect Street	Mineral Ridge		X	
West Farmington PD	251 Fourth Street	West Farmington		X	
West Farmington PO	226 East Main Street	West Farmington		X	
Youngstown Air Reserve Station	3976 King Graves Road	Vienna		X	
Youngstown-Warren Regional Airport	1453 Youngstown-Kingsville Road	Vienna		X	






The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

GEOLOGICAL HAZARDS VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	2	Low	Sinkholes are more common than landslides in Trumbull County, but both are rare.
Response	1	Less than half a day	Sinkholes typically do not require a traditional emergency response; though repairs can take time, detours and other measures allow for continuity of operations in affected areas.
Onset	1	Over 24 hours	Areas of subsidence and sinkhole can develop slowly, over the course of weeks. Other times, sinkholes can open with no warning.
Magnitude	2	10-25% of land area affected	Sinkholes and landslides have traditionally been confined to small sites; mine subsidence has also been single-site occurrences (though clusters of subsidence may occur).
Business	1	Less than 24 hours	Sinkholes typically do not impact the county's economic activity.
Human	1	Minimum with minor injuries	Sinkholes and subsidence do not usually cause human impacts. Damages are related primarily to land and property.
Property	1	Less than 10% damaged	Sinkholes and subsidence affect small areas and do not affect more than 10% of property in the county.
<b>Total</b>	<b>9</b>	<b>Lowest</b>	

## 2.0 RISK ASSESSMENT

### 2.2.9 Severe Thunderstorm

A severe thunderstorm is one that produces a tornado, winds in excess of 58 miles per hour, or hail of one inch in diameter or larger.				
	<b>Vulnerability</b>	<b>Period of Occurrence:</b>	At any time, typically during the summer months	<b>Hazard Index Ranking:</b> Medium
	HIGH	<b>Warning Time:</b>	12-24 hours	<b>State Risk Ranking:</b> 4-High
	MEDIUM	<b>Probability:</b>	Highly likely	<b>Severity:</b> Limited
	LOW	<b>Type of Hazard:</b>	Natural	<b>Disaster Declarations:</b> DR 266 (1969) DR 738 (1985) DR 870 (1990) DR 951 (1992) DR 1484 (2003) DR 1556 (2004) DR 3346 (2012)
	LOWEST			

#### Hazard Overview

Thunderstorms are local storms accompanied by lightning and thunder that are capable of producing strong winds, tornadoes, hail, and flash flooding. There are five types of thunderstorms, each described in detail in the table below.

TYPES OF THUNDERSTORMS				
Type	Description	Duration	Wind Speeds	Associated Hazards
Single Cell	Uncommon	20 - 30 minutes	N/A	<ul style="list-style-type: none"> <li>• Non-damaging hail</li> <li>• Microbursts</li> <li>• Weak tornadoes</li> </ul>
Multi-Cell	Common, organized cluster of two or more single cells.	Each cell lasts approximately 20 minutes	Downbursts of up to 80 mph	<ul style="list-style-type: none"> <li>• Heavy rainfall</li> <li>• Downbursts</li> <li>• Hail</li> <li>• Weak tornadoes</li> </ul>
Mesoscale Convective System (MCS)	A well-organized system of thunderstorms	Up to 12 hours or more	55 mph or more	<ul style="list-style-type: none"> <li>• Torrential rainfalls</li> <li>• Derechos</li> <li>• Tornadoes</li> </ul>
Squall Lines	May extend over 250 to 500 miles and 10 to 20 miles wide	Individual cells last from 30 to 60 minutes	N/A	<ul style="list-style-type: none"> <li>• Significant rain after the storm</li> <li>• Derechos</li> </ul>
Super Cells	Most dangerous storms, visible with Doppler radars	1 - 6 hours	Updrafts and downdrafts of more than 100 mph	<ul style="list-style-type: none"> <li>• Tornadoes</li> <li>• Hail</li> </ul>

A thunderstorm is “severe” when it produces a tornado, winds of at least 58 mph, or hail at least one inch in diameter. Hazards associated with severe thunderstorms include lightning, heavy rain, hail, damaging wind, and tornadoes. Severe winds, tornadoes, and hail appear in another profile.

Lightning is a naturally-occurring spark of electricity in the air between clouds, the air, or the ground. Air acts as an insulator between the cloud and the ground, but when the charge difference becomes great enough, this insulating capacity breaks down, allowing the rapid discharge of electricity. This electrical discharge is known as lightning.

#### Location and Extent

Thunderstorms and hail can affect all areas of the county. These events can last a few seconds (i.e., lightning), minutes (tornadoes), hours (thunderstorms and hailstorms), or days (high winds).

#### Impacts and Vulnerability

The impacts of thunderstorms include injury and even death. In some cases, lightning has caused fires in structures and open land or forests, while heavy rains can damage vegetation and infrastructure. Recently, some of the most damaging impacts of severe thunderstorms have been the cascading effects of long-duration power outages.

#### **Past Mitigation Efforts: Severe Thunderstorm**

- One of the most common impacts of severe weather is the loss of commercial power. Since many of the services rely on electricity for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from severe thunderstorms.
- The Trumbull County Emergency Management Agency and other county have agencies have compiled continuity of operations plans to support responses during sustained power outages.

#### Historical Occurrences

Trumbull County has experienced 223 thunderstorm events on 131 days since 1955. This rate is an average of 2.04 severe thunderstorms per year. These events appear in the table below.



HISTORICAL OCCURRENCE SEVERE THUNDERSTORMS (Source: NCEI Storm Events Database)				
<i>Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
11/15/1955	0	0	\$0.00	\$0.00
8/18/1956	0	0	\$0.00	\$0.00
4/19/1963	0	0	\$0.00	\$0.00
2/15/1967	0	0	\$0.00	\$0.00
4/2/1970	0	0	\$0.00	\$0.00
12/3/1970	0	0	\$0.00	\$0.00
3/27/1976	0	0	\$0.00	\$0.00
6/18/1977	0	0	\$0.00	\$0.00
7/17/1980	0	0	\$0.00	\$0.00
8/11/1980	0	0	\$0.00	\$0.00
9/13/1980	0	0	\$0.00	\$0.00
9/13/1980	0	0	\$0.00	\$0.00
5/2/1983	0	0	\$0.00	\$0.00
9/6/1983	0	0	\$0.00	\$0.00
3/10/1986	0	0	\$0.00	\$0.00
6/16/1986	0	0	\$0.00	\$0.00
4/12/1996	0	0	\$200,000.00	\$0.00
5/10/1996	0	0	\$0.00	\$0.00
7/13/1996	0	0	\$20,000.00	\$0.00
7/16/1996	0	0	\$0.00	\$0.00
12/1/1996	0	0	\$20,000.00	\$0.00
7/9/1999	0	0	\$50,000.00	\$0.00
7/31/1999	0	0	\$10,000.00	\$0.00
4/20/2000	0	0	\$15,000.00	\$0.00
5/31/2000	0	0	\$0.00	\$0.00
11/10/2002	0	0	\$75,000.00	\$0.00
4/5/2003	0	0	\$5,000.00	\$0.00
5/1/2003	0	0	\$1,000.00	\$0.00
5/1/2003	0	0	\$1,000.00	\$0.00
5/15/2003	0	0	\$0.00	\$0.00
6/12/2003	0	0	\$50,000.00	\$0.00
7/4/2003	0	0	\$15,000.00	\$0.00
7/4/2003	0	0	\$15,000.00	\$0.00
7/4/2003	0	0	\$15,000.00	\$0.00
7/4/2003	0	0	\$15,000.00	\$0.00
7/6/2003	0	0	\$15,000.00	\$0.00
7/6/2003	0	0	\$15,000.00	\$0.00
7/8/2003	0	0	\$50,000.00	\$0.00
7/21/2003	0	0	\$25,000.00	\$0.00
7/21/2003	0	0	\$50,000.00	\$0.00
7/21/2003	0	1	\$500,000.00	\$0.00
7/21/2003	0	0	\$15,000.00	\$0.00
7/21/2003	0	0	\$15,000.00	\$0.00
7/27/2003	0	0	\$8,000.00	\$0.00
8/26/2003	0	0	\$3,000.00	\$0.00
8/26/2003	0	0	\$10,000.00	\$0.00
9/27/2003	0	0	\$3,000.00	\$0.00
4/19/2004	0	0	\$0.00	\$0.00
5/17/2004	0	0	\$15,000.00	\$0.00
5/21/2004	0	0	\$250,000.00	\$0.00
5/22/2004	0	0	\$20,000.00	\$0.00



HISTORICAL OCCURRENCE SEVERE THUNDERSTORMS (Source: NCEI Storm Events Database)				
<i>Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
6/14/2004	0	0	\$15,000.00	\$0.00
6/14/2004	0	0	\$30,000.00	\$0.00
6/24/2004	0	0	\$15,000.00	\$0.00
8/10/2004	0	0	\$2,000.00	\$0.00
8/27/2004	0	0	\$4,000.00	\$0.00
4/20/2005	0	0	\$2,000.00	\$0.00
5/13/2005	0	0	\$0.00	\$0.00
5/13/2005	0	0	\$105,000.00	\$0.00
6/14/2005	0	0	\$5,000.00	\$0.00
6/30/2005	0	0	\$2,000.00	\$0.00
7/13/2005	0	0	\$10,000.00	\$0.00
7/26/2005	0	0	\$75,000.00	\$0.00
7/26/2005	0	0	\$15,000.00	\$0.00
11/29/2005	0	0	\$2,000.00	\$0.00
6/19/2006	0	0	\$25,000.00	\$0.00
6/22/2006	0	0	\$4,000.00	\$0.00
6/22/2006	0	0	\$30,000.00	\$0.00
7/10/2006	0	0	\$10,000.00	\$0.00
5/25/2007	0	0	\$2,000.00	\$0.00
5/31/2007	0	0	\$1,000.00	\$0.00
6/8/2007	0	0	\$3,000.00	\$0.00
6/19/2007	0	0	\$3,000.00	\$0.00
8/7/2007	0	0	\$10,000.00	\$0.00
8/23/2007	0	0	\$2,000.00	\$0.00
1/9/2008	0	0	\$6,000.00	\$0.00
6/13/2008	0	0	\$12,000.00	\$0.00
6/21/2008	0	0	\$2,000.00	\$0.00
6/21/2008	0	0	\$2,000.00	\$0.00
6/21/2008	0	0	\$3,000.00	\$0.00
6/21/2008	0	0	\$0.00	\$0.00
6/21/2008	0	0	\$3,000.00	\$0.00
6/21/2008	0	0	\$10,000.00	\$0.00
6/29/2008	0	0	\$5,000.00	\$0.00
7/8/2008	0	0	\$25,000.00	\$0.00
7/8/2008	0	0	\$50,000.00	\$0.00
7/26/2008	0	2	\$30,000.00	\$0.00
7/26/2008	0	0	\$15,000.00	\$0.00
7/26/2008	0	0	\$10,000.00	\$0.00
2/11/2009	0	0	\$0.00	\$0.00
2/11/2009	0	0	\$0.00	\$0.00
8/10/2009	0	0	\$20,000.00	\$0.00
8/20/2009	0	0	\$15,000.00	\$0.00
8/20/2009	0	0	\$3,000.00	\$0.00
5/7/2010	0	0	\$80,000.00	\$0.00
5/7/2010	0	0	\$10,000.00	\$0.00
5/7/2010	0	1	\$0.00	\$0.00
5/7/2010	0	0	\$1,000.00	\$0.00
5/7/2010	0	0	\$10,000.00	\$0.00
5/7/2010	0	0	\$3,000.00	\$0.00
5/7/2010	0	0	\$10,000.00	\$0.00



HISTORICAL OCCURRENCE SEVERE THUNDERSTORMS (Source: NCEI Storm Events Database)				
<i>Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
5/7/2010	0	0	\$3,000.00	\$0.00
5/7/2010	0	0	\$1,000.00	\$0.00
5/7/2010	0	0	\$6,000.00	\$0.00
5/14/2010	0	0	\$250,000.00	\$0.00
5/14/2010	0	0	\$200,000.00	\$0.00
6/5/2010	0	0	\$8,000.00	\$0.00
6/27/2010	0	0	\$5,000.00	\$0.00
7/23/2010	0	0	\$1,000.00	\$0.00
7/23/2010	0	0	\$3,000.00	\$0.00
7/24/2010	0	0	\$1,000.00	\$0.00
9/7/2010	0	0	\$15,000.00	\$0.00
5/12/2011	0	0	\$1,000.00	\$0.00
5/29/2011	0	0	\$0.00	\$0.00
6/7/2011	0	0	\$30,000.00	\$0.00
7/22/2011	0	0	\$25,000.00	\$0.00
7/23/2011	0	0	\$20,000.00	\$0.00
8/9/2011	0	0	\$0.00	\$0.00
8/25/2011	0	0	\$75,000.00	\$0.00
8/25/2011	0	0	\$5,000.00	\$0.00
8/25/2011	0	0	\$5,000.00	\$0.00
8/25/2011	0	0	\$5,000.00	\$0.00
11/14/2011	0	0	\$2,000.00	\$0.00
11/14/2011	0	0	\$1,000.00	\$0.00
11/14/2011	0	0	\$2,000.00	\$0.00
11/14/2011	0	0	\$1,000.00	\$0.00
1/17/2012	0	0	\$6,000.00	\$0.00
1/17/2012	0	0	\$5,000.00	\$0.00
1/17/2012	0	0	\$0.00	\$0.00
5/29/2012	0	0	\$5,000.00	\$0.00
5/29/2012	0	0	\$5,000.00	\$0.00
5/29/2012	0	0	\$10,000.00	\$0.00
7/3/2012	0	0	\$10,000.00	\$0.00
7/3/2012	0	0	\$25,000.00	\$0.00
7/26/2012	0	0	\$0.00	\$0.00
9/22/2012	0	0	\$35,000.00	\$0.00
9/22/2012	0	0	\$4,000.00	\$0.00
4/10/2013	0	0	\$35,000.00	\$0.00
4/10/2013	0	0	\$7,000.00	\$0.00
5/10/2013	0	0	\$10,000.00	\$0.00
5/10/2013	0	0	\$20,000.00	\$0.00
6/13/2013	0	0	\$1,000.00	\$0.00
6/13/2013	0	0	\$1,000.00	\$0.00
6/25/2013	0	0	\$15,000.00	\$0.00
6/25/2013	0	0	\$20,000.00	\$0.00
7/9/2013	0	0	\$15,000.00	\$0.00
7/10/2013	0	0	\$5,000.00	\$0.00
7/10/2013	0	0	\$75,000.00	\$0.00
7/23/2013	0	0	\$2,000.00	\$0.00
9/12/2013	0	0	\$150,000.00	\$0.00
11/17/2013	0	0	\$25,000.00	\$0.00



HISTORICAL OCCURRENCE SEVERE THUNDERSTORMS (Source: NCEI Storm Events Database)				
<i>Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
11/17/2013	0	0	\$15,000.00	\$0.00
11/17/2013	0	0	\$15,000.00	\$0.00
12/22/2013	0	0	\$10,000.00	\$0.00
4/4/2014	0	0	\$5,000.00	\$0.00
6/11/2014	0	0	\$20,000.00	\$0.00
6/18/2014	0	0	\$0.00	\$0.00
6/18/2014	0	0	\$15,000.00	\$0.00
6/18/2014	0	35	\$0.00	\$0.00
7/27/2014	0	0	\$50,000.00	\$0.00
7/27/2014	0	0	\$2,000.00	\$0.00
7/27/2014	0	0	\$5,000.00	\$0.00
7/27/2014	0	0	\$15,000.00	\$0.00
8/12/2014	0	0	\$1,000.00	\$0.00
5/11/2015	0	0	\$120,000.00	\$0.00
8/10/2015	0	0	\$2,000.00	\$0.00
6/5/2016	0	0	\$6,000.00	\$0.00
6/5/2016	0	0	\$6,000.00	\$0.00
6/6/2016	0	0	\$15,000.00	\$0.00
6/6/2016	0	0	\$30,000.00	\$0.00
7/13/2016	0	0	\$20,000.00	\$0.00
7/18/2016	0	0	\$1,000.00	\$0.00
2/25/2017	0	0	\$10,000.00	\$0.00
3/1/2017	0	0	\$150,000.00	\$0.00
3/1/2017	0	0	\$75,000.00	\$0.00
3/1/2017	0	0	\$2,000.00	\$0.00
5/1/2017	0	0	\$0.00	\$0.00
5/1/2017	0	0	\$150,000.00	\$0.00
6/18/2017	0	0	\$10,000.00	\$0.00
6/18/2017	0	0	\$1,000.00	\$0.00
6/18/2017	0	0	\$1,000.00	\$0.00
6/29/2017	0	0	\$2,000.00	\$0.00
6/29/2017	0	0	\$2,000.00	\$0.00
6/29/2017	0	0	\$2,000.00	\$0.00
6/29/2017	0	0	\$2,000.00	\$0.00
8/4/2017	0	0	\$10,000.00	\$0.00
8/4/2017	0	0	\$35,000.00	\$0.00
11/5/2017	0	0	\$650,000.00	\$0.00
4/27/2018	0	0	\$1,000.00	\$0.00
4/27/2018	0	0	\$25,000.00	\$0.00
4/27/2018	0	0	\$1,000.00	\$0.00
5/4/2018	0	0	\$8,000.00	\$0.00
5/4/2018	0	0	\$30,000.00	\$0.00
5/4/2018	0	0	\$15,000.00	\$0.00
5/22/2018	0	0	\$0.00	\$0.00
7/5/2018	0	0	\$12,000.00	\$0.00
7/26/2018	0	0	\$0.00	\$0.00
9/3/2018	0	0	\$25,000.00	\$0.00
9/3/2018	0	0	\$10,000.00	\$0.00
9/20/2018	0	0	\$1,000.00	\$0.00
9/20/2018	0	0	\$15,000.00	\$0.00





HISTORICAL OCCURRENCE SEVERE THUNDERSTORMS (Source: NCEI Storm Events Database)				
<i>Date</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
9/20/2018	0	0	\$1,000.00	\$0.00
9/20/2018	0	0	\$5,000.00	\$0.00
4/14/2019	0	0	\$1,000.00	\$0.00
4/14/2019	0	0	\$0.00	\$0.00
4/14/2019	0	0	\$5,000.00	\$0.00
4/14/2019	0	0	\$1,000.00	\$0.00
4/14/2019	0	0	\$0.00	\$0.00
4/14/2019	0	0	\$0.00	\$0.00
4/14/2019	0	0	\$0.00	\$0.00
5/25/2019	0	0	\$0.00	\$0.00
5/25/2019	0	0	\$5,000.00	\$0.00
7/20/2019	0	0	\$10,000.00	\$0.00
8/6/2019	0	0	\$5,000.00	\$0.00
8/6/2019	0	0	\$5,000.00	\$0.00
8/18/2019	0	0	\$0.00	\$0.00
8/18/2019	0	0	\$0.00	\$0.00
8/18/2019	0	0	\$10,000.00	\$0.00
8/18/2019	0	0	\$10,000.00	\$0.00
8/18/2019	0	0	\$5,000.00	\$0.00
8/18/2019	0	0	\$1,000.00	\$0.00
9/11/2019	0	0	\$0.00	\$0.00
9/11/2019	0	0	\$0.00	\$0.00
9/11/2019	0	0	\$0.00	\$0.00
<b>TOTALS</b>	<b>10</b>	<b>272</b>	<b>\$4,996,000.00</b>	<b>\$0</b>

### Loss and Damages

Severe thunderstorms can impact all areas and jurisdictions of Trumbull County. Severe storms have caused \$4,996,000 million in damages in Trumbull County over the past 64 years. The Ohio EMA's Hazard Mitigation Plan (2019) estimates the annual countywide damage due to severe thunderstorms to be \$22,403.59, or \$0.11 per person, significantly lower than the \$2.66 yearly damage per capita of Ohio Region 3.

For SHARPP data entry, planners utilized the historical worst-case scenario loss of \$650,000. Planners considered the entire building stock as exposed and used the worst-case scenario Trumbull County event as the representative historical occurrence for completion of the following table.

SEVERE THUNDERSTORMS LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	1	\$471,000
Non-Residential	1	\$154,000
Critical Facilities	1	\$25,000
<b>TOTALS</b>	<b>3</b>	<b>\$650,000</b>



### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from severe thunderstorms. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding severe thunderstorms. For the following table, data includes both severe thunderstorms and hail, as those hazards appeared combined in the survey.

PUBLIC SENTIMENT, SEVERE THUNDERSTORMS – TRUMBULL COUNTY					
<i>Hazard</i>	<i>Level of Concern</i>				<i>Total Responses</i>
	<i>Not at All</i>	<i>Somewhat</i>	<i>Concerned</i>	<i>Very</i>	
Severe Thunderstorms	43 (12.46%)	117 (33.91%)	116 (33.62%)	69 (20.00%)	346
In the past ten years, do you remember this hazard occurring in your community?				266 (77.10%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				139 (41.87%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				10 (3.18%)	314

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.




SEVERE THUNDERSTORM VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	5	Excessive	There have been multiple severe thunderstorms and at least one hail occurrence every year since 1985, and most years have had hail 1 inch or greater in diameter. Trumbull County can expect an average of just over two severe thunderstorms per year.
Response	2	One day	The response to severe thunderstorms typically occurs over a day (though storms impacting infrastructure can necessitate more extended responses).
Onset	2	12-24 hours	Thunderstorms that could produce hail can be predicted up to 24 hours in advance.
Magnitude	4	More than 50% of land area affected	Severe thunderstorms could affect large portions of the county, but the most severe impacts would be localized.
Business	1	Less than 24 hours	Businesses would not typically close for a thunderstorm or hailstorm. Damages from a significant storm may cause a short (less than 24 hour) disruption of services.
Human	1	Minimum (minor injuries)	There have been 39 injuries, and no deaths reported due to one severe thunderstorm. While injury and death are possible, it is unlikely that thunderstorms would cause significant human injuries.
Property	1	Less than 10% of property affected	Though impacting large land areas, thunderstorms often result in minimal property damage (when considering it at a countywide level).
<b>Total</b>	<b>16</b>	<b>Medium</b>	



## 2.0 RISK ASSESSMENT

### 2.2.10 Severe Wind and Tornado

Straight-line winds (Derechos), downbursts, macrobursts, microbursts, and gust fronts are all part of severe wind events. Tornadoes are violently-rotating columns of air that touch the ground and are usually attached to the base of a thunderstorm.			
	<b>Vulnerability</b>	<b>Period of Occurrence:</b>	At any time, typically when warm and cold air temperatures are present together
		<b>Warning Time:</b>	Less than 6 hours
		<b>Probability:</b>	Likely
		<b>Type of Hazard:</b>	Natural
		<b>Hazard Index Ranking:</b>	Medium
		<b>State Risk Ranking:</b>	4-High
		<b>Severity:</b>	Critical
		<b>Disaster Declarations:</b>	DR 266 (1969) DR 738 (1985) DR 870 (1990) DR 951 (1992) DR 1484 (2003) DR 4447 (2019)

#### Hazard Overview

Severe wind includes non-tornadic, damaging winds from thunderstorms. There are six types of severe wind: straight-line wind, downbursts, macrobursts, microbursts, gust fronts, and Derechos.

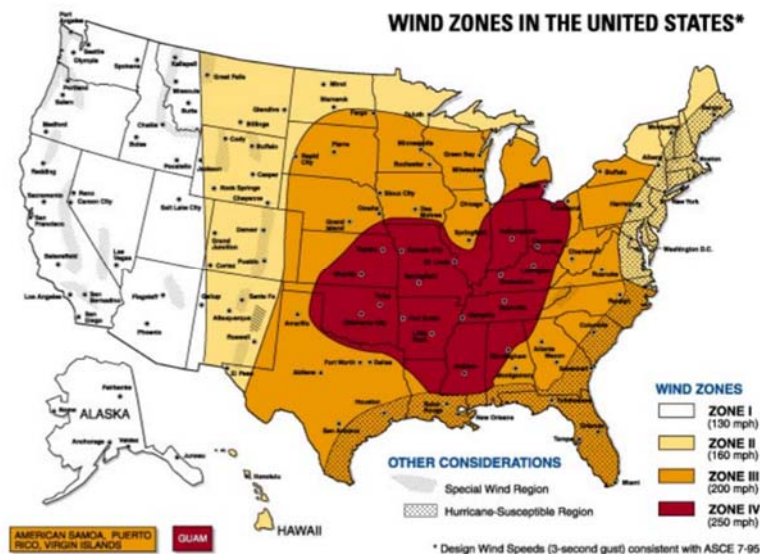
- **Straight-line Wind:** Straight-line wind is a term used to define any thunderstorm wind not associated with rotation, used mainly to differentiate from tornadic winds.
- **Downburst:** Downburst is the general term for all localized strong wind events caused by a strong downdraft within a thunderstorm.
- **Macroburst:** An outward burst of strong winds at or near the surface with a diameter larger than 2.5 miles that occurs when a strong downdraft reaches the surface.
- **Microburst:** A small, concentrated downburst that produces an outward burst of strong winds near the surface. Microbursts are small and short-lived, with a diameter less than 2.5 miles and lasting only 5-10 minutes.
- **Gust Front:** The leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. It is characterized by a wind shift, temperature drop, and gusty winds ahead of a thunderstorm.
- **Derecho:** A widespread, long-lived wind storm associated with a band of rapidly moving showers or thunderstorms. A typical derecho consists of numerous microbursts and

downbursts. An event with wind speeds of at least 58 mph and a diameter of 240 miles is a derecho.

Tornadoes form when warm, humid air collides with cold, dry air. They are vertical funnels of rapidly spinning air that extend from a thunderstorm cloud to the ground. Tornadoes can have wind speeds up to 250 miles per hour and a width of approximately 660 feet. They occur in the U.S. more than anywhere else in the world. Tornadoes originate from rotating thunderstorms called “supercells” or from quasi-linear convective systems (QLCS).

### Location and Extent

The wind is a commonplace phenomenon across the globe. Wind events can impact several jurisdictions at the same time, with varying duration and severity. All areas of Trumbull County are at an equal risk of experiencing severe wind and tornadoes. FEMA’s wind zone map classifies wind zones in the United States. As shown below, while the State of Ohio is primarily in Zone IV, Trumbull County and the extreme eastern edge of the state lie within a Zone III area, which means buildings should be constructed to withstand three-second gusts of up to 200 miles per hour.



The Beaufort Wind Scale measures wind. This scale characterizes wind using a 0-12 metric based on observation rather than exact measurements. The table below outlines the scale in detail.

BEAUFORT WIND SCALE					
Force	Wind Speed		Description	Appearance of Wind Effects	
	Knots	MPH		On Water	On Land
0	>1	>1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	4-7	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	8-12	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	13-18	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	19-24	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	25-31	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	32-38	Near Gale	Sea heaps up, waves 13-19 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	39-46	Gale	Moderately high (18-25 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Twigs breaking off trees, generally impedes progress
9	41-47	47-54	Strong Gale	High waves (23-32 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	55-63	Storm	Very high waves (29-41 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	64-72	Violent Storm	Exceptionally high (37-52 ft.) waves, foam patches cover sea, visibility more reduced	N/A
12	64+	72+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	N/A



Officials also utilize the Enhanced Fujita (EF) Scale to classify tornadoes. This scale uses a rating system based on wind speeds and related damages. The EF scale was adapted from the original Fujita scale to better estimate wind and storm damage.

ENHANCED FUJITA (EF) SCALE		
<i>EF Rating</i>	<i>3-second Gust Speed (mph)</i>	<i>Possible Damage</i>
0	65-85	<b>Light Damage.</b> Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to signboards.
1	86-110	<b>Moderate Damage.</b> Surface peeled off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
2	111-135	<b>Considerable Damage.</b> Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
3	136-165	<b>Severe Damage.</b> Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off the ground and thrown.
4	166-200	<b>Devastating Damage.</b> Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
5	200+	<b>Incredible Damage.</b> Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly through the air more than 100-yards; trees debarked; incredible phenomena will occur.

### Impacts and Vulnerability

Severe wind events can cause a variety of secondary and tertiary hazard events. In addition to damaging roofs and other home finishings, wind can cause damage to trees that may interrupt power service or block roadways. Such damages could be widespread and severe, potentially overwhelming the capacity of local responders to address the situation. Tornadoes are often short-lived and intensely focused. Such events could cause significant damage to framed structures, mobile homes, and any unsecured vehicles or property.

### **Past Mitigation Efforts: Severe Wind and Tornado**

- The development and distribution of public awareness materials about natural hazard risks, preparedness, and mitigation
- The establishment of a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and Trumbull County Emergency Management Agency
- Conducting a tabletop exercise with local law enforcement, emergency managers, city and county officials, and other disaster response agencies



- Continued conduct of National Weather Service Storm Spotter classes

### Historical Occurrences

Trumbull County has experienced numerous severe wind and tornado events. There have been 38 events with a high wind that caused two injuries and a combined \$8.085 million in property damage. There have also been 21 tornadoes that caused more than \$507 million in property damage in the county.

HISTORICAL OCCURRENCES HIGH WIND AND TORNADOES (Source: NCEI Storm Events Database)								
<i>Location</i>	<i>Date</i>	<i>Time</i>	<i>Type</i>	<i>Magnitude</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull County	8/5/1956	0:01	Tornado	F3	0	0	\$250,000.00	\$0.00
Trumbull County	8/13/1975	16:45	Tornado	F1	0	0	\$2,500.00	\$0.00
Trumbull County	6/7/1978	16:55	Tornado	F2	0	0	\$2,500,000.00	\$0.00
Trumbull County	6/18/1978	15:15	Tornado	F1	0	0	\$250,000.00	\$0.00
Trumbull County	5/31/1985	15:05	Tornado	F3	0	20	\$2,500,000.00	\$0.00
Trumbull County	5/31/1985	15:17	Tornado	F4	0	0	\$25,000.00	\$0.00
Trumbull County	5/31/1985	16:39	Tornado	F5	10	250	\$250,000,000.00	\$0.00
Trumbull County	5/31/1985	17:11	Tornado	F5	0	0	\$250,000,000.00	\$0.00
Trumbull County	5/15/1986	21:57	Tornado	F1	0	0	\$250,000.00	\$0.00
Trumbull County	7/22/1990	14:17	Tornado	F0	0	0	\$250,000.00	\$0.00
Trumbull County	7/13/1992	19:35	Tornado	F0	0	0	\$25,000.00	\$0.00
Trumbull County	7/14/1992	19:00	Tornado	F0	0	0	\$2,500.00	\$0.00
Berlin Center	4/16/1993	0:00	Tornado	F1	0	0	\$500,000.00	\$0.00
Brookfield	8/13/1994	19:15	Tornado	F0	0	0	\$50,000.00	\$0.00
Leavittsburg	4/9/1998	14:28	Tornado	F0	0	0	\$0.00	\$0.00
Girard	8/5/2012	13:35	Tornado	EF0	0	0	\$150,000.00	\$0.00
Fowler	8/17/2017	18:11	Tornado	EF1	0	0	\$50,000.00	\$0.00
Mesopotamia	9/20/2018	13:37	Tornado	EF1	0	0	\$20,000.00	\$0.00
Bazetta	1/8/2019	10:20	Tornado	EF1	0	0	\$250,000.00	\$0.00
Phalanx	6/16/2019	14:12	Tornado	EF1	0	0	\$250,000.00	\$0.00
Vienna	6/16/2019	15:44	Tornado	EF0	0	0	\$25,000.00	\$0.00
TOTALS (TORNADO EVENTS ONLY)					10	270	\$507,350,000.00	\$0.00
Trumbull County	1/27/1996	6:30	High Wind	50 kts.	0	0	\$0.00	\$0.00
Trumbull County	2/10/1996	23:45	High Wind	50 kts.	0	0	\$3,000.00	\$0.00
Trumbull County	3/25/1996	12:00	High Wind	50 kts.	0	0	\$35,000.00	\$0.00
Trumbull County	5/13/1996	14:20	High Wind	60 kts.	0	0	\$0.00	\$0.00





HISTORICAL OCCURRENCES HIGH WIND AND TORNADOES (Source: NCEI Storm Events Database)								
<i>Location</i>	<i>Date</i>	<i>Time</i>	<i>Type</i>	<i>Magnitude</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull County	5/13/1996	14:20	High Wind	60 kts.	0	0	\$100,000.00	\$0.00
Trumbull County	9/7/1996	4:00	High Wind	50 kts.	0	0	\$5,000.00	\$5,000.00
Trumbull County	10/30/1996	0:10	High Wind	50 kts.	0	0	\$50,000.00	\$100,000.00
Trumbull County	2/21/1997	10:30	High Wind	50 kts.	0	0	\$2,000.00	\$0.00
Trumbull County	2/22/1997	2:13	High Wind	50 kts.	0	0	\$0.00	\$0.00
Trumbull County	2/27/1997	0:15	High Wind	50 kts.	0	0	\$5,000.00	\$0.00
Trumbull County	9/29/1997	20:05	High Wind	N/A	0	0	\$20,000.00	\$0.00
Trumbull County	3/28/1998	13:04	High Wind	N/A	0	0	\$10,000.00	\$0.00
Trumbull County	12/15/1999	20:00	High Wind	N/A	0	0	\$25,000.00	\$0.00
Trumbull County	12/11/2000	23:30	High Wind	N/A	0	0	\$150,000.00	\$0.00
Trumbull County	2/9/2001	20:00	High Wind	N/A	0	0	\$15,000.00	\$0.00
Trumbull County	2/25/2001	7:00	High Wind	N/A	0	0	\$15,000.00	\$0.00
Trumbull County	10/16/2001	12:00	High Wind	N/A	0	0	\$15,000.00	\$0.00
Trumbull County	10/25/2001	11:00	High Wind	N/A	0	0	\$20,000.00	\$0.00
Trumbull County	12/14/2001	15:00	High Wind	N/A	0	0	\$35,000.00	\$0.00
Trumbull County	2/1/2002	10:00	High Wind	N/A	0	0	\$25,000.00	\$0.00
Trumbull County	3/9/2002	14:30	High Wind	55 kts. M	0	2	\$200,000.00	\$0.00
Trumbull County	11/12/2003	21:00	High Wind	50 kts. EG	0	0	\$100,000.00	\$0.00
Trumbull County	3/5/2004	12:30	High Wind	50 kts. EG	0	0	\$75,000.00	\$0.00
Trumbull County	12/7/2004	12:15	High Wind	50 kts. EG	0	0	\$25,000.00	\$0.00
Trumbull County	11/6/2005	8:00	High Wind	50 kts. EG	0	0	\$25,000.00	\$0.00
Trumbull County	2/17/2006	0:00	High Wind	50 kts. EG	0	0	\$35,000.00	\$0.00
Trumbull County	12/1/2006	14:31	High Wind	55 kts. MG	0	0	\$0.00	\$0.00
Trumbull County	12/23/2007	11:30	High Wind	50 kts. EG	0	0	\$20,000.00	\$0.00
Trumbull County	1/9/2008	5:00	High Wind	50 kts. EG	0	0	\$20,000.00	\$0.00
Trumbull County	1/30/2008	2:45	High Wind	55 kts. EG	0	0	\$30,000.00	\$0.00
Trumbull County	9/14/2008	18:00	High Wind	53 kts. MG	0	0	\$5,000,000.00	\$0.00
Trumbull County	2/12/2009	0:00	High Wind	50 kts. MG	0	0	\$750,000.00	\$0.00
Trumbull County	12/9/2009	13:00	High Wind	50 kts. MG	0	0	\$400,000.00	\$0.00
Trumbull County	4/28/2011	5:00	High Wind	50 kts. EG	0	0	\$50,000.00	\$0.00
Trumbull County	2/24/2012	14:31	High Wind	50 kts. EG	0	0	\$250,000.00	\$0.00
Trumbull County	10/29/2012	23:00	High Wind	52 kts. EG	0	0	\$200,000.00	\$0.00
Trumbull County	11/24/2014	14:00	High Wind	52 kts. EG	0	0	\$250,000.00	\$0.00
Trumbull County	2/24/2019	11:00	High Wind	53 kts. MG	0	0	\$125,000.00	\$0.00
TOTALS (HIGH WIND EVENTS ONLY)					0	2	\$8,085,000.00	\$105,000.00

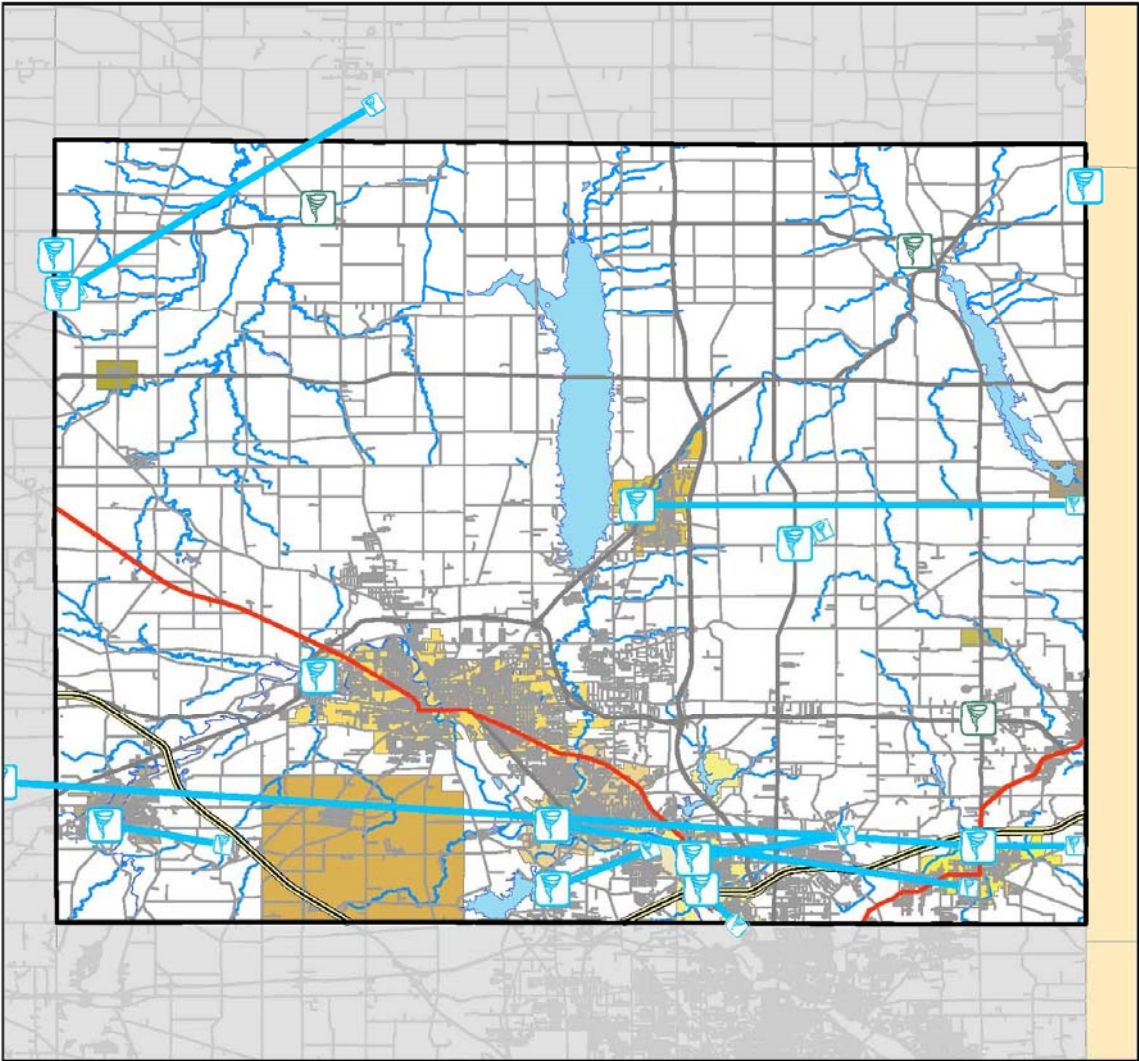
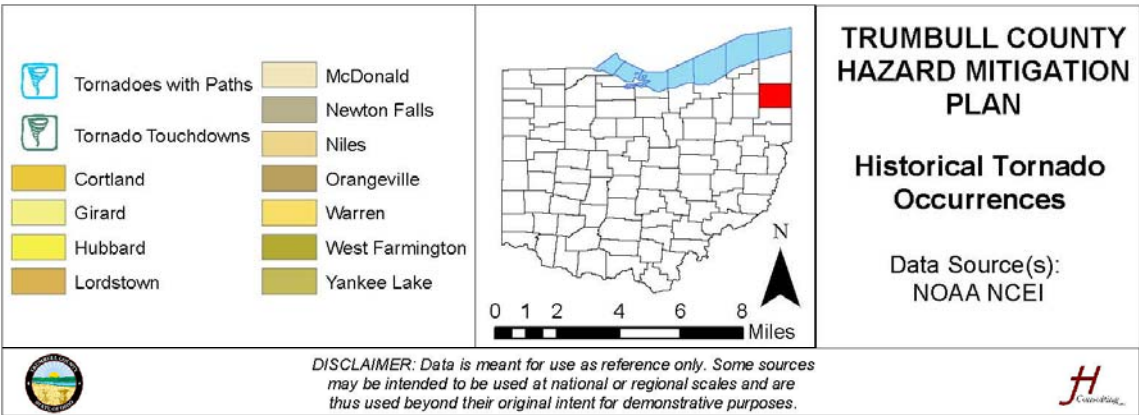


### **May 31, 1985**

During the early evening hours, an F5 tornado touched down within the western region of the Ravenna Training and Logistics Site, continued 28.5 miles west to the Ohio/Pennsylvania border, and then continued west into Pennsylvania. The tornado caused ten deaths, 250 injuries, \$250,000,000 in property damages, and destroyed an area of Niles known as “The Strip.” (NOTE: The table above lists two separate events, both listed as F5 tornadoes. Planners believe the events are the same, given that the first one ends where the second one begins.)

The following map shows the locations of tornado touchdowns and, where appropriate, their paths.





### **September 14, 2008**

The remnants of Hurricane Ike caused a low-pressure system with winds up to 53 knots to cross over Northeastern Ohio and into the Great Lakes. In general, damages consisted of downed trees and power lines with some damage to roofs and vehicles. Crops sustained some damage, with corn yields dropping 3-5%, whereas soybean yields fell 10% in some fields. These high winds resulted in two deaths and \$5,000,000 in property damage.

### **February 12, 2009**

High winds fueled by a cold front moved through Trumbull County during the evening of February 11 and continued into the early morning, leaving downed trees and utility poles in their path. Recorded wind speeds of 50 knots further caused property damage that mainly consisted of lost shingles, gutters, and siding along with power outages for parts of Trumbull County. Sustained property damage costs totaled \$750,000.

### **December 9, 2009**

A strong cold front caused rain and high winds to sweep across Trumbull County with gusts exceeding 50 knots. This system led to downed trees, utility poles and power lines, and power outages across the county. Homes and businesses experienced minor damage to siding and roofing. Total property damages rose to \$400,000.

### **Loss and Damages**

High wind caused a total of \$8.19 million in property damage in Trumbull County since 1996. The average loss per non-tornadic severe wind incident was \$215,526, which can serve as a severe wind loss estimate. Tornadoes caused an additional \$24,159,524 in damages since 1956. The average damage per event was \$124,166, which serves as the tornado loss estimate. The worst-case on record was the 1985 tornado, which caused \$250 million in damages.

As noted, severe wind events and tornadoes can impact all areas and jurisdictions of Trumbull County. The historical worst-case scenario loss was \$250,000,000, which was a rare event (with no other event coming close to that amount). A more realistic worst-case scenario would be the \$750,000 loss experienced during a February 2009 severe wind event. Planners considered the entire building stock as exposed and used the more realistic scenario Trumbull County event as the representative historical occurrence for completion of the following table.



SEVERE WIND AND TORNADO LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	2	\$543,900
Non-Residential	1	\$177,700
Critical Facilities	1	\$28,400
<b>TOTALS</b>	<b>4</b>	<b>\$750,000</b>

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from severe wind and tornadoes. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding severe wind and tornadoes.

PUBLIC SENTIMENT, SEVERE WIND AND TORNADOES – TRUMBULL COUNTY					
<i>Hazard</i>	<i>Level of Concern</i>				<i>Total Responses</i>
	<i>Not at All</i>	<i>Somewhat</i>	<i>Concerned</i>	<i>Very</i>	
Severe Wind & Tornadoes	23 (6.63%)	110 (31.70%)	124 (35.73%)	90 (25.94%)	347
In the past ten years, do you remember this hazard occurring in your community?				261 (75.65%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				145 (43.67%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				7 (2.23%)	314


The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

SEVERE WIND AND TORNADOES RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	5	Excessive	NOAA has listed 38 high wind events and 21 tornadoes since 1956, but the rate of events has increased (i.e., 0.92 incidents per year). There was a wind event or tornado nearly every year since 1997, with some years experiencing multiple events.
Response	3	One week	Regular county operations would likely resume within the week.
Onset	4	Less than 6 hours	While officials can predict thunderstorms and wind storms can relatively accurately in advance, tornadoes are sporadic and cannot be predicted as effectively.
Magnitude	1	Limited	Less than 10% of land area affected. Though destructive, a tornado would not affect a significant portion of the county. Planners utilized the tornado scenario for this category because it typically results in the most damage.
Business	2	One week	Typical business activity should resume within the week for those affected by high wind and tornadoes.
Human	2	Some injuries	In all cases of high wind and tornadoes, there were ten deaths attributed to one event, and in most cases, there were no injuries. Few events lead to multiple injuries.
Property	1	Less than 10% of property affected	Tornadoes are localized events, and a single event would not affect more than 10% of property in the county.
<b>TOTAL</b>	<b>18</b>	<b>Medium</b>	



## 2.0 RISK ASSESSMENT

### 2.2.11 Severe Winter Storms

Severe winter weather is a combination of heavy snow, blowing snow, and dangerous wind chills that could threaten life or property.				
 <p>Vulnerability</p> <p>HIGHEST</p> <p>HIGH</p> <p>MEDIUM</p> <p>LOW</p> <p>LOWEST</p>	Period of Occurrence:	At any type, typically during the winter months	Hazard Index Ranking:	Medium
	Warning Time:	Over 24 hours	State Risk Ranking:	4-High
	Probability:	Highly likely	Severity:	Critical
	Type of Hazard:	Natural	Disaster Declarations:	EM-3055 (1978) DR-1580 (2005)

#### Hazard Overview

During winter, there are multiple instances of cold weather, snow, and storms. This profile includes only those winter weather events that are damaging enough to be considered “severe.” These include NOAA-labeled winter storms, heavy snow, blizzards, and ice storms.

- **Winter Storm:** A winter storm is a combination of heavy snow, blowing snow, and dangerous wind chills.
- **Heavy Snow:** Heavy snow refers to snowfall accumulating to 4” or more in 12 hours or less or snowfall accumulating to 6” or more in 24 hours or less.
- **Blizzard:** A blizzard is a dangerous winter storm that is a combination of blowing snow and wind and results in very low visibility (less than ¼ mile). Heavy snowfall and severe cold usually accompany blizzards, but not always. Sometimes strong winds can pick up fallen snow, creating a ground blizzard.
- **Ice Storm:** An ice storm is a storm that results in the accumulation of at least 0.25” of ice on exposed surfaces. It can create hazardous driving and walking conditions, and tree branches and power lines can easily snap under the weight of the ice.

Just like with other storms, the right combination of ingredients is necessary for a winter storm to develop. The three key components of a winter storm are cold air, lift, and moisture.

### Location and Extent

Generally, severe winter weather affects all areas of the county similarly. More specifically, winter weather affects several jurisdictions simultaneously, yet with varying severity and duration. There is no widely-used scale to classify snowstorms, but Paul Kocin and Louis Uccellini from the National Weather Service developed the Northeast Snowfall Impact Scale (NESIS). The NESIS characterizes and ranks high-impact Northeastern snowstorms from “notable” to “extreme.”

NORTHEAST SNOWFALL IMPACT SCALE		
<i>Category</i>	<i>NESIS Value</i>	<i>Description</i>
1	1.0-2.499	Notable
2	2.5-3.99	Significant
3	4.0-5.99	Major
4	6.0-9.99	Crippling
5	10.0+	Extreme

Significantly, the NESIS does not predict the impacts of a forecasted storm; instead, it is a mechanism for rating impacts after a storm occurs

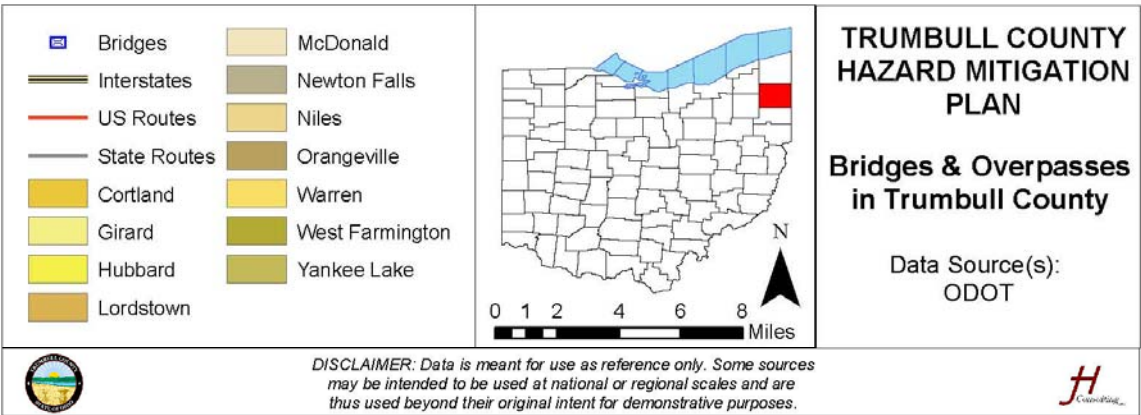
### Impacts and Vulnerability

According to the National Severe Storms Laboratory (NSSL), most deaths from winter storms are not from the storm itself. People die from traffic accidents on icy roads, heart attacks while shoveling snow, and hypothermia from prolonged exposure to cold. During severe storms, everyone is potentially at risk, particularly those stranded in their vehicle or outside during the storm. Recent data shows that 70% of injuries related to ice and snow occur in automobiles, and 25% are people caught out in the storm. Most victims are males over 40 years old.

Ice accumulation can topple power lines, utility poles, and communication towers. The resultant disruption in communication and utility services can last several days. Even minimal ice accumulation can pose a serious threat to motorists and pedestrians. Bridges and overpasses are particularly dangerous, as they freeze before other surfaces. The following graphic shows the location of the bridges and overpasses throughout Trumbull County.







### Past Mitigation Efforts: Severe Winter Storm

- One of the most common impacts of severe weather is the loss of commercial power. Since many other services rely on electricity for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from winter storms.
- The development and distribution of public awareness materials about natural hazard risks, utilizing the media for the publication of hazard information, and updating the county website to provide hazard-related information that is easily accessible.

### Historical Occurrences

According to the NOAA National Centers for Environmental Information Storm Event Database, there have been 51 winter storms, ice storms, and heavy snow events in Trumbull County since 1999. The following table summarizes those events.

HISTORICAL OCCURRENCES SEVERE WINTER WEATHER (Source: NCEI Storm Events Database)						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull (Zone)	Winter Storm	1/2/1999	0	2	\$15,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/8/1999	0	0	\$2,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/13/1999	0	0	\$5,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	1/14/1999	0	0	\$35,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	2/12/1999	0	0	\$0.00	\$0.00
Trumbull (Zone)	Heavy Snow	3/5/1999	0	0	\$10,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	11/29/1999	0	0	\$15,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	1/21/2000	0	0	\$15,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	11/21/2000	0	0	\$150,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/13/2000	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	12/24/2000	0	0	\$35,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	12/27/2000	0	0	\$50,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	3/5/2001	0	0	\$0.00	\$0.00
Trumbull (Zone)	Heavy Snow	2/4/2002	0	0	\$35,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	2/27/2002	0	0	\$25,000.00	\$0.00



HISTORICAL OCCURRENCES SEVERE WINTER WEATHER (Source: NCEI Storm Events Database)						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull (Zone)	Winter Storm	3/24/2002	0	0	\$50,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	12/24/2002	0	0	\$150,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/5/2003	0	0	\$0.00	\$0.00
Trumbull (Zone)	Heavy Snow	12/17/2003	0	0	\$250,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	3/16/2004	0	0	\$250,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/22/2004	0	0	\$1,800,000.00	\$0.00
Trumbull (Zone)	Ice Storm	1/5/2005	0	0	\$750,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/22/2005	0	0	\$150,000.00	\$0.00
Trumbull (Zone)	Winter Storm	4/2/2005	0	0	\$500,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	12/1/2005	0	0	\$50,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/13/2007	0	0	\$40,000.00	\$0.00
Trumbull (Zone)	Ice Storm	3/15/2007	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/15/2007	0	0	\$500,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/1/2008	0	0	\$75,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/12/2008	0	0	\$125,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/26/2008	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Winter Storm	3/4/2008	0	0	\$1,000,000.00	\$0.00
Trumbull (Zone)	Winter Storm	3/7/2008	0	0	\$1,200,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	3/21/2008	0	0	\$75,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/19/2008	0	0	\$30,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/9/2009	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/27/2009	0	0	\$250,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/5/2010	0	0	\$500,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/1/2011	0	0	\$300,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/20/2011	0	0	\$250,000.00	\$0.00



HISTORICAL OCCURRENCES SEVERE WINTER WEATHER (Source: NCEI Storm Events Database)						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull (Zone)	Winter Storm	3/10/2011	0	0	\$200,000.00	\$0.00
Trumbull (Zone)	Winter Storm	3/10/2011	0	0	\$200,000.00	\$0.00
Trumbull (Zone)	Winter Storm	12/26/2012	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Ice Storm	3/18/2013	0	0	\$100,000.00	\$0.00
Trumbull (Zone)	Winter Storm	11/26/2013	0	0	\$150,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/4/2014	0	0	\$125,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/17/2014	0	0	\$250,000.00	\$0.00
Trumbull (Zone)	Winter Storm	2/1/2015	0	0	\$200,000.00	\$0.00
Trumbull (Zone)	Heavy Snow	2/15/2016	0	0	\$300,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/12/2018	0	0	\$200,000.00	\$0.00
Trumbull (Zone)	Winter Storm	1/19/2019	0	0	\$100,000.00	\$0.00
TOTALS			0	2	\$11,012,000	\$0

### Loss and Damages

Winter storms caused \$11,012,000 in damages in Trumbull County over 20 years, with an average of \$215,922 per event. This likely underestimates damages caused to infrastructure and power lines. Severe winter storms can impact all areas and jurisdictions of Trumbull County. Regionally (i.e., in neighboring Mahoning County, December 2004), winter storms have caused up to \$2,200,000 in property damage. Planners considered the entire building stock as exposed and used the regional worst-case scenario as the representative historical occurrence for completion of the following table.

SEVERE WINTER STORMS LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	3	\$1,595,500
Non-Residential	1	\$521,000
Critical Facilities	1	\$83,000
TOTALS	5	\$2,200,000



### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from severe winter storms. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding severe winter storms.

PUBLIC SENTIMENT, SEVERE WINTER STORMS – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Severe Winter Storms	43 (12.46%)	117 (33.91%)	116 (33.62%)	69 (20.00%)	345
In the past ten years, do you remember this hazard occurring in your community?				266 (77.10%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				105 (31.63%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				33 (10.51%)	314


The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

SEVERE WINTER STORM VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	5	Excessive	NOAA has listed 51 severe winter storms since 1999, for an average of 2.55 events per year. On any given year, severe winter weather is likely
Response	3	One week	Clearing snow and ice from infrastructures, such as roads and power lines, could take up to a week.
Onset	2	12-24 hours	Winter storms can be predicted 24 hours or more in advance, leaving ample time to prepare; however, most include accurate warnings between 12 and 24 hours before a storm.
Magnitude	4	More than 50% of land area	Winter weather is not an isolated event, and would likely affect most of Trumbull County and surrounding counties.
Business	1	Less than 24 hours	Businesses would likely remain open during winter weather. Early closures or late openings due to ice or snow could occur.
Human	1	Minimum	Winter weather has caused two injuries but has not caused any deaths in Trumbull County.
Property	4	More than 50% affected	More than 50% of the property in the county could be affected by severe winter weather. As stated in the magnitude section, severe winter weather is not an isolated event and would affect the better part of Trumbull and surrounding counties.
Total	20	Medium	



## 2.0 RISK ASSESSMENT

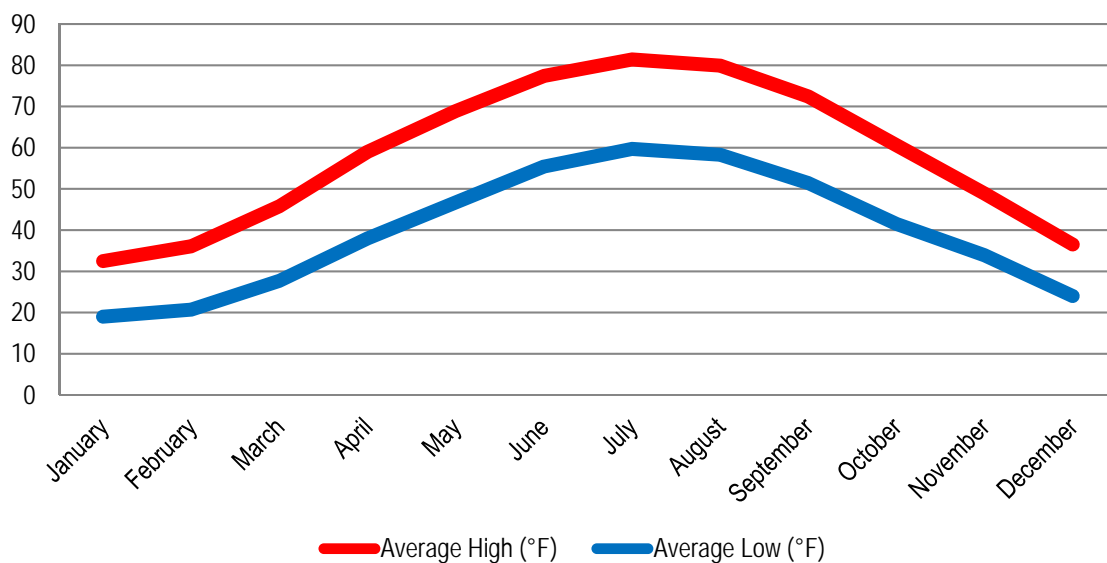
### 2.2.12 Temperature Extreme

Extreme temperatures are those 10° F or more above the average high or below the average low for an area.				
	Vulnerability	Period of Occurrence:	At any time, typically during the middle summer and middle winter months	Hazard Index Ranking: Low
		Warning Time:	Over 24 hours	State Risk Ranking: N/A
		Probability:	Likely	Severity: Limited
		Type of Hazard:	Natural	Disaster Declarations: None

#### Hazard Overview

Temperatures vary widely over a year, but each season has an average temperature range. The National Oceanic and Atmospheric Administration (NOAA) generates monthly “normal” reports from its different stations. The data presented below shows the average minimum and maximum temperatures from 1981 to 2010 using data from the Youngstown-Warren Regional Airport station, the closest station to Trumbull County.

### AVERAGE TEMPERATURE, 1981-2010



*Extreme* temperatures are those 10 degrees above or below the average high or low temperature. For example, an *extremely* cold temperature for Trumbull County would be below 10°F in January, and above 90°F in July would constitute an *extremely* hot temperature.

#### Location and Extent

Extreme temperatures affect each jurisdiction in Trumbull County equally. Although the temperatures may vary slightly across the county, the average of the county's temperatures and the extent of extremes are very similar. The National Weather Service, in collaboration with local partners, issues several heat-related products as conditions warrant. Descriptions of those products are in the table below.

NWS, HEAT-RELATED PRODUCTS	
<i>Product</i>	<i>Description</i>
Excessive Heat Warning	Issued within 12 hours of extremely dangerous heat conditions. Issued when the maximum heat index temperature is expected to be 105°F or higher for at least two days and night time air temperatures will not drop below 75°.
Excessive Heat Watch	Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A watch is used when the risk of a heatwave has increased, but its occurrence and timing is still uncertain.
Heat Advisory	Issued within 12 hours of the onset of extremely dangerous heat conditions. This Advisory is issued when the maximum heat index temperature is expected to be 100°F or higher for at least two days, and nighttime temperatures will not drop below 75°.
Excessive Heat Outlook	Issued when the potential exists for an excessive heat event in the next 3-7 days. Provides information to those who need considerable lead time to prepare for an event.

The National Weather Service also issues products regarding extremely cold temperatures. Such products include frost advisories, freeze watches and warnings, and hard freeze watches and warnings. The descriptions are in the table below.

NWS, PRODUCTS RELATED TO EXTREME COLD	
<i>Product</i>	<i>Description</i>
Frost Advisory	Issued when temperatures, winds, and sky cover are favorable for frost development. This is most likely when temperatures are less than or equal to 36 degrees.
Freeze Watch	Freeze Watches are issued a few days ahead of a cold front in which temperatures are expected to be 29-32 degrees.
Freeze Warning	Freeze Warnings are issued when low temperatures are expected to be 29-32 degrees.
Hard Freeze Watch	Hard Freeze Watches are issued days ahead of a cold front in which temperatures are expected to be 28 degrees or less.
Hard Freeze Warning	Hard Freeze Warnings issued when temperatures are expected to be 28 degrees or less



### Impacts and Vulnerability

Impacts of extreme temperatures affect the population's health, rather than structures. The extent of damage to infrastructure would consist of broken pipes, cracks in the pavement due to expansion/contraction, and power outages.

Extreme heat can impact health in a variety of ways. High temperatures can trigger a variety of heat stress conditions such as heat stroke, heat exhaustion, heat cramps, sunburn, and heat rash. High relative humidity exacerbates these conditions. High humidity also reduces the ability of sweat to evaporate from the skin, reducing the body's ability to cool itself. Prolonged exposure to heat can necessitate medical intervention; in extreme cases, prolonged exposure could cause death. Since 1999, 97 people have died of heat-related illnesses in Ohio (CDC, 2019). The table below outlines the possible heat disorders for people in high-risk groups (i.e., children, elderly, etc.).

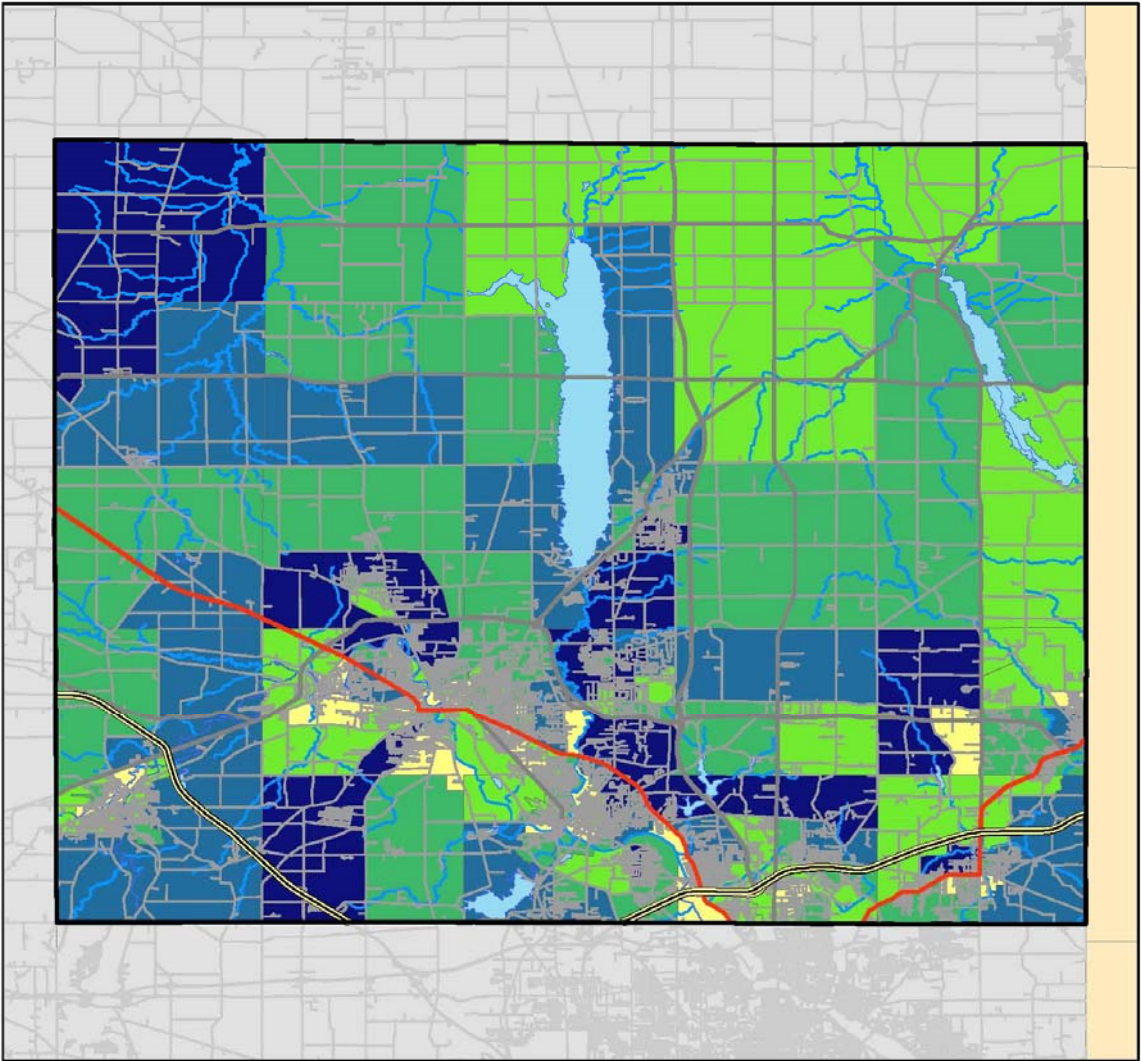
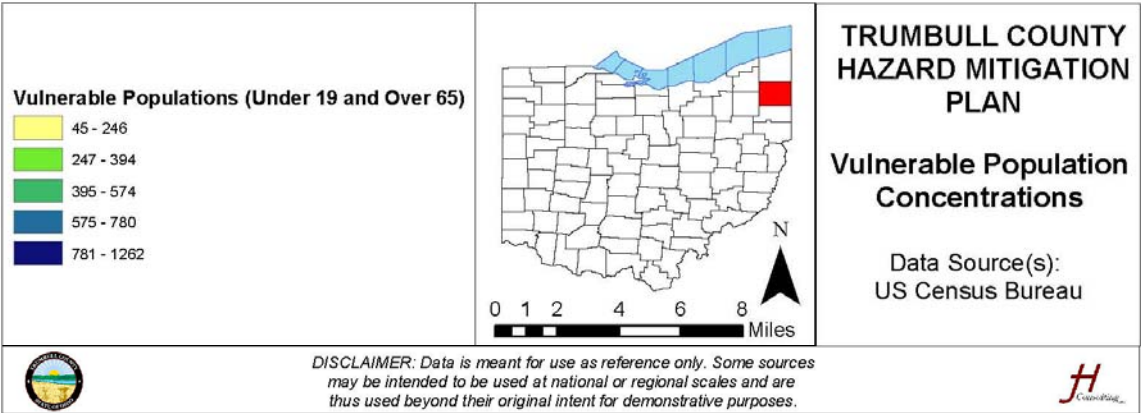
HEAT RISKS	
<i>Heat Index</i>	<i>Possible Heat Disorders for People in High-Risk Groups</i>
80°F-90°F	Fatigue possible with prolonged exposure of physical activity
90°F -105°F	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
105°F -130°F	Sunstroke, heat cramps, or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity
130°F +	Heat/Sunstroke highly likely with continued exposure

Source: <https://nws.weather.gov/blog/nwsdesmoines/2014/06/06/iowa-heat-awareness-day-june-5-2014-2/>

Extreme cold conditions also impact human health in several ways. Cold weather acts as a vasoconstrictor, meaning it constricts blood vessels and raises the risk of a heart attack. Prolonged exposure to cold weather can cause cold-related illnesses, which include hypothermia, frostbite, trench foot/immersion foot, and chilblains. Extreme temperatures of either type, heat or cold, appear to impact children and the elderly more severely than other population groups. The following maps show concentrations of the elderly (i.e., 65 and over) as well as children (i.e., under 19) in Trumbull County.







### Past Mitigation Efforts: Temperature Extreme

- The local ARC chapter, in coordination with public health authorities, has identified cooling centers for vulnerable populations with air conditioning and developed an outreach program encouraging at-risk people to use the centers.
- Local officials also purchased tents with water sprays for use throughout the county.

### Historical Occurrences

According to the NOAA'S National Centers for Environmental Information, there have been eight extreme cold events in Trumbull County since 2009, for an average of 0.73 incidents per year. There have been no recorded extreme heat events.

HISTORICAL OCCURRENCES EXTREME TEMPERATURES (Source: NCEI Storm Events Database)						
<i>Location</i>	<i>Date</i>	<i>Type</i>	<i>Injuries</i>	<i>Deaths</i>	<i>Property Damage</i>	<i>Crop Damage</i>
Trumbull (Zone)	1/15/2009	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	3/27/2012	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	4/29/2012	Extreme Cold/wind Chill	0	0	\$200,000	\$0
Trumbull (Zone)	1/6/2014	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	1/28/2014	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	2/15/2015	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	2/20/2015	Extreme Cold/wind Chill	0	0	\$0	\$0
Trumbull (Zone)	1/30/2019	Extreme Cold/wind Chill	0	0	\$0	\$0
<b>Totals</b>			<b>0</b>	<b>0</b>	<b>\$200,000</b>	<b>\$0</b>

### Loss and Damages

According to the NCEI, there has been one instance of extreme cold that resulted in \$200,000 in property damage. Temperatures fell to 26°F for several hours and resulted in damage to vegetation.

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from extreme temperatures. Trumbull County conducted an online survey for the public to share its thoughts on hazard



vulnerabilities. The following table presents the results of that survey regarding extreme temperatures.


PUBLIC SENTIMENT, EXTREME TEMPERATURES – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Extreme Temperatures	92 (26.82%)	142 (41.40%)	73 (21.28%)	36 (10.50%)	343
In the past ten years, do you remember this hazard occurring in your community?				224 (64.93%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				151 (45.48%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				21 (6.69%)	314

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

TEMPERATURE EXTREMES VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	4	High	Since 2009, there have been eight extreme temperature occurrences, for an average of 0.73 per year. Data indicate, however, that there have been years in that span without an incident.
Response	1	Less than half a day	Extreme temperatures likely will not result in a large-scale mobilized community response.
Onset	1	Over 24 hours	Extreme temperatures are forecasted more than a day in advance and can onset slowly (over days or weeks).
Magnitude	1	Less than 10% of land area affected	Though 100% of the county's population would feel the extreme temperatures, the impacts would likely be in pockets.
Business	1	Less than 24 hours	Businesses and critical facilities would not typically be interrupted during an extreme temperature event.
Human	2	Some Injuries	As mentioned above, extreme temperatures can have adverse impacts on human health. Injuries/illnesses from extreme temperatures will be minimal.
Property	1	Less than 10% of property affected	Extreme temperatures would not adversely impact property.
<b>Total</b>	<b>11</b>	<b>Low</b>	

## 2.0 RISK ASSESSMENT

### 2.2.13 Terrorism

Terrorism refers to the use of force against persons or property with the intent to intimidate or coerce, and includes threats, assassination, kidnapping, hijacking, bombings or bomb threats, cyber-attacks, and use of chemical, biological, nuclear, and radiological weapons.			
	<b>Vulnerability</b>	<b>Period of Occurrence:</b> Acts of terrorism can occur at any time	<b>Hazard Index Ranking:</b> Low
		<b>Warning Time:</b> None	<b>State Risk Ranking:</b> 2- Medium
		<b>Probability:</b> Unlikely	<b>Severity:</b> Critical
		<b>Type of Hazard:</b> Human-caused	<b>Disaster Declarations:</b> N/A

#### Hazard Overview

Terrorism is the use of force or violence against persons or property with the intent to intimidate or coerce. Acts of terrorism include threats of terrorism, assassinations, kidnappings, hijackings, bomb scares and bombings, cyber-attacks (computer-based), and the use of chemical, biological, nuclear, and radiological weapons. Increasingly, cyberattacks have become a more pressing concern for governments across America.

Civil disturbances are acts of violence that law enforcement does not consider routine, but might not rise to the level of a terrorist incident. Civil disturbances can include the following topics.

- **Active Assailant:** “An active assailant is an armed person(s) who uses any type of weapon to inflict serious harm and/or deadly physical force on others in public and continues to do so while having access to additional victims. Examples of active assailant attacks include an active shooter incident, mass stabbings, explosives, vehicle-as-a-weapon, fire-as-a-weapon, and so forth. (These are also known as active shooter events, hostile incidents, mass violence attacks, rampage violence, spree killings, and so forth.)” (North Carolina Active Assailant and Active Shooter Work Group, 2017).
- **Bomb Threat:** A bomb threat is generally a threat to detonate an explosive or incendiary device to cause property damage, death, or injuries, whether or not such a device exists (Louisiana State Police, 2013).

- **Riot:** Riots, also referred to as “social unrest,” are group protests that become or have the potential to become violent. Riots are considered the most elementary form of collective violence and can include gang violence, coups, rebellions, and revolutions.

### Location and Extent

High-risk targets for terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Trumbull County is home to three primary water sources, Youngstown Airforce Reserve base, and large public gatherings. Trumbull County also exists within the 50-mile nuclear fallout zone, shown below, of the Perry Nuclear Plant in Lake County, Ohio.



### Impacts and Vulnerability

Planners cannot predict terrorist events in the same way that they can natural hazard occurrences and risk areas. Terrorism can also take many forms and involves a range of political and personal agendas. Potentially vulnerable areas include critical facilities (e.g., water plants), and infrastructure (e.g., local electricity grid hardware).

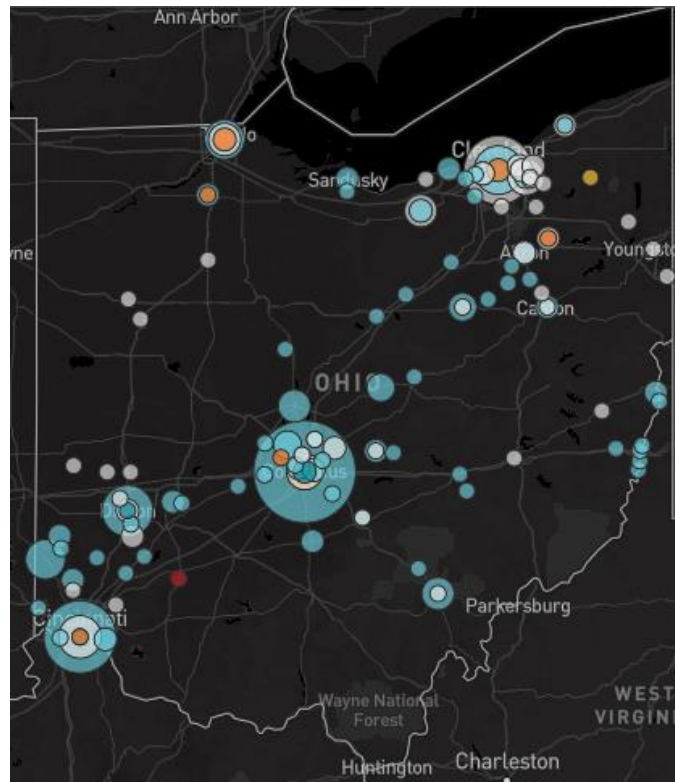


### Past Mitigation Efforts: Terrorism

- Broadly, local first responders have received grants since 1998 for the purchase of essential response equipment.
- Local officials have participated in national and local exercises of plans and procedures.
- The Trumbull County WMD Committee identified potential terrorist targets and added a terrorism annex to the *Trumbull County Emergency Operations Plan*.

### Historical Occurrences

The Anti-Defamation League (ADL), an anti-hate organization formed in 1913, records instances of extremist and anti-Semitic incidents in the United States. From 2002 to 2019, the ADL recorded 285 incidents in Ohio, including one extremist murder, 13 terrorist attacks and plots, one extremist police shootout, four white supremacist events, 183 white supremacist propaganda pieces, and 91 anti-Semitic incidents. The following depicts the locations of these events throughout the state.



Trumbull County has experienced terrorist threats in the past, including several bomb threats, as well as the disposal of a bomb placed in a woman's car.

<b>TERRORISM THREATS TRUMBULL COUNTY</b>			
<i>Date</i>	<i>Location</i>	<i>Threat Location</i>	<i>Type of Threat</i>
January 2020	Kinsman	Retail	Bomb Threat
May 2019	Warren	Residence	Active Bomb
December 2018	Warren	Law Enforcement Agency	Bomb Threat
December 2018	Trumbull	Courthouse	Bomb Threat
February 2018	Niles	High School	Bomb Threat
April 2016	Warren	High School	Bomb Threat

### Loss and Damages

The costs of terrorism can be direct or indirect. Direct losses include the value of structures damaged, lives lost, injuries sustained, lost wages, destroyed goods, cleanup, and reduced commerce (Sandler & Enders, 2014). Indirect costs include attack-related subsequent expenses, such as higher insurance premiums, enhanced security costs, counterterrorism expenses, and future lost commerce.

In contrast to most natural hazards, terrorism incidents primarily cause harm to the human population. According to FEMA's benefit-cost analysis tool, the value of human life is \$6.9 million. Though no deaths have occurred in Trumbull County, it comprises 1.71% of Ohio's population. Trumbull County's economic losses from a terrorist event, per the benefit-cost tool, could be \$117,990.

<b>TERRORISM EXPOSURE ESTIMATE – SHARPP DATA ENTRY</b>		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	1	\$85,600
Non-Residential	1	\$27,900
Critical Facilities	1	\$4,500
<b>TOTALS</b>	<b>3</b>	<b>\$118,000</b>

### Vulnerability Assessment

This section summarizes the vulnerability to Trumbull County from terrorism. Trumbull County conducted an online survey for the public to share its thoughts on hazard vulnerabilities. The following table presents the results of that survey regarding terrorism.



PUBLIC SENTIMENT, TERRORISM – TRUMBULL COUNTY					
Hazard	Level of Concern				Total Responses
	Not at All	Somewhat	Concerned	Very	
Terrorism	N/A	N/A	N/A	N/A	N/A
In the past ten years, do you remember this hazard occurring in your community?				2 (0.58%)	345
Have you noticed an increase in the occurrences or intensity of this hazard?				13 (3.92%)	332
Have you noticed a decrease in the occurrences or intensity of this hazard?				26 (8.28%)	314

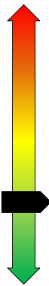
The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.

TERRORISM VULNERABILITY SUMMARY			
Category	Points	Description	Notes
Frequency	1	None	While there have been threats of terrorism, there have been no acts of terrorism in Trumbull County.
Response	2	One day	Based on the threats received in Trumbull County, the necessary responses have been short duration. Planners recognize, though, that a more substantial incident could necessitate a much larger response.
Onset	4	Less than 6 hours	Terrorism incidents cannot be predicted or forecasted, like many natural hazards.
Magnitude	1	Less than 10% of land area affected	Acts of terrorism typically target specific places or events. While significant, an event would affect a small land area.
Business	1	Less than 24 hours	As noted above, evidence provided by historical threats indicates a significant business closure would not be likely.
Human	4	Multiple deaths	In the event of a terrorist incident, there could be numerous severe injuries or fatalities.
Property	1	Less than 10% of property affected	Again, acts of terrorism are specific to a set target and would not cause widespread property damage.
<b>Total</b>	<b>14</b>	<b>Low</b>	



## 2.0 RISK ASSESSMENT

### 2.2.14 Wildfire

Uncontrolled fires that spread rapidly through vegetative fuels, exposing and possibly consuming structures.			
	<b>Vulnerability</b>	<b>Period of Occurrence:</b> Most common in Spring and Fall	<b>Hazard Index Ranking:</b> Low
	<b>Warning Time:</b> Sudden. Less than 24 hours	<b>State Risk Ranking:</b> 3-Medium	
	<b>Probability:</b> Not likely	<b>Severity:</b> Low	
	<b>Type of Hazard:</b> Natural	<b>Disaster Declarations:</b> None	

#### Hazard Overview

A wildfire is a raging, uncontrolled fire that spreads rapidly through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that is visible for miles. Wildfires can occur at any time of the year but mostly happen during prolonged, dry, hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Human carelessness, negligence, and ignorance cause most wildfires. In some instances, lightning strikes can precipitate spontaneous combustion. ODNR Division of Forestry estimates that more than 15,000 wildfire and natural fuel fires occur in any given year, caused mainly by people carelessly burning debris.

#### Location and Extent

Trumbull County experiences several fires each year, most of which are easily controlled by local fire departments and do not reach the threshold for inclusion as a “wildfire.” Like all other fires, wildfires require four conditions to start: an available fuel source (including dried leaves or grass), dry conditions (including low relative humidity), an ignition source, and a chemical reaction to sustain combustion. The first two conditions typically occur in Ohio in the spring and fall, when trees are bare, and sunlight can warm the ground and dry surface fuels.

The National Fire Danger Rating System is a system that allows fire officials to estimate current fire danger for a given area based on available fuels, weather, topography, and risks.

- **Low:** When the fire danger is “low,” fuels do not ignite easily, and a more intense heat

source is needed to start fires. Dry grasslands may burn quickly, but wood fires will spread slowly, and control of these fires is typically not difficult.

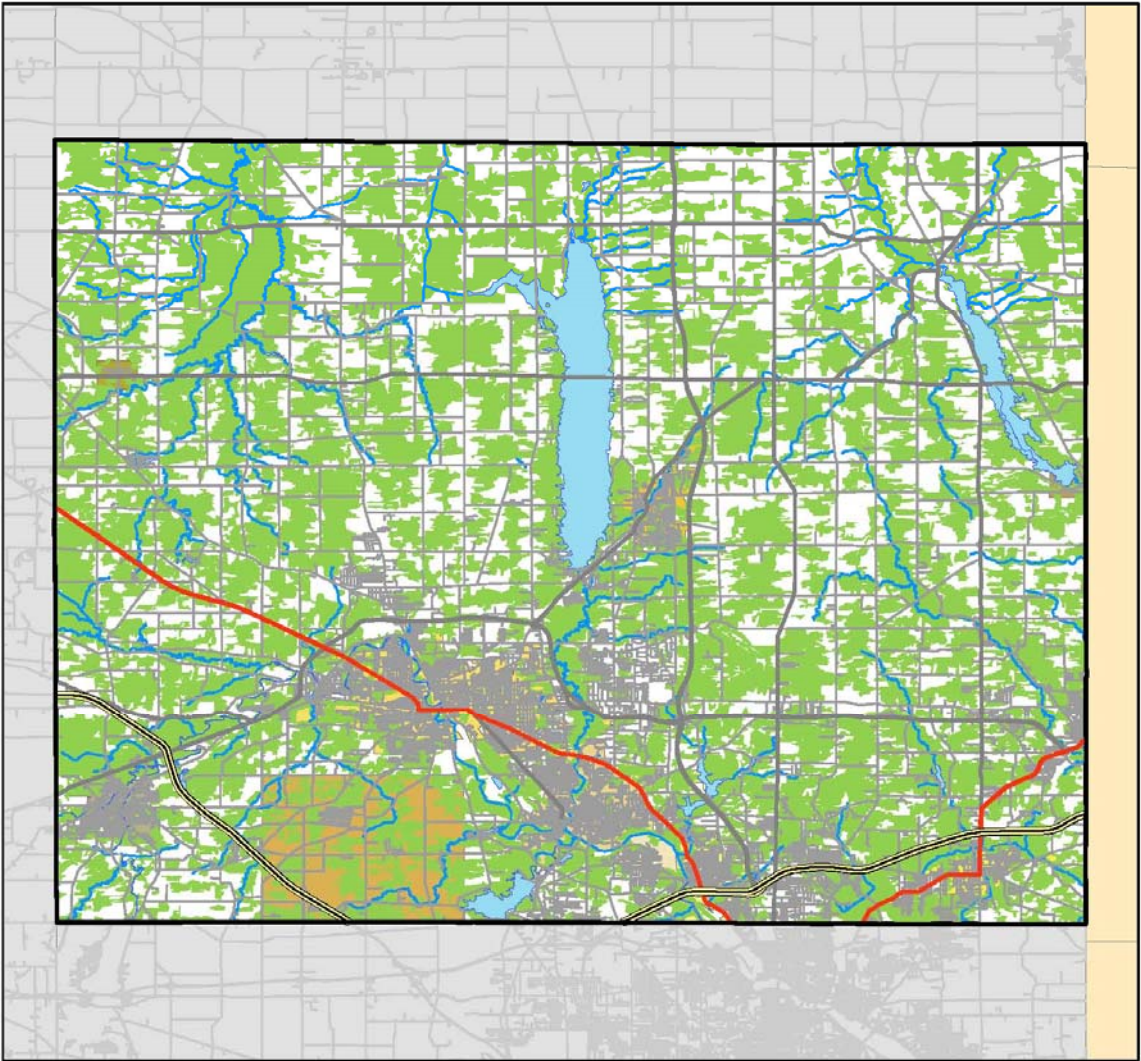
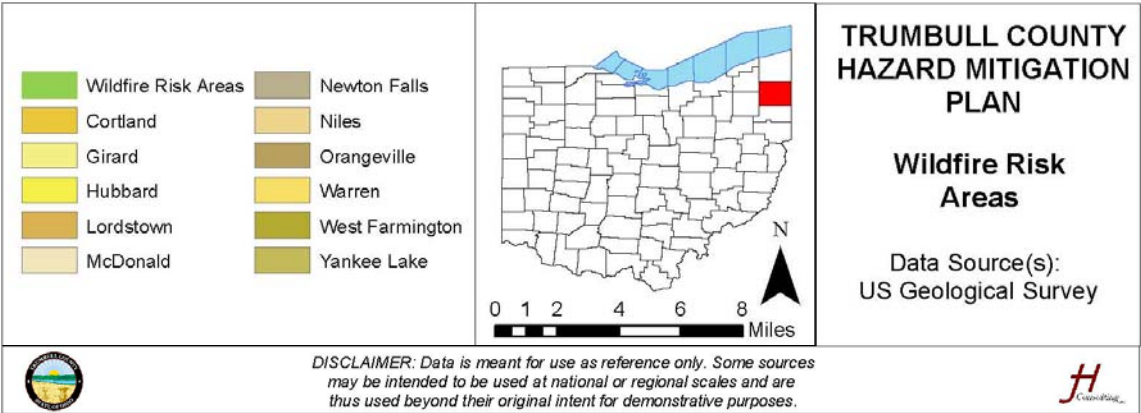
- **Moderate:** When the fire danger is “moderate,” fires can start from accidental causes, but the number of fire starts is generally low. If a fire does start on open, dry grassland, it can spread quickly on windy days. Most wood fires spread slowly or moderately. The average fire intensity will be moderate, except in heavy concentrations of fuel. Fires are still not likely to become severe and are typically easy to control.
- **High:** When the fire danger is “high,” fires can start easily from most fuel sources. Unattended campfires and brush fires are likely to escape and can spread quickly. Fires can become serious and difficult to control unless extinguished when they are still small.
- **Very High:** When the fire danger is “very high,” fires will start easily from most fuel sources, spread rapidly, and quickly increase in intensity following ignition. These fires can be challenging to control and will often become much more extensive and longer-lasting than fires in lower categories.
- **Extreme:** When the fire danger reaches “extreme,” fires of all types can start quickly and burn intensely. All fires are potentially dangerous and can spread rapidly with intense burning. Small fires become larger much faster than at the “very high” level. Long-distance fire spotting is likely. These fires can become dangerous and often last for several days.

### Impacts and Vulnerability

A major cause of forest fires in Ohio is debris burning. These fires typically start small but spread by wind to dead grass and leaves bordering woodlands. The number and severity of wildfires depend on external factors such as drought, human activity, wind activity, and the amount of available fuel. Wildfires can burn less than one acre up to hundreds of acres of land.

An area of concern for wildfires is The Grand River Wildlife Area, a 7,446-acre tract that is 49% open land, cropland, and brushland, used for recreation. Second growth hardwoods comprise roughly 46% of the area, while the remaining 5% is wetland and water. Though the area is approximately 1,500 acres smaller in than the Mosquito Creek Wildlife Area, the latter is mostly poorly-drained marshes and swamplands (ODNR, 2020).

The map below shows the areas in Trumbull County that could be susceptible to wildfire conditions. It shows areas with potential fuels (i.e., deciduous forest, evergreen forest, herbaceous wetlands, urban/recreational grasses, and woody wetlands).



### Past Mitigation Efforts: Wildfire

- Local fire departments coordinate with the State Fire Marshal's Office as part of an on-going effort to distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires.

### Historical Occurrences

According to ODNR, there have been no wildfires in Trumbull County since 1997. Further, NCEI does not report any fires in Trumbull County since 1950. ODNR reported two wildfires in neighboring Geauga County, which resulted in no monetary damage. These figures may be due to in part by ODNR's wildfire reporting not being mandatory, only encouraged.

### Loss and Damages

ODNR Division of Forestry Wildfire Protection Area Region 2, which includes Trumbull County, has experienced minimal damage within the last decade.

HISTORIC WILDFIRE OCCURRENCES, ODNR DIVISION OF FORESTRY REGION 2 (1997-2007)				
<i>County</i>	<i>Events</i>	<i>Acres</i>	<i>Damage</i>	<i>Loss Avoided</i>
Ashland	19	12.28	\$200.00	\$325,000.00
Ashtabula	0	0	\$0.00	\$0.00
Butler	0	0	\$0.00	\$0.00
Cuyahoga	0	0	\$0.00	\$0.00
Delaware	0	0	\$0.00	\$0.00
Fairfield	33	70.31	\$250.00	\$155,000.00
Franklin	0	0	\$0.00	\$0.00
Gauga	2	0.3	\$0.00	\$0.00
Greene	0	0	\$0.00	\$0.00
Hamilton	0	0	\$0.00	\$0.00
Knox	122	230.11	\$1,200.00	\$1,530,000.00
Lake	2	775	\$11,000.00	\$50,000.00
Licking	126	302.77	\$26,400.00	\$120,000.00
Lorain	0	0	\$0.00	\$0.00
Mahoning	0	0	\$0.00	\$0.00
Medina	0	0	\$0.00	\$0.00
Montgomery	0	0	\$0.00	\$0.00
Pickaway	7	34.25	\$0.00	\$0.00
Portage	0	0	\$0.00	\$0.00
Richland	39	159.45	\$16,450.00	\$575,000.00
Stark	52	222.87	\$100.00	\$0.00
Summit	0	0	\$0.00	\$0.00
Trumbull	0	0	\$0.00	\$0.00
Warren	0	0	\$0.00	\$0.00
<b>TOTALS</b>	<b>402</b>	<b>1807.34</b>	<b>\$55,600</b>	<b>\$2,755,000</b>



There have been over 400 wildfires of varying degrees in Ohio between 1997 and 2007; however, there have been no wildfires in Trumbull County during this period. Planners used a worst-case scenario value of \$1.5 million (based on the Knox County losses avoided figure above) to estimate the potential damages for the county.

WILDFIRE FAILURE LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	2	\$1,109,600
Non-Residential	1	\$362,400
Critical Facilities	1	\$58,000
<b>TOTALS</b>	<b>4</b>	<b>\$1,530,000</b>

### Vulnerability Assessment

The following table identifies the assets located in wildfire risk areas.

ASSET	ADDRESS	CITY	ASSET TYPE		
			<i>Infrastructure</i>	<i>Critical Facilities</i>	<i>Cultural Resources</i>
Braceville Twp.	4834 State Route 82	Newton Falls		X	
Briarfield of Cortland	4250 Sodom Hutchings Road	Cortland			X
Brookfield Elementary	614 Bedford Road SE	Brookfield		X	
Brookfield High School	614 Bedford Road SE	Brookfield		X	
Brookfield Local Schools	614 Bedford Road SE	Brookfield		X	
Brookfield Middle School	614 Bedford Road SE	Brookfield		X	
Brookfield Twp.	6844 Strimbu Drive	Brookfield		X	
Brookfield Twp. PD	6844 Strimbu Drive	Brookfield		X	
Community Health Care at the Ridge	3379 Main Street	Mineral Ridge		X	
E.J. Blott Elementary/Guy Middle	4003 Shady Road	Youngstown		X	
Girard High School	1244 Shannon Road	Girard		X	
Girard Junior High	1244 Shannon Road	Girard		X	
Guy Middle School	4115 Shady Road	Youngstown		X	
Howland Springs Primary	9500 Howland Springs Road	Warren		X	
Hubbard Elementary	150 Hall Avenue	Hubbard		X	



ASSET	ADDRESS	CITY	ASSET TYPE		
			Infrastructure	Critical Facilities	Cultural Resources
Hubbard Exempted Village Schools	150 Hall Avenue	Hubbard		X	
Hubbard Twp.	2600 Elmwood Drive	Hubbard		X	
Johnston Twp. PD	5922 Warren Road	Cortland		X	
LaBrae High School	1001 North Leavitt	Leavittsburg		X	
LaBrae Intermediate	1001 North Leavitt	Leavittsburg		X	
LaBrae Local Schools	1001 North Leavitt	Leavittsburg		X	
LaBrae Middle School	1001 North Leavitt	Leavittsburg		X	
Liberty Local Schools	4115 Shady Road	Youngstown		X	
Liberty Twp.	1315 Churchill Hubbard Road	Liberty		X	
Liberty Twp. FD	4001 Logan Way	Youngstown		X	
Ohio Army National Guard	1436 State Route 534 SW	Newton Falls		X	
Trumbull County EMA	640 North River Road NW	Warren		X	
Trumbull County Engineer	650 North River Road NW	Warren		X	
Youngstown-Warren Regional Airport	1453 Youngstown Kingsville Road	Vienna		X	

The following table assigns point totals based on the research presented in this profile for each category that appears in Ohio EMA's SHARPP tool.



WILDFIRE VULNERABILITY SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	2	Low	Wildfires in Trumbull are rare. There is precedent for them, though none have reached a significant level since 1997.
Response	2	One day	Wildfires in the region are typically small and easily-contained.
Onset	4	Less than 6 hours	Officials can easily predict wildfire conditions, but fires themselves occur with no notice.
Magnitude	1	Less than 10% of land area affected	The average wildfire burns 3.27 acres, which is substantially less than 10% of Trumbull County's land area.
Business	1	Less than 24 hours	Most wildfires in Trumbull County are small and would not affect the local economy.
Human	1	Minor injuries	Generally, the risk of injury or death due to wildfire is low. First responders to the event may experience adverse health effects.
Property	1	Less than 10% of property affected	The average wildfire in Trumbull County would burn less than 10% of the county's land area. By proxy, wildfires would impact less than 10% of the property in the county.
<b>Total</b>	<b>12</b>	<b>Low</b>	



## 2.0 RISK ASSESSMENT

### 2.3 Hazard Rankings

One of the components of the risk assessment is to determine the risk of and vulnerability to hazards, determined by the probability of occurrence and the potential severity of hazard events. This process helps identify which hazards pose the most significant concerns to Trumbull County and its municipalities. The probability of an event derives from the number of historical events within a certain timeframe. Timeframes vary based on information available from different sources (and they can vary widely).

The Ohio State Hazard Analysis Resource and Planning Portal (SHARPP) supports an overall ranking for the hazards considered in the state's mitigation plans. Like the SHARPP tool, this plan recognizes the value of implementing several categories to determine the overall risk and vulnerability. The following narrative and tables describe the categories utilized by this plan and how they relate to the available data.

Historical occurrences inform all calculations, not worst-case scenarios. In cases with zero occurrences, other available data (which varies across the hazards and is outlined in each profile) support determinations.

"Frequency" refers to the number of times a hazard occurs in a specific period (based on available historical data). In most instances, the total occurrences (e.g., three occurrences) are divided by the length of time (in years) that data is available (e.g., ten years). Thus three occurrences divided by ten years equals 0.3. The table above translates the resultant numeric values into a narrative description of frequency (that corresponds to SHARPP categories). In the example described here, the hazard would have a 'low' frequency. At times, no historical data is available; in these cases, the hazard receives the lowest possible points for

FREQUENCY			
<i>Value</i>	<i>Score</i>	<i>Description</i>	<i>Definition</i>
.76 - >1.0	5	Excessive	Will occur during a year (SHARPP: hazard or event resulted in nine or more declarations)
.51 - .75	4	High	Likely to occur in a year (SHARPP: hazard or event resulted in six to eight declarations)
.26 - .50	3	Medium	May (or may not) occur in a year (SHARPP: hazard or event resulted in three to five declarations)
0 - .25	2	Low	Unlikely to occur in a year (SHARPP: hazard or event resulted in one to two declarations)
0	1	None	So unlikely that it can be assumed it will not occur in a year (SHARPP: hazards or events result in no local disaster declarations)



the category (i.e., one). The table below presents the remainder of the categories (including “frequency”).

SHARPP CATEGORIES							
	<i>Frequency</i>	<i>Response</i>	<i>Onset</i>	<i>Magnitude</i>	<i>Business</i>	<i>Human</i>	<i>Property</i>
1	None	Less than half a day	Over 24 hours	Localized (Less than 10% of land area affected)	Less than 24 hours	Minimum (minor injuries)	Less than 10% of property affected
2	Low	One day	12-24 hours	Limited (10-25% of land area affected)	One week	Low (some injuries)	10-25% of property affected
3	Medium	One week	6-12 hours	Critical (25-50% of land area affected)	At least two weeks	Medium (multiple severe injuries)	25-50% of property affected
4	High	One month	Less than 6 hours	Catastrophic (More than 50% of land area affected)	More than 30 days	High (multiple deaths)	More than 50% of property affected
5	Excessive	More than one month	N/A	N/A	N/A	N/A	N/A

Each hazard receives a score for each category that corresponds to the number in the far left column. Hazards receive scores of between 7 (i.e., all seven categories receive a value of one) and 30 points (i.e., all seven categories receive a value of four or five). The list below represents an overall range by which planners ranked all of the hazards in this plan.

<u><i>Range of Points (Score)</i></u>	<u><i>Hazard Ranking</i></u>
7 - 10	Lowest
11 - 15	Low
16 - 20	Medium
21 - 25	High
26 - 30	Highest

The following table summarizes risk and vulnerability rankings for all of the hazards included in the plan. It outlines the points each hazard received per the above methodology.

SUMMARY OF HAZARD RANKINGS									
<i>Hazard</i>	<i>Risk</i>	Frequency	Response	Onset	Magnitude	Business	Human	Property	Total
Dam & Levee Failure	Lowest	2	2	1	1	1	1	1	9
Drought	Low	1	4	1	3	1	1	1	12
Earthquake	Low	2	2	4	1	1	1	1	12
Epidemic	Medium	5	3	1	1	3	2	1	16
Flooding	High	5	4	2	5	2	2	1	21
Hailstorms	Low	5	1	2	4	1	1	1	15
Infestation	Medium	5	5	1	2	1	1	1	16
Geologic Hazards	Lowest	2	1	1	2	1	1	1	9
Severe Thunderstorms	Medium	5	2	2	4	1	1	1	16
Severe Wind & Tornado	Medium	5	3	4	1	2	2	1	18
Severe Winter Storms	Medium	5	3	2	4	1	1	4	20
Temperature Extremes	Low	4	1	1	1	1	2	1	11
Terrorism	Low	1	2	4	1	1	4	1	14
Wildfire	Low	2	2	4	1	1	1	1	12



## 2.0 RISK ASSESSMENT

### 2.4 Development Trends and Complicating Variables

This section examines various demographic and other development trends in Trumbull County to contextualize future risk to the hazards identified by this plan.

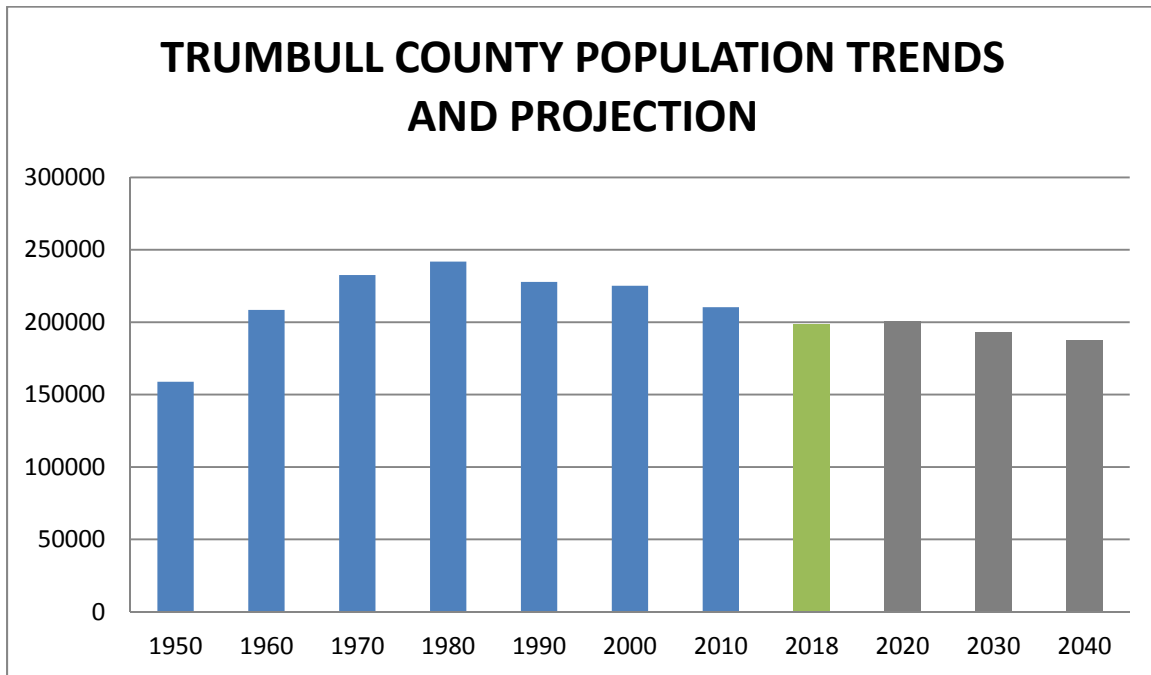
#### 2.4.1 Development Trends

§ 201.6(c)(2)(ii)(c)	Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land-use decisions.
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##### Population

<b>Hazard Mitigation Relevance:</b> People are the essential assets in a community. Understanding population trends and concentrations assists in describing current and future vulnerability, as well as in the design of outreach and to target preparedness, response, and mitigation actions. Also, understanding where people reside or visit in a community informs the appropriate locations for mitigation projects (FEMA, 2013).
---

Trumbull County's population has fluctuated since the mid-1900s. As the graphic below indicates, the population grew steadily (per decennial Census data) between 1950 and 1980. Since then, the population has declined with each decennial census. Projections for 2020, 2030, and 2040 show a continuing decline.



Source: Trumbull County Profile prepared by the Ohio Development Services Agency, Office of Research,  
<https://development.ohio.gov/files/research/C1079.pdf>

The following table assigns figures to the bars on the above graph.

TRUMBULL COUNTY POPULATION CHANGE, 1950-2040											
<i>Jurisdiction</i>	<i>1950</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2018</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>
Trumbull County	158,915	208,526	232,579	241,863	227,813	225,116	210,312	198,627	200,840	193,360	187,250

It is also helpful to consider population trends in the population clusters throughout Trumbull County. The Ohio Development Services Agency identifies the following as the “largest places” (2020) in Trumbull County.

POPULATION CHANGE, LARGEST PLACES			
<i>Place</i>	<i>2010 Pop.</i>	<i>Est. 2018</i>	<i>% Change</i>
Warren City	41,557	38,382	-31.75
Niles City	19,266	18,325	-9.41
Howland Twp. UB	17,327	16,519	-8.08
Liberty Twp. UB	12,062	11,489	-5.73
Girard City	9,958	9,314	-6.44
Champion Township	9,612	9,113	-4.99
Brookfield Twp. UB	8,775	8,330	-4.45
Weathersfield Twp. UB	8,400	8,062	-3.38
Hubbard City	7,874	7,461	-4.13
Cortland City	7,104	6,809	-2.95

As shown in the above table, the 2018 estimated populations of all ten places declined from the 2010 Census estimate. While this data is difficult to interpret for hazard mitigation purposes, it suggests that less local funding will be available in regular jurisdictional budgets for special mitigation projects.

Residential construction has remained mostly steady in Trumbull County, except for a spike in 2016. According to the Ohio Development Services Agency, residential construction averaged 89.25 units annually in 2014, 2015, 2017, and 2018. The following table presents the residential construction data.

RESIDENTIAL CONSTRUCTION 2014-2018					
<i>Criterion</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>
Total Units	88	77	241	98	94
Total Valuation (000)	\$16,079	\$13,364	\$29,871	\$16,022	\$16,217
Single-Unit Buildings	88	77	106	84	86
Avg. Cost per Single Unit Building	\$182,717	\$173,559	\$179,525	\$173,735	\$177,404
Multi-Unit Buildings	0	0	135	14	8
Avg. Cost per Multi-Unit Bldg.	\$0	\$0	\$80,309	\$102,023	\$120,030

Local data suggest that land bank projects in the City of Warren were active in 2016 (Trumbull Neighborhood Partnership, 2016), and this activity could have contributed to the spike in residential construction.

### Economic and Business Development

**Hazard Mitigation Relevance:** Describing economic and business development trends helps to assess dependencies between economic sectors and the infrastructure needed to support them (FEMA, 2013).

The Office of Research within Ohio's Development Services Agency noted changes in the number of establishments and employment between 2012 and 2017. The following table presents the data.

ESTABLISHMENTS, EMPLOYMENT, AND WAGES BY SECTOR, 2012 AND 2017 COMPARISON								
Sector	Number of Establishments		Average Employment		Total Wages		Average Weekly Wage	
	Since 2012 (%)	2017	Since 2012 (%)	2017	Since 2012 (%)	2017 (\$)	Since 2012 (%)	2017 (\$)
Private Sector	-2.8%	4,013	-5.4%	57,460	-1.7%	\$2,257,688,041	4.0%	\$756
Goods-Producing	-2.6%	631	-18.6%	13,452	-13.5%	\$855,444,305	6.3%	1,223
Natural Resources & Mining	17.9%	33	1.9%	165	17.5%	\$5,919,043	15.2%	\$690
Construction	-3.5%	359	-11.5%	2,482	0.4%	\$124,053,260	13.5%	\$961
Manufacturing	-3.6%	239	-20.6%	10,805	-15.6%	\$725,472,002	5.8%	\$1,291
Service-Producing	-2.8%	3,382	-0.5%	44,007	7.2%	\$1,402,243,736	7.9%	\$613
Trade, Transportation & Utilities	-2.0%	1,000	5.3%	14,868	14.7%	\$501,086,805	8.9%	\$648
Information	-15.8%	32	-19.2%	445	-9.8%	\$18,496,991	11.7%	\$799
Financial Services	-4.3%	381	-9.5%	2,179	10.3%	\$96,513,576	21.9%	\$852
Professional & Business Services	-10.2%	544	-10.1%	5,777	-4.9%	\$212,630,414	5.8%	\$708
Education & Health Services	10.0%	616	-3.9%	11,005	2.0%	\$413,724,802	6.0%	\$723
Leisure & Hospitality	-2.8%	451	8.0%	7,660	20.8%	\$105,115,773	11.9%	\$264
Other Services	-7.8%	356	-5.6%	2,069	17.8%	\$54,338,943	24.7%	\$505
Federal Government			4.4%	523	4.8%	\$29,162,822	0.4%	\$1,073
State Government			10.6%	790	23.7%	\$46,271,400	11.7%	\$1,126
Local Government			-1.5%	8,105	4.7%	\$337,149,533	6.4%	\$800

The population data presented above show a decline across the entire county. There has been speculation that job losses, particularly in the manufacturing sector, have led to outward population migration, as the above table would largely support. However, the Ohio Department of Development reports that the county's unemployment rate has remained steady since 2014.

- **2014:** 7.3% (U.S. – 6.2%)
- **2015:** 6.5% (U.S. – 5.3%)
- **2016:** 6.8% (U.S. – 4.9%)
- **2017:** 7.2% (U.S. – 4.4%)
- **2018:** 6.2% (U.S. – 3.9%)



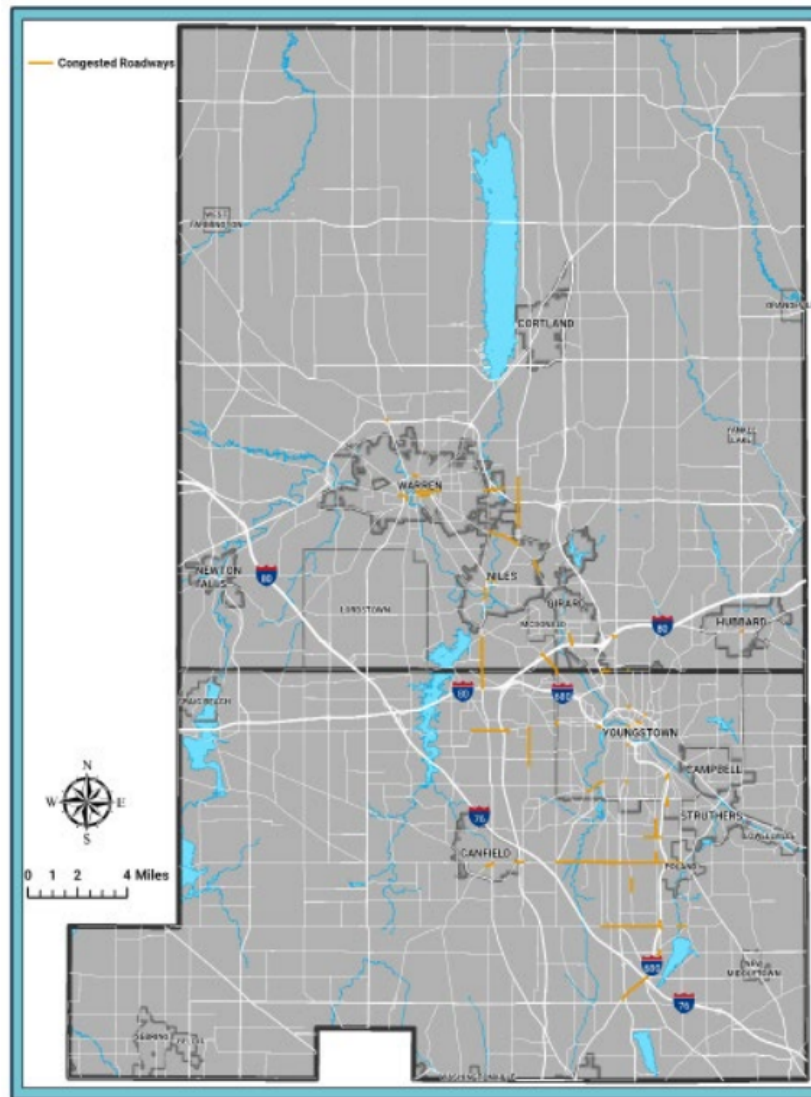
Though Trumbull County's rate is running higher than the national rate, the data above suggests that there is not an influx of unemployment persons that could be considered "vulnerable."

### Transportation

**Hazard Mitigation Relevance:** The transportation infrastructure is a vital community asset, particularly in the response and recovery phases. Ensuring open arterial routes helps with emergency response, the movement of life-saving (or sustaining) supplies, etc. Identifying critical transportation assets and understanding their potential vulnerabilities can inform projects designed to support their continuity in emergencies.

The Eastgate Regional Council of Governments maintains the metropolitan transportation plan (MTP) for Trumbull and Mahoning Counties. That plan is robust, and it includes substantial information relevant to hazard mitigation. A significant consideration in the MTP is a congestion analysis. The following graphic, taken from p. 78 of the plan, highlights congested areas in the Eastgate region.

EXHIBIT AD: CONGESTED ROADWAYS



The plan defines congestion as “the condition where a roadway’s usage increases, causing slower speeds, longer trip times, and increased vehicular queuing” (p. 77). Congestion is relevant to hazard mitigation because it can impact the ability to respond to emergency incidents. Responders may have difficulty accessing congested areas, and conversely, affected residents may experience challenges evacuating or getting to shelter in those areas. It can contribute to increased traffic accidents. Congested areas also signal to planners areas that are increasing in density, either from the building stock or population, and this increase can result in implications for hazards. In this plan, epidemics may more quickly spread in densely-populated communities.



Congested areas that are building up may be seeing more pavement and other impermeable surfaces that could add to stormwater runoff flooding problems.

The following table lists the projects currently “programmed” (i.e., included) in the plan for Trumbull County. These projects are throughout Trumbull County; thus, there does not appear to be an area of the county targeted from intensive transportation development.

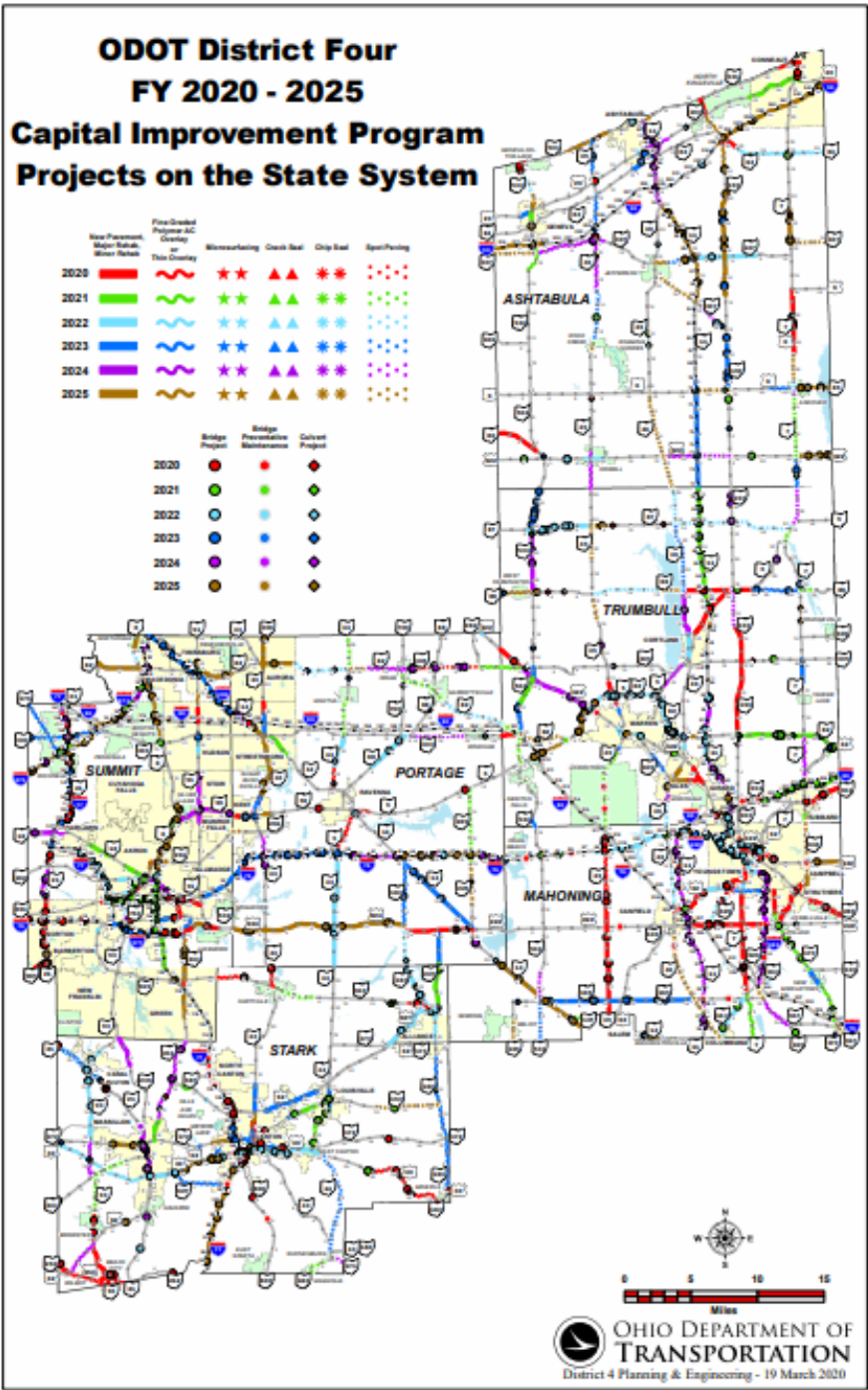
CURRENTLY PROGRAMMED PROJECTS: FY 2018-2022			
<i>Project Name</i>	<i>Description</i>	<i>Target Const. Year</i>	<i>Sponsor</i>
Main Street (Cortland)	Resurface from McCleary Jacoby ST to ET, and Walnut ST to SR-11	2019	City of Cortland
Mecca Street (Cortland)	Resurface from Wakefield DR to Cortland North Corp Limit	2021	City of Cortland
IR-80 02.04 Landscaping	Landscape and sign enhancement of IR-80 at US 422	2019	City of Girard
Trumbull Avenue (Girard)	Resurface from US-422 to Girard East Corp Limit	2019	City of Girard
East Liberty Street (Girard)	Resurface from US-422 to Girard East Corp Limit	2020	City of Girard
Greenway Trailhead	Trailhead construction along the Great Ohio Lake to River Greenway	2018	City of Warren
US-422 13.00	Reconstruction of US-422 from Laird Ave to Ridge AVE	2018	City of Warren
Tod Avenue / Atlantic Street	Resurface Tod AVE from Market ST to Elm Hill DR; resurface Atlantic ST from Mahoning AVE to Elm RD	2018	City of Warren
Laird / Genesee / Woodland	Resurface Laird AVE from YNG RD to AT ST; resurface Genessee AVE from Market ST to Elm RD; resurface Woodland AVE from Elm RD to Perkinswood BLVD	2019	City of Warren
East Market Street (Warren)	Resurface from Main ST to the SR-82 interchange	2021	City of Warren
Reserve Avenue Bridges	Rehabilitation of Reserve AVE BRS	2022	City of Warren
Tibbetts Wick (CR-28)	Weathersfield TWP – construction of 550 foot westbound right turn lane on Tibbetts Wick	2018	State
Burnett East Road Bridge	Kinsman TWP – replace Burnet East RD BR over Sugar Creek	2018	Trumbull Co. Engineer
Morford Road Bridge	Kinsman TWP – replace Morford RD BR over Stratton Creek	2019	Trumbull Co. Engineer
North Road / North River Road	Howland TWP – intersection improvements, includes north and southbound dedicated turn lanes	2019	Trumbull Co. Engineer
West Market Street (Warren Township)	Warren TWP – resurface from SR-5/82 interchange to Lovers LN	2019	Trumbull Co. Engineer
State Road (Champion)	Champion TWP – resurface from SR-45 to SR-305	2019	Trumbull Co. Engineer
Bedford Road (CR-175)	Brookfield TWP – widen from Stewart Sharon RD to US-62	2020	Trumbull Co. Engineer
North Road / Reeves Road	Howland TWP – intersection improvements, includes north and SB dedicated turn lanes	2020	Trumbull Co. Engineer
Salt Springs Road (CR-64)	Weathersfield TWP – resurface from SR-46 to MC Line	2020	Trumbull Co. Engineer
Myron Street Bridge Replacement	City of Hubbard – replace the Myron Street BR	2020	Trumbull Co. Engineer



CURRENTLY PROGRAMMED PROJECTS: FY 2018-2022			
<i>Project Name</i>	<i>Description</i>	<i>Target Const. Year</i>	<i>Sponsor</i>
East Market Street / North Road	Howland TWP – intersection improvements at East Market ST and North RD, included exclusive WB right turn lane	2021	Trumbull Co. Engineer
Warner Road Bridge	Liberty TWP – replacement of Warner RD BR	2021	Trumbull Co. Engineer
Tibbetts Wick Road (CR-28)	Liberty TWP – resurface from SR-11 to SR-193	2021	Trumbull Co. Engineer
Niles Vienna Road (CR-56)	Howland / Vienna TWP – resurface from Niles East Corp Limit to Warren Sharon RD	2022	Trumbull Co. Engineer
Western Reserve Greenway (PH IV)	Trumbull County – construct Phase IV of the Western Reserve Greenway Bike Trail	2020	Trumbull MetroParks
Salt Springs / South Leavitt Road	Village of Lordstown – resurface Salt Springs RD from Elsworth Bailey RD to SR-45; resurface South Leavitt RD from Palmyra RD to Hewitt Gifford RD	2018	Village of Lordstown

Generally, the MTP includes measures to ensure environmental justice, and planners spent significant time outlining the potential impacts of projects (i.e., both implemented and idled) to vulnerable or underserved populations in both counties. Categories include accessibility, aesthetics, air-noise-water, business, character, congestion, economic vitality, environment, residents, and safety. For future iterations of the MTP, planners may consider adding similar discussions regarding risk and vulnerability.

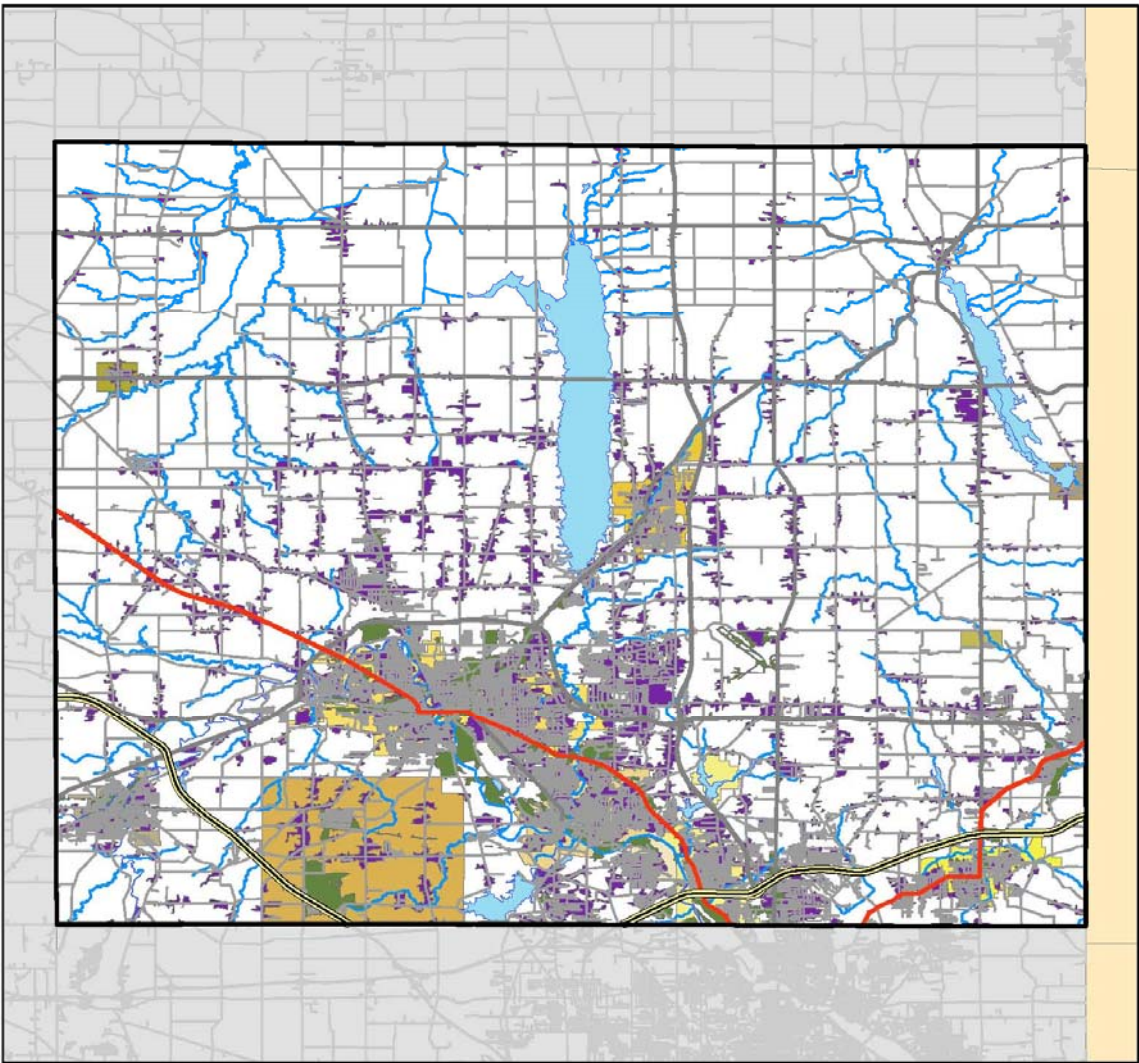
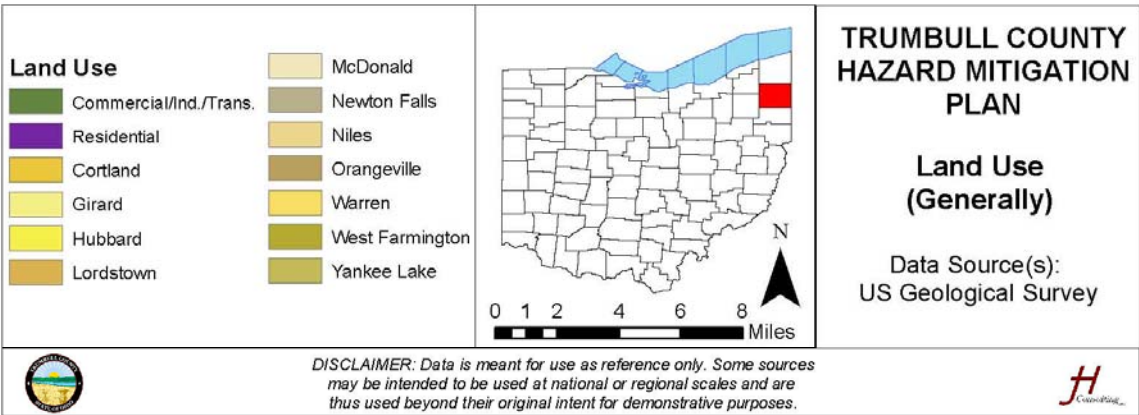
The Ohio Department of Transportation (ODOT) also maintains a schedule of planned road and bridge projects from 2020 through 2025. According to the ODOT graphic below, most transportation projects will occur in the southeastern portion of Trumbull County, though most major corridors will see some activity.



### Land Use

**Hazard Mitigation Relevance:** Land use descriptions inform discussions of risk and vulnerability. For example, flooding may exist as a high risk, but may not correlate with high susceptibility in open or unpopulated forested areas. Further, understanding land use may identify valuable areas where natural features can provide protective functions that reduce the magnitude of hazard events (FEMA, 2013). *Proposed* land uses can inform discussions about the types of assets that future hazard occurrences could impact.

The following graphic highlights land use identified as “commercial/industrial/transportation” and “residential.” Most of the residential areas lie along roadways and in the municipalities of southern Trumbull County. Commercial, industrial, and transportation areas also appear throughout the county, yet with a higher balance in the southern portion as well. Some areas, like the industrial park in Lordstown, contain both existing industries and areas targeted for future industrial development.



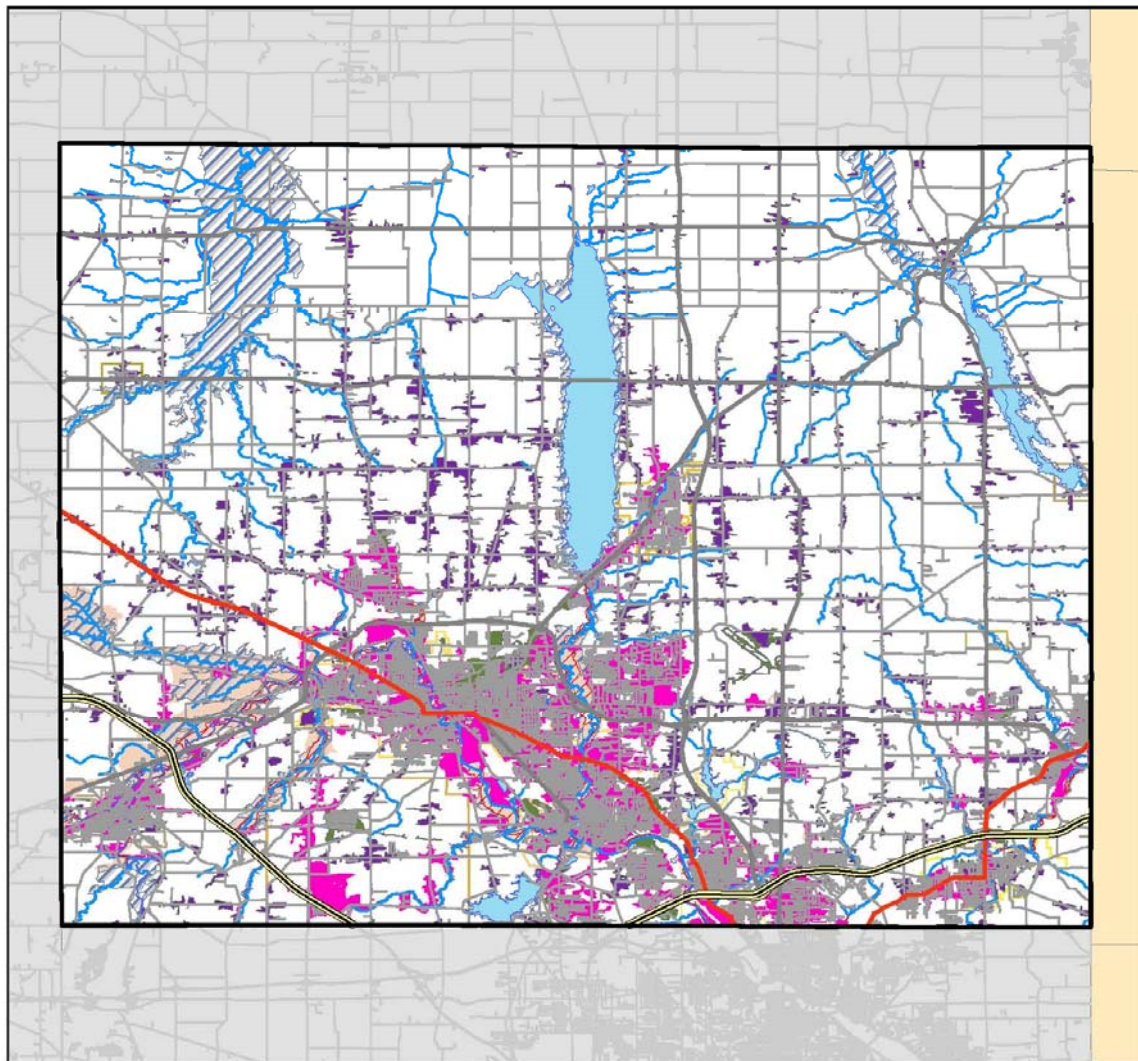
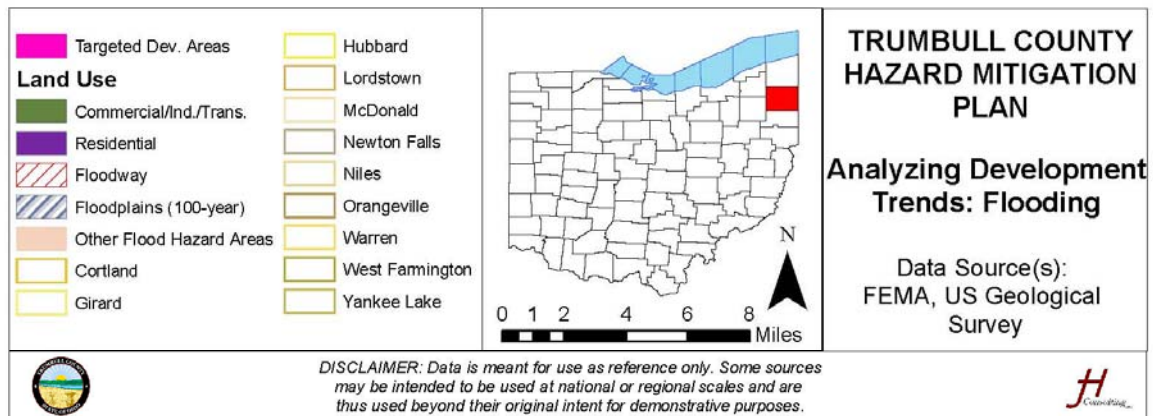
Planned Development and Hazard Areas

When planning for new development, this plan suggests that it is vital to consider areas where further development avoids damages from future hazardous events. Local officials plan to develop transportation assets and commercial and residential areas (as evidenced by the discussions above). Since transportation development is scheduled throughout the county (i.e., not targeted to a single area), the following **maps** identify areas targeted for residential and commercial/industrial development cross-referenced with various risk areas per the risk assessment in Section 2.2.

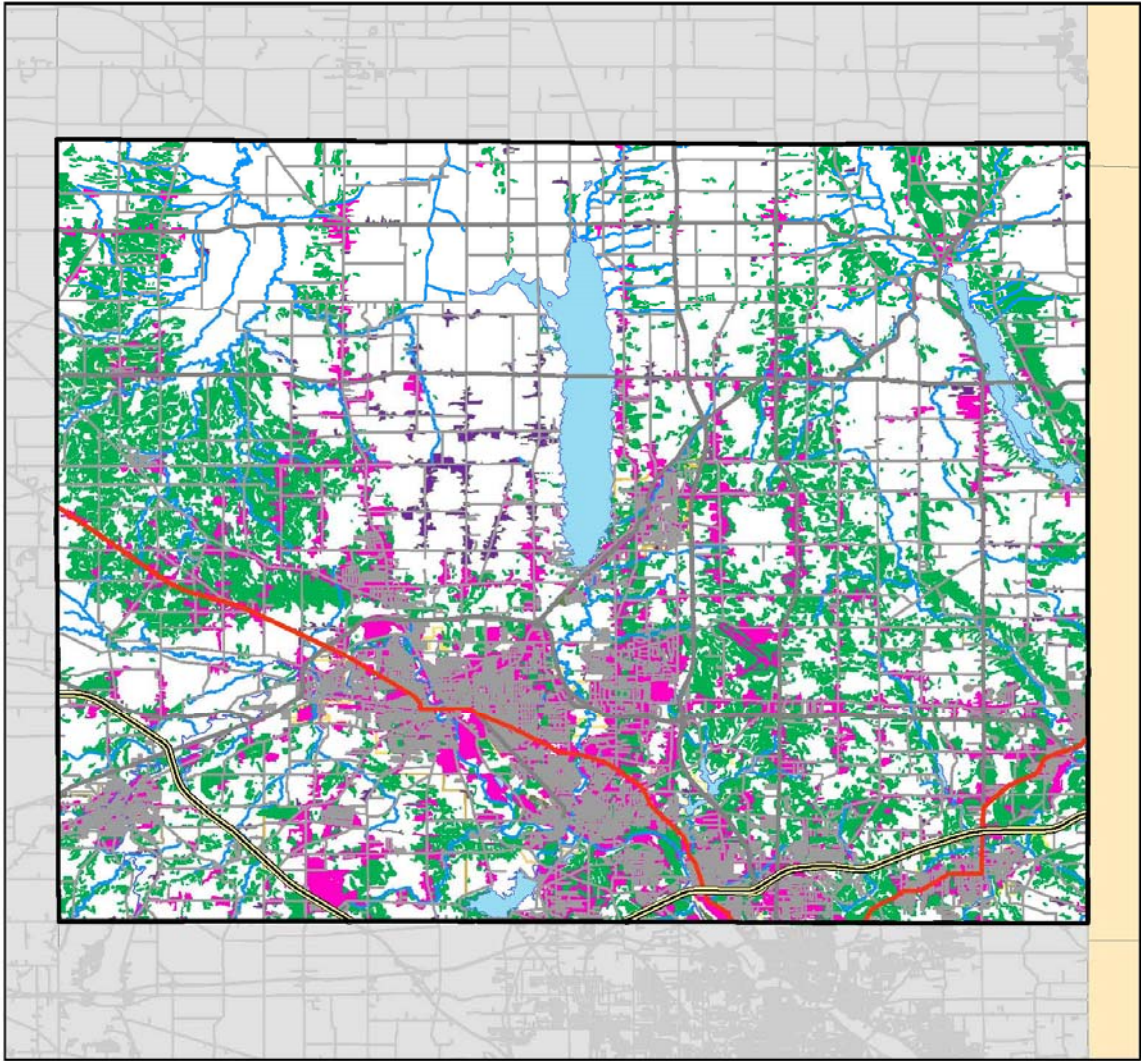
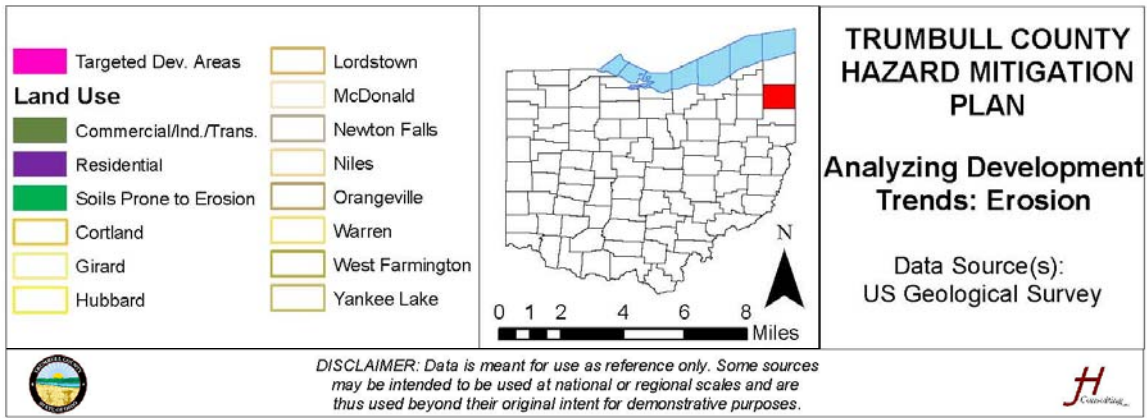




This map shows the areas of residential and commercial/industrial land use that overlap flood hazard areas.

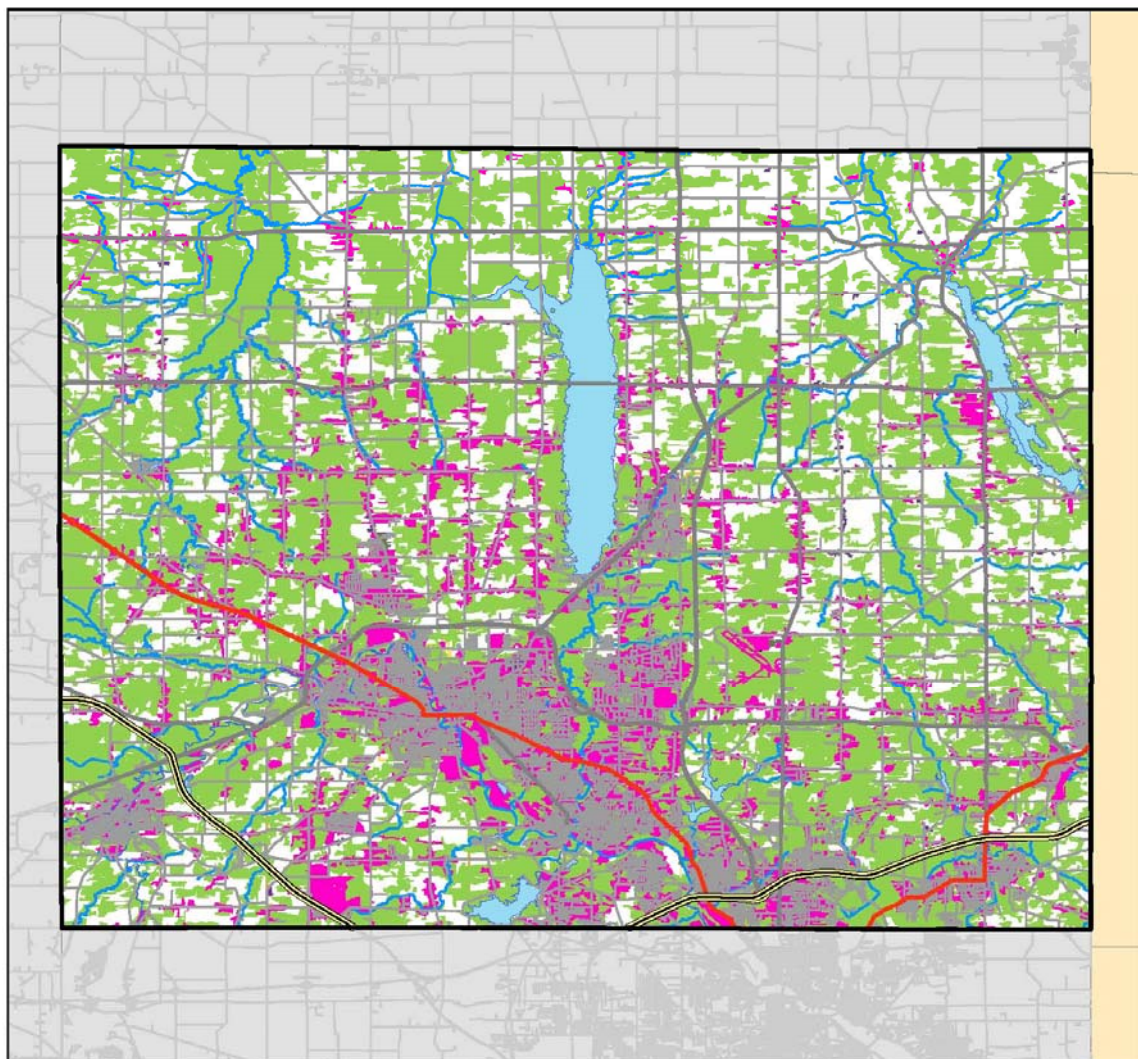
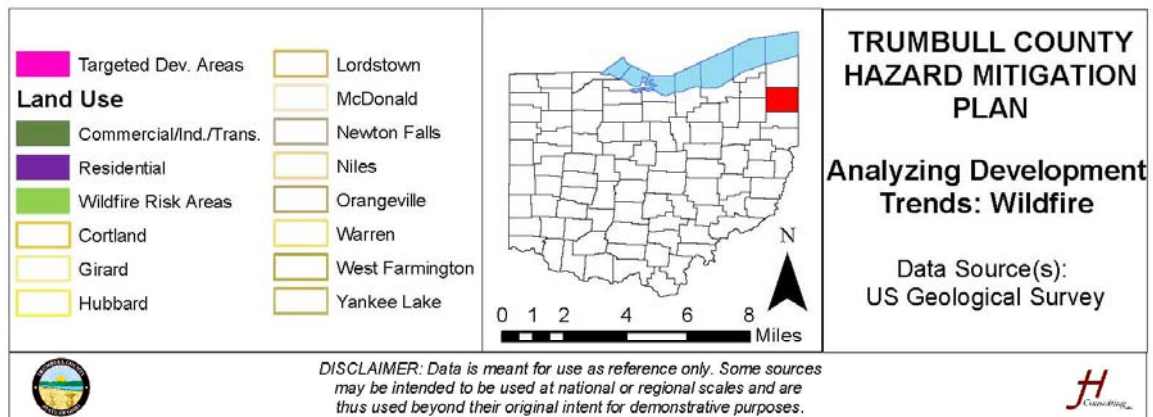


This map shows the areas of residential and commercial/industrial land use that sit on soil types prone to erosion.





This map shows the areas of residential and commercial/industrial land use that overlap land use areas that may contain fuels for wildfires. Though not an exact representation, these areas may be thought of as the “wildland urban interface.”



## 2.4.2 Complicating Variables

Direct, measurable consequences of disasters can include fatalities, injuries, and damages to humans, animals, or property. Disasters do not end there; there are several indirect effects, tangible and intangible, associated with them. Some examples of these include loss of livelihood and income, loss of community and population, mental and psychosocial impacts, costs of rebuilding, repair or replacement, loss of inventory, wages and tax revenue, etc. (Coppola, 2015). All of these also have a cost associated with them, but it is much more challenging to assign a specific dollar value and quantify them accurately. For this plan, the primary focus of loss estimates will be the direct consequences of the given hazard.

Countless situations could occur that could result in a disruption to critical systems throughout Trumbull County. Loosely-related variables often considered *cascading hazards*, can complicate some hazards. For example, high winds may cause sporadic damage, but usually do not become a significant countywide concern until a large number of residents are without power. In addition to weather-related power outages, cascading hazards in Trumbull County could include (but not be limited to) the following.

- Damage to infrastructure (i.e., roads, bridges, pipes, utility poles, etc.) and residences following flooding
- Flooding of downstream or protected areas in the event of a dam or levee failure
- Drinking water supply shortages and contamination following severe and prolonged drought conditions or floods
- Power outages, ruptured gas lines, etc. following earthquakes or severe weather
- Public health concerns following flooding conditions
- Population displacement before, during, or after an event that may be temporary or permanent

### Public Health, Social Vulnerability, and Other General Vulnerability Indicators

Vulnerability is the “measure of the propensity of an object, area, individual, group, community, country, or other entity to incur the consequences of a hazard” (Coppola, 2015, p. 33). Many aspects contribute to the vulnerability of society; these can include income disparity, class, race or ethnicity, gender, age, disability, health, and literacy (Thomas & Phillips, 2013, pp. 2-3). Understanding the overall health status of the community is essential in determining the vulnerability of the population to any given hazard; emergencies and disaster situations can exacerbate existing medical conditions. Vulnerable populations, populations of concern, or



populations at risk are those individuals or groups of people who are more exposed to the dangers of the impacts of a hazard because of their age, gender, income, occupation, disability, physical or mental health, literacy, religion, education, or ethnicity.

Some groups face several stressors related to both climate and non-climate factors. For example, people living in impoverished urban or isolated rural areas, floodplains, and other at-risk locations are more vulnerable not only to extreme weather and persistent climate change but also to social and economic stressors. Many of these stressors can occur simultaneously or consecutively. Over time, this accumulation of multiple, complex stressors is expected to become more evident as climate impacts interact with stressors associated with existing mental and physical health conditions and with other socioeconomic and demographic factors. Where appropriate (and where information is available), hazard profiles provide further vulnerability details.

Understanding trends associated with populations corresponding with various social vulnerability indicators can inform hazard mitigation decision-making. For instance, in areas with a low median household income, households may not be able to afford mitigation measures on their own. Populations living under the poverty line may have difficulty recovering. Thus, a community can lessen the indirect losses those families incur by strengthening capabilities to support those populations (e.g., assisting with access to FEMA and other governmental agencies accepting requests for disaster assistance, considering all options for structural mitigation projects to protect areas where clusters of those populations live, etc.). Phillips, Thomas, Fothergill, and Blinn-Pike (2010) provide a series of social vulnerability indicators. The following indicators<sup>1</sup> correspond to data that are available to the Trumbull County planning committee.

- **Age:** Senior citizens are reluctant to secure aid after a disaster out of concern they may lose their independence. (Proxy Data per Census: Under 18, 65+)
- **Class:** Lower-income families and households tend to live in housing that suffers disproportionately during disasters. (Proxy Data per Census: Median household income, Poverty %)
- **Gender:** Women tend to be the ones most likely to secure relief aid for the family, yet they are under-represented and under-used in recovery efforts. (Proxy Data per Census: Female population)
- **Literacy:** Few options exist to inform and prepare people with low reading levels. (Proxy Data per Census: No diploma)

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<sup>1</sup> Definitions are quotes from the Phillips et al. text. See p. 3 of the first edition.



- **Race & Ethnicity:** Warning messages tend to be in the dominant language with an expectation that people will take the recommended action immediately. Research indicates that culture influences how people may receive and interpret warnings and how they may respond. (Proxy Data per Census: White, Black/African American, Two or more races, Language other than English spoken in the home)

The following table presents these indicators and the corresponding demographics.

**SOCIAL VULNERABILITY INDICATORS**

Jurisdiction	AGE										CLASS										GENDER					
	Under 18					65+					Median Household Income					Poverty%					Female Population					
	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017	
Trumbull County	54,820	-14.94%	46,632	-9.01%	42,430	35,438	3.33%	36,617	10.37%	40,413	38,298.00	10.44%	\$42,296.00	7.29%	\$45,380.00	10.3	63.11%	16.8	2.38%	17.2	116,174	-6.90%	108,162	-3.73%	104,130	
Cortland City	1,683	-7.01%	1,565	-18.15%	1,281	922	45.55%	1,342	13.19%	1,519	50,941.00	-0.96%	\$50,453.00	36.22%	\$68,728.00	5.3	62.26%	8.6	47.67%	12.7	2,775	35.57%	3,762	-4.07%	3,609	
Girard City	2,542	-14.24%	2,180	-10.64%	1,948	2,004	-14.92%	1,705	2.11%	1,741	32,672.00	23.93%	\$40,491.00	-3.23%	\$39,184.00	12.5	40.80%	17.6	-5.11%	16.7	4,521	17.36%	5,306	-10.70%	4,738	
Hubbard City	1,923	-17.06%	1,595	4.20%	1,662	1,516	-0.92%	1,502	17.31%	1,762	34,657.00	29.49%	\$44,879.00	6.92%	\$47,984.00	8.6	-1.16%	8.5	41.18%	12	4,366	-5.47%	4,127	-2.42%	4,027	
Niles City	4,659	-14.29%	3,993	-31.08%	2,752	3,715	-7.91%	3,421	0.50%	3,438	35,615.00	-1.12%	\$35,215.00	14.70%	\$40,390.00	9.6	87.50%	18	1.11%	18.2	11,050	-8.66%	10,093	-2.05%	9,886	
Warren City	12,322	-19.98%	9,860	-3.34%	9,531	7,863	-15.49%	6,645	3.64%	6,887	30,147.00	2.34%	\$30,852.00	-5.22%	\$29,241.00	19.4	52.58%	29.6	16.89%	34.6	25,077	-13.96%	21,575	-4.44%	20,618	
Lordstown	873	-17.53%	720	-15.56%	608	399	47.37%	588	2.38%	602	51,144.00	-8.35%	\$46,875.00	9.55%	\$51,351.00	4.4	127.27%	10	2.00%	10.2	1,838	-4.41%	1,757	-6.43%	1,644	
McDonald	900	-12.11%	791	-4.05%	759	483	0.41%	485	26.80%	615	41,738.00	28.78%	\$53,750.00	-23.02%	\$41,375.00	4	241.04%	13.64	1738	21.69%	16.6	1,826	-7.83%	1,683	5.76%	1,780
Newton Falls Village	1,242	-34.86%	809	4.33%	844	797	10.92%	884	19.46%	1,056	32,827.00	12.76%	\$37,017.00	10.43%	\$40,878.00	10.5	18.10%	12.4	51.61%	18.8	2,644	-5.60%	2,496	0.92%	2,519	
Orangeville Village	44	20.45%	53	-1.89%	52	16	87.50%	30	3.33%	31	44,375.00	-2.11%	\$43,438.00	19.90%	\$52,083.00	0	0.00%	15.3	-42.48%	8.8	95	-2.11%	93	8.60%	101	
West Farmington	170	-12.35%	149	6.04%	158	45	6.67%	48	-29.17%	34	41,146.00	49.87%	\$61,667.00	-21.35%	\$48,500.00	8.9	-1.12%	8.8	86.36%	16.4	266	-9.40%	241	-2.07%	236	
Yankee Lake Village	21	-42.86%	12	-25.00%	9	14	0.00%	14	92.86%	27	45,000.00	-23.15%	\$34,583.00	50.00%	\$51,875.00	6.7	159.70%	17.4	-80.46%	3.4	45	-6.67%	42	-14.29%	36	

**SOCIAL VULNERABILITY INDICATORS**

Jurisdiction	LITERACY					RACE & ETHNICITY															LANGUAGE				
	No Diploma					White					Black/African American					Two or More Races					Other than English				
	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017	2000	%	2010	%	2017
Trumbull County	31,307	-24.55%	23,622	-19.08%	19,115	203,084	-7.86%	187,113	-3.75%	180,104	17,778	-2.03%	17,417	-2.48%	16,985	2,401	39.48%	3,349	35.23%	4,529	11,961	-91.42%	1,026	823.20%	9,472
Cortland City	530	-26.60%	389	-11.31%	345	6,719	2.52%	6,888	-0.42%	6,859	77	10.39%	85	2.35%	87	57	14.04%	65	78.46%	116	267	-55.43%	119	36.97%	163
Girard City	1,723	-52.12%	825	25.94%	1,039	10,421	-10.97%	9,278	-6.22%	8,701	266	50.00%	399	-13.03%	347	125	75.20%	219	75.80%	385	429	8.86%	467	4.93%	490
Hubbard City	910	-28.68%	649	-33.90%	429	8,125	-6.44%	7,602	-5.18%	7,208	76	53.95%	117	123.93%	262	49	91.84%	94	36.17%	128	297	-18.18%	243	-54.32%	111
Niles City	2,924	-17.10%	2,424	-32.55%	1,635	20,090	-10.70%	17,940	-5.13%	17,019	475	40.42%	667	59.97%	1,067	210	101.43%	423	10.17%	466	832	-9.25%	755	-31.66%	516
Warren City	8,241	-22.79%	6,363	-22.74%	4,916	33,690	-16.55%	28,114	-3.32%	27,180	11,802	-2.37%	11,522	-3.36%	11,135	925	49.08%	1,379	15.16%	1,588	2,310	-31.90%	1,573	-13.92%	1,354
Lordstown	365	2.74%	375	-32.80%	252	3,482	-6.63%	3,251	-4.74%	3,097	105	3.81%	109	-27.52%	79	26	38.46%	36	177.78%	100	162	-7.41%	150	-45.33%	82
McDonald	315	-9.52%	285	-30.88%	197	3,402	-6.67%	3,175	-6.43%	2,971	35	2.86%	36	211.11%	112	23	56.52%	36	11.11%	40	88	-36.36%	56	28.57%	72
Newton Falls Village	672	-29.39%	474	-18.86%	385	4,907	-4.87%	4,668	-4.09%	4,477	19	78.95%	34	-100.00%	0	38	-28.95%	27	255.56%	96	99	56.61%	155	-60.66%	61
Orangeville Village	15	-100.00%	0	700.00%	7	183	2.73%	188	-3.72%	181	0	200.00%	2	-100.00%	0	2	0.00%	2	-100.00%	0	11	-100.00%	0	500%	5
West Farmington	77	-24.68%	58	63.79%	95	516	-4.46%	493	-5.48%	466	2	-100.00%	0	0.00%	0	0	400.00%	4	-25.00%	3	32	118.75%	70	28.57%	90
Yankee Lake Village	3	66.67%	5	0.00%	5	99	-21.21%	78	6.41%	83	0	0.00%	0	0.00%	0	0	0.00%	0	400%	4	0	0.00%	0	0.00%	0



The complicating variables related to each hazard often appear in the hazard profiles. The information presented relates to worst-case scenario events; a single event may not always reach all impacts described. It is important, however, to understand that the implications of hazards go beyond those seen immediately after the event. The effects of one event can last months or even years, especially where public health, social, economic, environmental, and infrastructure impacts are concerned.

### Hazards and Climate Change

Many natural hazards are related to the climate or weather, such as droughts, severe weather, and floods. There is an important distinction between weather and climate. Weather refers to the atmospheric conditions of a geographical region over a short period, such as days or weeks. Climate, in contrast, refers to the atmospheric conditions of a geographic area over long periods, such as years or even decades (Keller & Devecchio, 2015, pp. 406-407). According to the U.S. Global Change Research Program, there are weather and climate changes already observed in the United States.

- Since recordkeeping began in 1895, the average U.S. temperature has increased by 1.3°F to 1.9°F, with most of the increase happening since 1970. Also, the first decade of the 2000s was the warmest on record.
- The average precipitation across the U.S. has increased since 1900, with some areas experiencing higher than the national average and some lower. Heavy downpours are increasing, especially over the last 30-50 years.
- Drought events have increased in the west. Changes in precipitation and runoff, combined with changes in consumption and withdrawal, have reduced surface and groundwater supplies in many areas.
- Some types of severe weather events have experienced changes. Heatwaves are more frequent and intense, and cold waves have become less frequent and intense overall.
- The intensity, frequency, and duration of North Atlantic hurricanes have increased since the early 1980s.

Climate change can have a significant impact on human health and the environment. The changes mentioned above can affect the environment by leading to changes in land use, ecosystems, infrastructure conditions, geography, and agricultural production. Extreme heat, poor air quality, reduced food and water supply and quality, changes in infectious agents, and population displacement can lead to public health concerns such as heat-related illnesses,

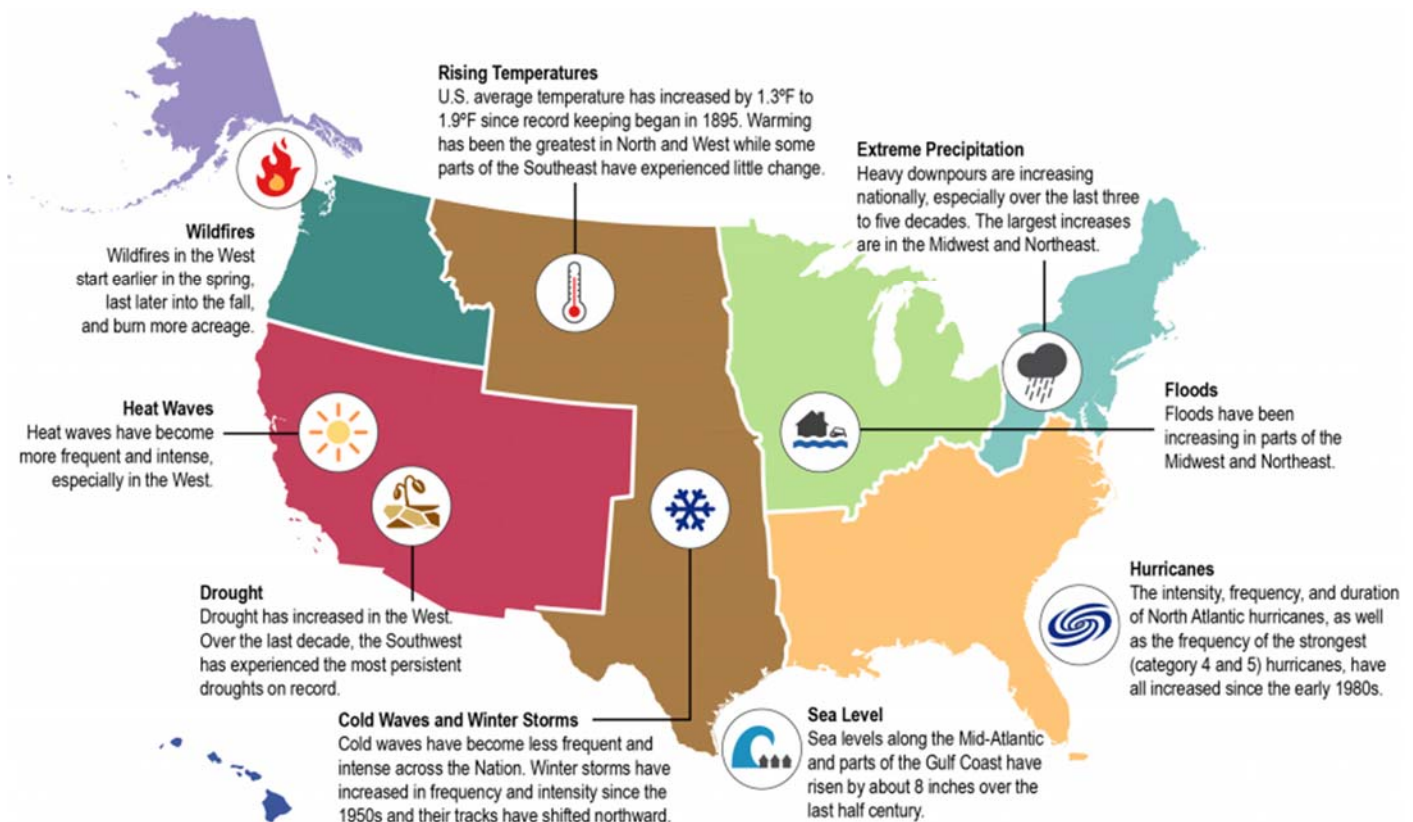


cardiopulmonary illnesses, food, water, and vector-borne diseases and have consequences on mental health and stress (USGCRP, 2016).

The National Climate Assessment (NCA) defined climate trends for national U.S. regions in 2014. The major trends are:

- wildfires and heat waves on the west coast,
- rising temperatures and increased severity and frequency of winter storms in the middle of the country,
- more rain and flooding in the Midwest and northeastern parts of the country, and
- an increase in sea levels in the mid-Atlantic with a rise in hurricane activity in the southeastern states.

The Intergovernmental Panel on Climate Change (IPCC) largely concurs with the above list (IPCC, n.d.). In Ohio, the trend will likely be an increase in flooding, as noted in the graphic below.





### 3.0 MITIGATION STRATEGY

§ 201.6(c)(3)

A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

According to FEMA (2013), “the mitigation strategy is made up of three main required components: mitigation goals, mitigation actions, and action plan for implementation. These provide the framework to identify, prioritize, and implement actions to reduce risk to hazards.” This section contains the aforementioned items; it describes the updated goals and objectives for this mitigation plan, it outlines the action items (or projects) for each participating jurisdiction within Trumbull County, and each project identifies the agency responsible for completing the project as well as a general timeline for completion.



## 3.0 MITIGATION STRATEGY

### 3.1 Mitigation Goals and Objectives

At the first plan update meeting, the committee decided to eliminate the goals from the 2010 plan and create a new, comprehensive, realistic goal for the update of the plan. The committee realized there are several ways to organize goals, but decided to have one overarching goal and three specific objectives that can be achieved through the mitigation projects included in the plan. These goals and objectives apply to the county's unincorporated areas as well as the cities and villages; this way all communities within the county are working towards the three objectives and ultimately towards the overall goal.

During the second meeting, the committee members approved the following as this plan's organizing goal and objectives.

Reduce the negative effects and impacts of all hazards that threaten Trumbull County to become a more resilient community.

**Objective 1:** Educate the public and local officials on preparedness and protective measures they can take to reduce vulnerability.

**Objective 2:** Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.

**Objective 3:** Promote partnerships and open communication within the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recover from hazardous events or incidents.

## 3.0 MITIGATION STRATEGY

### 3.2 Mitigation Actions

This section serves as a mitigation action plan to reduce the losses and other impacts Trumbull County may suffer from the hazards included in the risk assessment. “A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan’s mission and goals. The actions to reduce vulnerability to threats and hazards form the core of the plan and are a key outcome of the planning process” (FEMA, 2013).

§ 201.6(c)(3)(ii)	A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
§ 201.6(c)(3)(iii)	An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects and their associated costs.

The Trumbull County Emergency Management Agency (TCEMA), the county’s mitigation steering committee, and the county’s consultant coordinated directly with the jurisdictions in the county to update the project list. Outreach included individual calls and technical assistance. Further, on October 18, 2019, the TCEMA hosted a final planning meeting open to all jurisdictions to discuss existing project status, new projects, etc. The narrative below is the result of that outreach.

#### Types of Mitigation Actions

There are five primary types of mitigation actions that can work to reduce long-term vulnerability: local plans and regulations, structure and infrastructure projects, natural systems protection, education programs, and preparedness and response activities (Coastal Hazards Research Center & Center for Sustainable Community Design, n.d.).

- **Local Plans and Regulations:** Local land use or comprehensive plans embody the goals, values, and aspirations of the community, as expressed through a process of community engagement. Local ordinances and review processes influence land development and building construction. In some cases, plans and regulations can work at cross-purposes. For example, a capital improvement plan may call for extending water and



sewer lines to an area that is vulnerable to natural hazards. Examples include the following.

- Comprehensive plans
  - Land use ordinances
  - Subdivision regulations
  - Development review
  - Building codes and enforcement
  - NFIP Community Rating System
  - Capital improvement programs
  - Open space preservation
  - Stormwater management regulations and master plans
- 
- **Structure and Infrastructure Projects:** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. These projects could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct human-made structures to reduce the impact of hazards. Examples include the following.
    - Acquisitions and elevations of structures in flood-prone areas
    - Utility undergrounding
    - Structural retrofits
    - Floodwalls and retaining walls
    - Detention and retention structures
    - Culverts
    - Safe rooms
- 
- **Natural Systems Protection:** These are actions that minimize damage and losses while preserving or restoring the functions of natural systems. Examples include the following.
    - Sediment and erosion control
    - Stream corridor restoration
    - Forest management
    - Conservation easements
    - Wetland restoration and preservation

- **Education Programs:** These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Although this type of mitigation reduces risk less directly than structural projects or regulations, it is an important foundation. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public can lead to direct actions. Examples include the following.
  - Radio or television spots
  - Websites with maps and information
  - Real estate disclosure
  - Presentations to school groups or neighborhood organizations
  - Mailings to residents in hazard-prone areas.
  - StormReady
  - Firewise Communities
- **Preparedness and Response Activities:** Mitigation actions that reduce or eliminate long-term risk are different from actions taken to prepare for or respond to hazard events. Mitigation activities lessen or eliminate the need for preparedness or response resources in the future. When analyzing risks and identifying mitigation actions, the planning team may also identify emergency response or operational preparedness actions.

For some hazards such as tornadoes, including preparedness actions in the mitigation plan may be necessary and practical. The mitigation plan may be the best place for your community to capture and justify the need for these actions. However, these will not supplant or meet the federal requirements for identifying mitigation actions. It is important that the planning team understands the difference and can distinguish between mitigation and other emergency management activities.

To help committee members and participating jurisdictions better understand the types of mitigation techniques that work best for the hazards identified in the risk assessment, the following table serves as a reference.

HAZARD	MITIGATION TECHNIQUES				
	Local Plans & Regulations	Structure & Infrastructure Projects	Natural Systems Protection	Education Programs	Preparedness & Response Activities
Dam & Levee Failure	X			X	X
Drought	X	X	X	X	X
Earthquake	X			X	X
Epidemic				X	X
Flooding	X	X	X	X	X
Geologic Hazards	X		X	X	
Hailstorm				X	X
Infestation			X	X	
Severe Thunderstorm	X			X	X
Severe Wind & Tornado	X	X		X	X
Severe Winter Storm	X	X		X	X
Temperature Extreme				X	X
Terrorism				X	X
Wildfire	X			X	X

### Prioritization

Trumbull County prioritized the action items (i.e., projects) included in this plan. The county used the following criteria (roughly corresponding to the STAPLEE method) as considerations when prioritizing projects.

- **Social Impacts:** Consider whether the public would support implementation of the project. If so, priority likely rises.
- **Technical Feasibility:** Consider whether the project can be done and if it will yield the intended outcomes. If yes, priority would likely rise.
- **Administrative Requirements:** Consider the staffing, funding, and maintenance requirements of the project. If current capabilities can successfully manage and sustain the project, priority would be strengthened.
- **Political Impacts:** Consider the acceptability of the project from the political frame. If it is likely to cause political upheaval, it would receive a lower priority.
- **Legal Ramifications:** Consider whether the project can be lawfully implemented. If not, the project cannot be listed.
- **Environmental Impacts:** Consider whether there would be negative consequences to environmental assets should the project be implemented. If assets are impact, priority would be likely to fall.



- **Economic Impacts/Cost Benefit:** Consider the criteria in *FEMA Publication 386-5: Using Benefit Cost Review in Mitigation Planning* (2007) to determine the “pros” and “cons” of each project. Maximizing the use of available funds would positively affect a project’s priority.

Trumbull County’s committee permitted tie scores. As such, when reviewing the “Priority” line in the following table, readers may notice gaps in the numbering (e.g., “1, 2, 5, 6...”). In these instances, it means that three projects tied at the second-highest (thus, priority two) score. See Appendix 2 for documentation of the calculations.

#### Jurisdictional Mitigation Actions

The following table lists the active hazard mitigation actions for Trumbull County and the villages and cities that participated in this plan update. These actions have broad applicability and benefit multiple jurisdictions or unincorporated areas.

TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 1.1.5</b>	<b>Build out a notification system to quickly notify potentially-impacted residents and businesses downstream for impending hazard occurrences (i.e., similar to reverse 911 system).</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Hubbard Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	11
<b>Estimated Cost</b>	TBD
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Trumbull County 911, OSP-Trumbull, Warren PD)
<b>Implementation Schedule</b>	3 years (On-going: The planning committee revised this project to be more broadly applicable to multiple hazards.)





TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 1.1.6</b>	<b>Consider the removal, upgrading, or replacement of older dams throughout the county. While under consideration, encourage citizen involvement in project planning, and analyze potential impacts on not only the environment, but also hydrology, recreation, the economy, water quality, etc. Potential projects include the structures included in the Lower Mahoning Restoration Project.</b>
<b>Community(ies):</b>	Trumbull County, Girard City, Niles City, Warren City, McDonald Village, Newton Falls Village
<b>Action Type</b>	Structure & Infrastructure Projects, Natural Systems Protection
<b>Hazard(s) Addressed</b>	Dam & Levee Failure, Flooding
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	30
<b>Estimated Cost</b>	Site-specific cost estimates appear as "To Be Determined" in the lower Mahoning Restoration Project plan. The overall project is regional in scope, including elements in Mahoning and Trumbull Counties. Eastgate estimates Phase I of the total project (i.e., the removal of nine low-head dams) at \$20 million.
<b>Potential Funding Source(s)</b>	TBD
<b>Lead Agency or Department</b>	Eastgate Regional COG (Support Agencies: Trumbull County Combined Health District, Trumbull County MetroParks, Girard City, Warren City, Warren Township)
<b>Implementation Schedule</b>	5 years (New: This project appeared in earlier versions of the plan, but the committee removed it in the 2010 version. The steering committee added the project back into the plan during the 2020 update to show not only consistency with other plans in the region, but also to ensure that local officials and residents understand the hazard mitigation implications of these projects.)
<b>Strategy 1.1.7</b>	<b>Digitize the mapping included in the dam emergency action plans (EAPs) that dam owners submit to the Trumbull County Emergency Management Agency.</b>
<b>Community(ies):</b>	Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Hubbard Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vienna Twp., Warren Twp., Weathersfield Twp.
<b>Action Type</b>	Local Plans & Regulations
<b>Hazard(s) Addressed</b>	Dam & Levee Failure
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	1
<b>Estimated Cost</b>	The auditor's office currently coordinates access to GIS data for Trumbull County; as such, local officials could add the project to their task lists.
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Trumbull County Auditor, Dam Owners)
<b>Implementation Schedule</b>	5 years (New: The committee added this project as part of the 2020 update.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 1.1.8</b>	<b>Work with ODNR and dam owners to ensure that emergency action plans are current for the “high” and “significant” classified dams in Trumbull County. Specifically, seek to obtain an approved EAP for the Pleasant Valley Lake Dam.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Hubbard Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Dam & Levee Failure
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	1
<b>Estimated Cost</b>	This project should not require significant additional funding because dam owners compile emergency action plans by law, and the ODNR inspects dam facilities. The coordination suggested by this project facilitates information sharing rather than incurs costs.
<b>Potential Funding Source(s)</b>	N/A
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: ODNR Dam Safety, Dam Operators)
<b>Implementation Schedule</b>	Annually (New: The steering committee added this project during the 2020 update.)
<b>Strategy 1.1.9</b>	<b>Consider upgrades (i.e., rehabilitation), as necessary, for the high-hazard potential dams in Trumbull County. Specific projects could include the Mineral Lake Dam, the Upper Girard Lake Dam, and the Pleasant Valley Lake Dam.</b>
<b>Community(ies):</b> Trumbull County, Girard City, McDonald Village, Niles City, Howland Twp., Liberty Twp., Vienna Twp., Weathersfield Twp.	
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Dam & Levee Failure
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	27
<b>Estimated Cost</b>	TBD contingent on the type of project implemented (and the structure at which it occurs).
<b>Potential Funding Source(s)</b>	HHPD (though the Pleasant Valley Lake Dam is privately-owned and would not be eligible), Local Funding
<b>Lead Agency or Department</b>	Trumbull County Engineer (Support Agencies: Trumbull County EMA, ODNR Dam Safety)
<b>Implementation Schedule</b>	5 Years (New: The steering committee added this project during the 2020 update per guidance from the Ohio EMA and the advent of the HHPD funding program.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 2.1.1</b>	<b>Periodically disseminate information to residents about the types of hazards to which Trumbull County is susceptible, to include examples of personal mitigation projects.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Education Programs
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	1. Educate the public and local officials on preparedness and protective measures they can take to reduce vulnerability.
<b>Priority</b>	5
<b>Estimated Cost</b>	Requires minimal funding if websites and social media outlets serve as the venue.
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Trumbull County CCHD, Warren CHD, Municipalities)
<b>Implementation Schedule</b>	Annually (On-going: The planning committee consolidated this and several other previous strategies designed to educate the public about risk and personal mitigation measures.)
<b>Strategy 2.2.1</b>	<b>Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Trumbull County.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Orangeville Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Southington Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Drought, Severe Wind & Tornado, Temperature Extreme, Wildfire
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	22
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Coordinating mutual aid agreements will require no funding; however, initiating any sort of agreement may require local funding.
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Affected Jurisdictions, Fire Departments)
<b>Implementation Schedule</b>	As needed (On-going: Local fire departments have a regional capability to supply each other with emergency water. The steering committee re-listed this project so that additional agreements could be negotiated with non-public sector agencies, if necessary. Further, committee members acknowledge that mutual aid agreements may expire, and it is prudent to regularly re-negotiate them.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 4.4.2</b>	<b>Identify and prepare point of dispensing (POD) sites.</b>
<b>Community(ies):</b>	Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Epidemic
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	1
<b>Estimated Cost</b>	N/A (via MOUs)
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Trumbull County Combined Health District (Support Agency: Warren City Health Department)
<b>Implementation Schedule</b>	Annually (On-going: Public health authorities identified POD sites, storage facilities for vaccines, designated flu hospitals, and backup hospitals. The steering committee kept this project because it represents an on-going planning activity.)
<b>Strategy 5.1.1</b>	<b>Undertake streambank restoration projects where appropriate, and consider naturalizing areas to better handle precipitation.</b>
<b>Community(ies):</b>	Trumbull County, Girard City, Niles City, Warren City, McDonald Village, Newton Falls Village
<b>Action Type</b>	Natural Systems Protection
<b>Hazard(s) Addressed</b>	Flooding, Geologic Hazards
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	28
<b>Estimated Cost</b>	Up to \$50,000 depending on the size of the section of stream that is cleaned
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Trumbull County Engineer/Stormwater Management (Support Agency: Eastgate Regional COG, Trumbull County MetroParks, USACE)
<b>Implementation Schedule</b>	5 years (On-going: The committee revised the language of this strategy to better convey its intent of better mimicking natural environments to support mitigation. This project now supports cleaning stream segments, restoring eroded banks, etc. Further, to show greater local ownership of the project, the committee revised the primary and support agencies.)
<b>Strategy 5.3.1</b>	<b>Enforce building and development ordinances.</b>
<b>Community(ies):</b>	Cortland City, Girard City, Hubbard City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Braceville Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Johnston Twp.
<b>Action Type</b>	Local Plans & Regulations
<b>Hazard(s) Addressed</b>	Flooding, Geologic Hazards, Severe Wind & Tornado, Wildfire
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	25
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Enforcement is already a part of building departments' budgets; as such, no significant additional funding should be necessary.
<b>Lead Agency or Department</b>	Municipal Building/Zoning Departments
<b>Implementation Schedule</b>	Annually (On-going: Local governments complete this strategy on a daily basis. The steering committee re-listed it with an "annual" timeframe to reflect its continual nature.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 5.3.2</b>	<b>Encourage municipal participation in the Community Rating System (CRS) to reduce flood insurance rates.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village	
<b>Action Type</b>	Education Programs
<b>Hazard(s) Addressed</b>	Flooding
<b>2020 Objective Alignment</b>	1. Educate the public and local officials on preparedness and protective measures they can take to reduce vulnerability.
<b>Priority</b>	13
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Participation in the program requires no funding.
<b>Lead Agency or Department</b>	Trumbull County Planning Commission (Support Agency: Trumbull County EMA)
<b>Implementation Schedule</b>	5 years (On-going: The steering committee recognizes the potential value of the CRS and kept the strategy in the plan. The planning commission appears as the lead agency since it serves as the floodplain administrator for the county.)
<b>Strategy 5.3.3</b>	<b>Consider traditional flood mitigation projects such as acquisition and relocation, elevation, etc. of flood-prone properties. (See the list of 40 RL properties in Section 2.2.5 above.)</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village	
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Flooding
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	24
<b>Estimated Cost</b>	\$102,500 per property (based on the median value of owner-occupied units in Trumbull County per the U.S. Census Bureau)
<b>Potential Funding Source(s)</b>	HMGP, PDM, BRIC, Local Funding
<b>Lead Agency or Department</b>	Trumbull County Planning Commission (Support Agencies: Municipal Floodplain Administrators, Trumbull County EMA)
<b>Implementation Schedule</b>	5 years (New: The steering committee added this project as part of the 2020 update.)
<b>Strategy 5.3.4</b>	<b>Consider participation in the National Flood Insurance Program (NFIP).</b>
<b>Community(ies):</b> West Farmington Village, Yankee Lake Village	
<b>Action Type</b>	Local Plans & Regulations
<b>Hazard(s) Addressed</b>	Flooding
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	13
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Participation in the program requires little to no funding.
<b>Lead Agency or Department</b>	Village Administrators (Support Agencies: Trumbull County Planning Commission, Trumbull County EMA)
<b>Implementation Schedule</b>	5 years (New: Trumbull County added this project as part of the 2020 update.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 5.3.5</b>	<b>Develop a geographic information system (GIS) capability for Trumbull County to support planning for flood mitigation through identification and tracking of risks, structural loss estimates in SFHAs, etc.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Local Plans & Regulations
<b>Hazard(s) Addressed</b>	Flooding
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	10
<b>Estimated Cost</b>	\$80,000
<b>Potential Funding Source(s)</b>	N/A (The Trumbull County Planning Commission is researching funding opportunities.)
<b>Lead Agency or Department</b>	Trumbull County Planning Commission
<b>Implementation Schedule</b>	5 years (New: Trumbull County added this project as part of the 2020 update.)
<b>Strategy 6.1.1</b>	<b>Coordinate efforts with the National Weather Service (NWS) and local media providers to post advance warnings of impending hazard events.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Flooding, Hailstorm, Severe Thunderstorm, Severe Wind & Tornado, Severe Winter Storm, Temperature Extreme
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	5
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	IPAWS is operational at no cost to local jurisdictions.
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Local Governments, Emergency Services Agencies, Media Outlets)
<b>Implementation Schedule</b>	As needed (On-going: The steering committee revised this project to be more broadly applicable to multiple hazards.)
<b>Strategy 10.2.1</b>	<b>Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.</b>
<b>Community(ies):</b> Cortland City, Girard City, Hubbard City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Braceville Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Johnston Twp.	
<b>Action Type</b>	Local Plans & Regulations
<b>Hazard(s) Addressed</b>	Severe Wind & Tornado
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	26
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Enforcement is already a part of building departments' budgets; as such, no significant additional funding should be necessary.
<b>Lead Agency or Department</b>	Municipal Building/Zoning Departments
<b>Implementation Schedule</b>	Annually (On-going: Local governments complete this strategy on a daily basis. The steering committee re-listed it with an "annual" timeframe to reflect its continual nature.)





TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 10.2.2</b>	<b>Encourage developers to reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.</b>
<b>Community(ies):</b> Cortland City, Girard City, Hubbard City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Braceville Twp., Brookfield Twp., Champion Twp., Farmington Twp., Howland Twp., Johnston Twp.	
<b>Action Type</b>	Education Programs
<b>Hazard(s) Addressed</b>	Severe Wind & Tornado
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	29
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Encouragement would require no significant additional funding.
<b>Lead Agency or Department</b>	Trumbull County Planning Commission (Support Agencies: Municipal Zoning/Building Departments)
<b>Implementation Schedule</b>	As Needed (On-going: Local officials complete this strategy as permits for mobile home developments are approved. Significantly, local officials encourage this and other safety measures as a matter of process.)
<b>Strategy 10.2.3</b>	<b>Consider the purchase of generators for critical facilities throughout Trumbull County.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Severe Thunderstorm, Severe Wind & Tornado, Severe Winter Storm, Any Other Prolonged Electricity Outage
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	13
<b>Estimated Cost</b>	Up to \$30,000
<b>Potential Funding Source(s)</b>	HMGP, Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Emergency Services Providers, Utilities)
<b>Implementation Schedule</b>	5 years (On-going: The steering committee kept this project in the plan to support auxiliary power capabilities at various critical facilities throughout the county. The 2010 version of this plan referenced the installation of a generator at the Trumbull County EMA office, which occurred in 2013 with the opening of the current facility.)
<b>Strategy 10.2.4</b>	<b>Seek funding for and install residential and community storm shelters.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Severe Wind & Tornado
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	20
<b>Estimated Cost</b>	TBD contingent on the project specifications (e.g., size, etc.)
<b>Potential Funding Source(s)</b>	HMGP, Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Local Government, Trumbull County Planning Commission)
<b>Implementation Schedule</b>	5 years (New: The steering committee added this project as part of the 2020 update.)





TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 11.1.1</b>	<b>Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Severe Winter Storm
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	22
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	Development of mutual aid agreements requires no additional funding; however, a means and rate of compensation should be negotiated while developing said agreements.
<b>Lead Agency or Department</b>	Affected Jurisdictions (Support Agencies: Emergency Services)
<b>Implementation Schedule</b>	Annually (On-going: Mutual aid agreements for this purpose exist. Steering committee members acknowledge that mutual aid agreements may expire, and it is prudent to regularly re-negotiate them.)
<b>Strategy 12.1.2</b>	<b>Establish cooling/warming centers for vulnerable populations, along with an outreach program encouraging at-risk populations to use the centers.</b>
<b>Community(ies):</b> Trumbull County	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Temperature Extreme
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	5
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	No additional funding is needed to identify existing facility that could possibly be used as cooling centers.
<b>Lead Agency or Department</b>	Trumbull County Combined Health District (Support Agencies: Warren City Health Department, Trumbull County EMA)
<b>Implementation Schedule</b>	Annually (On-going: Public health authorities identified various sites for use as cooling or warming centers. The steering committee kept this project because it represents an on-going planning activity. NOTE: The committee revised the project to include both warming and cooling centers.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 13.1.5</b>	<b>Establish a critical infrastructure protection program.</b>
<b>Community(ies):</b> Trumbull County	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	13
<b>Estimated Cost</b>	\$5,000 to \$10,000
<b>Potential Funding Source(s)</b>	Local funding
<b>Lead Agency or Department</b>	TCEMA
<b>Implementation Schedule</b>	On-going (On-going: Local officials have completed “target hardening” projects at critical facilities, including such items as security cameras at water treatment plants, court security planning projects, partner agency participation in drills, etc. The county also developed and maintains a critical infrastructure risk assessment per state requirements. This program represents engagement of the whole community; thus, the steering committee kept the project as an “on-going” effort.)
<b>Strategy 15.1.2</b>	<b>Update the county’s commodity flow study (or “regional freight study”).</b>
<b>Community(ies):</b> Trumbull County	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Miscellaneous: Hazardous Materials
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	5
<b>Estimated Cost</b>	Up to \$15,000
<b>Potential Funding Source(s)</b>	PUCO, Local Funding
<b>Lead Agency or Department</b>	Eastgate Regional COG (Support Agency: Trumbull County EMA, Trumbull County LEPC)
<b>Implementation Schedule</b>	5 years (On-going: Eastgate completed its most recent freight study in 2018. The steering committee kept this project active in the plan to support periodic updates to that document.)
<b>Strategy 16.1.1</b>	<b>Establish a communications system that will allow jurisdictional fire and police departments to communicate with each other during large-scale emergency situations.</b>
<b>Community(ies):</b> Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	18
<b>Estimated Cost</b>	TBD contingent on the agencies that wish to come online.
<b>Potential Funding Source(s)</b>	USDHS, Local Funding
<b>Lead Agency or Department</b>	Trumbull County EMA (Support Agencies: Emergency Services)
<b>Implementation Schedule</b>	5 years (On-going: In 2019, two dozen fire departments collaborated to share a \$1.5 million grant from the FEMA AFGP to transition communications to the MARCS system. The Trumbull County EMA reports that several law enforcement agencies are moving to the MARCS system as well. The steering committee kept this project in the plan to support additional agencies coming online.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 16.2.1</b>	<b>Increase the number of public water systems throughout the county.</b>
<b>Community(ies):</b>	Trumbull County, Bazetta Township, Bristol Township, Champion Township, Mecca Township
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Drought, Water Contamination
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	20
<b>Estimated Cost</b>	TBD contingent on the area served, the size of the system, etc.
<b>Potential Funding Source(s)</b>	CDBG, Local Funding
<b>Lead Agency or Department</b>	Trumbull County Sanitary Engineer (Support Agencies: Utility Providers, Local Governments, Eastgate Regional COG)
<b>Implementation Schedule</b>	5 years (On-going: The sanitary engineer's office regularly examines how to feasibly and cost-effectively maintain water systems and extend the service areas of the systems. In November 2019, the county surveyed property owners about requesting public service connections, the appetite for a small cost share, etc.)
<b>Strategy 16.6.1</b>	<b>As warning sirens become more interconnected (i.e., per the migration to a digital activation), coordinate a planning project to outline jurisdictional activation protocols.</b>
<b>Community(ies):</b>	Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	11
<b>Estimated Cost</b>	Local officials can imbed planning into other venues, such as firefighters' association meetings, LEPC, etc. As such, this project should require little additional funding.
<b>Potential Funding Source(s)</b>	N/A
<b>Lead Agency or Department</b>	Trumbull County 911 (Support Agencies: Trumbull County EMA, Fire Departments)
<b>Implementation Schedule</b>	5 years (New: The committee added this project as part of the 2020 update.)
<b>Strategy 16.6.2</b>	<b>Support multijurisdictional and multi-discipline emergency responder training for a variety of hazards.</b>
<b>Community(ies):</b>	Trumbull County, Cortland City, Girard City, Hubbard City, Niles City, Warren City, Lordstown Village, McDonald Village, Newton Falls Village, Orangeville Village, West Farmington Village, Yankee Lake Village, Bazetta Twp., Bloomfield Twp., Braceville Twp., Bristol Twp., Brookfield Twp., Champion Twp., Farmington Twp., Fowler Twp., Greene Twp., Gustavus Twp., Hartford Twp., Howland Twp., Hubbard Twp., Johnston Twp., Kinsman Twp., Liberty Twp., Mecca Twp., Mesopotamia Twp., Newton Twp., Southington Twp., Vernon Twp., Vienna Twp., Warren Twp., Weathersfield Twp.
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	3. Promote partnerships and open communication with the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recovery from hazardous events or incidents.
<b>Priority</b>	1
<b>Estimated Cost</b>	This project represents support of on-going preparedness efforts. Agencies incorporate training into regular budgets and will continue to do so for the foreseeable future.
<b>Potential Funding Source(s)</b>	N/A
<b>Lead Agency or Department</b>	Emergency Services Agencies (Support Agency: Trumbull County EMA)
<b>Implementation Schedule</b>	Annually (New: The committee added this project as part of the 2020 update. It appeared in the 2010 version; the committee realized its broader benefits and kept it in the plan.)



TRUMBULL COUNTY 2020 MITIGATION ACTION PLAN	
<b>Strategy 1B.1.1</b>	<b>Continue to pursue upgrades and preventive maintenance projects of the city's sanitary sewers.</b>
<b>Community(ies):</b> Girard City	
<b>Action Type</b>	Structure & Infrastructure Projects
<b>Hazard(s) Addressed</b>	Epidemic, Flooding, Water Contamination
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	13
<b>Estimated Cost</b>	TBD contingent on areas identified for projects
<b>Potential Funding Source(s)</b>	CDBG, Clean Ohio Fund, Local Funding
<b>Lead Agency or Department</b>	Girard Public Works (Support Agency: Trumbull County Sanitary Engineer)
<b>Implementation Schedule</b>	5 years (On-going: This project appeared in earlier versions of the plan, and the city has fixed several collapsed and cracked sections of its sewers. This project remains in the plan to support infrastructure upgrades, and it has been revised to be more forward leaning.)
<b>Strategy 1I.1.1</b>	<b>Identify areas of the village and the assets in those areas that would be at risk if the Shenango Reservoir were to fill.</b>
<b>Community(ies):</b> Orangeville Village	
<b>Action Type</b>	Preparedness & Response Activities
<b>Hazard(s) Addressed</b>	Flooding
<b>2020 Objective Alignment</b>	2. Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
<b>Priority</b>	18
<b>Estimated Cost</b>	N/A
<b>Potential Funding Source(s)</b>	N/A
<b>Lead Agency or Department</b>	Village Council (Support Agencies: Dam Operators)
<b>Implementation Schedule</b>	Annually (On-going: Given its location, the village works with appropriate representatives regarding this issue on a regular basis.)
<b>Strategy 1M.1.3</b>	<b>Educate citizens on the capabilities of the warning siren system (e.g., it works best as an <i>outdoor</i> capability, etc.)</b>
<b>Community(ies):</b> Trumbull County, Bloomfield Township, Bristol Township, Champion Township, Gustavus Township, Johnston Township, Kinsman Township, Liberty Township, Vienna Township	
<b>Action Type</b>	Education Programs
<b>Hazard(s) Addressed</b>	All
<b>2020 Objective Alignment</b>	1. Educate the public and local officials on preparedness and protective measures they can take to reduce vulnerability.
<b>Priority</b>	5
<b>Estimated Cost</b>	This project is an education effort, but it is unique in its targeted content (which is why it appears separately from Strategy 2.1.1 above). Included as part of other education programs will lower the costs associated with it.
<b>Potential Funding Source(s)</b>	Local Funding
<b>Lead Agency or Department</b>	Fire Departments (Support Agency: Trumbull County EMA)
<b>Implementation Schedule</b>	Annually (New. Jurisdictional representatives added this project at Meeting 6 during the 2020 plan update process.)

See Appendix 3 for a list of inactive (i.e., completed, deleted, and deferred) projects.



## 4.0 PLAN MAINTENANCE AND INTEGRATION

§ 201.6(c)(4)(i)	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
§ 201.6(c)(4)(ii)	[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
§ 201.6(c)(4)(iii)	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

This section of the plan outlines the process by which Trumbull County and the participating jurisdictions will update and maintain this document.

### 4.1 Monitoring, Evaluating and Updating the Plan

The steering committee recognizes the importance of a plan maintenance *process*, not only as a function of the regulatory driver governing completion of mitigation plans (as a requirement for mitigation funding) but also as an opportunity to support networking amongst key stakeholders. Further, the committee recognizes that postponing the plan update results in an ineffective effort wherein it is difficult to garner enthusiasm and participation on the part of extended stakeholders. To this end, during the fifth planning meeting on July 26, 2019, the committee agreed to a maintenance process based on annual reviews and workshops. That process is as follows.

- **Year 1:** Focus on plan adoption; begin “Mitigation 101” outreach. The Trumbull County Emergency Management Agency (TCEMA) will ensure that participating jurisdictions receive copies of the plan and provide technical assistance, as necessary, to support adoption.
- **Year 2:** Meet to discuss plan integration opportunities (e.g., aligning mitigation objectives with efforts to upgrade stormwater systems, etc.).
- **Year 3:** Meet to conceptually plan the next update; begin targeting funding for the next update.
- **Year 4:** Meet to discuss project status; transition to “personal mitigation ideas” outreach.
- **Year 5:** Coordinate the next plan update.

The goal of the annual discussions will be to generate content for the next plan update and educate new stakeholders as they enter the process. Representatives on the steering committee could change, and these discussions offer a prime opportunity to orient new members



to what mitigation is, how the plan works, etc. Further, the TCEMA will document the annual meetings, thus providing content for the next update. The discussions thus support a more critical, in-depth formal update process.

## 4.2 Implementation through Existing Programs

Most local leaders are aware of and understand traditional hazard mitigation funding programs (e.g., the Hazard Mitigation Grant Program [HMGP], Pre-Disaster Mitigation [PDM] program, etc.). However, the key to the widespread implementation of the mitigation plan is the recognition of opportunities for integrating opportunities for mitigation into other planning and community development initiatives. For instance, highway or streetscape projects present opportunities to address runoff and potential flash flooding. The development of parks and other open spaces can also mitigate weather hazards. Even substantial preparedness for the inevitable hazard occurrences can double as mitigation efforts in that a more efficient and effective response can lessen the overall loss the community experiences. As such, many other funding sources and programs beyond HMGP and PDM enable hazard mitigation.

Six existing mechanisms can support mitigation in Trumbull County: (a) floodplain management, (b) emergency operations planning, (c) infrastructure planning, (d) community and economic development, (e) public health planning, and (f) transportation planning. The following table describes the potential integration of these elements with hazard mitigation in detail.

MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Floodplain Management	Trumbull County Planning Commission  Municipal Floodplain Administrators	According to FEMA's <i>Community Status Book</i> (current as of 03/2020), all jurisdictions in Trumbull County except for West Farmington and Yankee Lake participate in the National Flood Insurance Program and thus maintain floodplain regulations that at least mirror the state's regulations. Jurisdictional "designated floodplain administrators" (DFPAs) enforce ordinances locally. No communities in Trumbull County currently participate in the Community Rating System (CRS) program (as of April 2019).



MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Emergency Operations Planning	Trumbull County Emergency Management Agency	The TCEMA incorporates mitigation principals into the county's emergency operations plan to predetermine the hazards to which responders may respond. This plan works primarily to address the negative effects of natural, technological, and human-caused hazards (as an all-hazards framework).
	Municipal Partners  Response Agency Partners  Trumbull County Combined Health District  Warren City Health District	The health departments serving the county also prepare extensive response plans, to include an all-hazards response plan, pandemic and SNS response plans, epidemiological plans, etc.  <u>INTEGRATION WITH MITIGATION EFFORTS</u> Emergency operations planning efforts support mitigation through improved response times, addressing impacts before the cascade (to the extent possible), etc. Mitigation planning can support emergency operations planning through the collection of hazard and vulnerability information.
Infrastructure Planning (including Stormwater Management)	Eastgate Regional Council of Governments  Trumbull County Engineer  Trumbull County Soil & Water Conservation District	The county engineer is a party to the county's drainage and erosion/sediment control plan, along with the Trumbull County Soil & Water Conservation District.  Eastgate serves as a resource for Trumbull County and municipal governments therein regarding the Clean Ohio Conservation Fund for preserving open space, protecting ecosystems, and restoring streams. Eastgate also participates in water quality management, to include regional wastewater and watershed planning.  <u>INTEGRATION WITH MITIGATION EFFORTS</u> Water quality issues contribute to risk or, conversely, resilience as improvements occur. Specifically, drainage and other stormwater considerations can mitigate flooding through controls on the amount of runoff that occurs during precipitation events. Erosion control aspects support stream bank restoration, etc. Preservation of open space and other "green infrastructure" projects also impact the amount of runoff that ultimately overloads stormwater systems and contributes to site-specific flooding.





MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Community & Economic Development	Eastgate Regional Council of Governments	<p>Eastgate is an economic development district (EDD) under the U.S. Department of Commerce's Economic Development Administration (EDA). In this role, the council participates in setting regional priorities for projects and investments. Regarding mitigation initiatives, through its participation in this project (as well as similar ones in neighboring counties), Eastgate is in a unique position to consider the risk (and risk reduction) implications of economic development projects. Further, the council compiles the region's comprehensive economic development strategy (CEDS).</p> <p><u>INTEGRATION WITH MITIGATION EFFORTS</u> Mitigation planning and community/economic development can co-exist in many ways. Mitigation efforts (specific the hazard identification elements) can inform prospective developers or project administrators of the types of precautions or structure mitigation measures they may wish to include in projects. Local officials may also use mitigation plan information to encourage green infrastructure and other low-impact development initiatives.</p>
Public Health Planning	<p>Trumbull County Combined Health District</p> <p>Warren City Health District</p>	<p>The TCCHD and WCHD maintain an emergency response plan to guide efforts during public health emergencies (see above).</p> <p>Furthermore, the health departments participate in the community health needs assessment process, which identifies what residents and other stakeholders feel are the biggest threats and needs relative to the public in Trumbull County. In Trumbull County, health departments conduct community needs forums, and invite residents to comment on problems facing their neighborhoods. This plan update serves as an example of how that process integrates into mitigation planning (and vice versa). The 2019 community needs forum included special agenda time to discuss risk reduction and mitigation.</p> <p><u>INTEGRATION WITH MITIGATION EFFORTS</u> Public health planning efforts help to frame prevention and vulnerability reduction efforts per epidemic and other public health concerns (e.g., sanitation, water quality, etc.).</p>



MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Transportation Planning	Trumbull County Engineer  Eastgate Regional Council of Governments  Ohio Department of Transportation (ODOT)	The Trumbull County Engineer seeks to improve and maintain the infrastructure of the county, to include transportation infrastructure (roads and bridges, including snow/ice control). Eastgate participates in corridor planning initiatives throughout the region as well as collaborates regularly with public transit systems. As the metropolitan planning organization (MPO) for Mahoning and Trumbull Counties, Eastgate prepares a transportation improvement plan in conjunction with the Ohio Department of Transportation and local transit operators.  <u>INTEGRATION WITH MITIGATION EFFORTS</u> Hazard identification and risk assessment sections of the mitigation plan may identify areas where the transportation infrastructure could be vulnerable to hazards such as landslides, erosion, subsidence, etc. Further, in Northeast Ohio, severe weather may affect transportation concerns.

The integration of mitigation into other planning mechanisms between the 2010 and 2020 updates occurred primarily in the areas of “floodplain management,” “emergency operations planning,” and “public health planning.” Jurisdictional officials enforced floodplain management regulations regularly. As county agencies have updated the emergency operations plan, mitigation features as one of the “phases of emergency management.” Specifically under emergency operations, fire departments in the county collaborated to obtain funding to enhance emergency communications. Similarly, public health departments in the county maintain all-hazards response plans. They are preparedness documents by nature, but they contain steps for risk reduction and mitigation.

The county engineer’s office regularly completes culvert and bridge projects to address stormwater concerns; while these efforts support mitigation, they are regular duties of the engineer’s office and have not been intentionally or explicitly aligned with hazard mitigation (until this plan update).

#### 4.3 Continued Public Involvement

All adopting jurisdictions maintain copies of this plan. Citizens can review the plan and provide comments at any of these locations. Citizens may also access the plan through the TCEMA. The TCEMA will maintain a copy of the document on its website. Though the plan is available at these locations, citizens may not be aware of that availability or understand the nature and purpose of a hazard mitigation plan. As such, additional means of public education and involvement are important.



During the development of the 2020 update, the Warren City Health Department included hazard mitigation topics on its agenda at a community issues forum. The effort was successful, and it could serve as a model for public outreach during the five-year update period. The TCEMA and Warren City Health Department will coordinate to determine if scheduling a forum in Year 3 of the cycle is feasible.

Additionally, the online survey was highly effective, and it could also serve as a means of encouraging public participation during the cycle. The TCEMA will utilize the long survey distributed as part of this project, as well as the mini-survey distributed at the community issues meeting, to develop an online survey for distribution in Year 3. The questions on that survey will resemble the following.

1. Do you live or work in Trumbull County? If so, in what community?
2. What hazard do you feel presents the biggest risk to Trumbull County? Why?
3. Do you live in a special flood hazard zone?
4. What disaster preparedness measures have you taken in your home (e.g., 72-hour kit, etc.)?
5. Have you received, heard about, or searched for educational opportunities about disaster preparedness? If so, please describe your efforts.
6. How would you rate your ability to recovery from disasters?

Tracking this information will allow the steering committee that coordinates the next update to compare evolving responses (to see if a trend line forms). Further, it will enable local officials to determine whether efforts to educate the community are effective.



## **APPENDIX 1: PLANNING PROCESS INVOLVEMENT**

This appendix provides evidence of the planning process, to include participation at meetings and topics discussed. Appendix 4 provides evidence of public participation.



## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #1

### AGENDA

Date: Thursday, January 31, 2019  
Time: 3:00 p.m.  
Estimated Duration: 90 - 120 minutes  
Location: Trumbull County Emergency Management Agency  
640 N River Road NE, Suite B  
Warren, OH 44483

1. Welcome and introductions
2. Hazard mitigation 101
3. The hazard mitigation plan
4. Project review
5. Goals and objectives
6. Public involvement
7. Schedule for next meetings
8. Adjournment

**TRUMBULL COUNTY HAZARD MITIGATION PLAN**  
**PLANNING COMMITTEE MEETING #1**  
**NOTES**

Date: Thursday, February 7, 2019  
Time: 3:00 p.m.  
Duration: 90 minutes  
Location: Trumbull County Emergency Management Agency  
640 N River Road NE, Suite B  
Warren, OH 44483

Through the Trumbull Emergency Management Agency, Trumbull County hired the services of JH Consulting of West Virginia (the consultant) to assist in the update of the hazard mitigation plan. The Trumbull County Hazard Mitigation Plan Update of 2019 committee met for the first time on Thursday, February 7, 2019, at the Trumbull County EMA. Committee members will meet several times in person and on the phone during the update process.

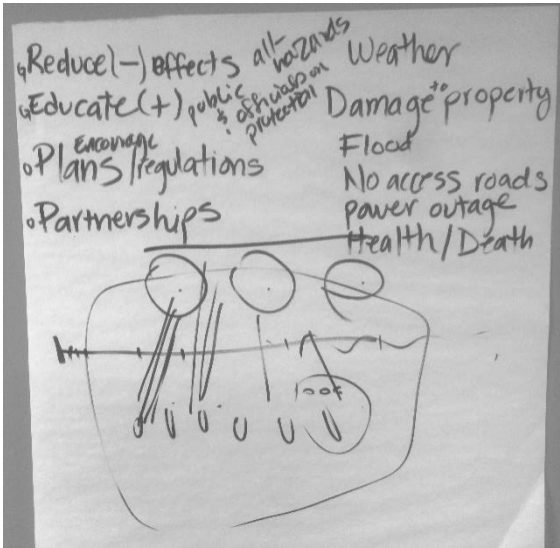
Mitigation is the effort to reduce the loss of life and property by lessening the impact of disasters, according to FEMA; FEMA requires jurisdictions to have an approved hazard mitigation plan in place and update it every five years. This plan update will follow all the latest regulations on hazard mitigation plans stipulated in the Disaster Mitigation Act of 2000, the Robert T. Stafford Act, Section 322, and the Code of Federal Regulations, Title 44, part 201.6.

The hazard mitigation plan itself will be reformatted and updated; the current version from 2010 has profile hazards in the appendices – these will be moved into the plan itself. The plan will flow in a way that it provides all the necessary background information on the process and the county, go into the description of all the hazards, and finally, identify the strategies that the committee and jurisdictions put forth to mitigate the hazards identified earlier in the plan.

For the update of this plan, the committee will be expected to meet several times in person and via online web conference; they will provide the consultant with relevant local information to include in the plan, reach out to the public for their input, and ultimately approve the draft of the plan before it is submitted to the Ohio Emergency Management Agency and the Federal Emergency Management Agency for final approval. Because the committee members live and work in the communities in Trumbull County, the consultant and Trumbull

County will rely on their connections to reach the appropriate jurisdictional representatives within the county.

The committee reviewed the prior plan's mitigation goals and objectives during this meeting and identified several issues: the number of goals was unmanageable, each goal related to a hazard in the plan and did not easily allow for projects to address more than one hazard without being repetitive, and each jurisdiction also had their own goals. After some discussion, the committee decided to eliminate the goals from the 2010 plan, rework them discuss them, and come up with new, comprehensive, realistic goals for the update of the



plan. Through discussion, the committee identified the problems they face from hazards that include damage to property, lack of access to certain roads, power outages, injuries, illness, and death, etc. To address the issues, they discussed goals which included topics such as reducing the negative effects of hazards, education, plans and regulations, and partnerships. The committee realizes that there are several ways to organize goals for the plan but decided to have one overarching goal, and three more specific objectives that can be achieved through the mitigation projects that will be included in the plan. These goals and objectives apply to the county's unincorporated areas as well as the cities and villages; this way all communities within the county are working towards the three objectives and ultimately towards the overall goal. The committee settled on the following goal and objectives.

**GOAL: Reduce the negative effects and impacts of all hazards that threaten Trumbull County to become more resilient.**

Objective 1: Educate the public and officials in preparedness and protective measures they can take to reduce their vulnerability.

Objective 2: Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.

Objective 3: Promote partnerships and open communication within the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recover from hazardous events or incidents.

During this first meeting, the committee also reviewed the previous mitigation plan's



project list and provided as much information as possible on the status of the projects. The consultant provided them with a list of active projects (the consultant removed all deleted and completed projects in the previous plan from the active list) to review.

This plan requires to involve the public; the consultant asked how the committee members wanted to engage the public as part of the update process. They agreed that an online survey that they could share on social media would be effective as a first step. Therefore, the consultant will provide the committee with the link for the survey once the next meeting is held because the survey will include information discussed in the next meeting.

The next committee meeting will be via web conference on Friday, March 29, 2019, at 10:00 AM. The login information is the following.

Online: <https://global.gotomeeting.com/join/213964509>

Dial-in: 1-866-899-4679

Access code: 213-964-509

## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #1

### AGENDA

Date: Thursday, February 7, 2019  
Time: 3:00 p.m.  
Estimated Duration: 90 - 120 minutes  
Location: Trumbull County Emergency Management Agency  
640 N River Road NE, Suite B  
Warren, OH 44483

1. Welcome and introductions
2. Hazard mitigation 101
3. The hazard mitigation plan
4. Project review
5. Goals and objectives
6. Public involvement
7. Schedule for next meetings
8. Adjournment

## TRUMBULL COUNTY HAZARD MITIGATION PLAN 2019 UPDATE



Trumbull County  
Emergency Management Agency

February 7, 2019 ~ 3:00 PM


640 N River Road NE, Suite B  
Warren, OH 44483



## WELCOME AND INTRODUCTIONS









## HAZARD MITIGATION 101



Federal Emergency Management Agency (FEMA):

- oversees the hazard mitigation process at the local, regional, state, and national levels, and
- defines mitigation as, "the effort to reduce loss of life and property by lessening the impact of disasters" (FEMA.gov, 2016).




## HAZARD MITIGATION 101

DMA2K ~ Stafford Act, Section 322 ~ 44 CFR 201.6

The  
Hazard  
Mitigation  
Plan


- Planning Process
- Description of the planning area
- Risk Assessment
- Action plan
  - Goals
  - Strategies (projects/actions)
- Plan maintenance
- Appendices



## HAZARD MITIGATION 101


- Tasks and activities
- Contact with jurisdictions and consultant
- Review and approval of drafts

Project start FEMA approval




February 2019 December 2019

In-person meetings ~ Phone calls ~ Workshops  
Activities ~ Surveys ~ Conference calls ~ Research  
Mapping ~ Analysis ~ Historical data ~ Reviews  
Partnerships ~ Plan integration ~ Development

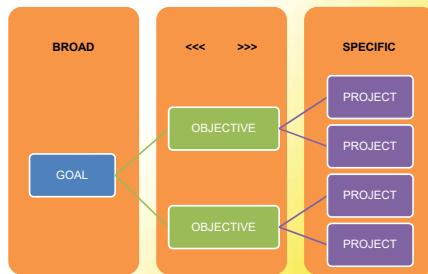


## PROJECT REVIEW

- Review 2010 action items
- Give update of status of each action item



## GOALS AND OBJECTIVES



## GOALS

GOAL 1: Dam failure  
 GOAL 2: Drought  
 GOAL 3: Earthquakes  
 GOAL 4: Epidemic  
 GOAL 5: Flooding  
 GOAL 6: Hail  
 GOAL 7: Infestation  
 GOAL 8: Mine subsidence  
 GOAL 9: Severe thunderstorms  
 GOAL 10: Severe wind and tornadoes  
 GOAL 11: Severe winter storms  
 GOAL 12: Heat waves  
 GOAL 13: Terrorism  
 GOAL 14: Wildfires  
 GOAL 15: Hazardous materials  
 GOAL 16: Various other hazards



## PUBLIC INVOLVEMENT

- Public survey
- Public meeting(s)
- Other public outreach



## SCHEDULE FOR NEXT MEETING

- Second committee meeting (conference call)
  - Hazards
  - Assets
  - Capabilities
- Third committee meeting (in-person)



**THANK YOU!**



# Mitigation Plan

Please print :

Name	Agency	email
Steven Gerberry	Trumbull County Engineer	hwgerber@co.trumbull.oh.us
Nicholas Coggins	TC Planning Commission	PCoggins@co.trumbull.oh.us
Zachary Svette	TC Metro Parks	mpsvette@co.trumbull.oh.us
BOB PINTI	Warren City Health District	bpinti@warren.oh.org
Grant Taylor	Eastgate	gtaylor@Eastgatecog.org
JUSTIN MONDOK	EASTGATE	JMONDOK@EASTGATECOG.ORG
Afradite Alteri	WRPA	aalteri@yngairport.com



## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #2

### AGENDA

Date: Friday, March 29, 2019  
Time: 10:00 a.m.  
Estimated Duration: 30-60 minutes  
Location: Web conference (log-in and dial-in information below)

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/213964509>

You can also dial in using your phone.

United States: [+1 \(646\) 749-3117](tel:+16467493117)

Access Code: 213-964-509

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<https://global.gotomeeting.com/install/213964509>

1. Welcome and roll call
2. Review goals and objectives
3. Hazards list
4. Surveys
  - Capability survey (participating jurisdictions)
  - Public survey
5. Schedule for next meeting
6. Adjournment

## TRUMBULL COUNTY HAZARD MITIGATION PLAN

### PLANNING COMMITTEE MEETING #2

### NOTES

Date: Friday, March 29, 2019  
Time: 10:00 a.m.  
Duration: Approximately 40 minutes  
Location: Web Conference (via GoToMeeting)

The Trumbull County Hazard Mitigation Planning Committee met via web conference on March 29<sup>th</sup> to continue the process of updating the county's multi-jurisdictional hazard mitigation plan. The meeting began with a roll call to confirm attendance. The following committee members attended the meeting.

- Bob Pinti, Warren City Health District
- Grant Taylor, Eastgate Regional Council of Governments
- Kayla Grizer, Trumbull Co. EMA
- Linda Beil, Trumbull Co. EMA
- Nicholas Coggins, Trumbull Co. Planning Commission
- Sandy Swann, Trumbull Co. Combined Health District
- Steve Gerberry, Trumbull Co. Engineer

The content portion of the meeting considered goals and objectives, hazards, and participation surveys. First, committee members reviewed the goals generated during Meeting 1. Committee members approved the following goal and three objectives.

- **Goal:** Reduce the negative effects and impacts of all hazards that threaten Trumbull County to become a more resilient community.
- **Objective 1:** Educate the public and local officials on preparedness and protective measures they can take to reduce vulnerability.
- **Objective 2:** Encourage the development of structures, plans, and regulations that can avoid or reduce the negative impacts of hazards in Trumbull County.
- **Objective 3:** Promote partnerships and open communication within the county, cities, villages, and townships of Trumbull County to effectively mitigate against, respond to, and recover from hazardous events or incidents.

For clarity, the consultant confirmed that “structures” in Objective 2 referred to flood walls, levees, elevation projects, etc. The committee agreed.

Committee members then considered the hazards for inclusion in this update. This discussion started with a list of the hazards from the previous version of the plan. The consultant shared his screen with the group and presented the list along with the number of occurrences of each hazard since 2010. The consultant noted a required revision per Ohio EMA (i.e., changing “dam failure” to “dam/levee failure” even though there are no levees in Trumbull County). The consultant also specifically asked several questions. The first was whether to change the title of the “epidemic” profile (from 2010) to the broader “public health emergencies.” The committee requested to keep “epidemic” because it conveys rising to a level where a multi-jurisdictional response may be necessary (versus something that ties into business as usual).

The second question regarded splitting the land and mine subsidence discussion into two separate profiles. (They currently comprise a single profile.) The committee suggested that the subsidence profile include subheadings rather than creating multiple profiles. The third question confirmed that the temperature extreme profile should include both extreme heat and cold. The committee noted that recent responses had included the activation of warming centers during extreme cold incidents.

Finally, the committee noted a preference for keeping “terrorism” listed as a hazard. The group asked the consultant to ensure that various “types” of terrorism are included (e.g., chemical, biological, etc.). Since the mitigation plan is a component of a broader effort to prepare for hazards (writ large), the consultant agreed to include a summary in the risk assessment that addresses the overlaps between mitigation, preparedness, and response, as well as complementary initiatives undertaken by partners (e.g., public health).

To close the meeting, the consultant provided an overview of online surveys to support participation in the plan update (a public survey and a jurisdiction-targeting capability survey). The committee agreed with this assessment and to share the public survey via various social media platforms. The consultant agreed to finalize both surveys and submit the link for the public survey to the committee as soon as possible. The next meeting of the committee will be in-person at Trumbull County EMA office on May 8, 2019, at 10:30 a.m.



## TRUMBULL COUNTY HAZARD MITIGATION PLAN

### PLANNING COMMITTEE MEETING #3

#### **AGENDA**

Date: Wednesday, May 8, 2019  
Time: 10:30 a.m.  
Estimated Duration: 90 minutes  
Location: Trumbull County Emergency Management Agency  
640 North River Road, NE, Suite B  
Warren, OH 44483

1. Welcome and introductions
2. Discussion of public survey results thus far
3. Discuss public meeting options
4. Mitigation projects
  - Review projects from previous mitigation plan
  - Integrating projects from other plans into the mitigation plan
5. Asset inventory review and updates
6. Schedule for next committee meeting
7. Adjournment

**TRUMBULL COUNTY HAZARD MITIGATION PLAN**  
**PLANNING COMMITTEE MEETING #3**  
**NOTES**

Date: Wednesday, May 8, 2019  
Time: 10:30 a.m.  
Duration: Approximately 75 minutes  
Location: Trumbull County EMA  
640 North River Road, NE, Suite B  
Warren, OH 44483

The Trumbull County Hazard Mitigation Planning Committee met at the county EMA office on May 8<sup>th</sup> to continue the process of updating the county's multi-jurisdictional hazard mitigation plan. The following committee members attended the meeting.

- Linda Beil, Trumbull Co. EMA
- Kayla Grizer, Trumbull Co. EMA
- Bob Pinti, Warren City Health District
- Steve Gerberry, Trumbull Co. Engineer
- Afrodite Altieri, Youngstown-Warren Airport
- Jeffery Harvey, JH Consulting, LLC

The meeting began with a review of the responses to the online public survey through May 7, 2019. At that time, 119 people had taken the survey. The consultant presented what he felt were the most interesting findings. Of the respondents, 37 individuals (31.09%) were very concerned about wind and tornado, 22 (18.64%) were very concerned about flooding and severe winter storms. Seventy-six (76) respondents (64.96%) were "not at all concerned" about dam failure, 35 (29.66%) were not at all concerned about extreme temperatures, and 32 (27.12%) were not at all concerned about hazardous materials. Sixty-one (61) respondents noted flooding as increasing in intensity in recent years, while 57 recorded more intense wind and 54 noted more intense thunderstorms.

Committee members briefly discussed the survey results. (A summary follows these minutes.) In addition, the group discussed how to increase participation in the survey. All members in attendance agreed to push the survey link via social media platforms and to their

extended networks again.

The consultant recommended that the committee consider in-person public forums to add to the public participation section. Bob Pinti noted that Warren City Health District could host community issues meetings and include the mitigation plan update on that agenda. The group targeted June 5<sup>th</sup> for the forum. Bob and Jeff Harvey agreed to touch base offline to plan the agenda. (NOTE: During planning, the health district will host two meetings: one on June 3 and the other on June 6. The consultant provided a mini survey, a front/back fact sheet on local mitigation planning, and a sheet of talking points.)

The consultant then distributed a handout containing the mitigation projects from the previous version of the plan. Committee members took time to review the list and mark updates accordingly. Many of the projects on the list were duplicates. The consultant agreed to revise the list and forward the revised list with these minutes. See attached.

To wrap up the meeting, committee members also took time to review the asset inventory list from the existing plan and marked updates on copies of the list as appropriate. The group will continue to work on this list as the project progresses. The group decided to meet again via web conference following the public meetings. The next committee meeting will be at 10:30 a.m. on Monday, June 10, 2019.

**Trumbull HMP Mtg. #4**

Mon, Jun 10, 2019 10:30 AM - 11:30 AM EDT

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/864858829>

You can also dial in using your phone.

United States: [+1 \(224\) 501-3412](tel:+12245013412)

Access Code: 864-858-829

Joining from a video-conferencing room or system?

Depending on your device, dial:

864858829@67.217.95.2 or 67.217.95.2##864858829

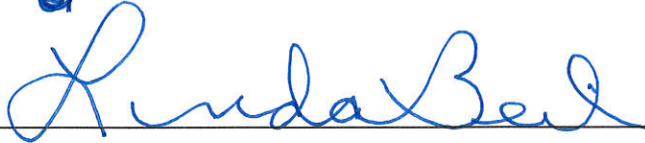
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# Mitigation Meeting Sign In Sheet

8 ~~10~~ May 2019

<sup>Beil</sup>  
Linda Biel  
EMA Director



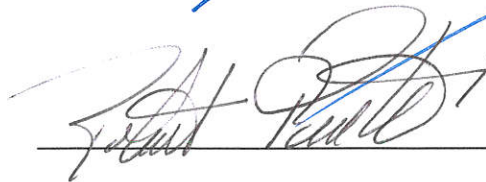
Kayla Grizer  
EMA Deputy Director



Steve Gerberry  
County Engineer



Bob Pinti  
Health



Nick Coggins  
Planning Commission

Zach Svette  
Metropolitan Parks District

Justin Mondok  
Eastgate

Grant Taylor  
Eastgate

Afrodite Altieri  
Youngstown-Warren Airport



Sandy Swann

Health

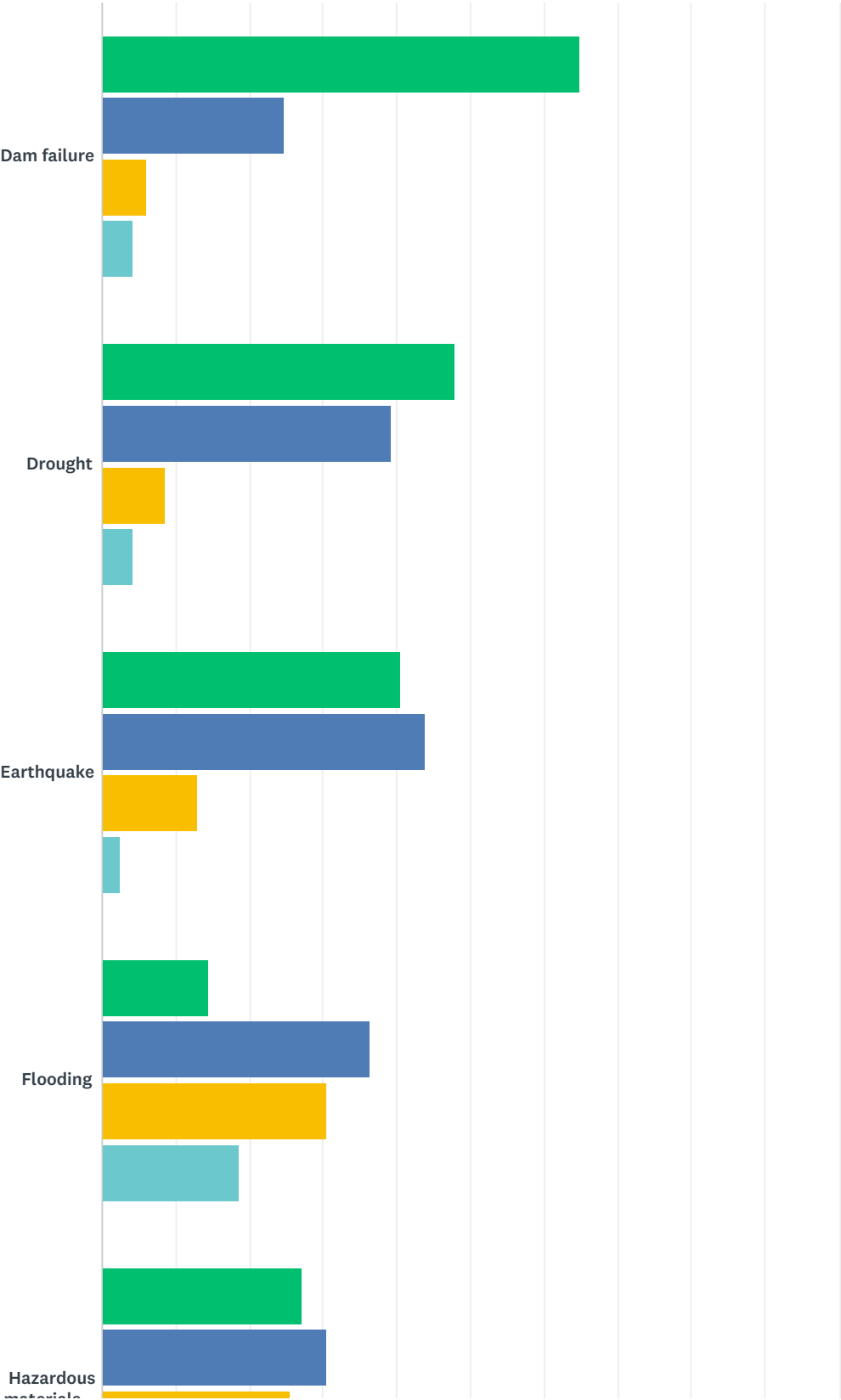
Frank Migliozi

Health

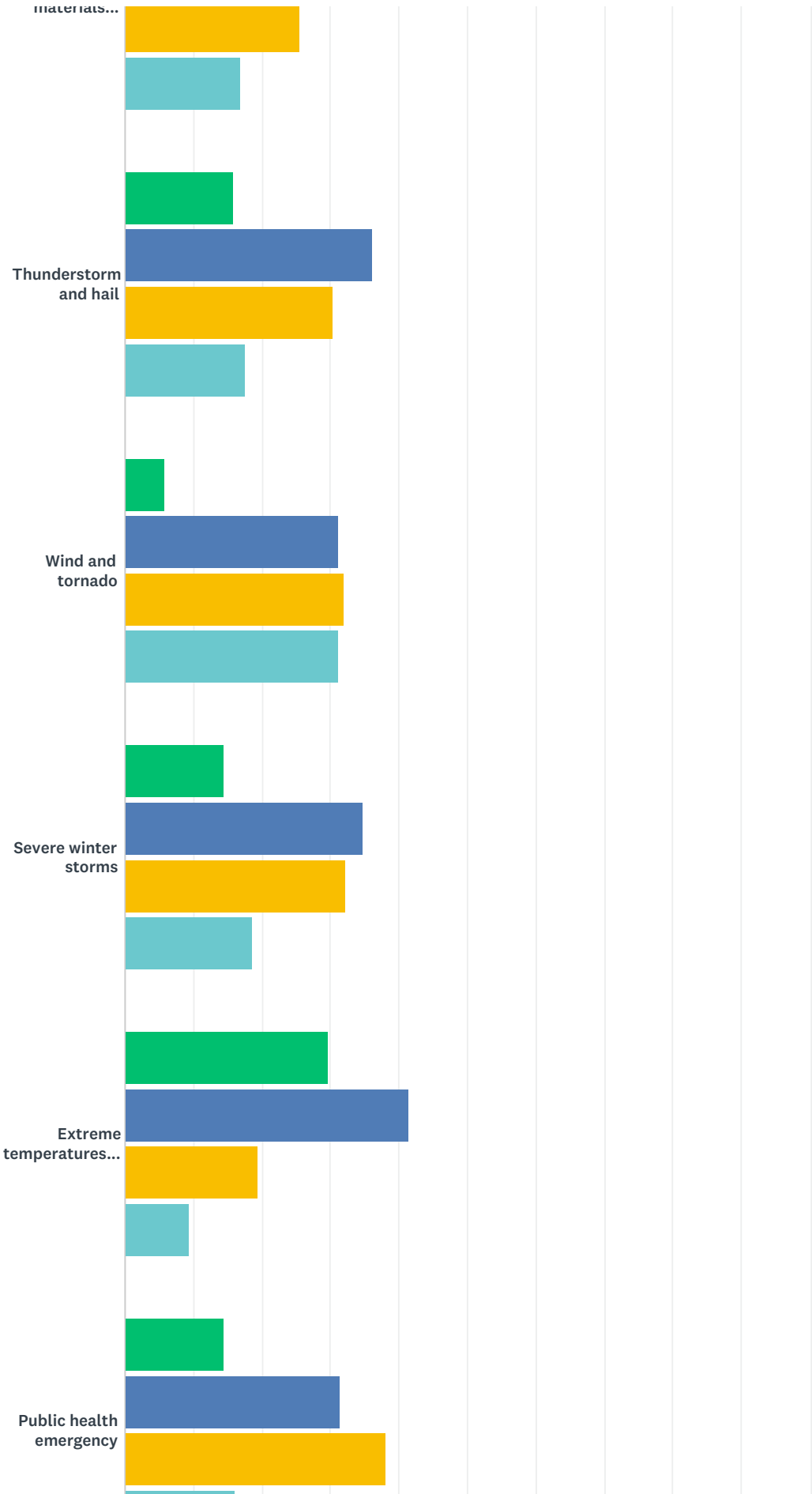
JEFFERY HARVEY - JH CONSULTING - 

Q1 Please indicate how concerned you are about the following hazards where you live.

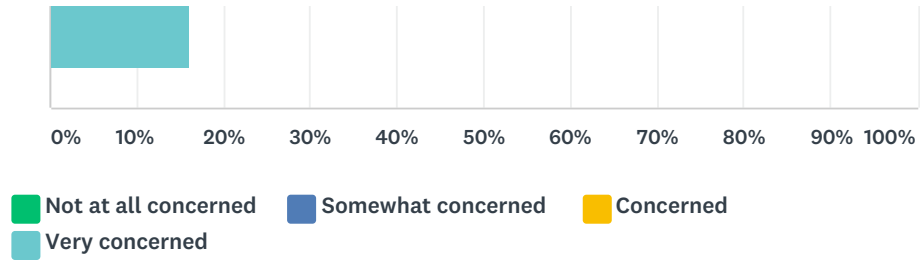
Answered: 119 Skipped: 0



Trumbull County Hazard Mitigation Survey



## Trumbull County Hazard Mitigation Survey

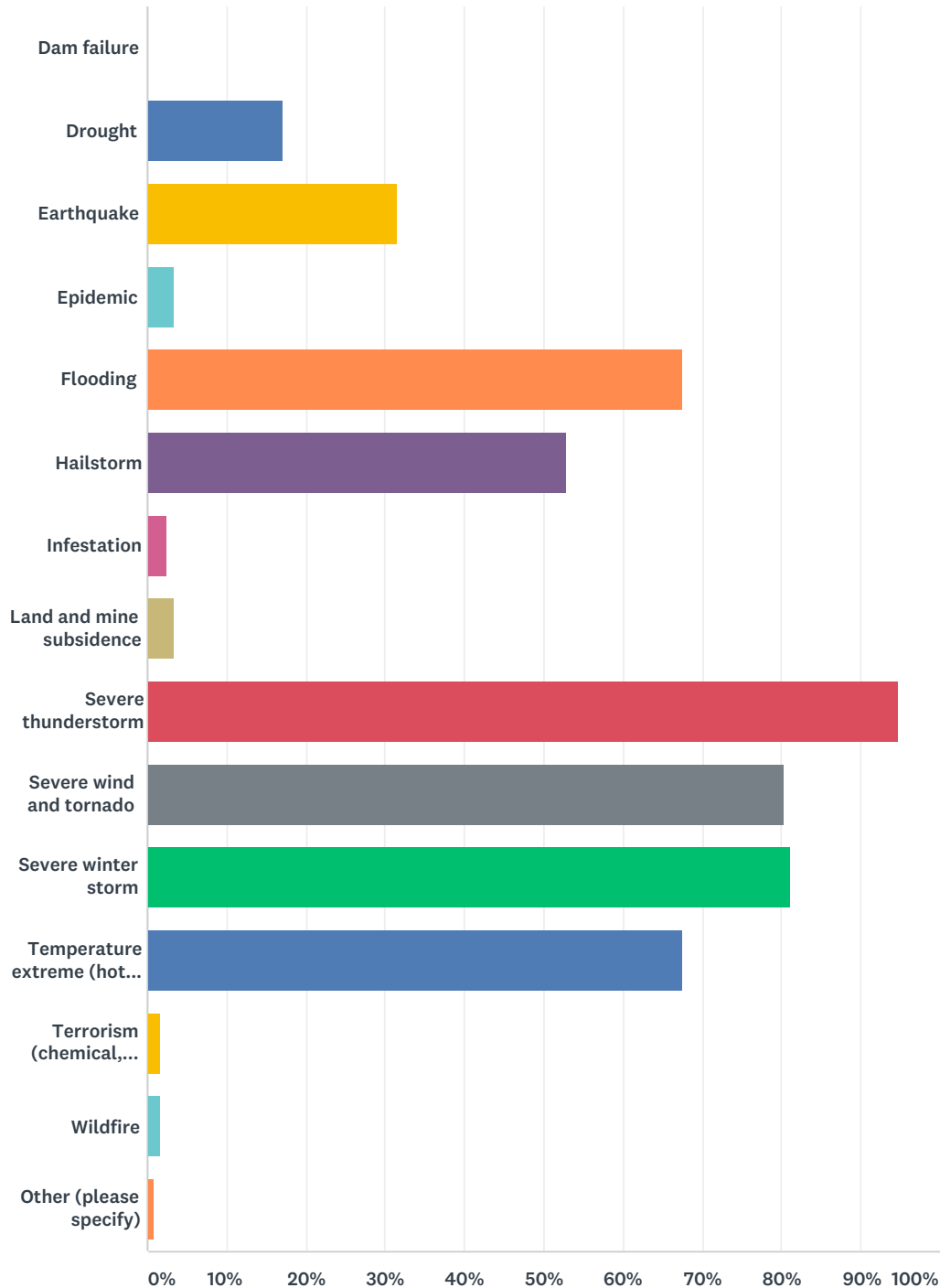


	NOT AT ALL CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Dam failure	64.96% 76	24.79% 29	5.98% 7	4.27% 5	117	1.50
Drought	47.86% 56	39.32% 46	8.55% 10	4.27% 5	117	1.69
Earthquake	40.52% 47	43.97% 51	12.93% 15	2.59% 3	116	1.78
Flooding	14.41% 17	36.44% 43	30.51% 36	18.64% 22	118	2.53
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	27.12% 32	30.51% 36	25.42% 30	16.95% 20	118	2.32
Thunderstorm and hail	15.97% 19	36.13% 43	30.25% 36	17.65% 21	119	2.50
Wind and tornado	5.88% 7	31.09% 37	31.93% 38	31.09% 37	119	2.88
Severe winter storms	14.41% 17	34.75% 41	32.20% 38	18.64% 22	118	2.55
Extreme temperatures (hot & cold)	29.66% 35	41.53% 49	19.49% 23	9.32% 11	118	2.08
Public health emergency	14.41% 17	31.36% 37	38.14% 45	16.10% 19	118	2.56



## Q2 In the past 10 years, which hazards do you remember occurring in your community? (Check all that apply)

Answered: 117 Skipped: 2



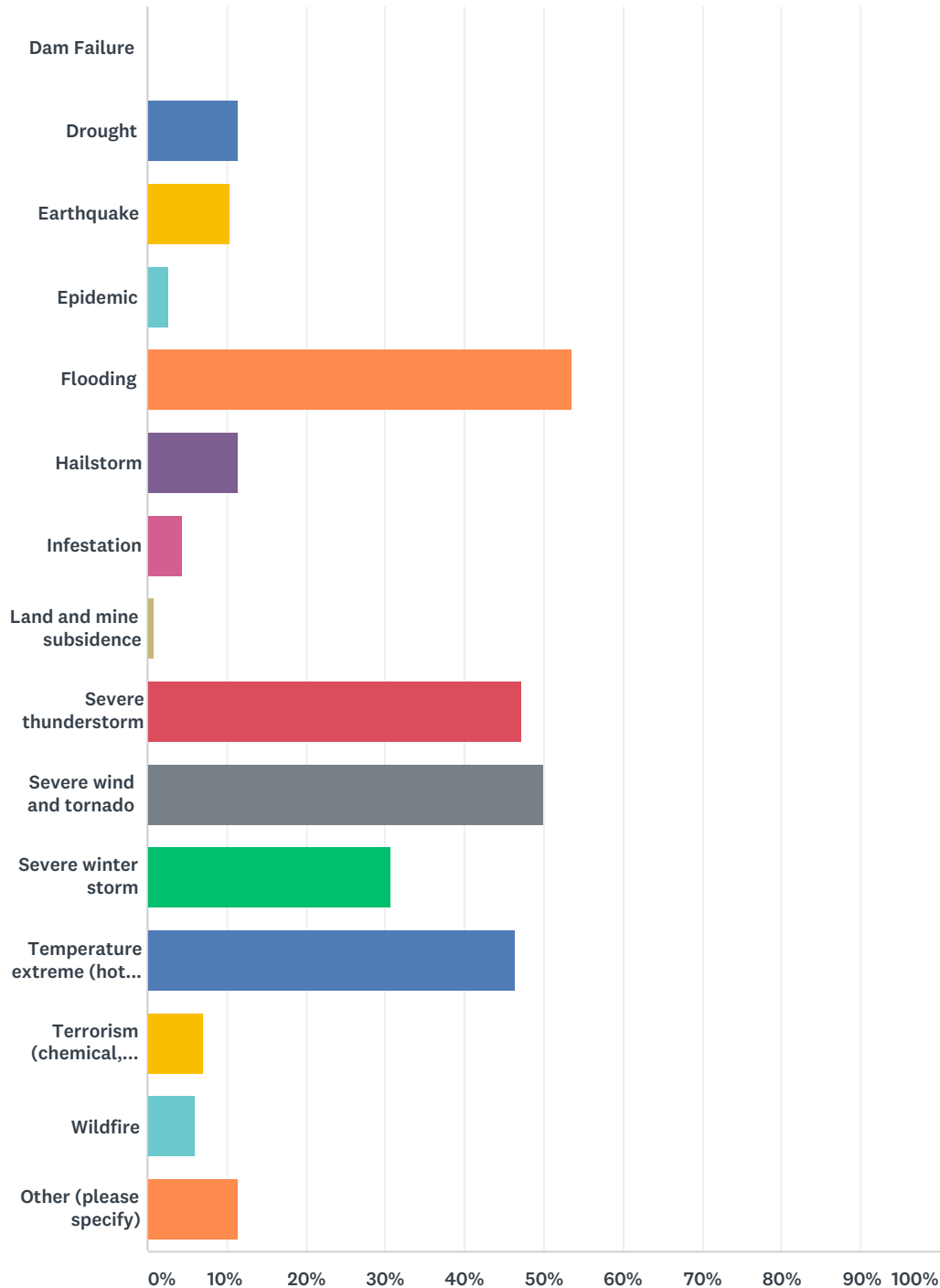
ANSWER CHOICES	RESPONSES	
Dam failure	0.00%	0
Drought	17.09%	20

## Trumbull County Hazard Mitigation Survey

Earthquake	31.62%	37
Epidemic	3.42%	4
Flooding	67.52%	79
Hailstorm	52.99%	62
Infestation	2.56%	3
Land and mine subsidence	3.42%	4
Severe thunderstorm	94.87%	111
Severe wind and tornado	80.34%	94
Severe winter storm	81.20%	95
Temperature extreme (hot & cold)	67.52%	79
Terrorism (chemical, biological, radiological, nuclear, and explosives)	1.71%	2
Wildfire	1.71%	2
Other (please specify)	0.85%	1
Total Respondents: 117		

### Q3 Have you noticed an increase in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 114 Skipped: 5



ANSWER CHOICES	RESPONSES	
Dam Failure	0.00%	0
Drought	11.40%	13

## Trumbull County Hazard Mitigation Survey

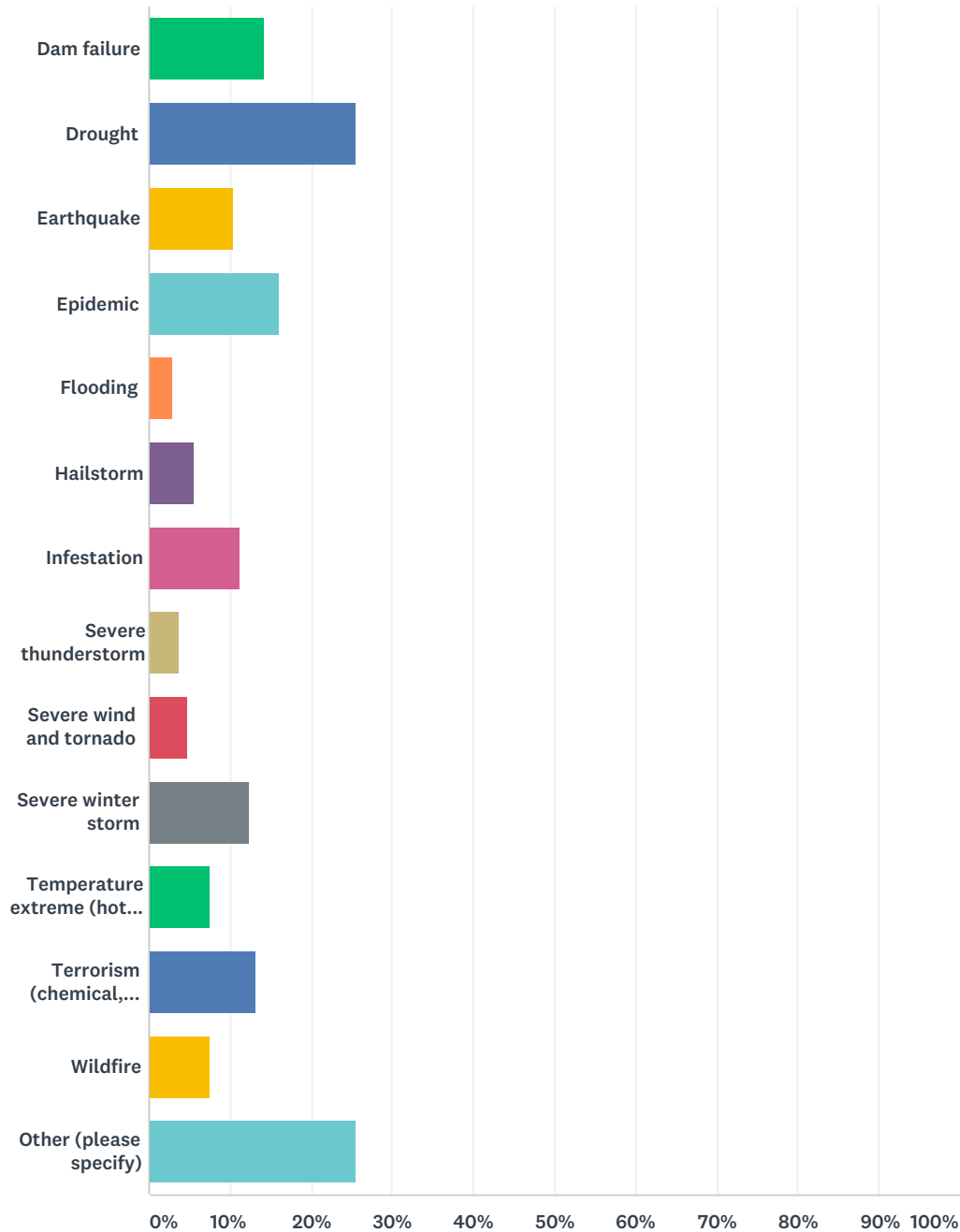
Earthquake	10.53%	12
Epidemic	2.63%	3
Flooding	53.51%	61
Hailstorm	11.40%	13
Infestation	4.39%	5
Land and mine subsidence	0.88%	1
Severe thunderstorm	47.37%	54
Severe wind and tornado	50.00%	57
Severe winter storm	30.70%	35
Temperature extreme (hot & cold)	46.49%	53
Terrorism (chemical, biological, radiological, nuclear, and explosives)	7.02%	8
Wildfire	6.14%	7
Other (please specify)	11.40%	13
Total Respondents: 114		

## Q4 To what do you think the increase could be attributed?

Answered: 36   Skipped: 83

## Q5 Have you noticed a decrease in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 106 Skipped: 13



ANSWER CHOICES	RESPONSES	
Dam failure	14.15%	15
Drought	25.47%	27
Earthquake	10.38%	11
Epidemic	16.04%	17

## Trumbull County Hazard Mitigation Survey

Flooding	2.83%	3
Hailstorm	5.66%	6
Infestation	11.32%	12
Severe thunderstorm	3.77%	4
Severe wind and tornado	4.72%	5
Severe winter storm	12.26%	13
Temperature extreme (hot & cold)	7.55%	8
Terrorism (chemical, biological, radiological, nuclear, and explosives)	13.21%	14
Wildfire	7.55%	8
Other (please specify)	25.47%	27
Total Respondents: 106		

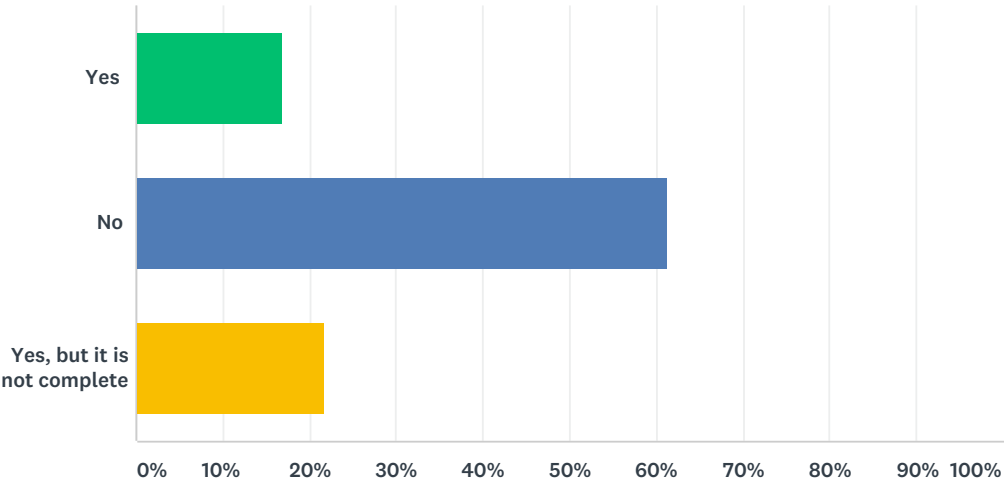
## Q6 To what do you think the decrease could be attributed?

Answered: 25   Skipped: 94



Q7 Do you have a 72-hour emergency kit in your home?

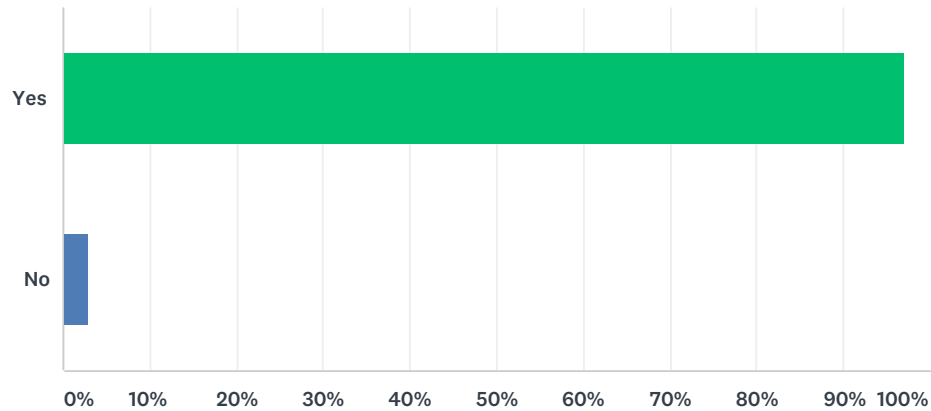
Answered: 106 Skipped: 13



ANSWER CHOICES		RESPONSES	
Yes		16.98%	18
No		61.32%	65
Yes, but it is not complete		21.70%	23
TOTAL			106

Q8 Do you have homeowner or renter's insurance?

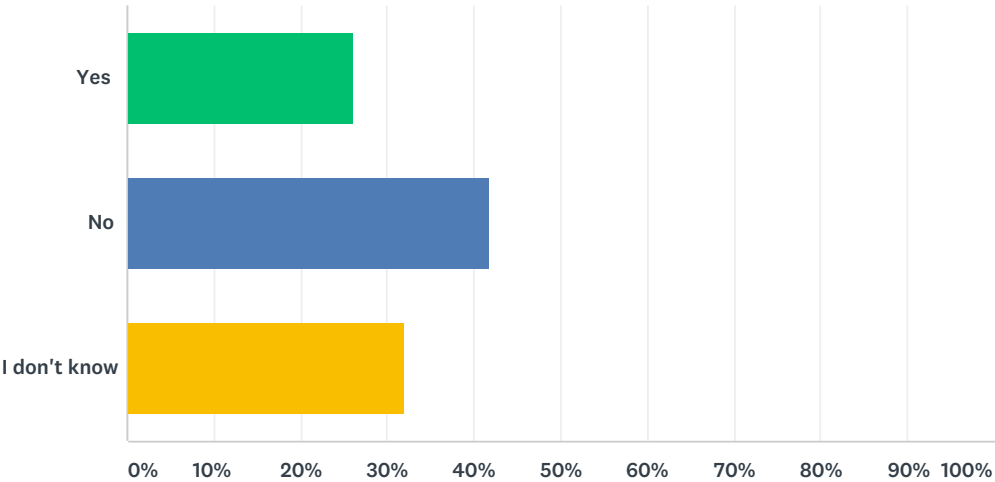
Answered: 106    Skipped: 13



ANSWER CHOICES		RESPONSES	
Yes		97.17%	103
No		2.83%	3
TOTAL			106

Q9 Does your homeowner or renter's insurance include flood insurance?

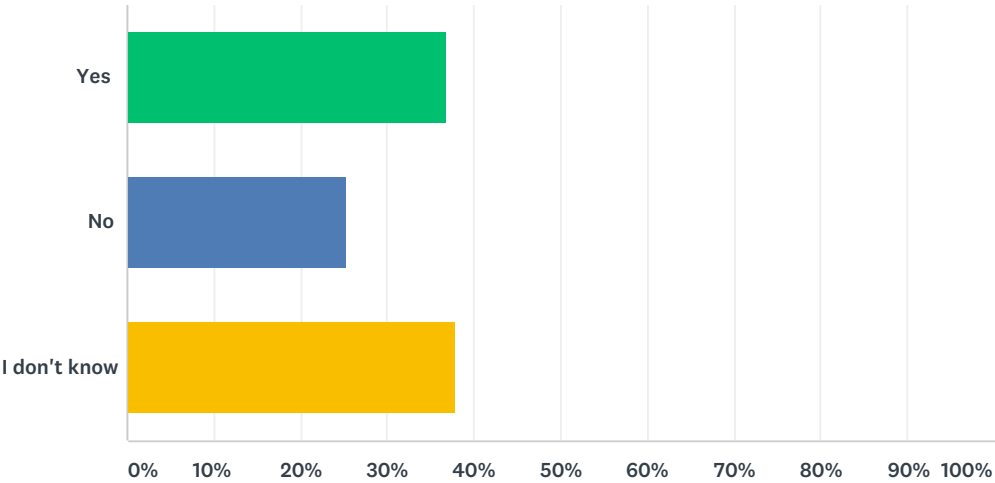
Answered: 103    Skipped: 16



ANSWER CHOICES		RESPONSES	
Yes		26.21%	27
No		41.75%	43
I don't know		32.04%	33
TOTAL			103

Q10 Does your homeowner or renter's insurance include sewer backup insurance?

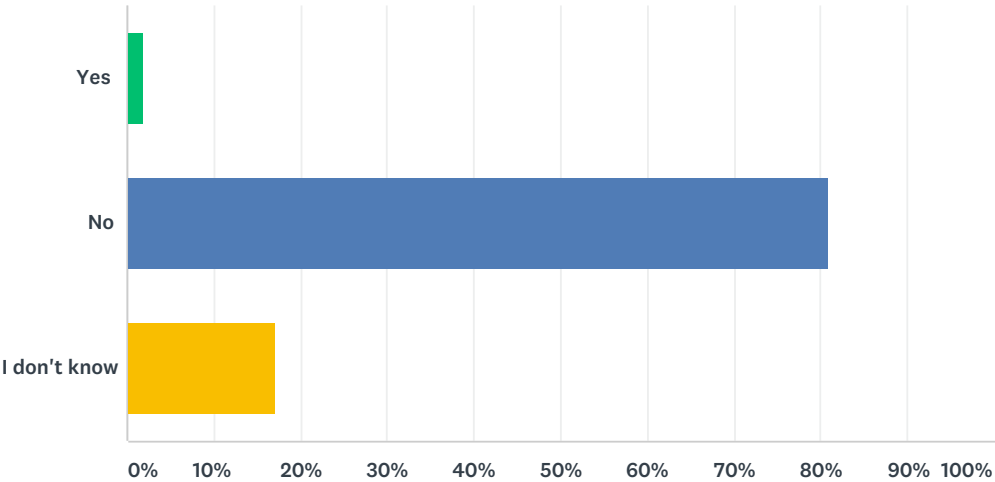
Answered: 103 Skipped: 16



ANSWER CHOICES	RESPONSES	
Yes	36.89%	38
No	25.24%	26
I don't know	37.86%	39
TOTAL		103

Q11 Do you live in a special flood hazard area (SFHA)?

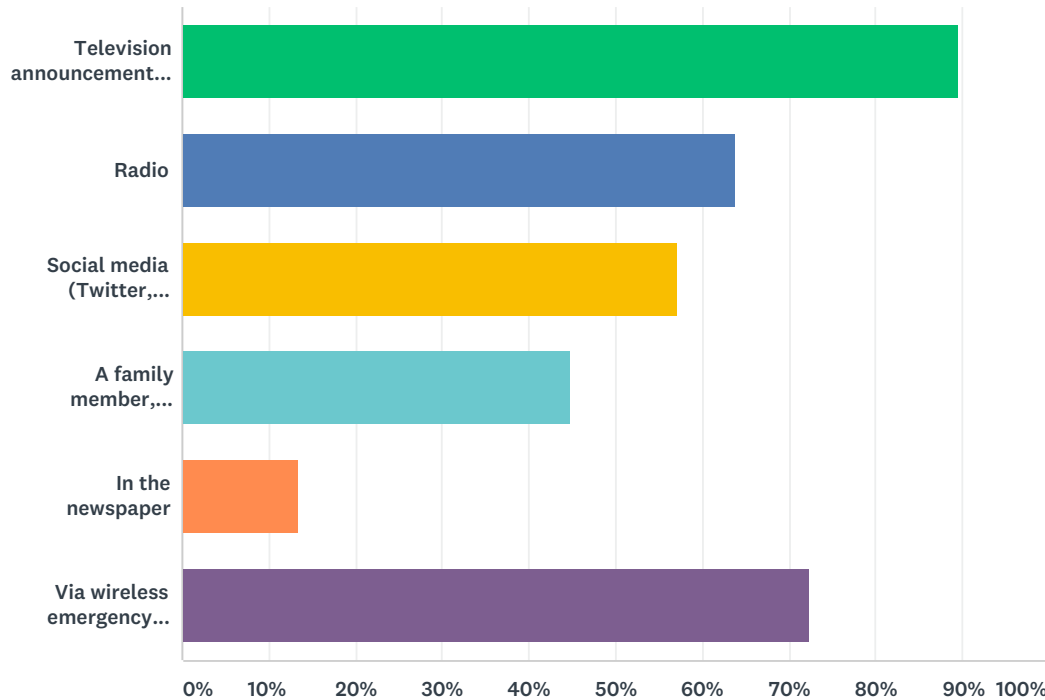
Answered: 105    Skipped: 14



ANSWER CHOICES		RESPONSES	
Yes		1.90%	2
No		80.95%	85
I don't know		17.14%	18
TOTAL			105

## Q12 How do you find out about upcoming hazards such as the ones previously mentioned? (Select all that apply)

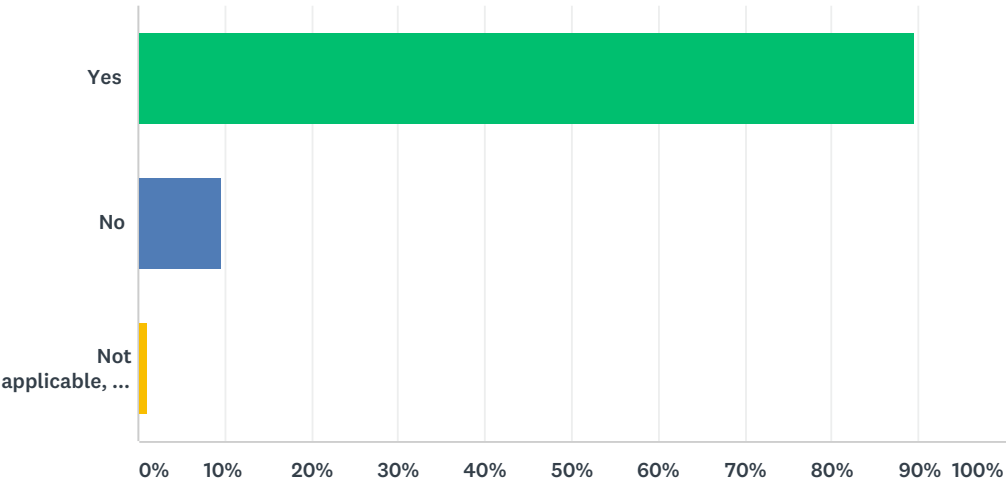
Answered: 105 Skipped: 14



ANSWER CHOICES	RESPONSES	
Television announcements or the news	89.52%	94
Radio	63.81%	67
Social media (Twitter, Facebook, etc.)	57.14%	60
A family member, neighbor, friend, or acquaintance	44.76%	47
In the newspaper	13.33%	14
Via wireless emergency notifications (e.g., text message)	72.38%	76
Total Respondents: 105		

Q13 Do you receive timely, accurate, and effective notifications from these sources that allow you to make appropriate decisions about what to do?

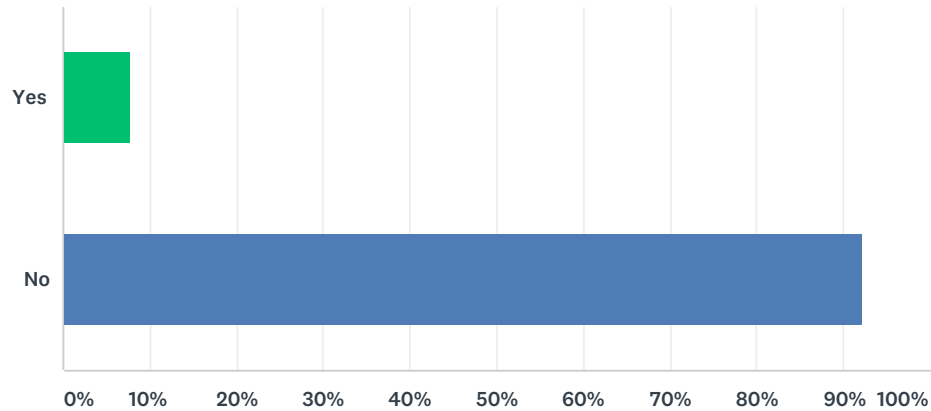
Answered: 105    Skipped: 14



ANSWER CHOICES		RESPONSES	
Yes		89.52%	94
No		9.52%	10
Not applicable, I do not receive notifications		0.95%	1
TOTAL			105

Q14 Have you ever evacuated your home or community due to a hazard when officials suggested or mandated you do so?

Answered: 103 Skipped: 16

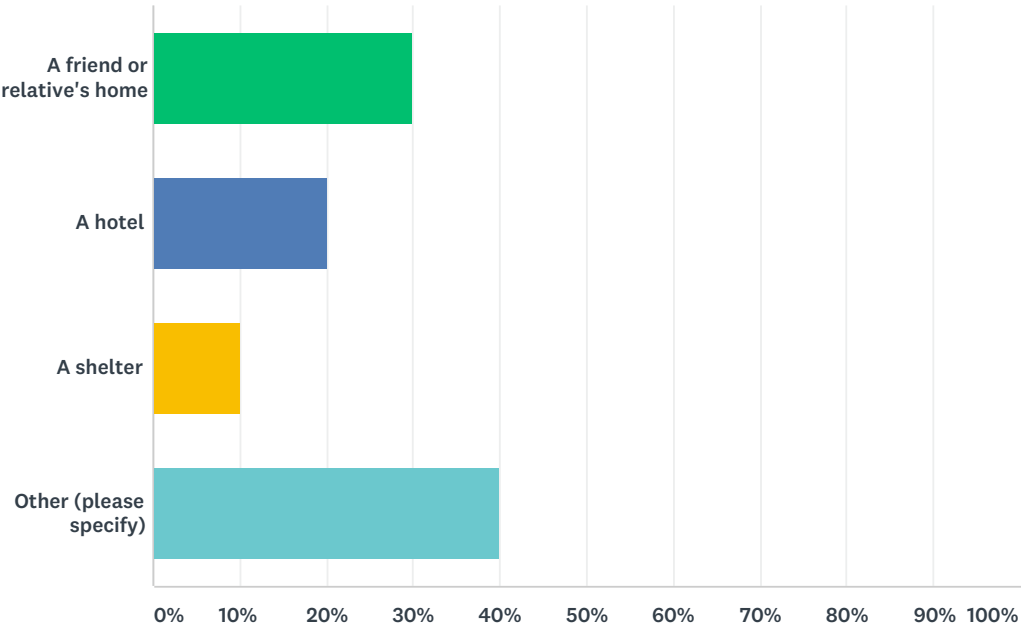


ANSWER CHOICES		RESPONSES	
Yes		7.77%	8
No		92.23%	95
TOTAL			103



Q15 To where did you evacuate?

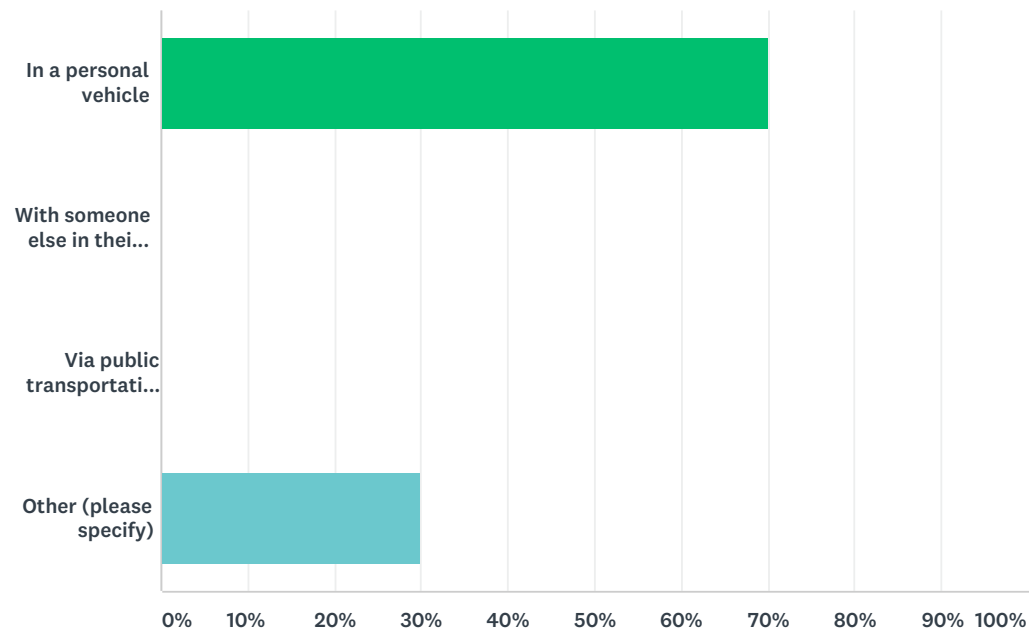
Answered: 10    Skipped: 109



ANSWER CHOICES	RESPONSES	
A friend or relative's home	30.00%	3
A hotel	20.00%	2
A shelter	10.00%	1
Other (please specify)	40.00%	4
TOTAL		10

Q16 How did you evacuate?

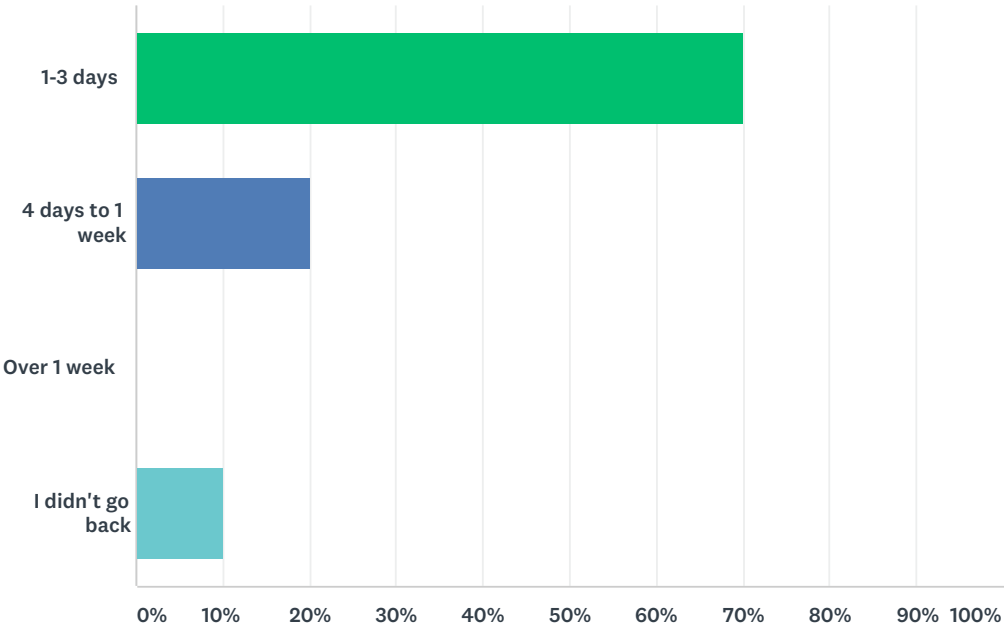
Answered: 10    Skipped: 109



ANSWER CHOICES	RESPONSES	
In a personal vehicle	70.00%	7
With someone else in their vehicle	0.00%	0
Via public transportation or transportation provided by the county/city/village/etc.	0.00%	0
Other (please specify)	30.00%	3
TOTAL		10

Q17 How long were you away from home?

Answered: 10    Skipped: 109



ANSWER CHOICES	RESPONSES	
1-3 days	70.00%	7
4 days to 1 week	20.00%	2
Over 1 week	0.00%	0
I didn't go back	10.00%	1
TOTAL		10

Q18 Please indicate the reason you did not evacuate

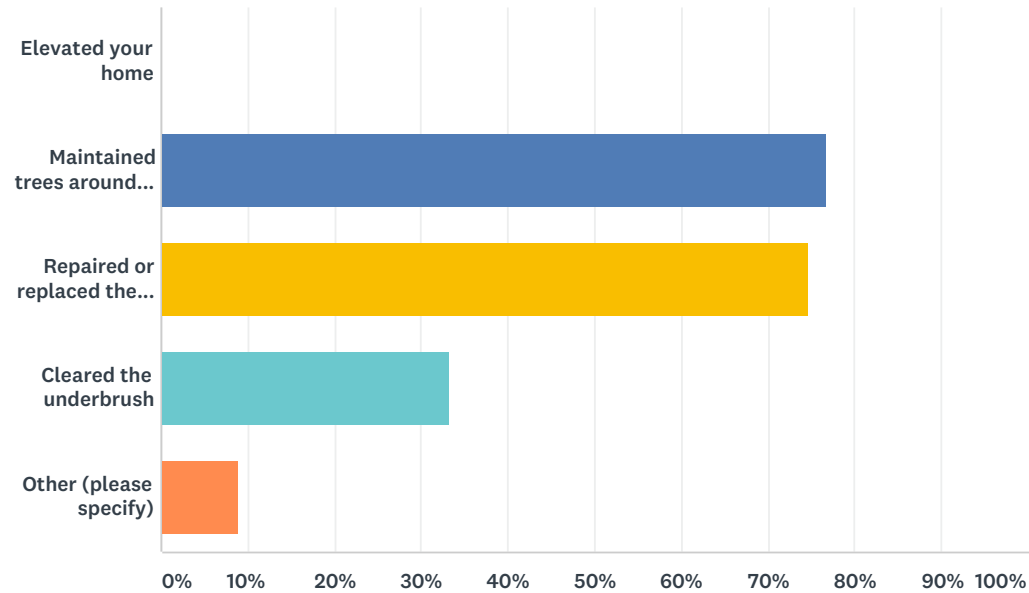
Answered: 0    Skipped: 119

 No matching responses.

ANSWER CHOICES	RESPONSES	
I/we did not receive notification in time to leave	0.00%	0
I/we do not own a vehicle	0.00%	0
It is too expensive to evacuate	0.00%	0
It was not necessary to evacuate, the danger was over exaggerated	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

Q19 Have you ever... (check all that apply)

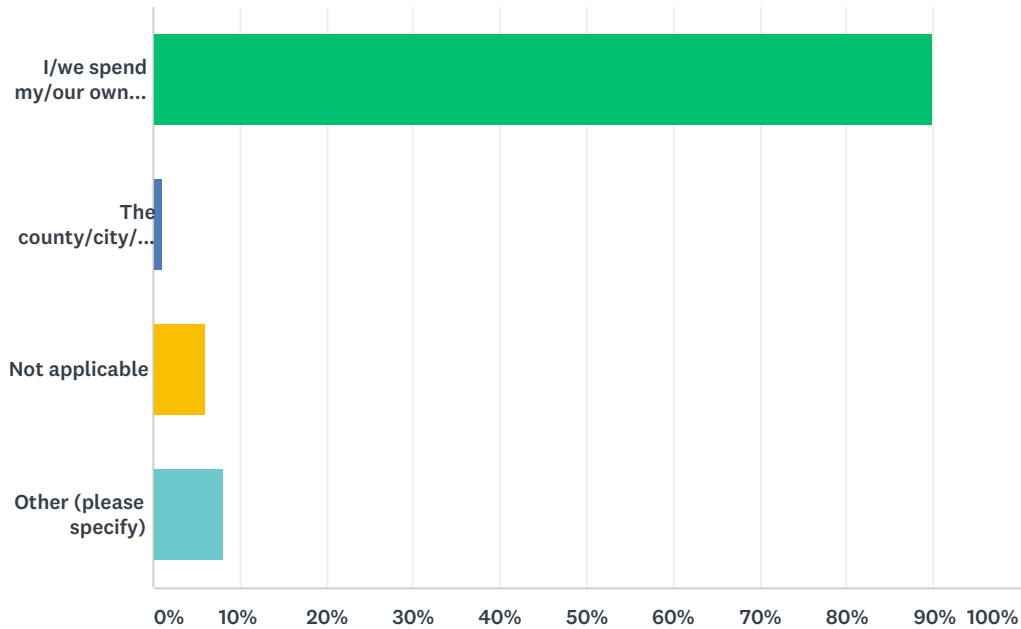
Answered: 99    Skipped: 20



ANSWER CHOICES	RESPONSES	
Elevated your home	0.00%	0
Maintained trees around the house or removed problematic trees	76.77%	76
Repaired or replaced the roof	74.75%	74
Cleared the underbrush	33.33%	33
Other (please specify)	9.09%	9
Total Respondents: 99		

Q20 If you have done any of the previous to your property, how was it paid for?

Answered: 99 Skipped: 20

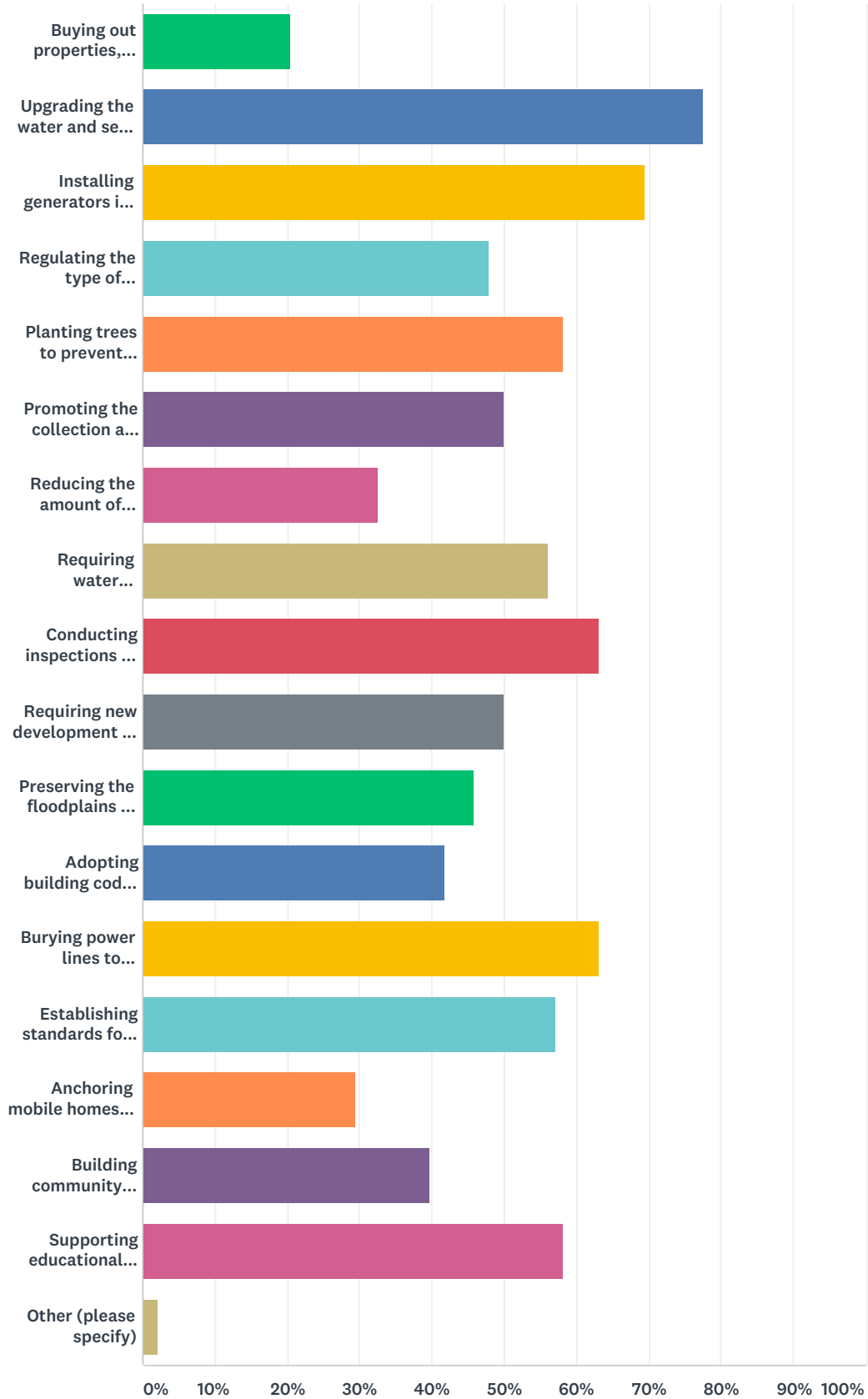


ANSWER CHOICES	RESPONSES	
I/we spend my/our own money	89.90%	89
The county/city/village paid for it	1.01%	1
Not applicable	6.06%	6
Other (please specify)	8.08%	8
Total Respondents: 99		

**Q21 Please indicate the types of mitigation actions you would support; these could be something you can do, or an initiative by your officials (check all that apply)**

Answered: 98   Skipped: 21

## Trumbull County Hazard Mitigation Survey



### ANSWER CHOICES

Buying out properties, relocating homes, or elevating structures that are prone to repetitive flooding

### RESPONSES

20.41% 20

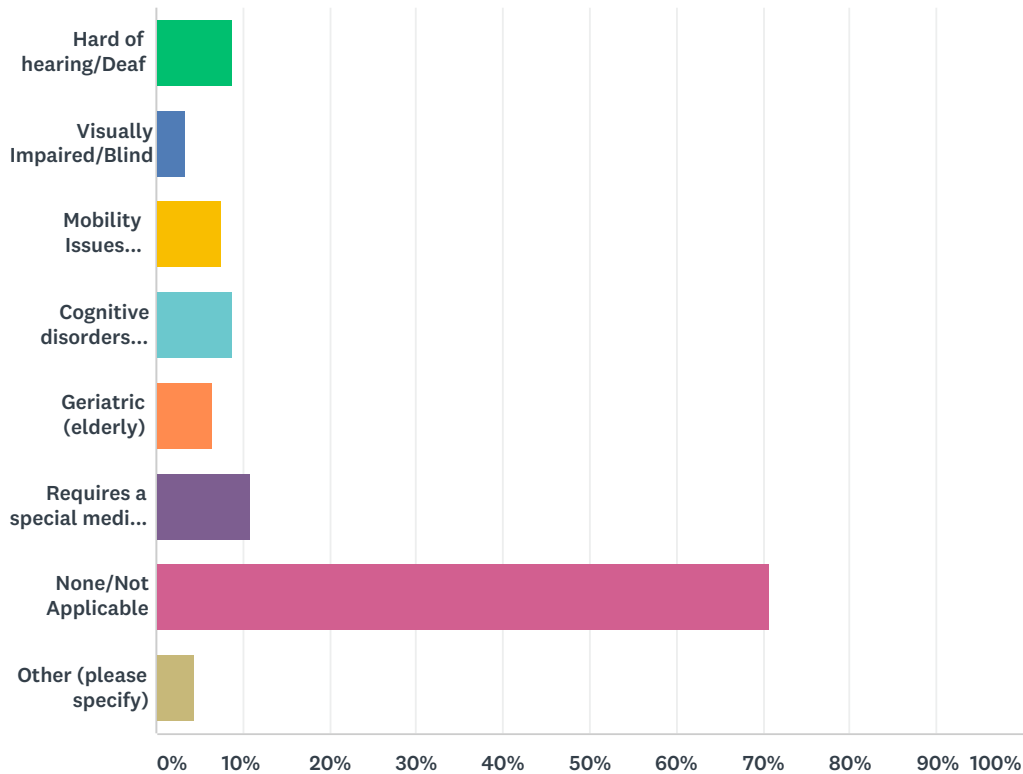


## Trumbull County Hazard Mitigation Survey

Upgrading the water and sewer systems	77.55%	76
Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.	69.39%	68
Regulating the type of development that is permitted in areas that are dangerous due to hazards	47.96%	47
Planting trees to prevent erosion and promote cooler micro-climates	58.16%	57
Promoting the collection and reuse of rainwater such as in rain gardens and green roofs	50.00%	49
Reducing the amount of surface pavement to reduce flooding and the heat island effect	32.65%	32
Requiring water conservation during drought conditions	56.12%	55
Conducting inspections of new construction and enforcing existing building codes	63.27%	62
Requiring new development to construct on-site retention basins for excessive stormwater runoff and as a firefighting water source	50.00%	49
Preserving the floodplains as open space	45.92%	45
Adopting building codes that go above and beyond the basic requirements of construction	41.84%	41
Burying power lines to provide uninterrupted power during severe weather	63.27%	62
Establishing standards for all utilities regarding tree pruning around lines	57.14%	56
Anchoring mobile homes and roof-mounted and ground equipment	29.59%	29
Building community shelters for tornadoes and severe weather events	39.80%	39
Supporting educational campaigns aimed at preparing the population for a variety of hazards	58.16%	57
Other (please specify)	2.04%	2
Total Respondents: 98		

## Q22 Do you, or someone who resides in your residence, have a special need that emergency service providers should be aware of in an emergency? (Check all the apply)

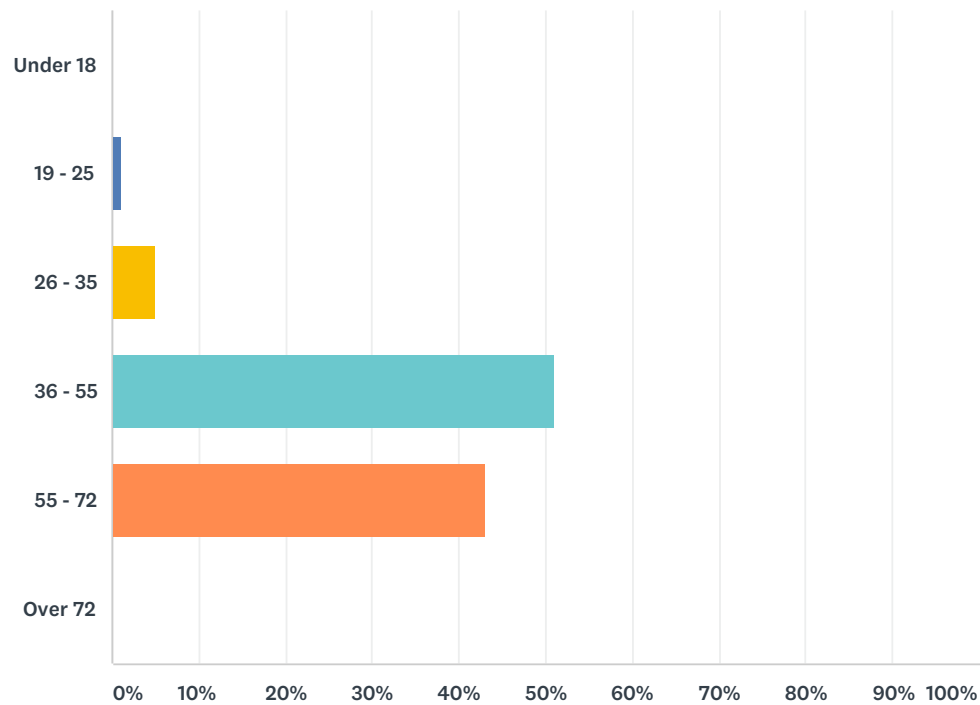
Answered: 92 Skipped: 27



ANSWER CHOICES	RESPONSES	
Hard of hearing/Deaf	8.70%	8
Visually Impaired/Blind	3.26%	3
Mobility Issues (non-ambulatory, confined to a wheelchair, requires the use of a can or walker)	7.61%	7
Cognitive disorders (includes autism, depression, etc.)	8.70%	8
Geriatric (elderly)	6.52%	6
Requires a special medical device (such as a Ventilator, CPAP machine, or drugs that require refrigeration [i.e., insulin])	10.87%	10
None/Not Applicable	70.65%	65
Other (please specify)	4.35%	4
Total Respondents: 92		

Q23 Please provide your age

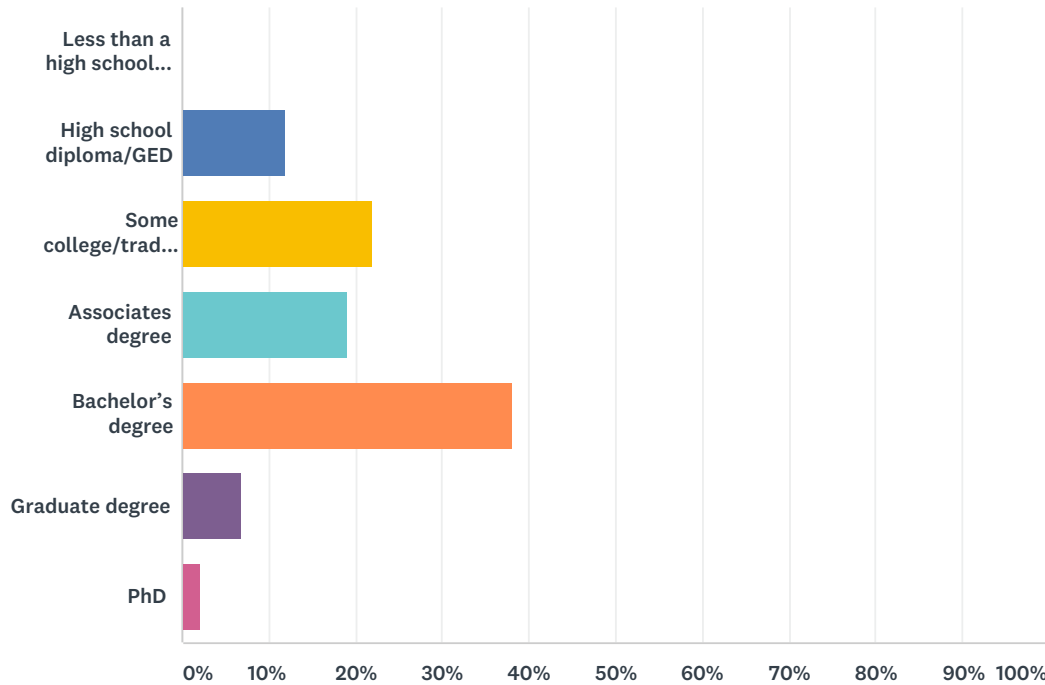
Answered: 100    Skipped: 19



ANSWER CHOICES		RESPONSES	
Under 18		0.00%	0
19 - 25		1.00%	1
26 - 35		5.00%	5
36 - 55		51.00%	51
55 - 72		43.00%	43
Over 72		0.00%	0
TOTAL			100

## Q24 Please indicate your level of education

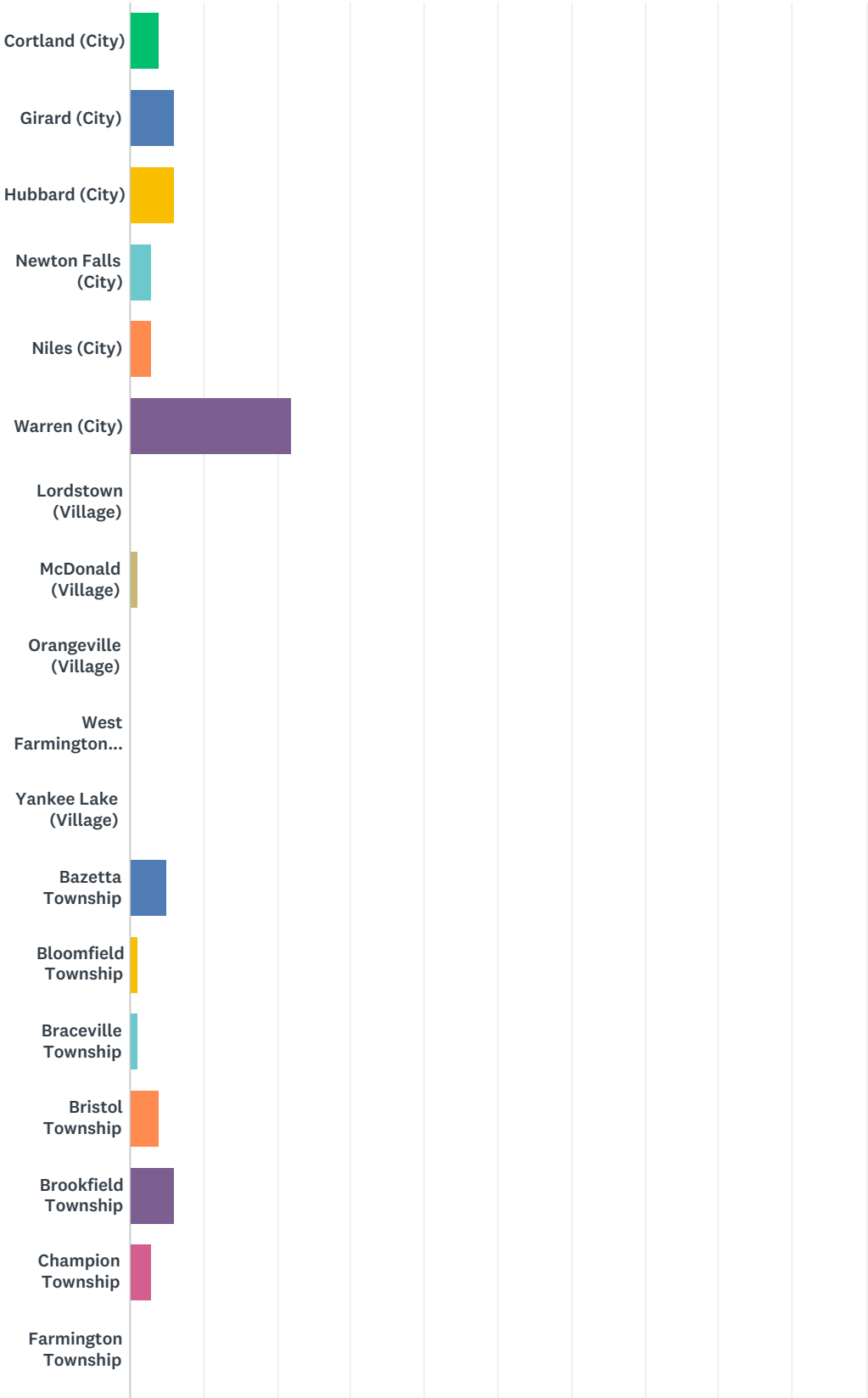
Answered: 100 Skipped: 19



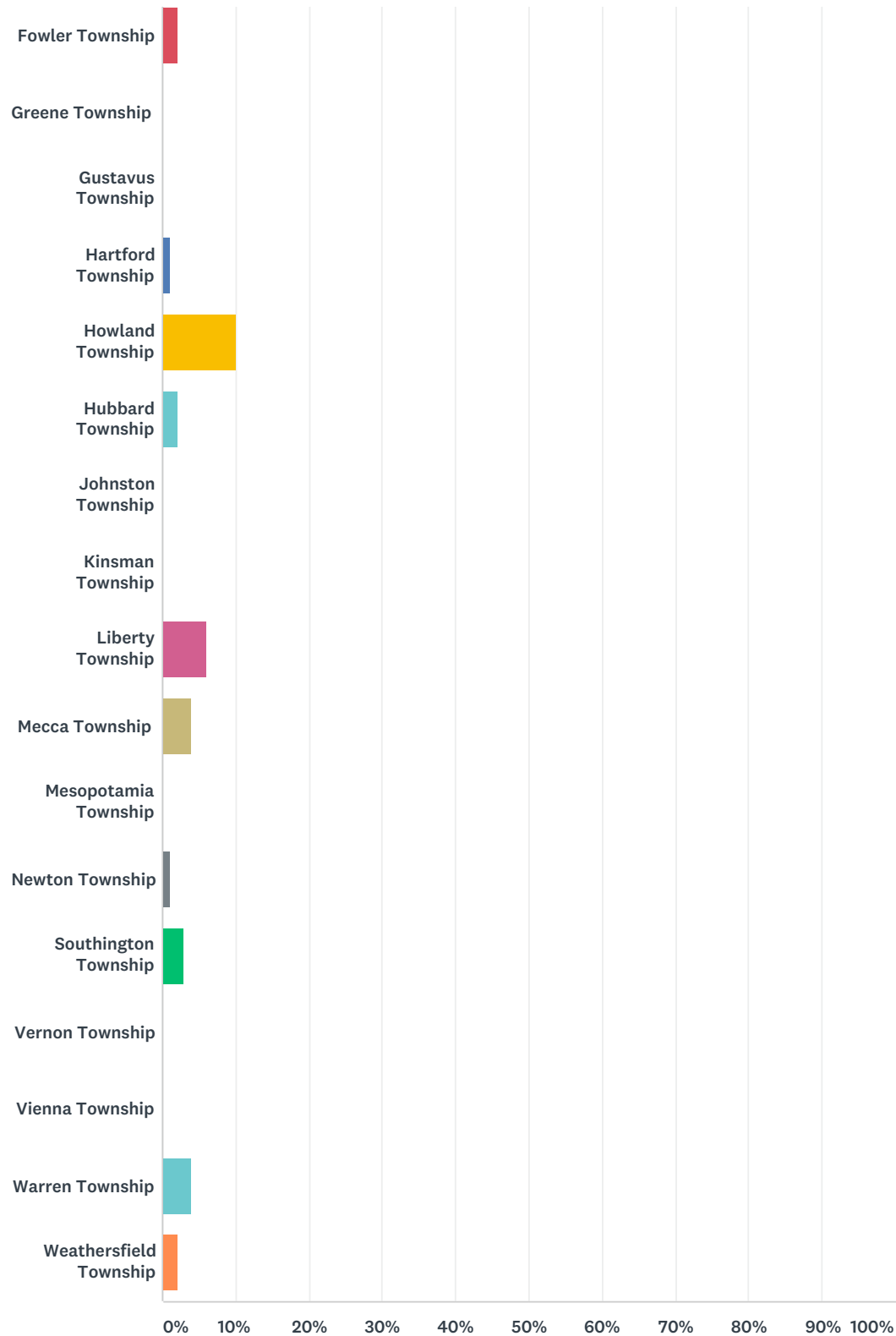
ANSWER CHOICES	RESPONSES	
Less than a high school diploma	0.00%	0
High school diploma/GED	12.00%	12
Some college/trade school	22.00%	22
Associates degree	19.00%	19
Bachelor's degree	38.00%	38
Graduate degree	7.00%	7
PhD	2.00%	2
TOTAL		100

Q25 In which community do you live (or work, if you do not live in Trumbull County)?

Answered: 100    Skipped: 19



Trumbull County Hazard Mitigation Survey



ANSWER CHOICES	RESPONSES	
Cortland (City)	4.00%	4
Girard (City)	6.00%	6
Hubbard (City)	6.00%	6

## Trumbull County Hazard Mitigation Survey

Newton Falls (City)	3.00%	3
Niles (City)	3.00%	3
Warren (City)	22.00%	22
Lordstown (Village)	0.00%	0
McDonald (Village)	1.00%	1
Orangeville (Village)	0.00%	0
West Farmington (Village)	0.00%	0
Yankee Lake (Village)	0.00%	0
Bazetta Township	5.00%	5
Bloomfield Township	1.00%	1
Braceville Township	1.00%	1
Bristol Township	4.00%	4
Brookfield Township	6.00%	6
Champion Township	3.00%	3
Farmington Township	0.00%	0
Fowler Township	2.00%	2
Greene Township	0.00%	0
Gustavus Township	0.00%	0
Hartford Township	1.00%	1
Howland Township	10.00%	10
Hubbard Township	2.00%	2
Johnston Township	0.00%	0
Kinsman Township	0.00%	0
Liberty Township	6.00%	6
Mecca Township	4.00%	4
Mesopotamia Township	0.00%	0
Newton Township	1.00%	1
Southington Township	3.00%	3
Vernon Township	0.00%	0
Vienna Township	0.00%	0
Warren Township	4.00%	4
Weathersfield Township	2.00%	2
TOTAL		100

**Q26 Please write any comments here.**

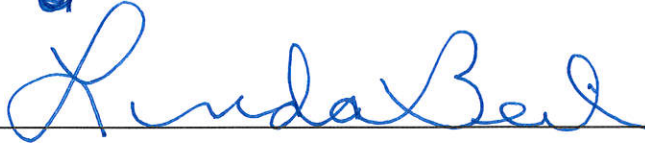
Answered: 8   Skipped: 111



# Mitigation Meeting Sign In Sheet

8 ~~10~~ May 2019

<sup>Beil</sup>  
Linda Biel  
EMA Director



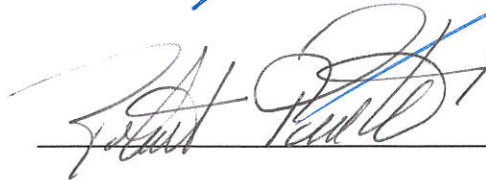
Kayla Grizer  
EMA Deputy Director



Steve Gerberry  
County Engineer



Bob Pinti  
Health



Nick Coggins  
Planning Commission

Zach Svette  
Metropolitan Parks District

Justin Mondok  
Eastgate

Grant Taylor  
Eastgate

Afrodite Altieri  
Youngstown-Warren Airport



Sandy Swann

Health

Frank Migliozi

Health

JEFFERY HARVEY - JH CONSULTING - 

## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #4

### AGENDA

Date: Monday, June 10, 2019  
Time: 10:30 a.m.  
Estimated Duration: 30-60 minutes  
Location: Web conference (log-in and dial-in information below)

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/864858829>

You can also dial in using your phone.

United States: [+1 \(224\) 501-3412](tel:+12245013412)

Access Code: 864-858-829

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<https://global.gotomeeting.com/install/864858829>

1. Welcome and roll call
2. Review public participation survey
3. Review community issues meetings (June 3<sup>rd</sup> and June 6<sup>th</sup>)
4. Revisit asset inventory matrix
5. Project list updates
6. Schedule for next meeting
7. Adjournment

**TRUMBULL COUNTY HAZARD MITIGATION PLAN**  
**PLANNING COMMITTEE MEETING #4**  
**NOTES**

Date: Monday, June 10, 2019  
Time: 10:30 a.m.  
Duration: Approximately 30 minutes  
Location: Web Conference (via GoToMeeting)

The Trumbull County Hazard Mitigation Planning Committee met via web conference on June 10<sup>th</sup> to continue the process of updating the county's multi-jurisdictional hazard mitigation plan. The following committee members attended the meeting.

- Kayla Grizer, Trumbull Co. EMA
- Linda Beil, Trumbull Co. EMA
- Steve Gerberry, Trumbull Co. Engineer
- Sandy Swann, Trumbull County Combined Health District
- Jeff Harvey, JH Consulting, LLC

The content portion of the meeting included presentation of the final online public survey results, discussion of the community needs meetings held June 3 and 6, and updates on the asset inventory and project status processes.

At the May 8<sup>th</sup> meeting, Jeff noted the survey yielded 119 results, and committee members agreed to disseminate the online survey again. Between May 9 and June 10, survey responses increased to 345. Jeff presented an abbreviated overview of the results. The top three hazards under the “very concerned” heading were wind and tornado (88 respondents, 25.66%), severe winter storms (67 respondents, 19.65%), and hazardous materials (54 respondents, 15.79%). The top three hazards under the “not at all concerned” heading were dam failure (247 respondents, 72.43%), drought (195 respondents, 57.18%), and earthquake \$167 respondents, 49.41%). Respondents felt that temperature extremes (hot and cold), flooding, and severe wind/tornado situations were increasing in intensity. Finally, respondents were agreeable to the following types of mitigation projects.

- Upgrading the water and sewer systems (207 respondents)
- Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.

(206 respondents)

- Burying power lines to provide uninterrupted power during severe weather (181 respondents)
- Planting trees to prevent erosion and promote cooler micro-climates (180 respondents)
- Supporting education campaigns aimed at preparing the population for a variety of hazards (167 respondents)

Committee members then agreed to close the survey. A full summary appears attached to these minutes.

The Warren City Health Department sponsored two community meetings on June 3 and 6, 2019. Bob Pinti with the health department provided a brief overview of the process and distributed “mini surveys” to attendees at these meetings. Though Bob could not attend the call, Linda reported that he received approximately 27 written mini-surveys at the first meeting (i.e., June 3).

Jeff then provided two brief updates as to the planning process. He thanked everyone for their work on updating the asset inventory from the previous plan and indicated there was still time to submit updates to that list. He then referenced a revised version of the previous project list. At the May 8<sup>th</sup> meeting, Jeff provided committee members with a copy of the projects from the previous version of the plan. Committee members noted the presence of several projects complete by virtue of agencies (e.g., ODNR) accomplishing the tasks as part of the regular duties. Further, there were several public information projects that the county could consolidate to make the total number of projects more manageable. Jeff agreed to revise the project list and submit it with the minutes of the May 8<sup>th</sup> meeting.

The minutes included the revised project list, but in the process of updating it, Jeff felt it would be beneficial to explain the edits so committee members could see how the revised list relates to the previous list. When removing projects from the list, Jeff added a strike-through the text. He wrote proposed revisions for the 2019 plan (i.e., projects and status updates) in red text. Finally, he placed consolidated/removed projects (with proposed status statements) at the end of the file. The revised list appears attached to these minutes.

To close the meeting, the committee discussed the next meeting date (for an in-person session). Committee members looked at mid-to-late July, but since several members could not attend the call, Jeff agreed to submit a Doodle poll to gauge the best date. Based on the results of that poll, the next meeting of the committee will be via teleconference on July 26, 2019, at 10:00 a.m. There will likely be an additional meeting after the July 26<sup>th</sup> session, and it will be in-person.

**Trumbull HMP Mtg. #5**

Fri, Jul 26, 2019 10:00 AM - 11:00 AM EDT

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/150351981>

You can also dial in using your phone.

United States: [+1 \(872\) 240-3311](tel:+18722403311)

Access Code: 150-351-981

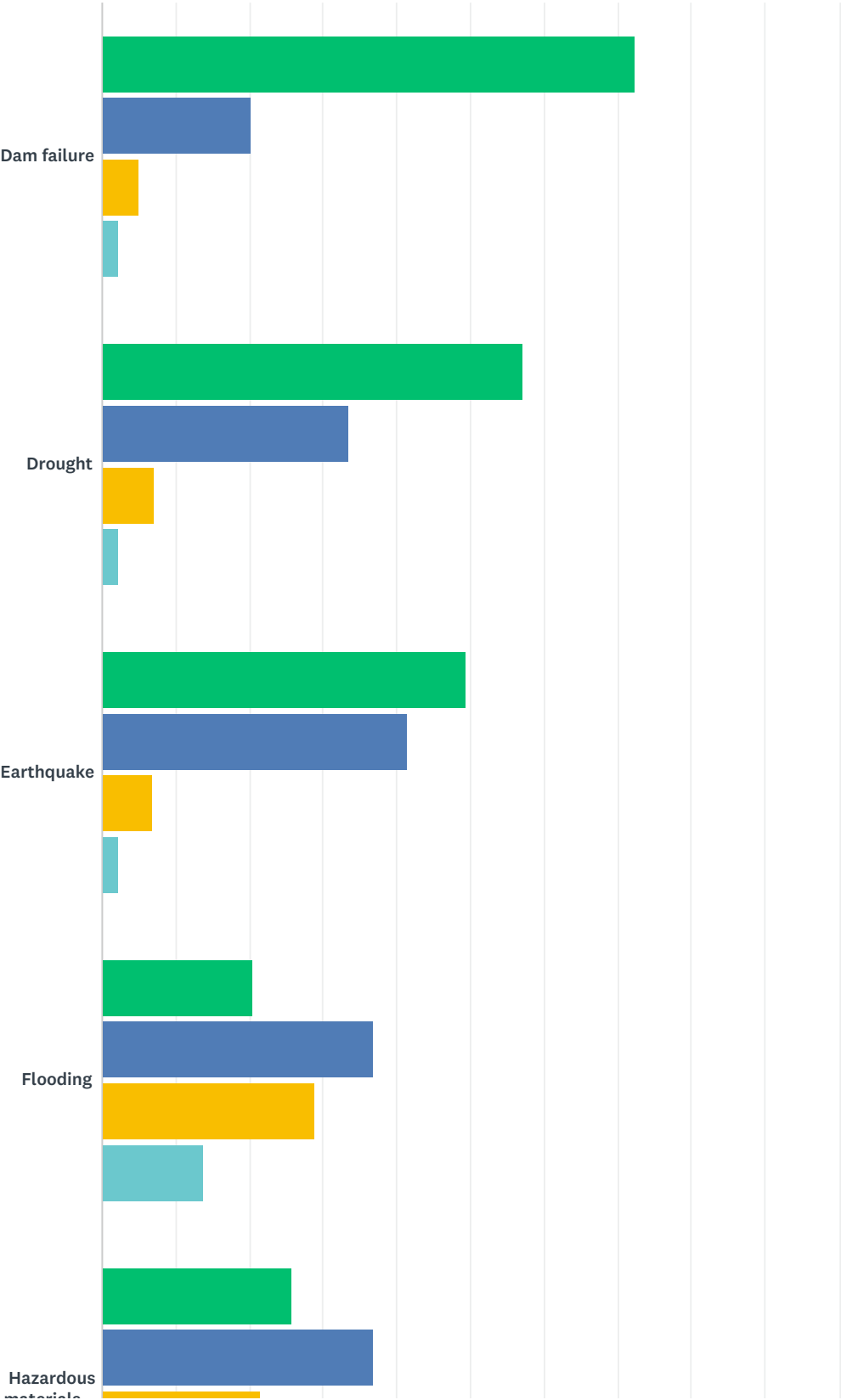
Joining from a video-conferencing room or system?

Depending on your device, dial:

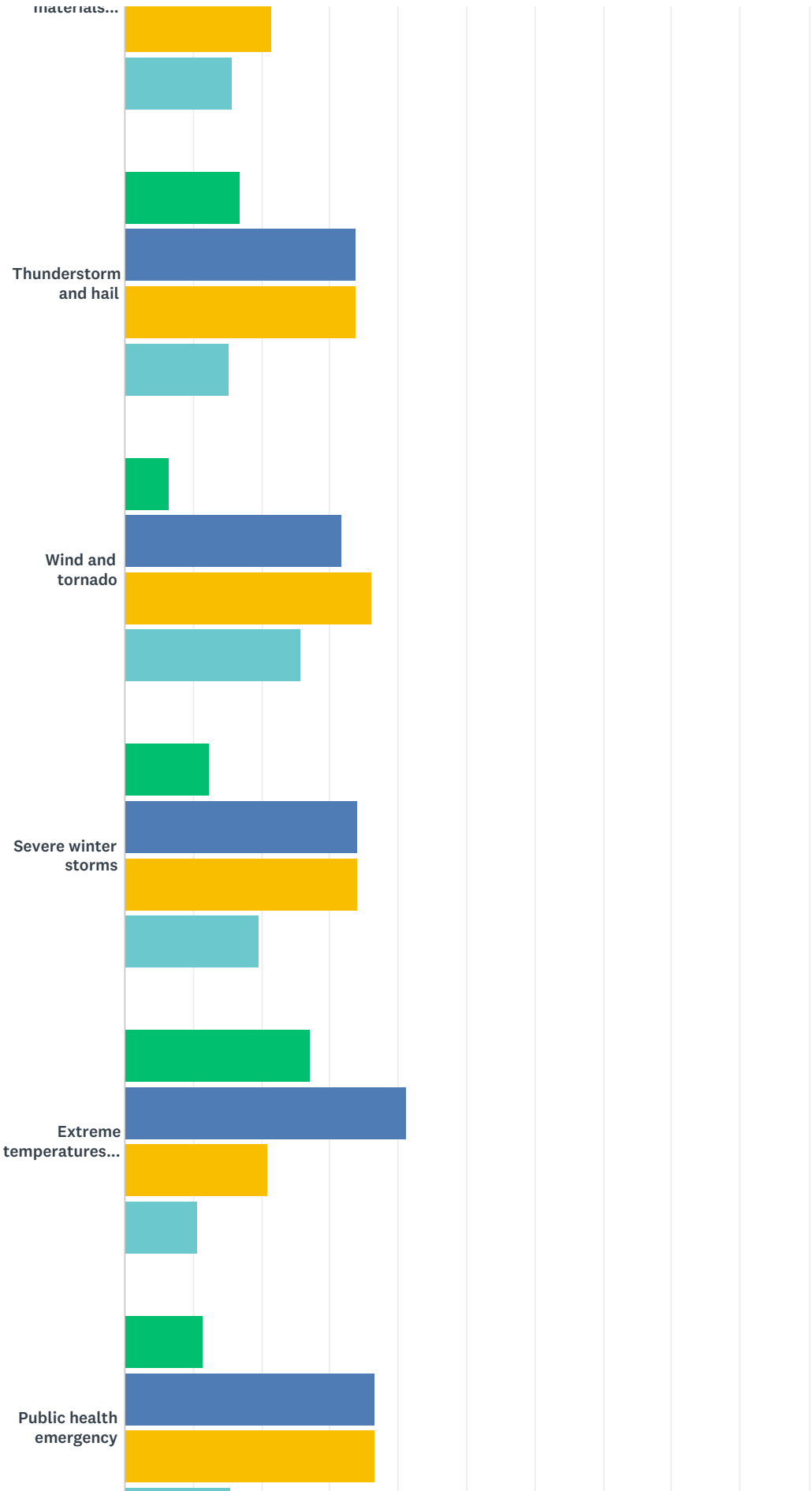
150351981@67.217.95.2 or 67.217.95.2##150351981

Q1 Please indicate how concerned you are about the following hazards where you live.

Answered: 345 Skipped: 0

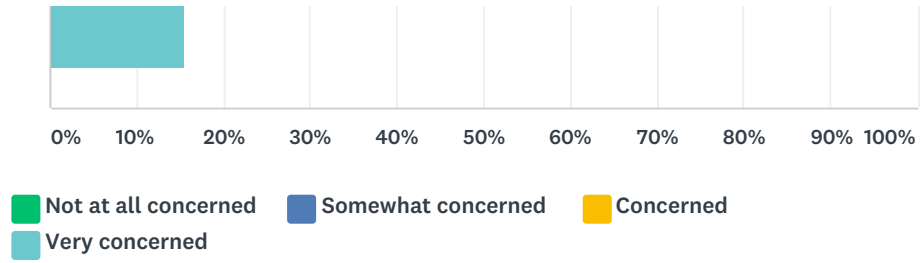


Trumbull County Hazard Mitigation Survey





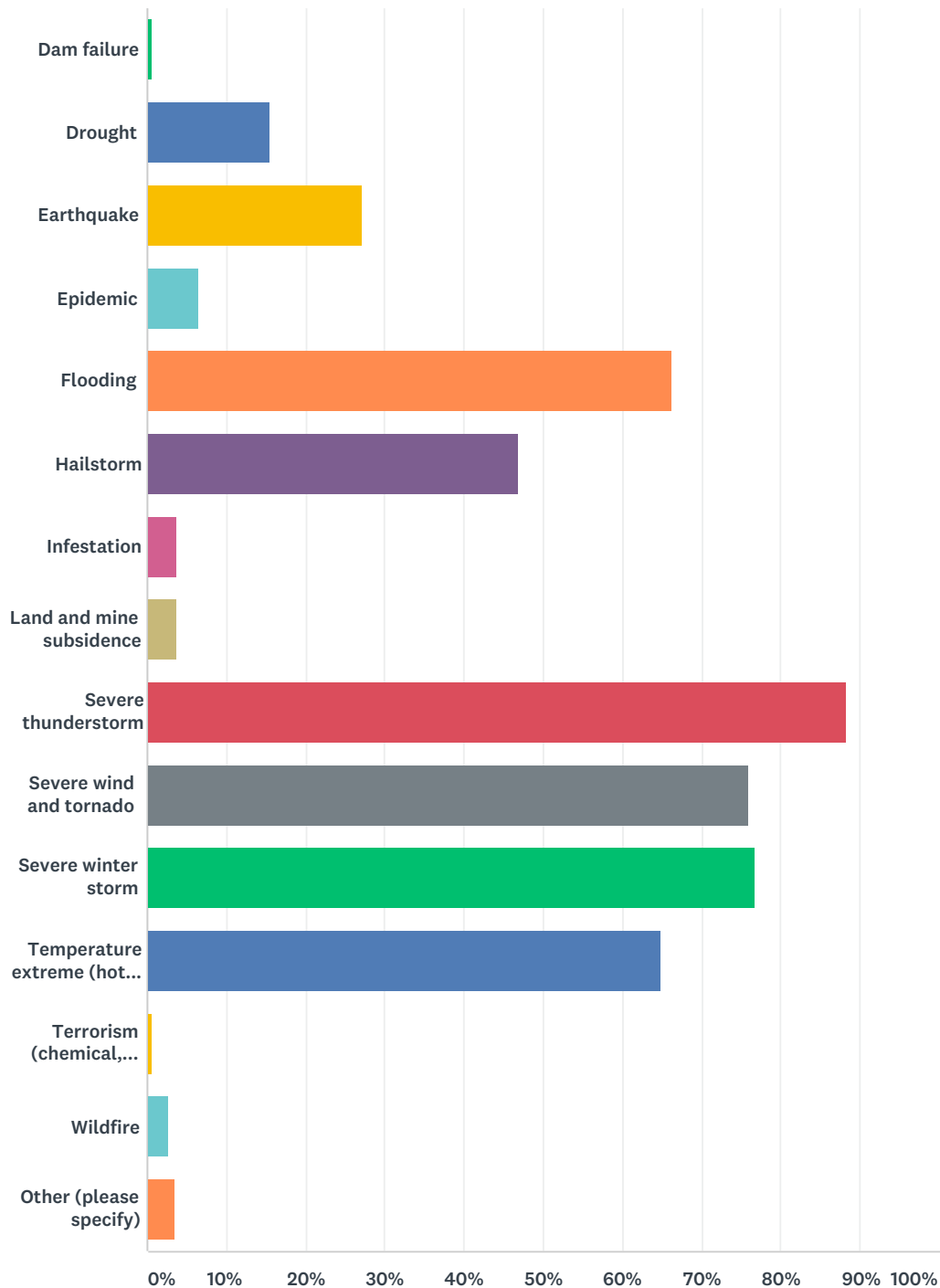
## Trumbull County Hazard Mitigation Survey



	NOT AT ALL CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Dam failure	72.43% 247	20.23% 69	4.99% 17	2.35% 8	341	1.37
Drought	57.18% 195	33.43% 114	7.04% 24	2.35% 8	341	1.55
Earthquake	49.41% 167	41.42% 140	6.80% 23	2.37% 8	338	1.62
Flooding	20.47% 70	36.84% 126	28.95% 99	13.74% 47	342	2.36
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	25.73% 88	36.84% 126	21.64% 74	15.79% 54	342	2.27
Thunderstorm and hail	16.96% 58	33.92% 116	33.92% 116	15.20% 52	342	2.47
Wind and tornado	6.41% 22	31.78% 109	36.15% 124	25.66% 88	343	2.81
Severe winter storms	12.32% 42	34.02% 116	34.02% 116	19.65% 67	341	2.61
Extreme temperatures (hot & cold)	27.14% 92	41.30% 140	20.94% 71	10.62% 36	339	2.15
Public health emergency	11.40% 39	36.55% 125	36.55% 125	15.50% 53	342	2.56

## Q2 In the past 10 years, which hazards do you remember occurring in your community? (Check all that apply)

Answered: 341 Skipped: 4



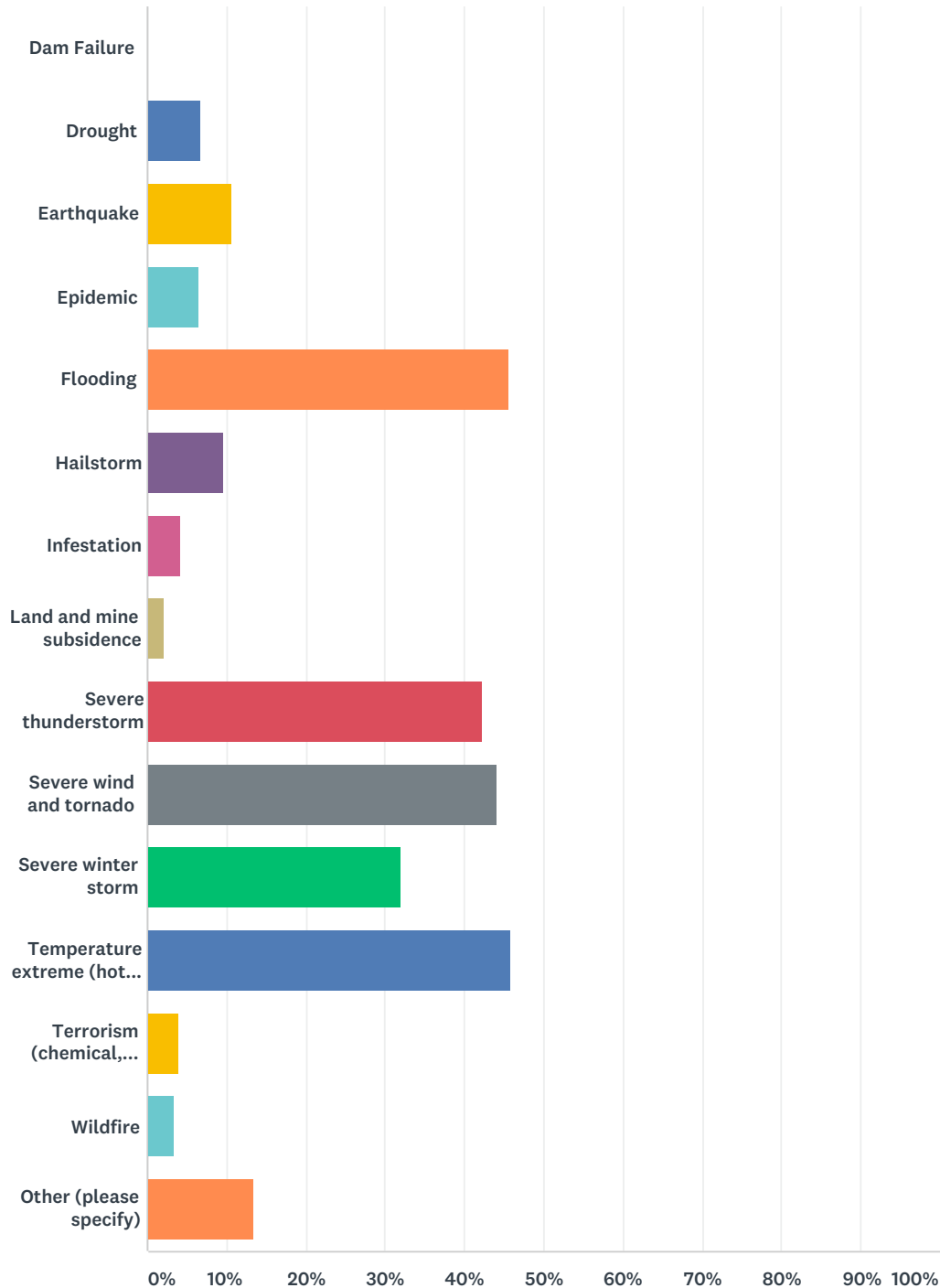
ANSWER CHOICES	RESPONSES	
Dam failure	0.59%	2
Drought	15.54%	53

## Trumbull County Hazard Mitigation Survey

Earthquake	27.27%	93
Epidemic	6.45%	22
Flooding	66.28%	226
Hailstorm	46.92%	160
Infestation	3.81%	13
Land and mine subsidence	3.81%	13
Severe thunderstorm	88.27%	301
Severe wind and tornado	75.95%	259
Severe winter storm	76.83%	262
Temperature extreme (hot & cold)	64.81%	221
Terrorism (chemical, biological, radiological, nuclear, and explosives)	0.59%	2
Wildfire	2.64%	9
Other (please specify)	3.52%	12
Total Respondents: 341		

### Q3 Have you noticed an increase in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 329 Skipped: 16



ANSWER CHOICES	RESPONSES	
Dam Failure	0.30%	1
Drought	6.69%	22

## Trumbull County Hazard Mitigation Survey

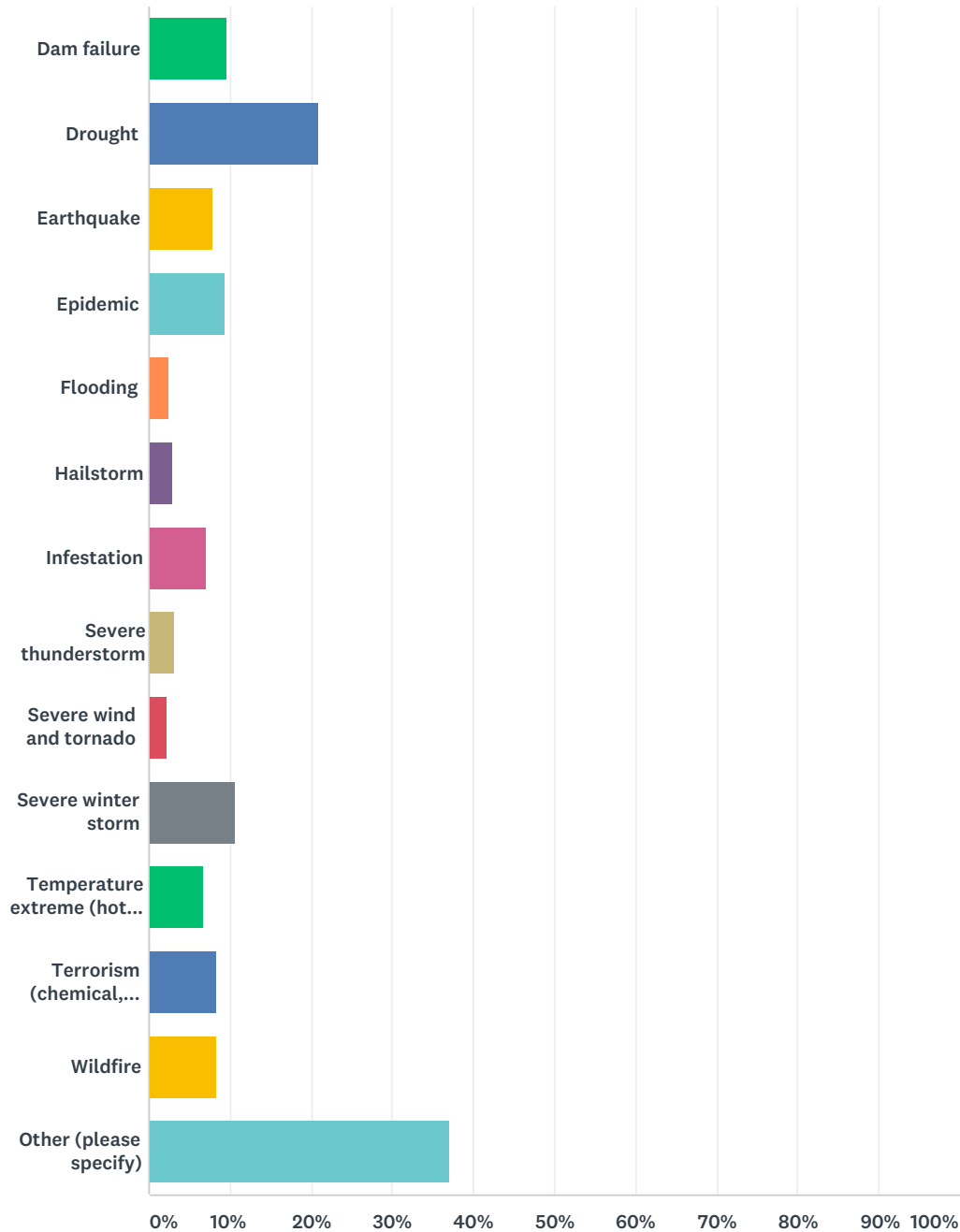
Earthquake	10.64%	35
Epidemic	6.38%	21
Flooding	45.59%	150
Hailstorm	9.73%	32
Infestation	4.26%	14
Land and mine subsidence	2.13%	7
Severe thunderstorm	42.25%	139
Severe wind and tornado	44.07%	145
Severe winter storm	31.91%	105
Temperature extreme (hot & cold)	45.90%	151
Terrorism (chemical, biological, radiological, nuclear, and explosives)	3.95%	13
Wildfire	3.34%	11
Other (please specify)	13.37%	44
Total Respondents: 329		

## Q4 To what do you think the increase could be attributed?

Answered: 127   Skipped: 218

## Q5 Have you noticed a decrease in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 311 Skipped: 34



ANSWER CHOICES	RESPONSES	
Dam failure	9.65%	30
Drought	20.90%	65
Earthquake	8.04%	25
Epidemic	9.32%	29

## Trumbull County Hazard Mitigation Survey

Flooding	2.57%	8
Hailstorm	2.89%	9
Infestation	7.07%	22
Severe thunderstorm	3.22%	10
Severe wind and tornado	2.25%	7
Severe winter storm	10.61%	33
Temperature extreme (hot & cold)	6.75%	21
Terrorism (chemical, biological, radiological, nuclear, and explosives)	8.36%	26
Wildfire	8.36%	26
Other (please specify)	36.98%	115
Total Respondents: 311		

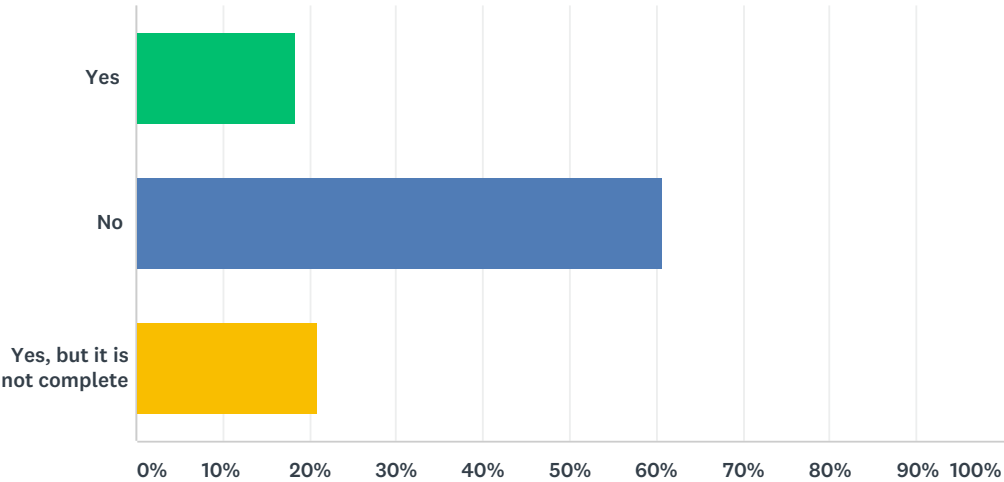


## Q6 To what do you think the decrease could be attributed?

Answered: 88   Skipped: 257

Q7 Do you have a 72-hour emergency kit in your home?

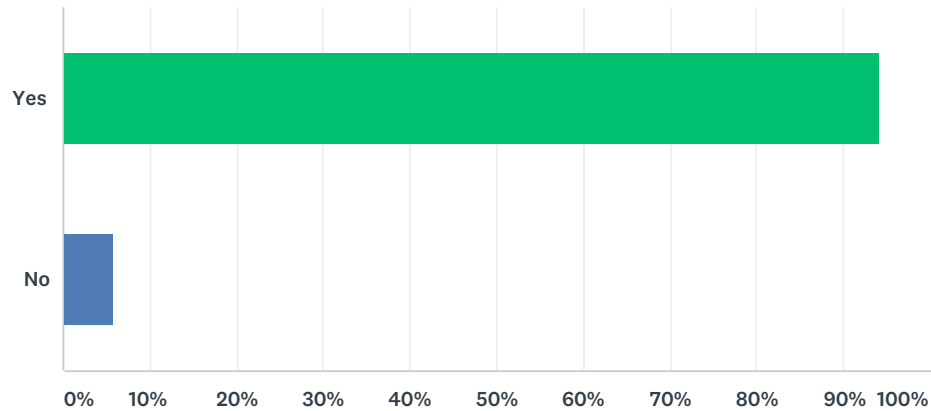
Answered: 310    Skipped: 35



ANSWER CHOICES		RESPONSES	
Yes		18.39%	57
No		60.65%	188
Yes, but it is not complete		20.97%	65
TOTAL			310

Q8 Do you have homeowner or renter's insurance?

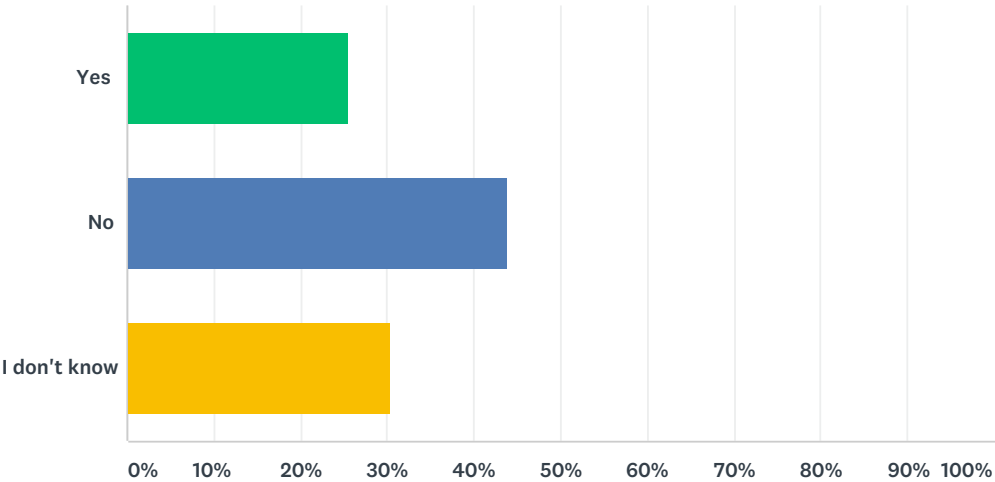
Answered: 311    Skipped: 34



ANSWER CHOICES		RESPONSES	
Yes		94.21%	293
No		5.79%	18
TOTAL			311

Q9 Does your homeowner or renter's insurance include flood insurance?

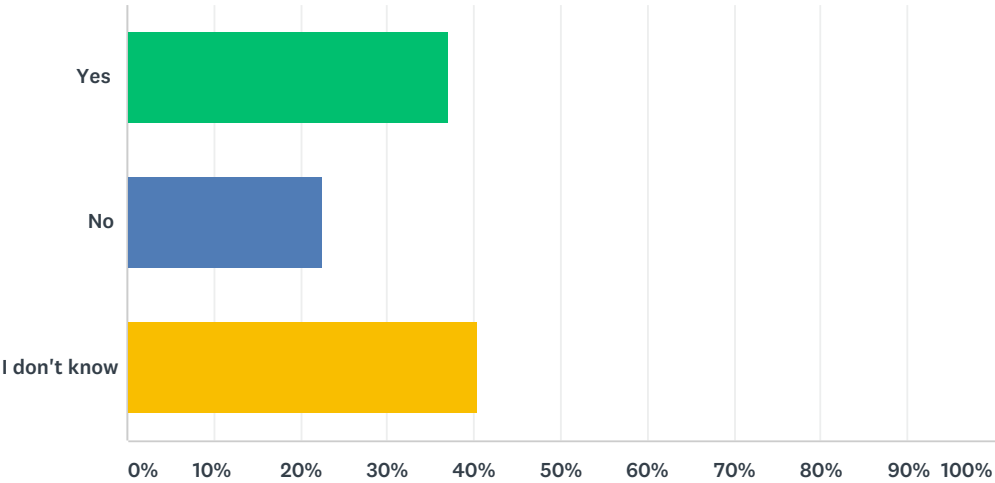
Answered: 293    Skipped: 52



ANSWER CHOICES		RESPONSES	
Yes		25.60%	75
No		44.03%	129
I don't know		30.38%	89
TOTAL			293

Q10 Does your homeowner or renter's insurance include sewer backup insurance?

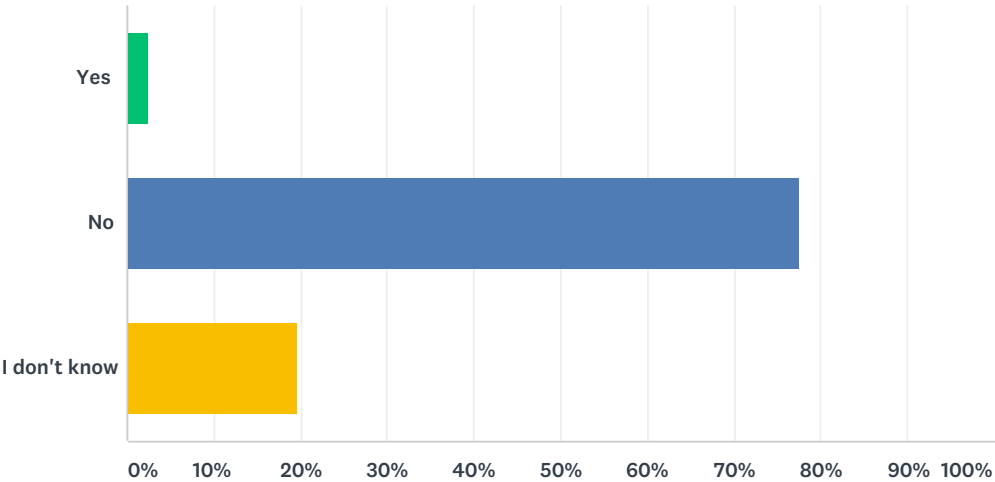
Answered: 292 Skipped: 53



ANSWER CHOICES		RESPONSES	
Yes		36.99%	108
No		22.60%	66
I don't know		40.41%	118
TOTAL			292

Q11 Do you live in a special flood hazard area (SFHA)?

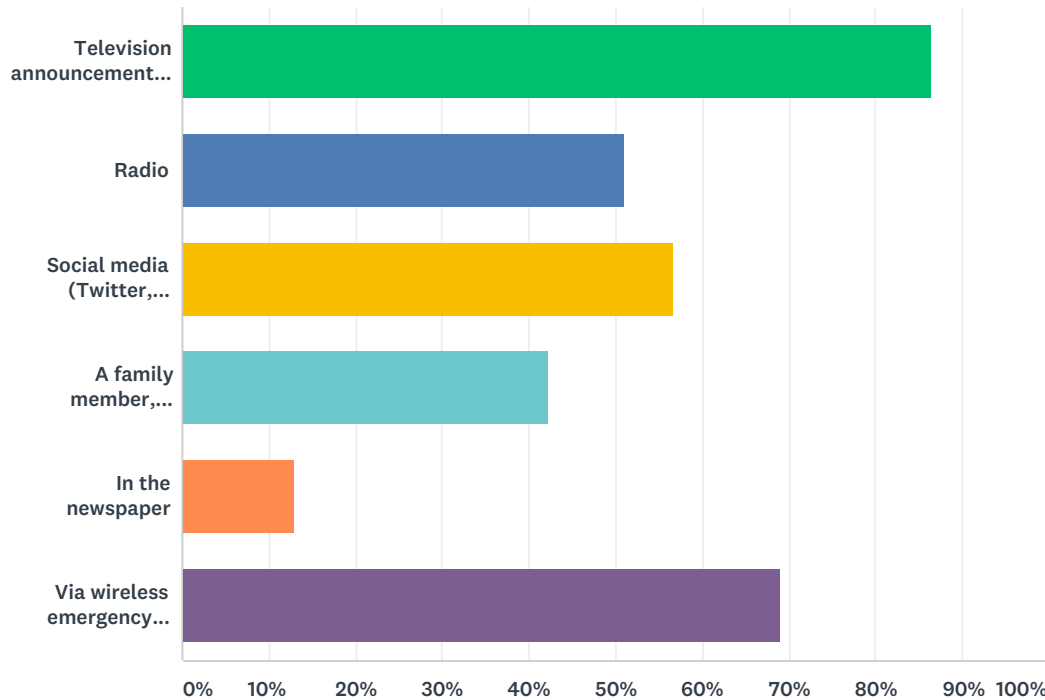
Answered: 309    Skipped: 36



ANSWER CHOICES		RESPONSES	
Yes		2.59%	8
No		77.67%	240
I don't know		19.74%	61
TOTAL			309

## Q12 How do you find out about upcoming hazards such as the ones previously mentioned? (Select all that apply)

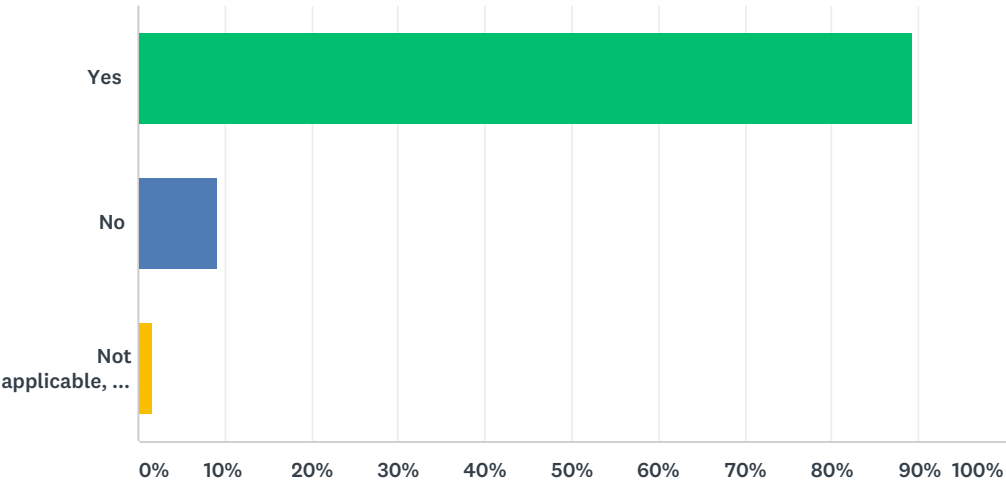
Answered: 307 Skipped: 38



ANSWER CHOICES	RESPONSES	
Television announcements or the news	86.32%	265
Radio	51.14%	157
Social media (Twitter, Facebook, etc.)	56.68%	174
A family member, neighbor, friend, or acquaintance	42.35%	130
In the newspaper	13.03%	40
Via wireless emergency notifications (e.g., text message)	69.06%	212
Total Respondents: 307		

Q13 Do you receive timely, accurate, and effective notifications from these sources that allow you to make appropriate decisions about what to do?

Answered: 307    Skipped: 38

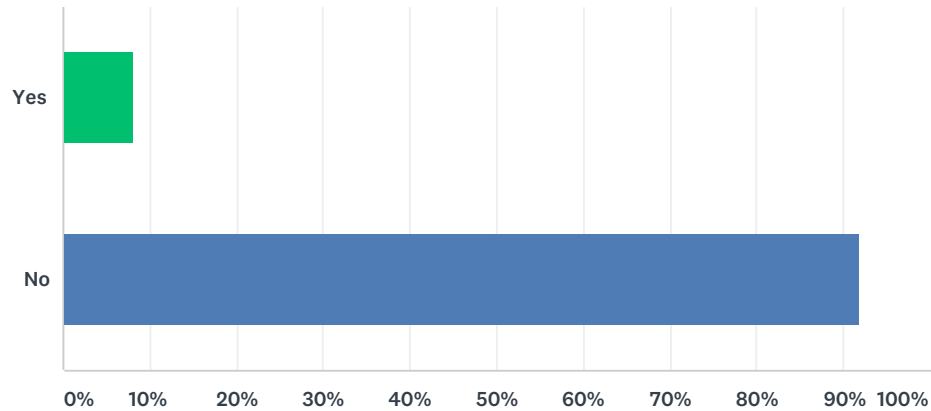


ANSWER CHOICES		RESPONSES	
Yes		89.25%	274
No		9.12%	28
Not applicable, I do not receive notifications		1.63%	5
TOTAL			307



Q14 Have you ever evacuated your home or community due to a hazard when officials suggested or mandated you do so?

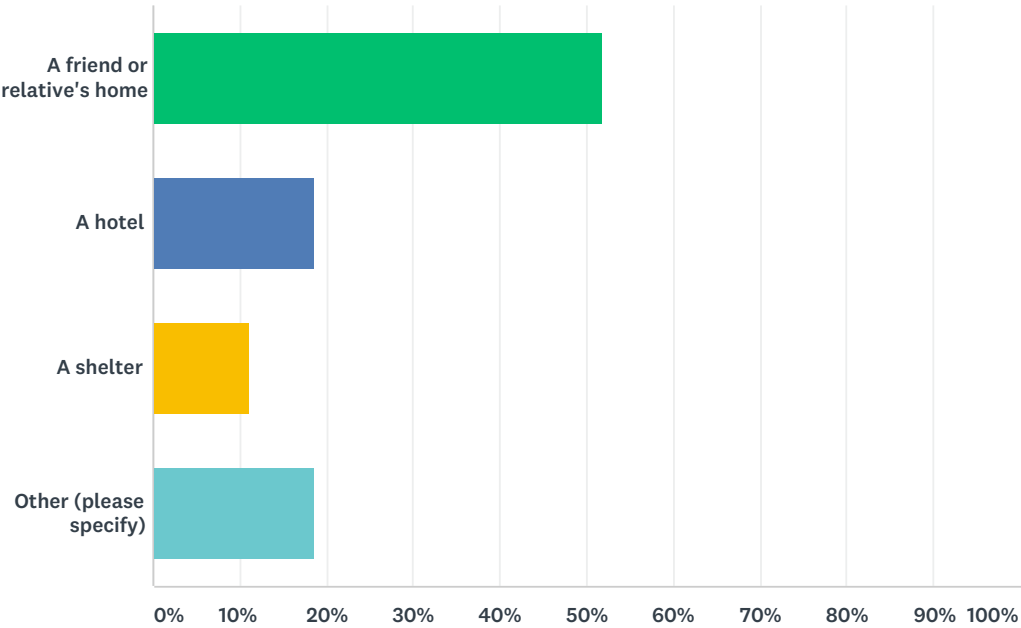
Answered: 305 Skipped: 40



ANSWER CHOICES	RESPONSES	
Yes	8.20%	25
No	91.80%	280
TOTAL		305

Q15 To where did you evacuate?

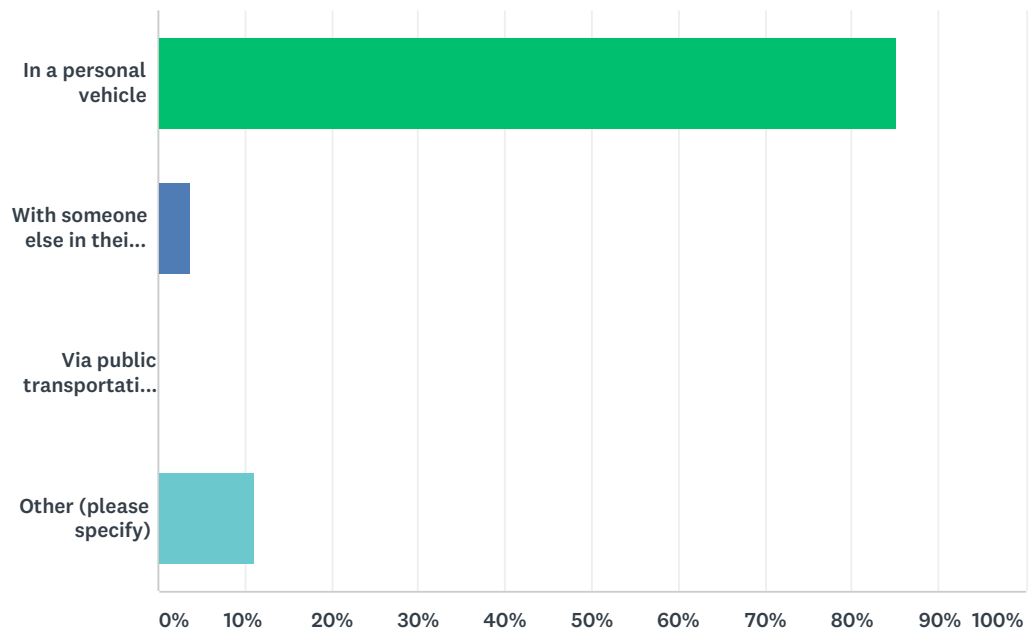
Answered: 27    Skipped: 318



ANSWER CHOICES	RESPONSES	
A friend or relative's home	51.85%	14
A hotel	18.52%	5
A shelter	11.11%	3
Other (please specify)	18.52%	5
TOTAL		27

Q16 How did you evacuate?

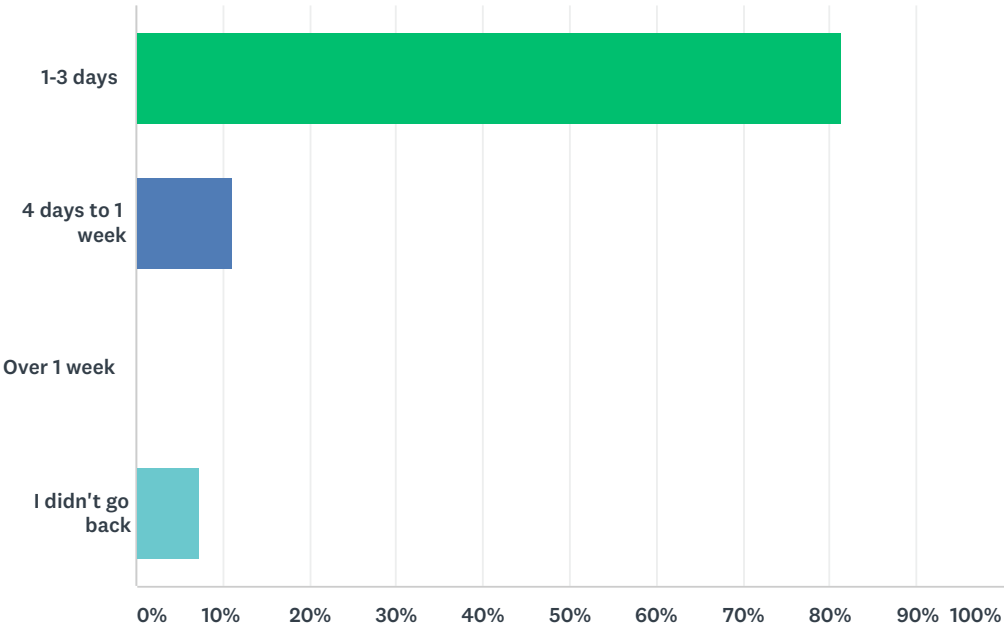
Answered: 27    Skipped: 318



ANSWER CHOICES	RESPONSES	
In a personal vehicle	85.19%	23
With someone else in their vehicle	3.70%	1
Via public transportation or transportation provided by the county/city/village/etc.	0.00%	0
Other (please specify)	11.11%	3
TOTAL		27

Q17 How long were you away from home?

Answered: 27    Skipped: 318



ANSWER CHOICES	RESPONSES	
1-3 days	81.48%	22
4 days to 1 week	11.11%	3
Over 1 week	0.00%	0
I didn't go back	7.41%	2
TOTAL		27

Q18 Please indicate the reason you did not evacuate

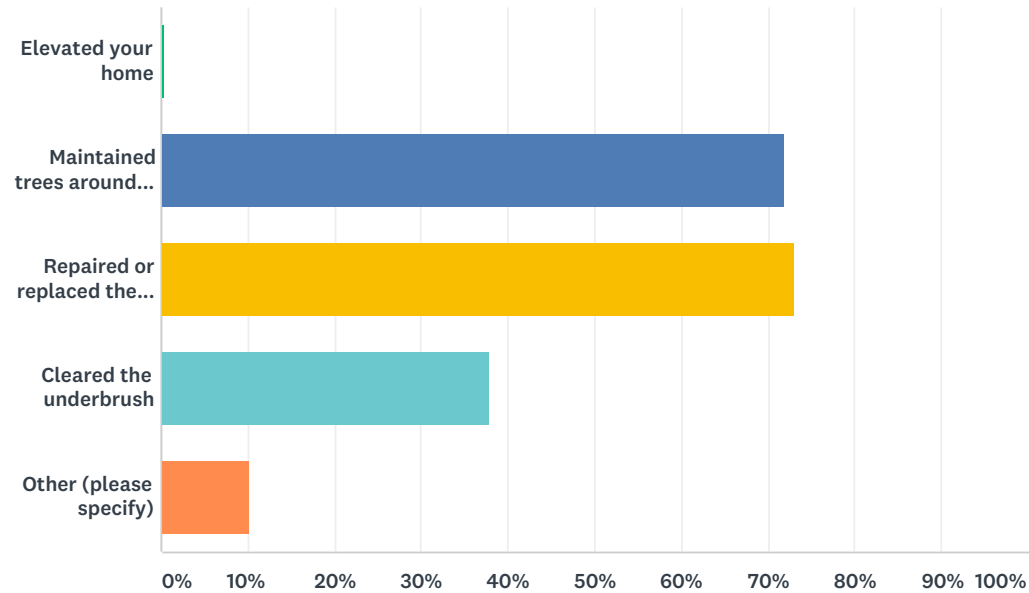
Answered: 0    Skipped: 345

 No matching responses.

ANSWER CHOICES	RESPONSES	
I/we did not receive notification in time to leave	0.00%	0
I/we do not own a vehicle	0.00%	0
It is too expensive to evacuate	0.00%	0
It was not necessary to evacuate, the danger was over exaggerated	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

Q19 Have you ever... (check all that apply)

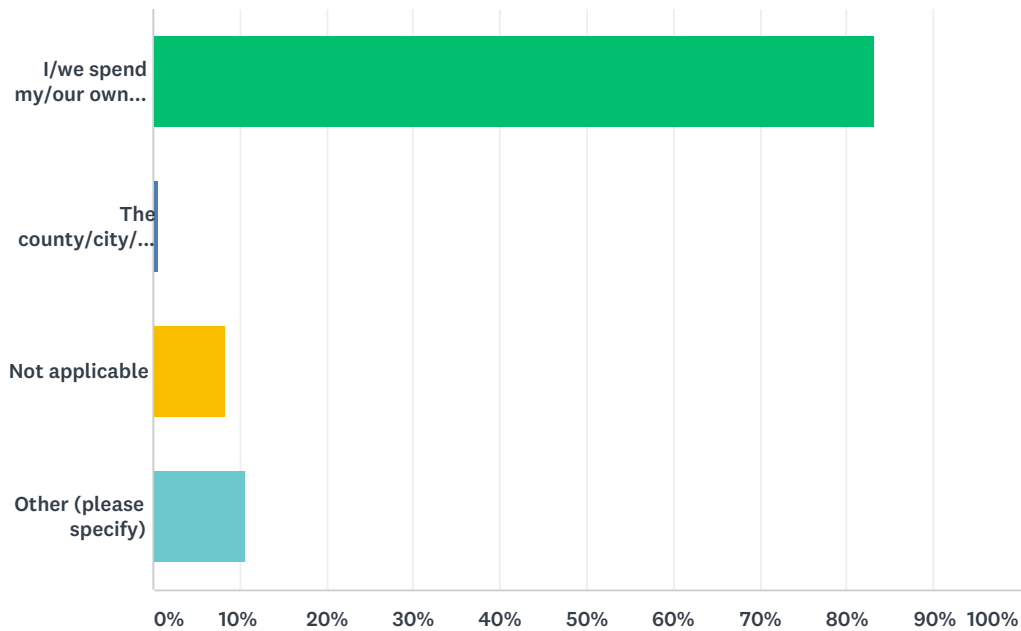
Answered: 282    Skipped: 63



ANSWER CHOICES	RESPONSES	
Elevated your home	0.35%	1
Maintained trees around the house or removed problematic trees	71.99%	203
Repaired or replaced the roof	73.05%	206
Cleared the underbrush	37.94%	107
Other (please specify)	10.28%	29
Total Respondents: 282		

Q20 If you have done any of the previous to your property, how was it paid for?

Answered: 288 Skipped: 57



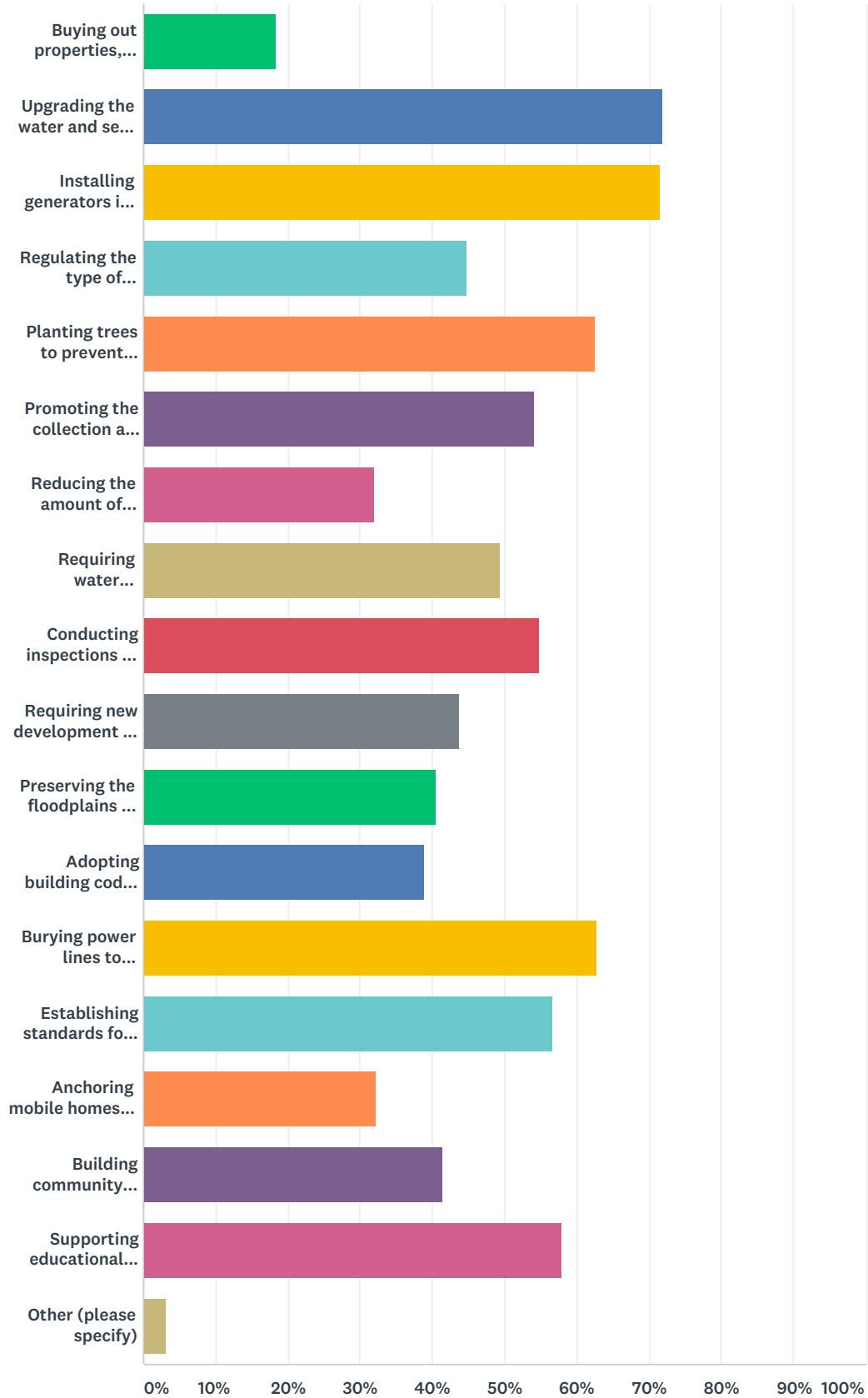
ANSWER CHOICES	RESPONSES	
I/we spend my/our own money	83.33%	240
The county/city/village paid for it	0.69%	2
Not applicable	8.33%	24
Other (please specify)	10.76%	31
Total Respondents: 288		

**Q21 Please indicate the types of mitigation actions you would support; these could be something you can do, or an initiative by your officials (check all that apply)**

Answered: 288   Skipped: 57



## Trumbull County Hazard Mitigation Survey



### ANSWER CHOICES

Buying out properties, relocating homes, or elevating structures that are prone to repetitive flooding

### RESPONSES

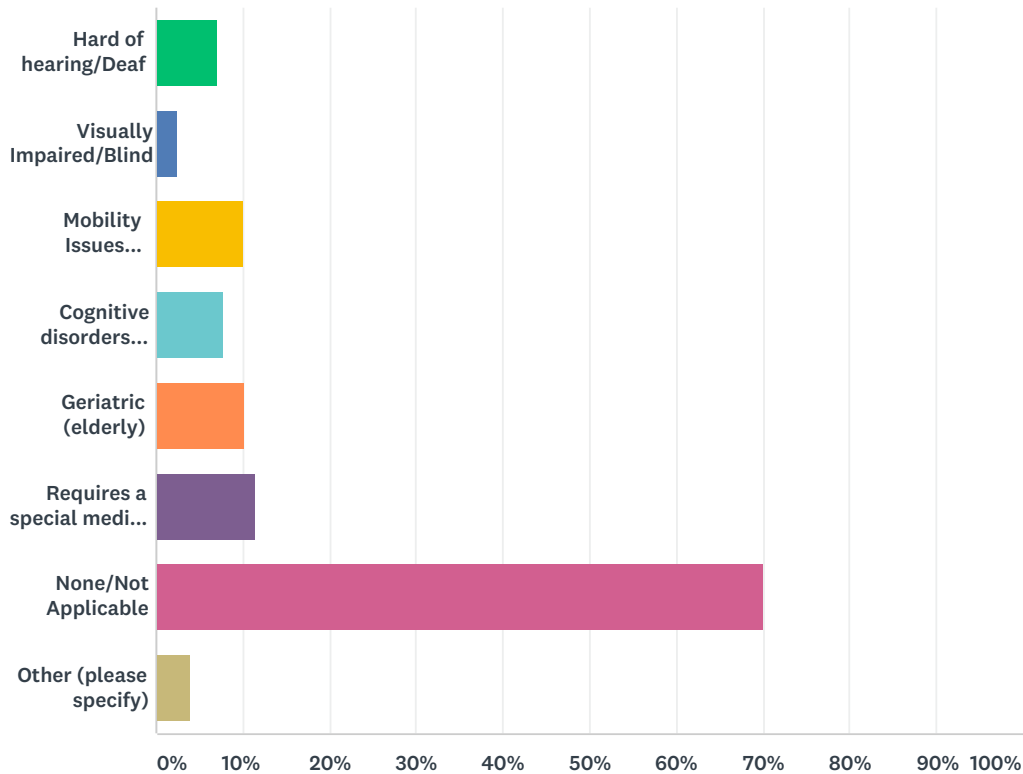
18.40% 53

## Trumbull County Hazard Mitigation Survey

Upgrading the water and sewer systems	71.88%	207
Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.	71.53%	206
Regulating the type of development that is permitted in areas that are dangerous due to hazards	44.79%	129
Planting trees to prevent erosion and promote cooler micro-climates	62.50%	180
Promoting the collection and reuse of rainwater such as in rain gardens and green roofs	54.17%	156
Reducing the amount of surface pavement to reduce flooding and the heat island effect	31.94%	92
Requiring water conservation during drought conditions	49.31%	142
Conducting inspections of new construction and enforcing existing building codes	54.86%	158
Requiring new development to construct on-site retention basins for excessive stormwater runoff and as a firefighting water source	43.75%	126
Preserving the floodplains as open space	40.63%	117
Adopting building codes that go above and beyond the basic requirements of construction	38.89%	112
Burying power lines to provide uninterrupted power during severe weather	62.85%	181
Establishing standards for all utilities regarding tree pruning around lines	56.60%	163
Anchoring mobile homes and roof-mounted and ground equipment	32.29%	93
Building community shelters for tornadoes and severe weather events	41.32%	119
Supporting educational campaigns aimed at preparing the population for a variety of hazards	57.99%	167
Other (please specify)	3.13%	9
Total Respondents: 288		

## Q22 Do you, or someone who resides in your residence, have a special need that emergency service providers should be aware of in an emergency? (Check all the apply)

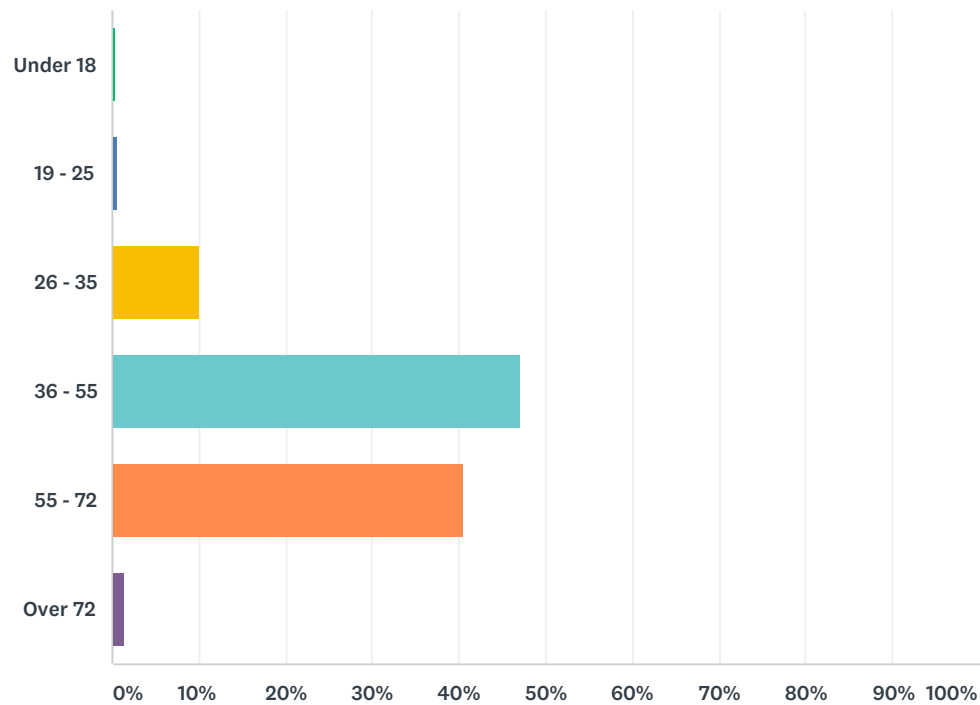
Answered: 271 Skipped: 74



ANSWER CHOICES	RESPONSES	
Hard of hearing/Deaf	7.01%	19
Visually Impaired/Blind	2.58%	7
Mobility Issues (non-ambulatory, confined to a wheelchair, requires the use of a can or walker)	9.96%	27
Cognitive disorders (includes autism, depression, etc.)	7.75%	21
Geriatric (elderly)	10.33%	28
Requires a special medical device (such as a Ventilator, CPAP machine, or drugs that require refrigeration [i.e., insulin])	11.44%	31
None/Not Applicable	70.11%	190
Other (please specify)	4.06%	11
Total Respondents: 271		

## Q23 Please provide your age

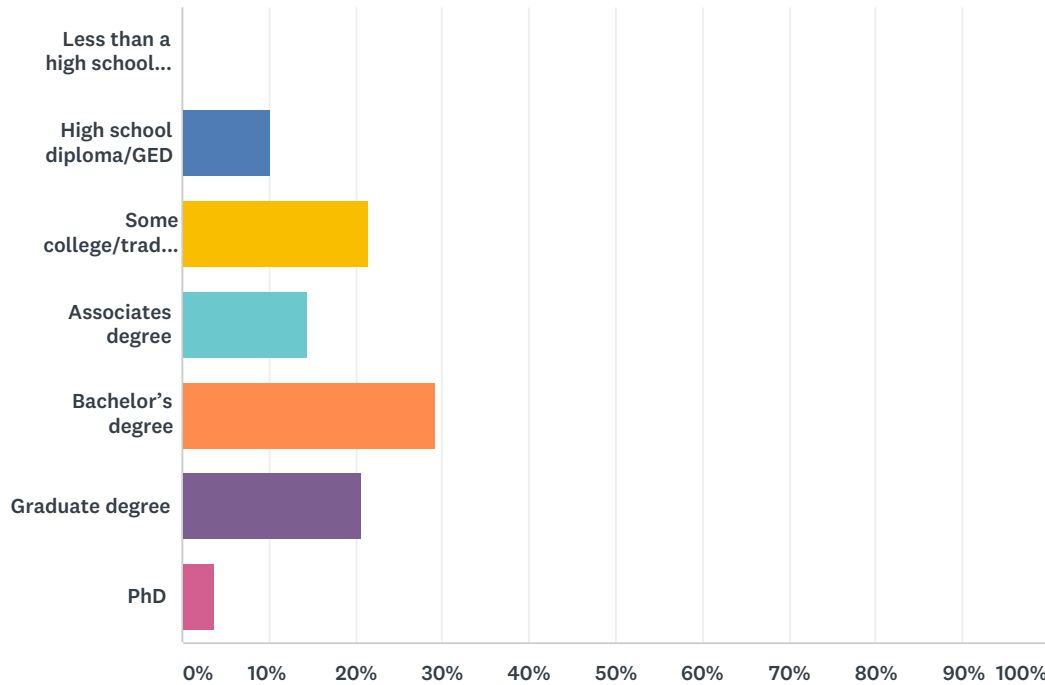
Answered: 291    Skipped: 54



ANSWER CHOICES		RESPONSES	
Under 18		0.34%	1
19 - 25		0.69%	2
26 - 35		9.97%	29
36 - 55		47.08%	137
55 - 72		40.55%	118
Over 72		1.37%	4
TOTAL			291

## Q24 Please indicate your level of education

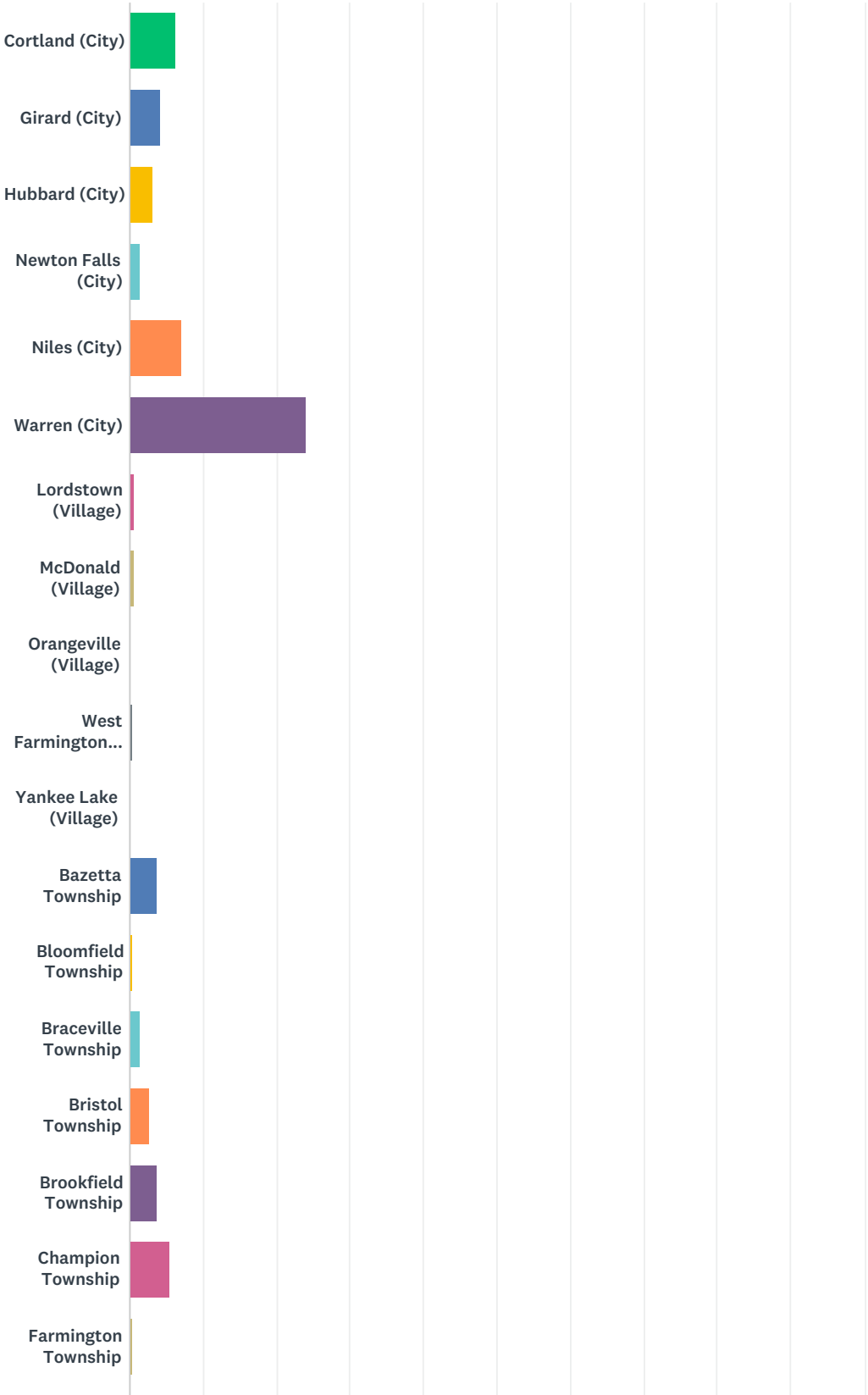
Answered: 291 Skipped: 54



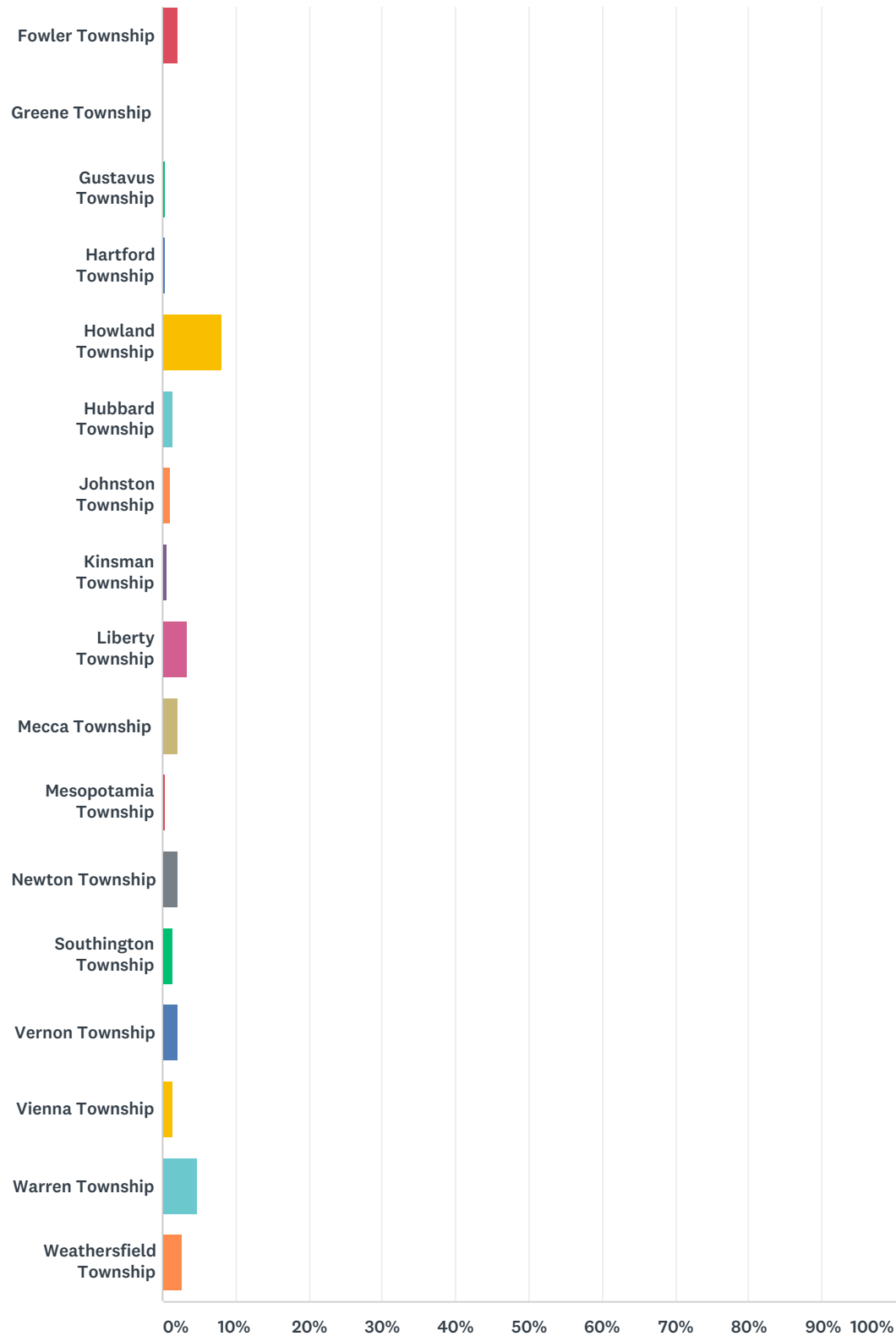
ANSWER CHOICES	RESPONSES	
Less than a high school diploma	0.00%	0
High school diploma/GED	10.31%	30
Some college/trade school	21.65%	63
Associates degree	14.43%	42
Bachelor's degree	29.21%	85
Graduate degree	20.62%	60
PhD	3.78%	11
TOTAL		291

Q25 In which community do you live (or work, if you do not live in Trumbull County)?

Answered: 291    Skipped: 54



Trumbull County Hazard Mitigation Survey



ANSWER CHOICES	RESPONSES	
Cortland (City)	6.19%	18
Girard (City)	4.12%	12
Hubbard (City)	3.09%	9

## Trumbull County Hazard Mitigation Survey

Newton Falls (City)	1.37%	4
Niles (City)	7.22%	21
Warren (City)	24.05%	70
Lordstown (Village)	0.69%	2
McDonald (Village)	0.69%	2
Orangeville (Village)	0.00%	0
West Farmington (Village)	0.34%	1
Yankee Lake (Village)	0.00%	0
Bazetta Township	3.78%	11
Bloomfield Township	0.34%	1
Braceville Township	1.37%	4
Bristol Township	2.75%	8
Brookfield Township	3.78%	11
Champion Township	5.50%	16
Farmington Township	0.34%	1
Fowler Township	2.06%	6
Greene Township	0.00%	0
Gustavus Township	0.34%	1
Hartford Township	0.34%	1
Howland Township	8.25%	24
Hubbard Township	1.37%	4
Johnston Township	1.03%	3
Kinsman Township	0.69%	2
Liberty Township	3.44%	10
Mecca Township	2.06%	6
Mesopotamia Township	0.34%	1
Newton Township	2.06%	6
Southington Township	1.37%	4
Vernon Township	2.06%	6
Vienna Township	1.37%	4
Warren Township	4.81%	14
Weathersfield Township	2.75%	8
TOTAL		291



**Q26 Please write any comments here.**

Answered: 21   Skipped: 324

## TRUMBULL COUNTY

~~Strategy 1.1.5: Develop a notification system that can be utilized to notify residents and businesses downstream of large dams of actions to take before a dam failure, if lead time exists. (i.e., similar to reverse 911 system).~~

~~**Timeframe:** 3 years~~

~~**Funding** HMGP, PDM, ODNR (\$25,000 to \$100,000 depending on the  
(Cost Estimate): sophistication of the notification system.)~~

~~**Primary Coordinator:** ODNR, Dam Owner~~

~~**Support Agency:** Notification System Designer~~

~~**Mitigation Type:** Public Education & Awareness~~

~~**Status Description:** This project was added during the 2010 update. It was based on, and would be similar to, the notification system current used at Mosquito Lake Dam, which is an audible alarm system.~~

PROPOSED 2019 REVISION: *Strategy 1.1.5R: Build out a notification system to quickly notify potentially-impacted residents and businesses downstream impending hazard occurrences (i.e., similar to reverse 911 system).*

**Timeframe:** 3 years

**Funding** Local funding (TBD)  
(Cost Estimate):

**Primary Coordinator:** Trumbull County EMA

**Support Agency:** N/A

**Mitigation Type:** Public Education & Awareness

**Status Description:** (On-going) The planning committee revised this project to be more broadly applicable to multiple hazards.

~~Strategy 2.1.1: Develop an informational brochure to distribute to local farmers and residents.~~

~~**Timeframe:** Annually~~

~~**Funding** USDA, If necessary (\$3,000 for publication and distribution, if USDA  
(Cost Estimate): does not already have such materials printed.~~

~~**Primary Coordinator:** Natural Resource Conservation Service (NRCS)~~

~~**Support Agency:** Farm Bureau~~

~~**Mitigation Type:** Public Education & Awareness~~

~~**Status Description:** This strategy is conducted on an annual basis, at the county's Safety First Day event, through the State, and local water departments.~~

**PROPOSED 2019 REVISION:** *Strategy 2.1.1R:* Periodically disseminate information to residents about the types of hazards to which Trumbull County is susceptible, to include examples of personal mitigation projects.

**Timeframe:** Annually

**Funding** Local funding (Requires minimal funding if websites and social media  
(*Cost Estimate*): outlets serve as the venue.)

**Primary Coordinator:** Trumbull County EMA

**Support Agency:** Trumbull County Consolidated Health District  
Warren City Health District  
Municipalities

**Mitigation Type:** Public Education & Awareness

**Status Description:** (On-going) The planning committee consolidated this and several other previous strategies designed to educate the public about risk and personal mitigation measures.

*Strategy 2.2.1:* Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Trumbull County.

**Timeframe:** As needed

**Funding** Coordinating mutual aid agreements will require no funding; however,  
(*Cost Estimate*): initiating any sort of agreement may require local funding. (N/A)

**Primary Coordinator:** Affected Jurisdictions

**Support Agency:** Fire Departments

**Mitigation Type:** Emergency Services

**Status:** This project has been completed as local fire departments have developed a regional capability to supply each other with emergency water. The HMC elected to re-list this project so that additional agreements could be negotiated with non-public sector agencies, if necessary.

*Strategy 3.1.2:* Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes.

**Timeframe:** Annually  
**Funding** No additional funding necessary.  
*(Cost Estimate):*  
**Primary Coordinator:** TCEMA  
**Support Agency:** State of Ohio  
**Mitigation Type:** Public Education and Awareness  
**Status:** Conducted on an annual basis. This project was completed as part of the aforementioned EPI campaigns.

*Strategy 3.2.1:* Install sensory systems that immediately shut off the flow of gas throughout the county as soon as earth movements are felt.

**Timeframe:** 3 years  
**Funding** PDM, HMGP, Local funding (Up to \$3,000 per sensor).  
*(Cost Estimate):*  
**Primary Coordinator:** Utility Providers  
**Support Agency:** TCEMA  
**Mitigation Type:** Property Protection  
**Status:** The emergency services sector is still coordinating with local utilities on this strategy.

*Strategy 4.2.2:* Staff and equip identified Points of Dispensing (POD) sites.

**Timeframe:** 2 years  
**Funding** Local funding.  
*(Cost Estimate):*  
**Primary Coordinator:** Trumbull County General Health District  
**Support Agency:** Municipal Health Departments  
**Mitigation Type:** Emergency Services  
**Status:** This project has been started with the identification of POD sites, storage facilities for vaccines, designated flu hospitals, and backup hospitals.

~~*Strategy 5.1.1:* Clean or dredge creeks and streams, clearing log jams, trees, shrubs, and sediment bars.~~

~~**Timeframe:** 3 years~~

**Funding** Local Funding (~~Up to \$50,000, depending on the size of the section of~~  
(~~Cost Estimate~~): ~~stream that is cleaned~~)

**Primary Coordinator:** USACOE

**Support Agency:** Trumbull County Engineer / Storm Water Management

**Mitigation Type:** Prevention

**Status:** ~~This strategy is currently unchanged due to political and environmental issues; however, it is a strategy that the CPC would like to implement.~~

PROPOSED 2019 REVISION: *Strategy 5.1.1R: Undertake streambank restoration projects where appropriate.*

**Timeframe:** 5 years

**Funding** Local funding (*Up to \$50,000, depending on the size of the section of*  
(*Cost Estimate*): *stream that is cleaned*)

**Primary Coordinator:** Trumbull County Engineer / Storm Water Management

**Support Agency:** USACE

**Mitigation Type:** Prevention

**Status:** (On-going) The committee revised the language of this strategy to better convey its intent and to serve as a recognition of how better mimicking natural environments can support mitigation. This project now supports cleaning stream segments, restoring eroded banks, etc. Further, to show greater local ownership of the project, the committee revised the primary and support agencies.

*Strategy 5.3.1: Enforce building and development ordinances.*

**Timeframe:** As Needed

**Funding** Enforcement is already a part of building departments' budgets. As  
(*Cost Estimate*): such, no significant additional funding should be necessary. (N/A)

**Primary Coordinator:** Trumbull County Commission and Municipal Building Departments

**Mitigation Type:** Prevention

**Status:** This project has been completed on a daily basis throughout Trumbull County. The HMC elected to re-list the project with an "on-going" timeframe and to list municipal building departments as the coordinating agency to better reflect actual responsibilities.

~~Strategy 5.3.2: Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.~~

**Timeframe:** 2-years  
**Funding** Participating in the program requires no funding. (N/A)  
(Cost Estimate):  
**Primary Coordinator:** TCEMA, Board of Commissioners  
**Mitigation Type:** Public Education and Awareness  
**Status:** This project has not been addressed since the original development of the plan due to its priority. The HMC elected to re-list it as a worthy project, but again with a low priority. The City of Warren has initiated participation in the CRS.

PROPOSED 2019 REVISION: *Strategy 5.3.2R: Encourage municipal participation in the Community Rating System (CRS) to reduce flood insurance rates.*

**Timeframe:** 5 years  
**Funding** Participating in the program requires no funding. (N/A)  
(Cost Estimate):  
**Primary Coordinator:** Trumbull County EMA  
**Support Agency:** Trumbull County Floodplain Management  
**Mitigation Type:** Public Education and Awareness  
**Status:** (On-going) The committee reworded this project to make it more actionable (i.e., at a local level vs. countywide).

~~Strategy 6.1.1: Coordinate efforts with local media providers to post advance warnings of hailstorms.~~

~~**Timeframe:** As Needed  
**Funding** Coordination should require no additional funding, especially since  
(Cost Estimate): the Emergency Alert System (EAS) is already operational. (N/A)  
**Primary Coordinator:** TCEMA  
**Support Agency:** Affected Jurisdictions  
**Mitigation Type:** Public Education and Awareness  
**Status:** Conducted on an as-needed basis. This project was completed as necessary as part of Trumbull County's participation in the Emergency Alert System (EAS). The CPC elected to re-list this project and list it as on-going.~~

PROPOSED 2019 REVISION: *Strategy 6.1.1R: Coordinate efforts with the National Weather Service (NWS) and local media providers to post advance warnings of impending hazard events.*

**Timeframe:** As Needed

**Funding** Coordination should require no additional funding, especially since  
(*Cost Estimate*): the Emergency Alert System (EAS) is already operational. (N/A)

**Primary Coordinator:** Trumbull County EMA

**Support Agency:** Affected jurisdictions  
Media outlets

**Mitigation Type:** Public Education and Awareness

**Status:** (On-going) The planning committee revised this project to be more broadly applicable to multiple hazards.

*Strategy 10.2.1:* Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.

**Timeframe:** As Needed

**Funding** Encouragement of adherence to existing standards should require no  
(*Cost Estimate*): additional funding, especially if it is made a part of on-going EPI efforts. (N/A)

**Primary Coordinator:** Trumbull County Planning Commission

**Support Agency:** Trumbull County Building Inspection Department, Municipal Building and Zoning Departments

**Mitigation Type:** Prevention, Property Protection

**Status:** This project was originally stated as “Consider developing and/or strengthening building codes...” The CPC wanted to keep the spirit of the project, but implement it through existing codes and programs.

*Strategy 10.2.2:* Encourage developers to reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.

**Timeframe:** As Needed

**Funding** Encouragement would require no significant additional funding. (N/A)  
(*Cost Estimate*):

**Primary Coordinator:** Trumbull County Planning Commission

**Support Agency:** Municipal Zoning/Building Inspection Departments

**Mitigation Type:** Property Protection

**Status:** This project is completed on a “site-specific” basis as permits for mobile home developments are approved. The CPC elected to re-list this project, but decided to add “Encourage developers” to the strategy and change the coordinating agency to the Planning Commission and appropriate municipal departments to better reflect actual responsibilities.

*Strategy 10.2.3:* Purchase and install fixed-in-place 35kw generators or (gen-sets) at emergency services facilities and the Trumbull County EMA Office.

**Timeframe:** 2 years

**Funding** PDM, HMGP (Up to \$10,000 to \$15,000 per generator, installed)  
(*Cost Estimate*):

**Primary Coordinator:** Trumbull County Commission

**Support Agency:** TCEMA

**Mitigation Type:** Prevention

**Status:** This is a new strategy developed during the 2010 updating process.

*Strategy 11.1.1:* Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal.

**Timeframe:** Annually



**Funding (Cost Estimate):** Development of mutual aid agreements requires no additional funding; however, a means and rate of compensation should be negotiated while developing said agreements. (N/A)

**Primary Coordinator:** Affected Jurisdictions

**Mitigation Type:** Emergency Services

**Status:** This project has been completed as numerous mutual aid agreements have been put into effect. The CPC elected to re-list this project to encourage additional resource inventorying.

*Strategy 11.1.2:* Upgrade existing salt storage facilities, or construct Regional Salt Barns at strategic locations throughout the county.

**Timeframe:** 3 years

**Funding (Cost Estimate):** PDM, HMGP, ODOT (Up to \$200,000 to upgrade existing, and \$1.5 million to construct a Regional Salt Barn)

**Primary Coordinator:** ODOT

**Support Agency:** Local highway / street departments

**Mitigation Type:** Structural Project

**Status:** This is a new strategy developed during the updating process.

*Strategy 12.1.2:* Establish cooling centers for vulnerable populations, along with an outreach program encouraging at-risk populations to use the centers.

**Timeframe:** 3 years

**Funding (Cost Estimate):** No additional funding is needed to identify existing facility that could possibly be used as cooling centers.

**Primary Coordinator:** Trumbull County Commission and TCEMA

**Mitigation Type:** Emergency Services

**Status:** This is a new strategy. This project has been initiated, as tents with water sprays have been purchased, and the local ARC chapter and health department have identified shelters with air conditioning.

*Strategy 13.1.5:* Establish a critical infrastructure protection program.

**Timeframe:** On-going

**Funding (Cost Estimate):** Local funding (\$5,000 to \$10,000)

**Primary Coordinator:** TCEMA

**Mitigation Type:** Prevention

**Status:** This project has been completed through a number of “target hardening” projects at critical facilities, including such items as security cameras at water treatment plans, court security planning projects, partner agency participation in drills, etc. A Critical Infrastructure Risk Assessment was also developed per State requirements. The CPC would like to continue this program.

*Strategy 14.1.2: Encourage residents to inspect and clean their chimneys at least once a year.*

**Timeframe:** Annually  
**Funding** PDM, Local Funding (*Up to \$3,000 for publication and distribution of*  
(*Cost Estimate*): *informative materials.*)  
**Primary Coordinator:** TCEMA  
**Support Agency:** Emergency Services Providers  
**Mitigation Type:** Public Education and Awareness  
**Status:** Conducted on an annual basis. This project is completed as part of periodic EPI campaigns sponsored by the TCEMA and other emergency services organizations (e.g., regularly-updated websites, etc.).

*Strategy 15.1.2: Assess the feasibility of conducting a commodity flow study.*

**Timeframe:** 1 year  
**Funding** SERC, HMEP, Local Funding (*Assessing feasibility would require no*  
(*Cost Estimate*): *additional funding; a study itself, however, may cost up to \$15,000.*)  
**Primary Coordinator:** Local Emergency Planning Committee (LEPC)  
**Support Agency:** TCEMA  
**Mitigation Type:** Emergency Services  
**Status:** The Trumbull County LEPC is in the process of updating the county's Commodity Flow Study which includes highway and rail analysis.

*Strategy 16.1.1: Establish a communications system that will allow jurisdictional fire and police departments to communicate with each other during large-scale emergency situations.*

**Timeframe:** 3 years  
**Funding** USDHS, Local Funding (*Approximately \$17,000,000*)  
(*Cost Estimate*):  
**Primary Coordinator:** TCEMA  
**Support Agency:** Emergency Services Organizations  
**Mitigation Type:** Emergency Services  
**Status:** This project has been started. To date, several millions of dollars in upgrades have been completed (for a completion percentage of approximately 30%).

*Strategy 16.2.1:* Increase the number of public water systems throughout the northern portion of the county.

**Timeframe:** 5 years

**Funding** CDBG, PDM, HMGP, (Up to \$75,000,000 per water system).  
(*Cost Estimate*):

**Primary Coordinator:** Trumbull County Commission, County Engineer, local utility providers

**Mitigation Type:** Structural Project

**Status:** This project has not been started to date, due to funding restraints.

*Strategy 16.3.2:* Develop a routing plan to instruct people on how to get to designated shelter sites.

**Timeframe:** 3 years

**Funding** Local funding (\$5,000 to \$10,000)  
(*Cost Estimate*):

**Primary Coordinator:** Local ARC Chapter, TCEMA

**Mitigation Type:** Emergency Services

**Status:** This project has been completed for all EHS facilities, and schools in the Cities of Niles and Warren.

### CITY OF CORTLAND

*Strategy 1A.1.1:* Coordinate with local private contractors to develop Mutual Aid Agreements (MAAs) for emergency snow removal.

**Timeframe:** 2 years

**Funding** No additional funding necessary.  
(*Cost Estimate*):

**Primary Coordinator:** Cortland City Council

**Mitigation Type:** Prevention

**Status:** Cortland representatives on the CPC elected to re-list this project in support of on-going efforts.

### CITY OF GIRARD

*Strategy 1B.1.1:* Repair sections of the city's sanitary sewers, to include fixing collapsed and severely cracked sections.

**Timeframe:** 5 years

**Funding** FEMA – FMA (\$500,000 to \$2 million)  
(*Cost Estimate*):

**Primary Coordinator:** Girard City Council and Public Works Department

**Mitigation Type:** Prevention, Structural Project

**Status:** All sections of the city's sanitary sewers listed in section 3.0 have been repaired; however there are other areas that are still in need of repair.

### CITY OF HUBBARD

*Strategy 1C.1.1:* Update or develop distributable maps of former mining areas so that developers and residents may be advised of the hazards.

**Timeframe:** 2 years

**Funding** Local funding (Up to \$5,000 if printing and preparation are contracted out; ODNR has developed on-line, GIS based underground mine mapping.  
(*Cost Estimate*):

**Primary Coordinator:** Hubbard City Council, ODNR

**Mitigation Type:** Public Education & Awareness

**Status:** Maps have been developed by ODNR, no distribution of the information has taken place.

### CITY OF NEWTON FALLS

*Strategy 1D.1.1:* Update local maps in relation to the NFIPs 100-year flood plain maps

of the city with information such as recent development, not previously included on the FIRM maps.

**Timeframe:** 3 years

**Funding** Local funding (Up to \$5,000 if contracted out; city officials may  
(*Cost Estimate*): partner with county engineering staff if local staff is insufficient).

**Primary Coordinator:** Newton Falls City Council

**Mitigation Type:** Public Education & Awareness

**Status:** Updated flood plain maps have been developed through FEMA's Map Modernization Project; however, this new information has not been integrated with existing city mapping which illustrates recent and projected development.

## CITY OF NILES

*Strategy 1E.1.1:* Dredge or otherwise clear debris from creeks and streams that continually flood in the City of Niles.

**Timeframe:** 4 years

**Funding** PDM, HMGP, FMA (*Up to \$50,000, depending on the size of the*  
(*Cost Estimate*): *section of stream that is cleaned*)

**Primary Coordinator:** Niles City Council, TCEMA

**Mitigation Type:** Prevention

**Status:** This is a new strategy, developed during the updating process.

## CITY OF WARREN

*Strategy 1F.1.1:* Complete the two (2)-phase combined sewer separation project identified in the Warren Water Pollution Control Department's Comprehensive Sewer Systems Master Plan.

*Phase I: North Side and East Side Combined Sewer Separation*

*Phase I: Parts A & B Downtown Sewer Separation to eliminate the WCI regulator*

*Phase II: Downtown Sewer Separation to eliminate overflow at Second National Bank*

**Timeframe:** Construction set to begin in 2005 run through 2010

**Funding** CDBG (*Up to \$1,336,038*)  
(*Cost Estimate*):

**Primary Coordinator:** City of Warren Water Pollution Control Department

**Mitigation Type:** Prevention, Structural Project

**Status:** This project has been started, and is on-going.

*Strategy 1F.1.2:* Offer eligible residential homeowners subsidies to install backflow prevention devices to aid in the prevention of sewer backup into basements.

**Timeframe:** On-going

**Funding** Assistance to homeowners will come in the form of grants from the  
(*Cost Estimate*): city of Warren for up to 100% of the cost for the installation of a  
backflow valve and other associated costs

**Primary Coordinator:** City of Warren

**Mitigation Type:** Prevention

**Status:** This project has been completed in some areas; however there are  
still areas that need installation.



## VILLAGE OF LORDSTOWN

*Strategy 1G.2.1:* Better train and equip the local fire department for hazardous materials incidents.

**Timeframe:** On-going

**Funding** Training and equipment could run as much as \$250,000, contingent  
(*Cost Estimate*): upon the program/apparatus acquired).

**Primary Coordinator:** Lordstown Fire Department

**Mitigation Type:** Emergency Services

**Status:** The State has provided various grants for equipment purchases, and provided training; however, this is an on-going strategy for the village.

*Strategy 1G.3.1:* Work with appropriate individuals to close the local dump, or instate stricter environmental standards for the facility prior to a hazmat or health hazard.

**Timeframe:** 4 years

**Funding** Closing the facility will not require significant funding. However, the  
(*Cost Estimate*): economic impact of closing the facility should be studied.

**Primary Coordinator:** Village Council

**Mitigation Type:** Prevention

**Status:** The project has not been started.

## VILLAGE OF McDONALD

*Strategy 1H.1.1:* Based on 100-year flood plain information, determine an updated list of assets vulnerable to a flood and develop a method to ensure that list's maintenance.

**Timeframe:** On-going

**Funding** Local funding (This is a very low cost strategy if village council  
(*Cost Estimate*): members or staff members compile the list).

**Primary Coordinator:** Village Council

**Mitigation Type:** Prevention

**Status:** During the update to this plan a more in-depth updated list of assets vulnerable to flooding in the Village of McDonald has been developed, and will be updated every five (5) years as required. The CPC members representing the Village of McDonald want to reinstate this strategy as an on-going effort.

## VILLAGE OF ORANGEVILLE

*Strategy 1I.1.1:* Identify areas of the village and the assets in those areas that would be at risk if the Shenango Reservoir were to fill.

**Timeframe:** 1 year

**Funding** Local funding (This is a very low cost strategy if village council  
(*Cost Estimate*): members compile the list).

**Primary Coordinator:** Village Council

**Mitigation Type:** Public Education and Awareness

**Status:** Orangeville representatives on the CPC elected to re-list this project in support of on-going efforts.

## **VILLAGE OF WEST FARMINGTON**

*Strategy 1J.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winter storms.

**Timeframe:** On-going

**Funding** No additional funding necessary.  
(*Cost Estimate*):

**Primary Coordinator:** Village Council, NWS

**Mitigation Type:** Public Education and Awareness

**Status:** West Farmington representatives on the CPC elected to re-list this project in support of on-going efforts.

## **VILLAGE OF YANKEE LAKE**

*Strategy 1K.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

**Timeframe:** On-going

**Funding** No additional funding necessary.  
(*Cost Estimate*):

**Primary Coordinator:** Village Council, NWS

**Mitigation Type:** Public Education and Awareness

**Status:** The TCEMA coordinates with the NWS and the EAS to warn residents of impending severe winds and/or tornadoes, this is considered an on-going strategy.

## TOWNSHIPS OF TRUMBULL COUNTY

### BAZETTA & MECCA

*Strategy 1L.1.1:* Determine areas that would be inundated just before the Mosquito Lake Dam overtops.

**Timeframe:** 2 years

**Funding** Local funding (\$50,000 to \$100,000 if a consultant is used; county  
(*Cost Estimate*): engineering staff may be able to complete this project more cost-effectively).

**Primary Coordinator:** Township Trustees

**Mitigation Type:** Public Education and Awareness

**Status:** Inundation mapping is available for the Mosquito Lake Dam through the USACOE, Pittsburgh District. The assets at risk are identified in the Asset Inventory Section of the Plan. This strategy is considered on-going as the Townships will continue efforts to update the information.

### BLOOMFIELD, BRISTOL, CHAMPION, GUSTAVUS, JOHNSTON, KINSMAN, AND LIBERTY

*Strategy 1M.1.3:* Purchase and install tornado sirens in Champion Township.

**Timeframe:** 1 year

**Funding** Local funding (\$5,000 to \$15,000 per siren).  
(*Cost Estimate*):

**Primary Coordinator:** Township Trustees and TCEMA

**Mitigation Type:** Public Education & Awareness

**Status:** This is a new strategy developed during the updating process.

*Strategy 1M.2.1:* Install structural bracing, window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to township facilities.

**Timeframe:** On-going

**Funding** PDM, HMGP, (\$40,000 to \$200,000 depending on size of facility)  
(*Cost Estimate*):

**Primary Coordinator:** Township Trustees, Contractor

**Mitigation Type:** Structural Project

**Status:** This is a new strategy developed during the updating process.

*Strategy 2M.1.1:* Conduct a storm water management project in the vicinity of the Cardinal Avenue / Goldie Road intersection and extend south to approximately 800

feet east of the Mansell Drive / Fifth Avenue intersection.

**Timeframe:** 4 years  
**Funding** CDBG, PDM, HGMP, FMA (Up to \$1 million to \$2 million dollars)  
(*Cost Estimate*):  
**Primary Coordinator:** Township Trustees, Engineering Consultant  
**Mitigation Type:** Structural Project  
**Status:** This is a new strategy developed during the updating process.

## BRACEVILLE

*Strategy 1N.1.1:* Train, equip, and prepare local first responders for response to an incident.

**Timeframe:** On-going  
**Funding** AFGP, DHS, Local funding (\$20,000 to \$250,000, contingent upon  
(*Cost Estimate*): equipment needed.  
**Primary Coordinator:** Township Trustees, Local First Responders  
**Mitigation Type:** Emergency Services  
**Status:** Braceville representatives on the CPC elected to re-list this project in support of on-going efforts.

## BROOKFIELD

*Strategy 1O.2.1:* Consider channel enlargement and realignment, as well as bank stabilization along Yankee Creek.

**Timeframe:** 5 years  
**Funding** USACOE, FMA, (Cost estimate is currently being prepared).  
(*Cost Estimate*):  
**Primary Coordinator:** Township Trustees, USACOE  
**Mitigation Type:** Structural Project, Prevention  
**Status:** This project has been initiated, but has not yet been completed.

## FARMINGTON

*Strategy 1P.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Grand River Wildfire Management Area.

**Timeframe:** On-going  
**Funding** ODNR, State Parks Commission, If necessary (\$3,000 to \$5,000 if  
(*Cost Estimate*): state agencies do not already have materials printed).  
**Primary Coordinator:** ODNR, State Parks Commission

**Mitigation Type:** Public Education and Awareness

**Status:** This project has been completed through information available on the county's website, through information available at local fires departments, and information that is frequently distributed by the State Fire Marshal's Office. Farmington representatives on the CPC elected to re-list this project in support of on-going efforts.

## **FOWLER AND HARTFORD**

*Strategy 1Q.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions.

**Timeframe:** On-going

**Funding** No additional funding necessary.  
(*Cost Estimate*):

**Primary Coordinator:** Township Trustees, NWS

**Mitigation Type:** Public Education and Awareness

**Status:** The TCEMA coordinates with the NWS and the EAS to warn residents of impending severe winds and/or tornadoes. Township representatives on the CPC elected to re-list this project in support of on-going efforts.

## **GREENE**

*Strategy 1R.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Mosquito Lake Wildfire Management Area.

**Timeframe:** On-going

**Funding** ODNR, State Parks Commission, if necessary (\$3,000 to \$5,000 if  
(*Cost Estimate*): state agencies do not already have materials printed).

**Primary Coordinator:** ODNR, State Parks Commission

**Mitigation Type:** Public Education and Awareness

**Status:** This project has been initiated through information available on the county's website, through information available from local fire departments, and information that is frequently distributed by the State Fire Marshal's Office. Green Township representatives on the CPC elected to re-list this project in support of on-going efforts.

## **HOWLAND, NEWTON, SOUTHINGTON, VERNON, AND WARREN**

*Strategy 1S.1.1:* Work with the county engineer to update 100-year flood plain maps in

the townships with information not included by FEMA on the originals, especially in the areas near Mosquito Creek, Mahoning River, Pymatuning Creek, Tinker Creek, and Dead Branch Creek.

**Timeframe:** 2 years

**Funding** Local funding (\$5,000 to \$10,000 if contracted out; county  
(*Cost Estimate*): engineering staff may be able to undertake the project at a lesser cost.

**Primary Coordinator:** Township Trustees, County Engineer

**Mitigation Type:** Prevention

**Status:** Updated 100-year floodplain mapping has been developed by FEMA through the Map Modernization project, however this information has not been integrated into flood mapping for the townships.

## HUBBARD

*Strategy 1T.1.1:* Work with the ODNR to map formerly mined areas or geologically unstable terrain so that residents may be advised of the risk of subsidence.

**Timeframe:** 1 year

**Funding** No additional funding necessary.  
(*Cost Estimate*):

**Primary Coordinator:** Township Trustees, ODNR

**Mitigation Type:** Public Education and Awareness

**Status:** The ODNR has developed GIS-based mapping that is available on the agency's website. This information has not been integrated into any specific mapping for Hubbard Township.

## MESOPOTAMIA

*Strategy 1U.1.1:* Raise Brigden Road beginning at the intersection of Brigden Road and SR 87, proceeding south for one (1) mile.

**Timeframe:** 5 years

**Funding** CDBG per LMI requirements (Estimate has been development)  
(*Cost Estimate*):

**Primary Coordinator:** Township Trustees

**Mitigation Type:** Structural Project

**Status:** This project has been initiated; however, is not complete.

## VIENNA

*Strategy 2V.1.1:* Upgrade the existing Vienna Fire Department roof siren so that the

tornado component of the siren can be activated remotely.

**Timeframe:** 1 year

**Funding** PDM, HMGP, Local funding (Up to \$10,000)  
(*Cost Estimate*):

**Primary Coordinator:** Vienna Fire Department

**Mitigation Type:** Public Education and Awareness

**Status:** The siren is currently only activated by 9-1-1 for fire and emergency calls. Currently the tornado component must be activated manually, requiring an individual to stand at the switch and hold the button for a two (2) minute period. Currently the closest tornado siren is located on Sodom Hutchings Road, approximately two and half miles (2.5 miles) from Vienna Center. This siren is very difficult to hear during extreme weather conditions and high winds.

## WEATHERSFIELD

*Strategy 1W.1.1:* Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of the Meander Dam.

**Timeframe:** On-going

**Funding** No funding required per ODNR's normal operating budget.  
(*Cost Estimate*):

**Primary Coordinator:** Dam Owner, ODNR

**Mitigation Type:** Prevention

**Status:** ODNR conducts safety inspections of the Meander Dam as required per law, thus this is an on-going strategy.



## CONSOLIDATED/REMOVED

*Strategy 1.1.1:* Coordinate with the Ohio Department of Natural Resources (ODNR), Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Trumbull County as a result of a change in circumstances not in existence at the time of the initial classification to ensure adequate safety according to the potential for downstream damage.

**Timeframe:** As needed

**Funding** ODNR quite possibly has items such as this budgeted as this project  
(*Cost Estimate*): would fall under the responsibilities of ODNR personnel. (N/A)

**Primary Coordinator:** ODNR

**Support Agency:** Dam Owner

**Mitigation Type:** Prevention

**Status:** Jurisdictions throughout Trumbull County comply with ODNR and other dam safety regulations accordingly. The CPC elected to re-list this project because other projects under this goal may result in the “changes in circumstances” noted by this project.

**PROPOSED 2019 STATUS:** (Completed) The planning committee removed this project from the plan. ODNR performs these tasks as a matter of regular operations and regularly involves applicable local officials.

*Strategy 1.1.2:* During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.

**Timeframe:** During new dam construction.

**Funding** Local Funding (\$50,000 to \$75,000 if a consultant is used.)  
(*Cost Estimate*):

**Primary Coordinator:** Dam Owner

**Support Agency:** ODNR

**Mitigation Type:** Prevention

**Status:** This project is completed as necessary and to the level required of local government per compliance with existing dam safety regulations. The HMC elected to re-list this project to show mitigation through existing laws and programs; however, the coordinating agency was changed to better represent where this responsibility should lie.

PROPOSED 2019 STATUS: (Completed) Ohio Revised Code requires this analysis.

*Strategy 1.1.3:* Coordinate with the ODNR, Dam Safety and Engineering Program to conduct periodic safety inspections of existing dams in Trumbull County.

**Timeframe:** Annually

**Funding** No funding should be required per ODNR's normal operating budget.  
*(Cost Estimate):* (N/A)

**Primary Coordinator:** Affected Jurisdiction

**Support Agency:** Dam Owner, ODNR

**Mitigation Type:** Prevention

**Status:** This project is completed as necessary and to the level required of local government per compliance with existing dam safety regulations. The HMC elected to re-list this project to show mitigation through existing laws and programs.

PROPOSED 2019 STATUS: (Completed) ODNR Dam Safety personnel regularly inspect dams throughout Ohio.

*Strategy 2.1.2:* Educate local residents on the benefits of conserving water at all times, not just during a drought.

**Timeframe:** Annually

**Funding (Cost Estimate):** Local funding, PDM (\$3,000 for publication and distribution of informative materials.)  
**Primary Coordinator:** Trumbull County EMA  
**Support Agency:** Local water distribution systems  
**Mitigation Type:** Public Education & Awareness  
**Status Description:** Conducted on an annual basis and as necessary, at such events as the Safety First Day event, through the State, and local water departments.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.

*Strategy 3.1.1:* Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes.

**Timeframe:** Annually  
**Funding (Cost Estimate):** PDM, Local Funding (*Up to \$3,000 for publication and distribution of informative materials.*)  
**Primary Coordinator:** TCEMA  
**Support Agency:** Emergency Services providers  
**Mitigation Type:** Public Education and Awareness  
**Status:** This project was completed as part of periodic EPI campaigns sponsored by the TCEMA and other emergency services organizations (e.g., regularly-updated websites, etc.). The CPC elected to re-list this project with more general language to afford those sponsoring information campaigns greater flexibility. Also, other emergency services organizations were added as coordinating agencies.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.

*Strategy 4.1.1:* Produce public awareness campaigns through local media outlets.

**Timeframe:** Annually

**Funding** Local Funding, PDM (*Unknown, contingent upon local media rates*  
(*Cost Estimate*): *that are subject to frequent change. During emergencies, EPI may be distributed at a reduced rate.*)

**Primary Coordinator:** Trumbull County General Health District and Municipal Health Departments

**Mitigation Type:** Public Education and Awareness

**Status:** This project was completed as part of the H1N1 response in late 2009. The HMC elected to re-list the project (as well as add “pandemic” to the objective) to show support for the TCGHD’s on-going efforts.

PROPOSED 2019 STATUS: (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.

Strategy 5.2.1: Coordinate with local and rural property owners to gain access to flooded property for recovery purposes after a flood has occurred.

**Timeframe:** As necessary

**Funding** No additional funding required.  
(*Cost Estimate*):

**Primary Coordinator:** Trumbull County Commission

**Support Agency:** TCEMA

**Mitigation Type:** Emergency Services

**Status:** This project has been completed, and is on-going.

PROPOSED 2019 STATUS: (Deleted) Local officials complete this project, as necessary, when significant incidents occur. The committee removed it from this plan because it is recovery-centric.

Strategy 7.1.1: Develop an informational brochure to distribute to local farmers, residents.

**Timeframe:** Annually

**Funding** USDA, ODNR (*Up to \$3,000 for public and distribution, if USDA or*  
(*Cost Estimate*): *ODNR does not already have materials available.*)

**Primary Coordinator:** ODNR

**Support Agency:** NRCS, Farm Bureau

**Mitigation Type:** Public Education and Awareness

**Status:** Conducted on an annual basis. This project has been completed as efforts to notify affected individuals regarding gypsy moths and the emerald ash borer has occurred.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.

*Strategy 8.1.1:* Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location.

**Timeframe:** As Needed

**Funding** Coordination should require no significant additional funding;  
*(Cost Estimate):* however, a project would require significant funding, primarily from ODNR through the AML&R program. (*Up to \$2,000,000*)

**Primary Coordinator:** Affected Jurisdiction

**Support Agency:** ODNR

**Mitigation Type:** Property Protection

**Status:** Small-scale reclamation projects have been conducted by the ODNR. The HMC elected to re-list this project because of the presence of the hazard. The coordinating agency was changed from “County Engineer” to “Affected Jurisdiction” to better reflect actual responsibilities and to allow for greater flexibility.

**PROPOSED 2019 STATUS:** (Completed) This task represents a routine responsibility of the ODNR office.

*Strategy 9.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions.

**Timeframe:** As Needed

**Funding** Coordination should require no significant additional funding. (*N/A*)  
*(Cost Estimate):*

**Primary Coordinator:** TCEMA, NWS

**Mitigation Type:** Public Education and Awareness

**Status:** The project has been completed via the on-going coordination between the TCEMA and the NWS. The CPC elected to re-list this project since it is easily-implementable and likely to continue.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.

*Strategy 9.1.3:* Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas.

**Timeframe:** Annually

**Funding** Coordination should require no additional funding, especially since  
(*Cost Estimate*): the EAS is already operational. (N/A)

**Primary Coordinator:** TCEMA and local law enforcement agencies

**Support Agency:** Affected Jurisdictions

**Mitigation Type:** Public Education and Awareness

**Status:** This project was completed as necessary as part of Trumbull County's participation in the Emergency Alert System (EAS). The CPC elected to re-list this project and list it as on-going.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.

*Strategy 10.1.1:* Coordinate with the National Weather Services (NWS) to warn residents of impending severe winds and possible tornado conditions.

**Timeframe:** As Needed

**Funding** Coordination should require no significant additional funding. (N/A)  
(*Cost Estimate*):

**Primary Coordinator:** TCEMA and NWS

**Mitigation Type:** Public Education and Awareness

**Status:** The project has been completed via the on-going coordination between the TCEMA and the NWS. The CPC elected to re-list this project since it is easily-implementable and likely to continue.

PROPOSED 2019 STATUS: (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.

*Strategy 13.1.3:* Increase the knowledge of the general public concerning preparedness through the preparation of information brochures, town meetings, training seminars, etc.

**Timeframe:** Annually

**Funding (Cost Estimate):** PDM, USDHS, Local Funding (*Up to \$3,000 to \$5,000 could be incurred for printing and distribution of materials.*)

**Primary Coordinator:** TCEMA

**Mitigation Type:** Public Education and Awareness

**Status:** This project has been completed via the formation of the Trumbull County WMD Committee, the TCEMA website, on-going public information campaigns, and the TCEMA booth at Safety First Day. Also, local school boards have been educating their communities as to bomb threat protocols and other man-made hazards at their facilities.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.

*Strategy 13.2.2:* Coordinate with first responders for interagency cooperation to assist in collaborative planning.

**Timeframe:** Annually

**Funding (Cost Estimate):** Coordination should require little to no additional funding. (N/A)

**Primary Coordinator:** TCEMA

**Support Agency:** Emergency Services Providers

**Mitigation Type:** Prevention

**Status:** **PROPOSED 2019 STATUS:** (Completed) This project is a preparedness-centric project. The committee thus removed it from this plan since responders routinely collaborate for incident preparedness.

*Strategy 13.2.3:* Continue the education and training of first responders and emergency personnel.

**Timeframe:** Annually

**Funding (Cost Estimate):** Many programs can be attended free of charge. Other training programs are currently underway at response agencies. (N/A)

**Primary Coordinator:** TCEMA, LEPC, Trumbull County WMD Committee

**Support Agency:** Emergency Services Providers

**Mitigation Type:** Public Education and Awareness

**Status:** This project has been completed through the regular training the



response agency personnel receive. The HMC elected to re-list this project to show continued support for these efforts. The LEPC and individual emergency services agencies were added as coordinating agencies to more accurately depict actual responsibilities.

**PROPOSED 2019 STATUS:** (Completed) This project is a preparedness-centric project. The committee thus removed it from this plan since responders routinely train their personnel.

*Strategy 15.1.3: Assess the feasibility of cleaning up busy intersections.*

**Timeframe:** 3 years

**Funding** ODOT, USDOT (*Assessing the feasibility would require no additional*  
(*Cost Estimate*): *funding; undertaking a project, however, could range from \$100,000 to \$1,000,000+.*)

**Primary Coordinator:** ODOT

**Support Agency:** Trumbull County Engineer

**Mitigation Type:** Structural Projects

**Status:** Several projects have been done. For example, the DOT has cleaned up the State Route 82/46 interchange.

**PROPOSED 2019 STATUS:** (Deleted) The committee removed this project because of its vague wording and questions as to how it contributes to the mitigation of hazards identified in this plan.

*Strategy 15.1.5: Increase public education and awareness regarding hazardous materials incidents.*

**Timeframe:** Annually

**Funding** Local Funding (*Up to \$5,000*)  
(*Cost Estimate*):

**Primary Coordinator:** LEPC, TCEMA

**Mitigation Type:** Public Education and Awareness

**Status:** Conducted on an annual basis by the LEPC, and information is posted on the county's website. The CPC elected to re-list it to support the on-going efforts of the LEPC.

**PROPOSED 2019 STATUS:** (Deleted) This project was one of many education-centric projects that the committee consolidated into a

single strategy for ease of plan use.

## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #5

### AGENDA

Date: Friday, July 26, 2019  
Time: 10:00 a.m.  
Estimated Duration: 30 minutes  
Location: Web conference (log-in and dial-in information below)

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/150351981>

You can also dial in using your phone.

United States: [+1 \(872\) 240-3311](tel:+18722403311)

Access Code: 150-351-981

1. Welcome and roll call
2. Review community issues meetings (June 3<sup>rd</sup> and June 6<sup>th</sup>)
3. Plan maintenance process
4. Jurisdictional involvement
5. Schedule for next (and final!) planning meeting
6. Adjournment

**TRUMBULL COUNTY HAZARD MITIGATION PLAN**  
**PLANNING COMMITTEE MEETING #5**  
**NOTES**

Date: Friday, July 26, 2019  
Time: 10:00 a.m.  
Duration: Approximately 35 minutes  
Location: Web Conference (via GoToMeeting)

The Trumbull County Hazard Mitigation Planning Committee met via web conference on July 26<sup>th</sup> to continue the process of updating the county's multi-jurisdictional hazard mitigation plan. The following committee members attended the meeting.

- Linda Beil, Trumbull Co. EMA
- Kayla Grizer, Trumbull Co. EMA
- Steve Gerberry, Trumbull Co. Engineer
- Nick Coggins, Trumbull County Planning Commission
- Grant Taylor, Eastgate Regional Council of Governments
- Afrodite Alteiri, Youngstown-Warren Regional Airport
- Bob Pinti, Warren City Health District
- Jeff Harvey, JH Consulting, LLC

The content portion of the meeting included a discussion about the early-June community issues meetings, the plan maintenance process, and municipal invitations to the final, face-to-face planning meeting at which the consultant will present a full draft of the mitigation plan.

Bob Pinti discussed the community issues meetings held by the Warren City Health District on June 3 and 6. Bob reported good participation, noting the receipt of approximately 20 responses to a "mini survey" each night (see a blank version attached). Bob further reported that nothing extraordinary stood out about the responses received at the meetings; most responses were consistent with the results of the online survey. Many attendees commented on neighborhood issues like dilapidated homes and cluttered property. Bob had to frequently steer the conversation back to the topic multi-jurisdictional (i.e., county) hazard vulnerability and mitigation.

Based on Bob's report, Jeff Harvey noted that there seems to be a need to educate the

general public as to what hazard mitigation is, and Bob agreed. Jeff further suggested that, as Trumbull County moves into the implementation phase for this five-year cycle, initial outreach efforts could target what hazard mitigation is, and after the first couple of years of the cycle, outreach could then transition to mitigation strategies at the home. The committee agreed, and Bob mentioned the possibility of creating an insert to include in Warren's utility bills as a way to support that effort. Jeff noted that he could create a one-page flyer for that purpose, but also for posting on county and other partner-agency websites to ensure consistency of information.

The committee also spent some time discussing the plan maintenance procedure. Jeff noted state and federal recommendations to make the interim periods (i.e., those between plan adoption and the next update process) more dynamic than in the past. Jeff asked if the committee would prefer an annual process or some other type of periodic process, and group members recommended an annual process. Committee members also recommended keeping the steering committee used for this update in place during the interim period (as opposed to consolidating it with another group, such as the LEPC). Jeff then suggested the following annual schedule.

- **Year 1:** Focus on plan adoption, begin "Mitigation 101" outreach
- **Year 2:** Meet to discuss plan integration opportunities (e.g., aligning mitigation objectives with efforts to upgrade stormwater systems, etc.)
- **Year 3:** Meet to conceptually plan the next update, begin targeting potential funding for the next update
- **Year 4:** Meet to discuss project status, transition to "personal mitigation ideas" outreach
- **Year 5:** Coordinate the next update

Committee members agreed to this schedule.

To close the meeting, the committee discussed the final in-person planning meeting. The primary agenda item at that meeting will be to review a cover-to-cover draft of the plan. Jeff noted that the JHC staff continues to work with individual jurisdictions to ensure their participation, and that by design that process has been done in a bit of a vacuum. Jeff recommended that the committee consider inviting municipal representatives to the last session so that all participating jurisdictions have the opportunity to debate the plan. The committee agreed, but further agreed that the EMA and Jeff's office should coordinate beforehand to ensure the appropriate representatives at the jurisdictional levels receive invitations. Jeff asked Grant Taylor from Eastgate if the regional council had recommendations as to effective ways to target and garner municipal attendance at meetings; Grant said he would review his files for Trumbull County projects and forward relevant information to Jeff. The committee then adjourned after targeting

early-to-mid September for the final planning meeting.

Attachment

- Blank “mini-survey” from community issues meeting

## TRUMBULL COUNTY HAZARD MITIGATION PLAN COMMUNITY ISSUES FORUM ~ MITIGATION TALKING POINTS

### Purpose

- Disasters cause loss of life, damage buildings and infrastructure, and can impact a community's economic, social, and environmental well-being.
- In short, they can be disruptive, and the recovery from major disasters can take years.
- Mitigation represents an effort to minimize losses to life and property from these hazards.
- The state and federal governments require communities to compile a hazard mitigation plan, and the presence of the plan is necessary to ensure eligibility for several grant sources.
- Communities update mitigation plans regularly, and Trumbull County is in the process of updating its plan.
- Think about what would make the impacts to the hazards you've experience, like severe weather, less disruptive.
  - Would better access to water and sewer help?
  - Would better storm drainage help?
  - Would have better homeowners' insurance coverage help?
  - Would better paying jobs help people recovery more quickly and effectively?
- Ideally, this plan is a dynamic document that includes comments from governmental officials and the public. Currently, the cities, villages, and townships in Trumbull County are participating and nearly 350 people have completed an online public survey. The process is succeeding; however, we want to make sure the public can participate in as many ways as possible.

### Specific Items for Public Consideration

We want to better understand how you see hazards relating to other issues your community faces. Feel free to provide any comments, but think specifically about the following.

- What hazards are you concerned about?
- What types of projects would you be willing to do to address those hazards?
  - What would you support your governmental leaders doing?
  - What would you be willing to do at your home?

Please consider taking the online survey. There are numerous questions that are multiple choice, but there are also spaces for your comments.

## TRUMBULL COUNTY HAZARD MITIGATION PLAN 2019

*Mitigation* is any action you or your community takes to reduce the negative impacts of hazards such as weather or floods.

1. Do you live or work in Trumbull County? ☐ Yes ☐ No

2. What is the name of your city/village?

---

3. What hazard (see back) represents the biggest risk?

---

4. Do you have a 72-hour emergency kit in your home?

☐ Yes ☐ No ☐ I don't know

5. Do you live in a special flood hazard zone?

☐ Yes ☐ No ☐ I don't know

6. How would you rate your ability to recover from disasters?

☐ Not capable w/o assistance ☐ Can accomplish minimal actions

☐ Can fully recover w/o assistance

7. What mitigation efforts would you support in your community?  
Check all that apply.

- ☐ Buying out properties or relocating or elevating houses that are prone to repetitive flooding
- ☐ Upgrading the water and sewer systems
- ☐ Installing generators in critical facilities such as police and fire stations, hospitals, etc.
- ☐ Promoting the collection and reuse of rainwater such as in rain gardens and green roofs
- ☐ Building shelters for tornadoes and severe weather events
- ☐ Supporting educational campaigns aimed at preparing the population for a variety of hazards

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## **HAZARDS LIST**

Dam & Levee Failure  
Drought  
Earthquake  
Epidemic  
Flooding  
Hailstorm  
Infestation  
Land & Mine Subsidence  
Severe Thunderstorm  
Severe Wind & Tornado  
Severe Winter Storm  
Temperature Extreme (Heat & Cold)  
Terrorism (Domestic & International)  
Wildfire

## **HAZARDS LIST**

Dam & Levee Failure  
Drought  
Earthquake  
Epidemic  
Flooding  
Hailstorm  
Infestation  
Land & Mine Subsidence  
Severe Thunderstorm  
Severe Wind & Tornado  
Severe Winter Storm  
Temperature Extreme (Heat & Cold)  
Terrorism (Domestic & International)  
Wildfire

## TRUMBULL COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #6

### AGENDA

Date: Friday, October 18, 2019  
Time: 10:00 a.m.  
Estimated Duration: 90 minutes  
Location: Trumbull County Emergency Management Agency  
640 North River Road, NE, Suite B  
Warren, OH 44483

1. Welcome and introductions
2. Municipal involvement
  - Risk and vulnerability concerns
  - Capabilities (paper surveys)
  - Projects (status updates and/or new projects)
3. Draft narrative review
4. Where do we go from here?
5. Adjournment

**TRUMBULL COUNTY  
HAZARD MITIGATION PLAN  
COMMITTEE MEETING #6**

**MINUTES**

Date: Friday, October 18, 2019  
Time: 10:00 a.m.  
Duration: 90 minutes  
Location: Trumbull County Emergency Management Agency  
640 North River Road, NE, Suite B  
Warren, OH 44483

The Trumbull County Emergency Management Agency hosted a sixth face-to-face planning meeting to update the county's hazard mitigation plan. The primary purpose of this meeting was to provide an opportunity for municipal representatives to participate in the planning process. A sign-in sheet appears as an attachment.

The county's consultant provided a brief overview of the hazard mitigation planning process, and he shared with those in attendance the steps that had been taken (to date) to update the plan. A steering committee has been busy since early 2019 crafting high-level strategy items, and the update has reached the point where specific municipal input regarding capabilities, concerns, and potential projects is necessary.

The majority of the meeting was an open forum where attendees provided feedback. Issues discussed included the following.

- **Flooding:** Updating zoning maps to include floodplain information.
- **Flooding:** Attendees confirmed that storm water issues contributed to flooding.
- **Flooding/Dam & Levee Failure:** There is a project under consideration to remove several dams in the county, and doing so will raise water levels in local streams. Attendees discussed the positioning of that project in the mitigation plan.
- **Miscellaneous:** Siren interconnectivity, to include alignment of jurisdictional activation protocols. Attendees noted there will soon be a migration to digital activation (with current activation occurring on VHF). There is a need for education

regarding siren capabilities (e.g., it is an outdoor warning system, not an indoor system).

To conclude the meeting, Trumbull County's consultant shared with attendees the final set of "next steps." All in attendance, as well as the remaining municipalities that wish to be a party to the updated plan, should complete a municipal capabilities survey. That survey asks about local ordinances, plans, staffing capabilities, and the like with the intent of gauging local governments' abilities to implement and administer mitigation projects. The consultant had paper copies for that wished to complete it by hand, and he noted that he would forward a web link to the EMA for those that would like to complete the survey online (via Survey Monkey). As of November 1, 2019, 15 jurisdictions had completed the survey.

The consultant also asked attendees if a shared folder on a platform such as Dropbox would be a sufficient way to share draft documents. Most attendees affirmed the suggestion, but the EMA will keep printed copies on file at its office for those that would like to view it in a traditional format. The consultant shared the Dropbox link with the EMA on Monday, October 28<sup>th</sup>.

**Municipal Capabilities Survey Link:**

<https://www.surveymonkey.com/r/TCHMP-Capabilities>

**Dropbox Link:**

<https://www.dropbox.com/sh/q7rstu28rftrez5/AADzhFTJuY5mmVp2c8jGKmh9a?dl=0>

## Hazard Mitigation Plan Meeting

# Sign In Sheet 10/18/2019

**PLEASE PRINT YOUR NAME!**

Kayla Grizer	TCEMA
Linda Beil	TCEMA
John Hickey	CHAMPION FIRE
CHRIS SKRUCK	HUBBARD P&Z
DENNIS LEWIS	BAZETTA FIRE
Edward Anthony	WARREN Twp
JEFFERY HARVEY	JH CONSULTING
Natalie Markusic	TCHD
Sandy Swann	TCHD
Afrodite Altheri	YNG AIRPORT
Jim Davies	Hartford Zoning

## Hazard Mitigation Plan Meeting

# Sign In Sheet 10/18/2019

**PLEASE PRINT YOUR NAME!**

Kayla Grizer	TCEMA
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Edward Anthony	WARREN Twp
JEFFERY HARVEY	JH CONSULTING
Natalie Markusic	TCHD
Sandy Swann	TCHD
Affrodite Alteri	YNG AIRPORT
Jim Davies	Hartford Zoning

## APPENDIX 2: PROJECT PRIORITIZATION

This appendix contains a spreadsheet used to calculate project prioritization scores.



# TRUMBULL COUNTY HAZARD MITIGATION PLAN (2020 UPDATE)

## Mitigation Strategy Prioritization

### Definition of Priority Scoring

- 5 Best outcome for each criterion (e.g., very few negative social impacts, minimal (or doable in-house) administrative requirements, etc.)
- 4 ↓
- 3 ↓
- 2 ↓
- 1 Worst outcome for each criterion (e.g., significant political drawback, economically unfeasible, negative environmental consequences, etc.)

STRATEGY		PRIORITY CATEGORIES							SUM	RES. PRIORITY
Number	Description	Social Impacts	Technical Feasibility	Admin. Requirements	Political Impacts	Legal Ramifications	Env. Impacts	Economic / Cost Benefit		
1.1.5	Build out a notification system to quickly notify potentially-impacted residents and businesses downstream for impending hazard occurrences (i.e., similar to a reverse 911 system).	5	3	5	5	4	5	4	31	11
1.1.6	Consider the removal, upgrading, or replacement of older dams throughout the county. While under consideration, encourage citizen involvement in project planning, and analyze potential impacts on not only the environment, but also hydrology, recreation, the economy, water quality, etc. Potential projects include the structures included in the Lower Mahoning Restoration Project.	3	3	3	1	2	3	2	17	30
1.1.7	Digitize the mapping included in the dam emergency action plans (EAPs) that dam owners submit to the Trumbull County Emergency Management Agency.	5	5	5	5	5	5	5	35	1
1.1.8	Work with ODNR and dam owners to ensure that EAPs are current for the "high" and "significant" classified dams in Trumbull County. Specifically, seek to obtain an approved EAP for the Pleasant Valley Lake Dam.	5	5	5	5	5	5	5	35	1
1.1.9	Consider upgrades (i.e., rehabilitation), as necessary, for the high-hazard potential dams in Trumbull County. Specific projects could include the Mineral Lake Dam, the Upper Girard Lake Dam, and the Pleasant Valley Lake Dam.	4	3	3	2	2	3	3	20	27



2.1.1	Periodically disseminate information to residents about the types of hazards to which Trumbull County is susceptible, to include examples of personal mitigation projects.	5	5	4	5	5	5	4	33	5
2.2.1	Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Trumbull County.	3	5	2	3	4	5	3	25	22
4.4.2	Identify and prepare point of dispensing (POD) sites.	5	5	5	5	5	5	5	35	1
5.1.1	Undertake streambank restoration projects where appropriate, and consider naturalizing areas to better handle precipitation.	3	3	2	3	3	3	2	19	28
5.3.1	Enforce building and development ordinances.	2	5	4	1	2	5	3	22	25
5.3.2	Encourage municipal participation in the Community Rating System (CRS) to reduce flood insurance rates.	5	5	3	3	5	5	4	30	13
5.3.3	Consider traditional flood mitigation projects such as acquisition and relocation, elevation, etc. of flood-prone properties.	3	3	3	3	4	4	3	23	24
5.3.4	Consider participation in the NFIP.	5	5	4	2	5	5	4	30	13
5.3.5	Develop a GIS capability for Trumbull County to support planning for flood mitigation through identification and tracking of risks, structural loss estimates in SFHAs, etc.	5	5	4	5	5	5	3	32	10
6.1.1	Coordinate efforts with the NWS and local media providers to post advance warnings of impending hazard events.	5	4	4	5	5	5	5	33	5
10.2.1	Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds.	2	5	3	1	2	5	3	21	26
10.2.2	Encourage developers to reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type.	2	3	2	1	2	5	3	18	29
10.2.3	Consider the purchase of generators for critical facilities throughout Trumbull County.	4	5	4	4	4	5	4	30	13
10.2.4	Seek funding for and install residential and community storm shelters.	3	5	4	3	4	5	3	27	20
11.1.1	Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal.	3	5	3	3	3	5	3	25	22
12.1.2	Establish warming/cooling centers for vulnerable populations, along with an outreach program encouraging at-risk populations to use the centers.	4	5	5	4	5	5	5	33	5
13.1.5	Establish a critical infrastructure protection program.	5	5	4	4	4	5	3	30	13

15.1.2	Update the county's commodity flow study (or "regional freight study").	5	5	5	4	5	5	4	33	5
16.1.1	Establish a communications system that will allow jurisdictional fire and police departments to communicate with each other during large-scale emergency situations.	3	4	4	4	4	5	4	28	18
16.2.1	Increase the number of public water systems throughout the county.	5	4	3	4	4	4	3	27	20
16.6.1	As warning sirens become more interconnected (i.e., per the migration to a digital activation), coordinate a planning project to outline jurisdictional activation protocols.	5	5	3	5	4	5	4	31	11
16.6.2	Support multijurisdictional and multi-discipline emergency responder training for a variety of hazards.	5	5	5	5	5	5	5	35	1
1B.1.1	Continue to pursue upgrades and preventive maintenance projects of Girard's sanitary sewers.	5	5	4	4	5	4	3	30	13
1L.1.1	Identify areas of Orangeville and the assets in those areas that would be at risk if the Shenango Reservoir were to fill.	3	4	3	4	5	5	4	28	18
1M.1.3	Educate citizens on the capabilities of the warning siren system (e.g., it works best as an outdoor capability, etc.).	5	5	4	5	4	5	5	33	5

## APPENDIX 3: INACTIVE PROJECTS

This appendix lists projects that have appeared in previous versions of the mitigation plan. It serves as a record of what has been completed in Trumbull County.

### Completed Mitigation Efforts (but **NOT** Listed in Previous Versions of this Plan)

#### **Trumbull County**

- Updated zoning maps now include floodplain information (per attendees at Meeting 6 of the 2020 update)
- Bloomfield #14, Bloomfield Geneva Road (CH 301B) Culvert (poured concrete invert) ~ 2017
- Braceville #27, Eagle Creek Road (TH 134A) Culvert Replacement (71" x 47" CMP) ~ 2017
- Bristol #13, Hyde Shaffer Road (CH 242), Replaced Super Structure with U.S. Bridge Kit ~ 2018
- Fowler #15, Warner Road (CH 43C) Culvert Replacement (64" x 43" CMP) ~ 2017
- Greene #15, York Street (CH 290A) Culvert Replacement (71" x 47" CMP) ~ 2017
- Greene #21, Dennison Ashtabula Road (CH 295B) Culvert Replacement (77" x 52" CMP) ~ 2017
- Gustavus #16, Barclay North Road (TH 287B) Culvert Replacement (71" x 47" CMP) ~ 2017
- Hartford, Five Points Hartford Road (CH 187) Culvert Replacement with Full Height Headwalls (42" HDPE) ~ 2018
- Hubbard #5, Schotten Road (CH 2H) Culvert (poured concrete invert) ~ 2017
- Lordstown #13, Salt Springs Road (TH 72) Culvert Replacement (84" CMP) ~ 2017
- Brookfield Township, Albright McKay Road (CH 167A) Culvert Replacement (60" HDPE) ~ 2017
- Champion Township, Bristol Champion Townline Road (CH 198A) Culvert Replacement (18" HDPE) ~ 2017
- Farmington, Geauga Portage Easterly Road (TH 198) Culvert Replacement/Basin Installation (15" HDPE) ~ 2018
- Farmington, Curtis Middlefield Road (TH 227) Culvert Installation (New) (18" HDPE) ~ 2018



- Fowler, Ridge Road (CH 159) Culvert Replacement with Precast Large Wingwalls ~ 2018
- Fowler, Cadwallader Sonk Road (TH 196) Culvert Replacement with Half Height Headwall (42" HDPE) ~ 2018
- Fowler Township, Ridge Road (CH 159D) Culvert Replacement (36" HDPE) ~ 2017
- Greene #11, Higgins Dorset Road (TH 296) 117" x 79" CMP Pipe with Full Height Headwalls ~ 2018
- Hartford Township, Bushnell Campbell Road (CH 185D) Culvert Replacement (left concrete box ends, 36" HDPE) ~ 2017
- Howland, King Graves Road (CH 158 @ TH 157) Culvert Replacement (18" HDPE) ~ 2018
- Howland, Henn Hyde Road (TH 157 @ CH 158) Culvert Replacement (15" HDPE) ~ 2018
- Hubbard, Chestnut Ridge Road (CH 12) 66" Aluminized Type CMP with Full Height Headwalls ~ 2018
- Johnston, Stoddard Hayes Road (TH 249) Culvert Replacement (15" HDPE) ~ 2018
- Johnston Township, Ridge Road (CH 159A) Culvert Replacement (18" HDPE) ~ 2017
- Johnston Township, Stoddard Hayes Road (CH 249B) Culvert Replacement (48" HDPE) ~ 2017
- Kinsman, Kinsman Pymatuning Road (CH 360) Culvert Replacement with Full Height Headwalls ~ 2018
- Liberty, Loganway Road (CH 41) Culvert Replacement with Full Height Headwalls at Outlet & Existing Basin at Inlet (36" HDPE) ~ 2018
- Mesopotamia Township, Girdle Road (CH 223E) Culvert Replacement (30" HDPE) ~ 2017
- Mesopotamia Township, Girdle Road (CH 223F) Culvert Replacement (18" HDPE) ~ 2017
- Mesopotamia Township, Parkman Mesopotamia Road (CH 313B) Culvert Replacement (24" HDPE) ~ 2017
- Newton, Hallock Young Road (CH 86) Culvert Replacement with Half Height Headwalls (48" HDPE) ~ 2018
- Newton, Newton Avenue (TH 697) Culvert Replacement/Basin Installation (12" HDPE)
- Newton Township, South Canal Street (CH 105B) Culvert Replacement (15" HDPE) ~ 2017
- Southington/Braceville, Herr Fieldhouse Road (TH 124) 49" x 33" CMP Arch ~ 2018
- Southington Township, Phalanx Mill Herner Road (CH 127G) Storm Sewer Culvert Replacement (60" HP) ~ 2017



- Vernon, Orangeville Kinsman Road (CH 255) Culvert Replacement with Full Height Headwalls on Inlet & Basin on Outlet ~ 2018
- Vernon, Orangeville Kinsman Road (CH 255) Culvert Replacement with Half Height Headwall (60" HDPE) ~ 2018
- Vernon Township, Orangeville Kinsman Road (#1) (CH 255B) Culvert Replacement (36" HDPE) ~ 2017
- Vernon Township, Orangeville Kinsman Road (#2) (CH 255B) Culvert Replacement (24" HDPE) ~ 2017
- Vienna, Warner Road (CH 43) Culvert Replacement with Full Height Headwalls (48" HDPE) ~ 2018
- Vienna Township, Sodom Hutchings Road (CH 45D) Culvert Replacement (53" x 83" RCP) ~ 2017

#### **Warren City**

- TH 400 Caleb Road Drainage Improvements (Trumbull County Engineer Project) ~ 2018

#### **Bristol Township**

- Phelps Road (TH 318) Culvert Replacement (12" HDPE) ~ 2017

#### **Farmington Township**

- Ensign Road (TH 225B) Culvert Replacement (12" HDPE) ~ 2017
- Housel Craft Road (TH 222) (#1) Culvert Replacement (18" CMP) ~ 2017
- Housel Craft Road (TH 222) (#2) Culvert Replacement (15" CMP) ~ 2017
- Countyline Clark Road (TH 232A) Culvert Replacement (18" HDPE) ~ 2017

#### **Southington Township**

- Barclay Messerly Road (TH 123D) Culvert Replacement (42" HDPE) ~ 2017

#### **Vernon Township**

- Haynes South Road (TH 253) Culvert Replacement (15" HDPE) ~ 2017

#### **Vienna Township**

- Mackey Road (TH 645) Culvert Replacement (24" HDPE) ~ 2017



### **Weathersfield Township**

- TH 65 Ohltown Girard Road Drainage and Widening (Trumbull County Engineer Project)  
~ 2018

### Projects Designated as “Inactive” during the 2020 Update

#### **Trumbull County**

- *Strategy 1.1.1:* Coordinate with the Ohio Department of Natural Resources (ODNR), Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Trumbull County as a result of a change in circumstances not in existence at the time of the initial classification to ensure adequate safety according to the potential for downstream damage. (Completed) The planning committee removed this project from the plan. ODNR performs these tasks as a matter of regular operations and regularly involves applicable local officials.
- *Strategy 1.1.2:* During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio. (Completed) Ohio Revised Code requires this analysis.
- *Strategy 1.1.3:* Coordinate with the ODNR, Dam Safety and Engineering Program to conduct periodic safety inspections of existing dams in Trumbull County. (Completed) ODNR Dam Safety personnel regularly inspect dams throughout Ohio.
- *Strategy 2.1.2:* Educate local residents on the benefits of conserving water at all times, not just during a drought. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 3.1.1:* Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 3.1.2:* Develop a technical assistance information program for homeowners teaching them how to seismically strengthen their homes. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 3.2.1:* Install sensory systems that immediately shut off the flow of gas throughout the county as soon as Earth movements are felt. (Deleted) Though earthquake risks are



present in Trumbull County, historical data in-county and in the region suggest that those that occur will be small and cause minimal damage. The steering committee decided to delete this project because its savings would not offset the costs of implementation.

- *Strategy 4.1.1:* Produce public awareness campaigns through local media outlets. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 5.2.1:* Coordinate with local and rural property owners to gain access to flooded property for recovery purposes after a flood has occurred. (Deleted) Local officials complete this project, as necessary, when significant incidents occur. The committee removed it from this plan because it is recovery-centric.
- *Strategy 7.1.1:* Develop an informational brochure to distribute to local farmers, residents. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 8.1.1:* Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location. (Completed) This task represents a routine responsibility of the ODNR office.
- *Strategy 9.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.
- *Strategy 9.1.3:* Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas. (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.
- *Strategy 10.1.1:* Coordinate with the National Weather Services (NWS) to warn residents of impending severe winds and possible tornado conditions. (Deleted) This project was one of several warning-centric projects. The committee consolidated them into a single, broadly-applicable strategy.
- *Strategy 11.1.2:* Upgrade existing salt storage facilities, or construct regional salt barns at strategic locations throughout the county. (Completed) The Trumbull County Engineer stores road treatment at its facility in Warren, and the facility serves as a regional depot for townships.
- *Strategy 13.1.3:* Increase the knowledge of the general public concerning preparedness through the preparation of information brochures, town meetings, training seminars, etc. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.



- *Strategy 13.2.2:* Coordinate with first responders for interagency cooperation to assist in collaborative planning. (Completed) This project is a preparedness-centric project. The committee thus removed it from this plan since responders routinely collaborate for incident preparedness.
- *Strategy 13.2.3:* Continue the education and training of first responders and emergency personnel. (Completed) This project is a preparedness-centric project. The committee thus removed it from this plan since responders routinely train their personnel.
- *Strategy 14.1.2:* Encourage residents to inspect and clean their chimneys at least once a year. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 15.1.3:* Assess the feasibility of cleaning up busy intersections. (Deleted) The committee removed this project because of its vague wording and questions as to how it contributes to the mitigation of hazards identified in this plan.
- *Strategy 15.1.5:* Increase public education and awareness regarding hazardous materials incidents. (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 16.3.2:* Develop a routing plan to instruct people on how to get to designated shelter sites. (Completed) The committee noted that the 2010 version of the plan marked this project as complete for all EHS facilities in Niles and Warren. The Trumbull County LEPC coordinates the off-site planning aspects of the SARA legislation with planning facilities.
- *Strategy 1A.1.1:* Coordinate with local private contractors to develop Mutual Aid Agreements (MAAs) for emergency snow removal. (Applicable to Cortland City) (Deleted) Planners consolidated this project with Strategy 11.1.1.
- *Strategy 1C.1.1:* Update or develop distributable maps of former mining areas so that developers and residents may be advised of the hazards. (Applicable to Hubbard City) (Completed) ODNR completed this project; see <http://minerals.ohiodnr.gov/abandoned-mine-land-reclamation/mine-locators>.
- *Strategy 1D.1.1:* Update local maps in relation to the NFIPs 100-year flood plain maps of the city with information such as recent development, not previously included on the FIRM maps. (Applicable to Newton Falls Village) (Completed) The village completed this project as part of its 2014 comprehensive plan update.
- *Strategy 1E.1.1:* Dredge or otherwise clear debris from creeks and streams that continually flood in the City of Niles. (Applicable to Niles City) (Deleted) Planners consolidated this project with Strategy 5.1.1.





- *Strategy 1F.1.1:* Complete the two (2)-phase combined sewer separation project identified in the Warren Water Pollution Control Department's Comprehensive Sewer Systems Master Plan (*Phase I: North Side and East Side Combined Sewer Separation; Phase I: Parts A & B Downtown Sewer Separation to eliminate the WCI regulator; Phase II: Downtown Sewer Separation to eliminate overflow at Second National Bank*). (Applicable to Warren City) (Completed) The city constructed this project between 2005 and 2010.
- *Strategy 1F.1.2:* Offer eligible residential homeowners subsidies to install backflow prevention devices to aid in the prevention of sewer backup into basements. (Applicable to Warren City) (Completed) The city's water department maintains a backflow prevention program based on state law. In Warren, Ordinance 9765/87, titled "Cross-Connection Control," passed in March 1987. As a utility, the city regulates protection of the distribution system, and in accordance with state law, water customers bear the responsibility for properly maintaining their plumbing systems, which is why the subsidy portion of the strategy originally appeared. However, the steering committee recognized that implementing such a subsidy would be difficult within the confines of law.
- *Strategy 1G.3.1:* Work with appropriate individuals to close the local dump, or instate stricter environmental standards for the facility prior to a hazmat or health hazard. (Applicable to Lordstown Village) (Completed) A private company (LaFarge) now operates the site and adheres to applicable laws and standards.
- *Strategy 1H.1.1:* Based on 100-year flood plain information, determine an updated list of assets vulnerable to a flood and develop a method to ensure that list's maintenance. (Applicable to McDonald Village) (Completed) This information appears as a part of the 2020 updated hazard mitigation plan.
- *Strategy 1J.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winter storms. (Applicable to West Farmington Village) (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 1K.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions. (Applicable to Yankee Lake Village) (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 1M.2.1:* Install structural bracing, window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to township facilities. (Applicable to Bloomfield, Bristol, Champion, Gustavus, Johnston, Kinsman, and Liberty



Townships) (Deleted) This project applied to seven townships, and the steering committee felt that it was too broad to apply to such a range of jurisdictions.

- *Strategy 2M.1.1:* Conduct a storm water management project in the vicinity of the Cardinal Avenue/Goldie Road intersection and extend south to approximately 800 feet east of the Mansell Drive/Fifth Avenue intersection. (Applicable to Bloomfield, Bristol, Champion, Gustavus, Johnston, Kinsman, and Liberty Townships) (Completed) Local officials used PWC funds to complete this project.
- *Strategy 1N.1.1:* Train, equip, and prepare local first responders for response to an incident. (Applicable to Braceville Township) (Deleted) The steering committee consolidated this project into a countywide project.
- *Strategy 1O.2.1:* Consider channel enlargement and realignment, as well as bank stabilization along Yankee Creek. (Applicable to Brookfield Township) (Deleted) Planners consolidated this project with Strategy 5.1.1.
- *Strategy 1P.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Grand River Wildfire Management Area. (Applicable to Farmington Township) (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 1Q.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions. (Applicable to Fowler and Hartford Townships) (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 1R.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Mosquito Lake Wildfire Management Area. (Applicable to Greene Township) (Deleted) This project was one of many education-centric projects that the committee consolidated into a single strategy for ease of plan use.
- *Strategy 1S.1.1:* Work with the county engineer to update 100-year flood plain maps in the townships with information not included by FEMA on the originals, especially in the areas near Mosquito Creek, Mahoning River, Pymatuning Creek, Tinker Creek, and Dead Branch Creek. (Applicable to Howland, Newton, Southington, Vernon, and Warren Townships) (Completed) This project was included in digital flood insurance rate map (D-FIRM) updates.
- *Strategy 1T.1.1:* Work with the ODNR to map formerly mined areas or geologically unstable terrain so that residents may be advised of the risk of subsidence. (Applicable to



Hubbard Township) (Completed) ODNR completed this project; see <http://minerals.ohiodnr.gov/abandoned-mine-land-reclamation/mine-locators>.

- *Strategy 1U.1.1:* Raise Brigden Road beginning at the intersection of Brigden Road and SR 87, proceeding south for one (1) mile. (Applicable to Mesopotamia Township) (Completed) This project appeared in the 2010 plan and was under construction at that time; it has since finished.
- *Strategy 2V.1.1:* Upgrade the existing Vienna Fire Department roof siren so that the tornado component of the siren can be activated remotely. (Applicable to Vienna Township) (Completed) This project was a part of siren upgrades throughout the county.
- *Strategy 1W.1.1:* Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of the Meander Dam. (Applicable to Weathersfield Township) (Completed) The planning committee removed this project from the plan. ODNR performs these tasks as a matter of regular operations and regularly involves applicable local officials.

#### Projects Designated as “Inactive” during Previous Updates

##### **Trumbull County**

- *Strategy 1.1.1:* Coordinate with the Ohio Department of Natural Resources, Division of Water, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Trumbull County as a result of a change in circumstances not in existence at the time of the dam’s initial classification to ensure adequate safety according to the potential for downstream damage. (Completed)
- *Strategy 1.1.2:* During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio. (Completed)
- *Strategy 1.1.3:* Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of existing dams in Trumbull County. (Completed)
- *Strategy 1.1.4:* Consider the removal and replacement of older dams prone to flooding, (e.g., Steel Mill Dam in Hubbard Township). (Completed)
- *Strategy 2.1.1:* Develop an informational brochure to distribute to local farmers and residents. (Completed)
- *Strategy 2.1.2:* Educate local residents on the benefits of conserving water at all times, not just during a drought. (Completed)
- *Strategy 2.2.1:* Coordinate mutual aid agreements with water hauling companies to have emergency supplies of water hauled into Trumbull County. (Completed)



- *Strategy 3.1.1:* Develop an informational brochure explaining the potential for earthquakes, as well as the potential damages from those earthquakes. The brochure should include information pertaining to measures to take to safe-proof homes and other structures from the potential effects of earthquakes. (Completed)
- *Strategy 3.1.2:* Develop a technical assistance information program for homeowners, teaching them how to seismically strengthen their homes. (Completed)
- *Strategy 4.1.1:* Produce public awareness campaigns through local media outlets. (Completed)
- *Strategy 4.2.1:* Coordinate with the Trumbull County Health Department to identify the source of epidemics, and determine appropriate actions for the general public to take to reduce or slow the spread of epidemics. (Completed)
- *Strategy 5.2.2:* Facilitate the formation of flood task forces throughout the county to address flooding problems on a regular basis. (Completed)
- *Strategy 5.2.3:* Update FEMA 100-year floodplain maps. (Completed)
- *Strategy 5.2.4:* Develop specific flood mitigation plan(s) to accompany this mitigation plan especially for flood-prone areas. (Deleted because committee members wanted to add more specific flood projects to previous versions of the plan.)
- *Strategy 5.3.2:* Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates. (Deferred due to low priority.)
- *Strategy 5.4.1:* Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds. (Completed)
- *Strategy 6.1.1:* Coordinate efforts with the local media to post advance warnings of hailstorms. (Completed)
- *Strategy 6.1.2:* Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio. (Completed)
- *Strategy 7.1.1:* Develop an informational brochure to distribute to local farmers and residents. (Completed)
- *Strategy 8.1.1:* Coordinate with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Office of Abandon Mine Lands and Reclamation to undertake reclamation projects if subsidence occurs at a specific location. (Completed)
- *Strategy 9.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. (Completed)



- *Strategy 9.1.2:* Encourage the use of NOAA weather radios that continuously broadcast National Weather Service forecasts and provide direct warnings to the public for natural, technological, and man-made hazards. At a minimum, each township should possess a radio. (Completed)
- *Strategy 9.1.3:* Encourage the use of the Emergency Alert System (EAS) on commercial radio, television, and cable systems to send out emergency information targeted to specific areas. (Completed)
- *Strategy 9.1.4:* Ensure that surge protection, such as surge protectors and grounding, has been installed on all critical electronic equipment owned by county government. (Completed)
- *Strategy 10.1.1:* Coordinate with the National Weather Service to warn residents of impending severe winds and possible tornado conditions. (Completed)
- *Strategy 10.2.1:* Enforce existing building codes that regulate the materials used in new construction with respect to design wind speeds. (Deleted through consolidation with Strategy 5.3.1.)
- *Strategy 10.2.2:* Reduce the risk of mobile home damage by suggesting the use of tie-downs with ground anchors appropriate for the soil type. (Completed)
- *Strategy 10.3.1:* Develop an informational brochure to distribute to local residents. (Completed)
- *Strategy 10.4.1:* Assess the number, location, strength, and ability of shelters to house residents and withstand high wind speeds. (Completed)
- *Strategy 11.1.1:* Coordinate with local private contractors to develop mutual aid agreements for emergency snow removal. (Completed)
- *Strategy 11.2.1:* Strategically place or identify existing sites that could be used as emergency shelters throughout Trumbull County. (Completed)
- *Strategy 12.1.1:* Develop an informational brochure to distribute to local residents. (Completed)
- *Strategy 13.1.1:* In future risk assessments, thoroughly analyze the county's vulnerability to the various types of terrorist incidents. (Completed)
- *Strategy 13.1.2:* Develop and/or enhance terrorist annexes in county Emergency Operations Plans (EOPs). (Completed)
- *Strategy 13.1.3:* Increase the knowledge of the general public concerning preparedness through the preparation of informational brochures, town meetings, training seminars, etc.



Such activities can include the activities of a Citizens Emergency Response Team (CERT). (Completed)

- *Strategy 13.1.4:* Coordinate with local media to alert the public as to current threat status. (Completed)
- *Strategy 13.1.5:* Establish a critical infrastructure protection program. (Completed)
- *Strategy 13.1.6:* Ensure that institutions with computers that interface with other computers responsible for the function of vital equipment (water treatment plants, etc.) have back-up systems and anti-virus software installed on them. (Completed)
- *Strategy 13.2.1:* Establish trauma centers to offer medical attention and counseling to affected populations in the event of a terrorist event. (Completed)
- *Strategy 13.2.2:* Coordinate with first responders for interagency cooperation to assist in collaborative planning. (Completed)
- *Strategy 13.2.3:* Continue the education and training efforts of first responders and emergency personnel. (Completed)
- *Strategy 14.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires. (Completed)
- *Strategy 14.1.2:* Encourage residents to inspect and clean their chimneys at least once a year. (Completed)
- *Strategy 15.1.1:* In future risk assessments, thoroughly analyze the county's vulnerability to hazardous materials incidents. (Completed)
- *Strategy 15.1.2:* Assess the feasibility of conducting a commodity flow study. (Completed)
- *Strategy 15.1.3:* Assess the feasibility of cleaning up busy intersections. (Completed)
- *Strategy 15.1.5:* Increase public education and awareness regarding hazardous materials incidents. (Completed)
- *Strategy 15.1.6:* Consider developing a land use plan or modifying an existing plan to guide industrial development away from and reduce the density of the population near Extremely Hazardous Substance (EHS) facilities. (Deleted because of the planning, regulating, and inspecting done in partnership with covered facilities.)
- *Strategy 15.2.1:* Provide additional training and updated equipment for first response units throughout the county. (Completed)
- *Strategy 16.1.2:* Develop an integrated communications system that will allow surrounding counties to communicate with Trumbull County, as a means of facilitating a regional response during hazard situations. (Completed)





- *Strategy 16.3.1:* Conduct a shelter assessment to inventory the facilities within Trumbull County that could be used as emergency shelters. (Completed)
- *Strategy 16.3.3:* Develop an alternative/evacuation route plan using the county's bike paths. (Deleted)
- *Strategy 16.4.1:* Conduct inspections of the stadiums in the county. (Deleted)
- *Strategy 16.5.1:* Educate the public on the response services available following a hazard event, and the appropriate actions that individuals can take following a hazardous event. (Completed)
- *Strategy 1L.1.1:* Determine areas that would be inundated just before the Mosquito Lake Dam overtops. (Applicable to Bazetta and Mecca Townships) (Completed)
- *Strategy 1M.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winter storm conditions. (Applicable to Bloomfield, Bristol, Champion, Gustavus, Johnston, Kinsman, and Liberty Townships) (Completed)
- *Strategy 1M.1.2:* Coordinate with the Trumbull County EMA to obtain a minimum of one (1) NOAA weather radio to increase the advance warning capabilities of the townships. (Applicable to Bloomfield, Bristol, Champion, Gustavus, Johnston, Kinsman, and Liberty Townships) (Completed)
- *Strategy 1N.1.1:* Train, equip, and prepare local first responders for response to an incident. (Applicable to Braceville Township) (Completed)
- *Strategy 1O.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe weather conditions. (Applicable to Brookfield Township) (Completed)
- *Strategy 1O.2.2:* Repair the Brookfield Wastewater Treatment Plant from previous severe flash floods and safeguard the facility from future flash flood events. (Applicable to Brookfield Township) (Completed)
- *Strategy 1P.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Grand River Wildfire Management Area. (Applicable to Farmington Township) (Completed)
- *Strategy 1Q.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions. (Applicable to Fowler and Hartford Townships) (Completed)
- *Strategy 1R.1.1:* Distribute information concerning the leading causes of wildfires and steps the general public can take to avoid starting wildfires around the Ohio State Mosquito Lake Wildfire Management Area. (Applicable to Greene Township) (Completed)



- *Strategy 1S.1.1:* Work with the county engineer to update 100-year flood plain maps in the townships with information not included by FEMA on the originals, especially in the areas near Mosquito Creek, Mahoning River, Pymatuning Creek, Tinker Creek, and Dead Branch Creek. (Applicable to Howland, Newton, Southington, Vernon, and Warren Townships) (Completed)
- *Strategy 1T.1.1:* Work with the ODNR to map formerly mined areas or geologically unstable terrain so that residents may be advised of the risk of subsidence. (Applicable to Hubbard Township) (Completed)
- *Strategy 1W.1.1:* Coordinate with the ODNR, Dam Safety Engineering Program to conduct regular safety inspections of the Meander Dam. (Applicable to Weathersfield Township) (Completed)

#### **Cortland City**

- *Strategy 1A.1.1:* Coordinate with local private contractors to develop Mutual Aid Agreements (MAAs) for emergency snow removal. (Completed)

#### **Girard City**

- *Strategy 1B.1.1:* Repair the following sections of the city's sanitary sewers: Harry Street, Park Avenue, Krehl Avenue, Lawrence Avenue, Washington Avenue, Ward Avenue, Highland Avenue, Liberty Street, and Gary Avenue. Repairs will include fixing collapsed and severely cracked sections. (Completed)

#### **Hubbard City**

- *Strategy 1C.1.1:* Update or develop distributable maps of former mining areas so that developers and residents may be advised of the hazards. (Completed)

#### **Niles City**

- *Strategy 1E.1.1:* Coordinate with the Trumbull County EMA to provide city residents with information detailing what steps to take if their homes or businesses are flooded, as well as ways to help other members of the community whose homes or businesses may be flooded. (Completed)

#### **Warren City**





- *Strategy 1F.2.1:* Purchase an additional 30 flow meters to supplement the five (5) flow meters that the Water Pollution Control Department currently owns. (Completed)
- *Strategy 1F.2.2:* Complete Phase I of the study identified in the Comprehensive Sewer Systems Master Plan maintained by the Warren Water Pollution Control Department. (Completed)

#### **Lordstown Village**

- *Strategy 1G.1.2:* Prepare a mailing, perhaps with utility statements, etc., to educate residents on what steps to take if a major event occurs, such as a bombing at the GM plant. Information should be more “hands-on” and useful than simply telling residents to seal doors and windows with duct tape. (Completed)
- *Strategy 1G.2.1:* Better train and equip the local fire department for hazardous materials incidents. (Completed)
- *Strategy 1G.4.1:* Provide for better treating of roadways during winter storms to lessen the number of accidents. (Completed)

#### **McDonald Village**

- *Strategy 1H.1.1:* Based on 100-year flood plain information, determine an updated list of assets vulnerable to a flood and develop a method to ensure that list's maintenance. (Completed)

#### **Newton Falls Village**

- *Strategy 1D.1.1:* Update local maps in relation to the NFIP's 100-year flood plain maps of the city with information, such as recent development, not previously included of the FIRM maps. (Completed)

#### **Orangeville Village**

- *Strategy 1I.1.1:* Identify areas of the village and the assets in those areas that would be at risk if the Shenango Reservoir were to fill. (Completed)

#### **West Farmington Village**

- *Strategy 1J.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winter storms. (Completed)



### **Yankee Lake Village**

- *Strategy 1K.1.1:* Coordinate with the National Weather Service (NWS) to warn residents of impending severe winds and possible tornado conditions. (Completed)



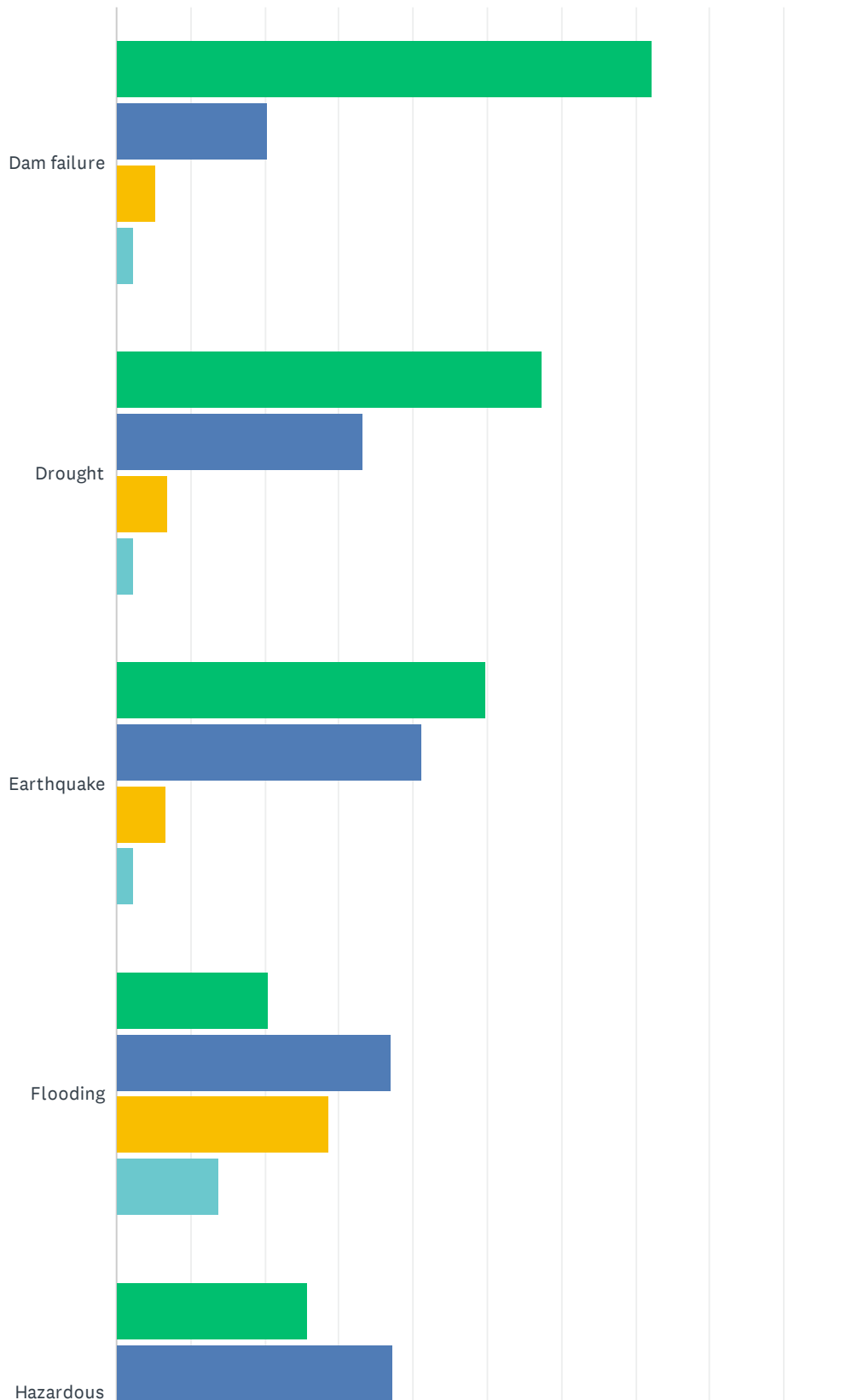
## APPENDIX 4: PUBLIC PARTICIPATION

The appendix contains a summary of the raw data from the online survey distributed as part of this project. It also includes evidence of the responses received at the community needs meetings.

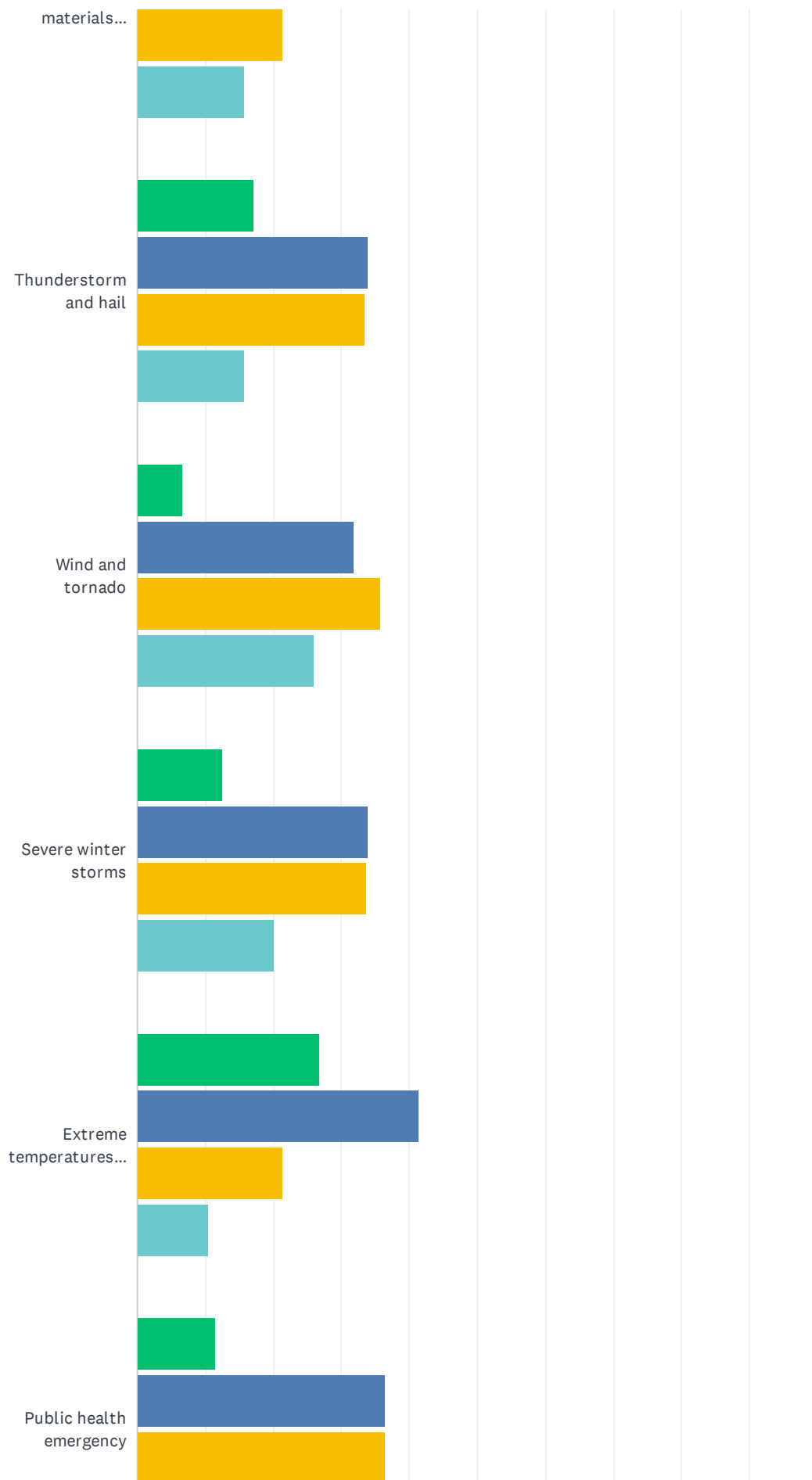


## Q1 Please indicate how concerned you are about the following hazards where you live.

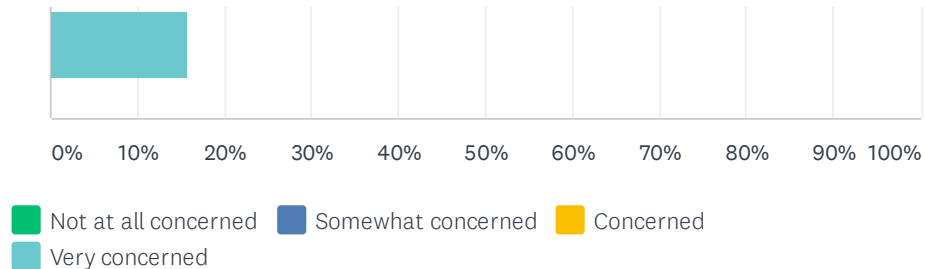
Answered: 349 Skipped: 0



# Trumbull County Hazard Mitigation Survey



## Trumbull County Hazard Mitigation Survey



	NOT AT ALL CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Dam failure	72.17% 249	20.29% 70	5.22% 18	2.32% 8	345	1.38
Drought	57.39% 198	33.33% 115	6.96% 24	2.32% 8	345	1.54
Earthquake	49.71% 170	41.23% 141	6.73% 23	2.34% 8	342	1.62
Flooding	20.52% 71	36.99% 128	28.61% 99	13.87% 48	346	2.36
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	25.72% 89	37.28% 129	21.39% 74	15.61% 54	346	2.27
Thunderstorm and hail	17.05% 59	33.82% 117	33.53% 116	15.61% 54	346	2.48
Wind and tornado	6.63% 23	31.70% 110	35.73% 124	25.94% 90	347	2.81
Severe winter storms	12.46% 43	33.91% 117	33.62% 116	20.00% 69	345	2.61
Extreme temperatures (hot & cold)	26.82% 92	41.40% 142	21.28% 73	10.50% 36	343	2.15
Public health emergency	11.56% 40	36.42% 126	36.42% 126	15.61% 54	346	2.56

# Trumbull County Hazard Mitigation Survey

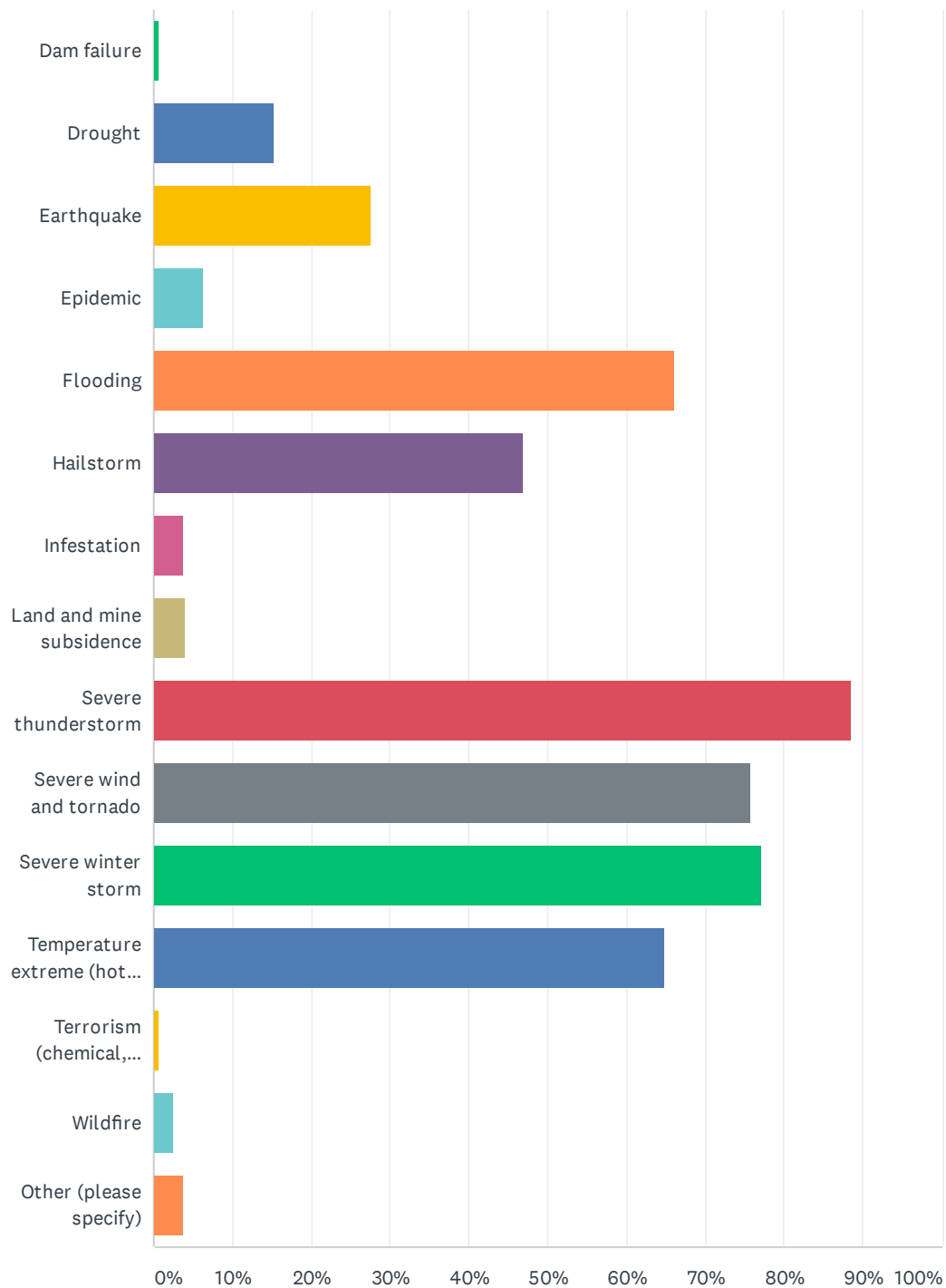
#	PLEASE ADD ANY COMMENTS HERE, OR LIST ANY HAZARDS THAT YOU ARE CONCERNED ABOUT THAT ARE NOT INCLUDED ON THE LIST.	DATE
1	Loss of public services such as electricity, gas, water. What is in place if we lost electricity for more than 3 days?	1/28/2020 8:10 AM
2	Need to make sure our alert systems are worked and activated properly at all times. Utilize modern technologies to expedite deployment. Mobile emergency alert system	11/26/2019 6:14 PM
3	Too many unnecessary EA messages on TV, and far too many tests - weekly, monthly, state, county, plus now tests and EA for western Pennsylvania (I'm in southern Trumbull Co, OH -- our weather is NOT the same as Northern Trumbull Co OH or Mercer Co PA. We are in the mild belt.)	6/17/2019 12:20 PM
4	I happen to live in a Ravine next to a stream and in the middle of a forest of large trees that could crush my house, so many of these issues concern me more than if I lived elsewhere.	5/14/2019 9:26 AM
5	pandemic and terrorism	5/13/2019 7:59 AM
6	no/none	5/10/2019 1:42 PM
7	Natural (solar) or man-made EMP; conventional & nuclear strikes by foreign actors (proximity to Ravenna, for example, if it becomes a missile installation, as it would be a potential target...also proximity to Cleveland/Pittsburgh); terrorism of all kinds including radiological, chemical, biological, etc	5/10/2019 11:07 AM
8	Civil disturbances, power and/or communications disruptions (large-scale, particularly involving at-risk populations), active aggressor (it can happen in places other than schools).	5/10/2019 1:37 AM
9	Terrorism	5/9/2019 10:12 AM
10	This is the Red Cross..	5/9/2019 9:25 AM
11	Need to find an alternative to injection wells which cause earthquakes. I've seen the disposition of brine accomplished by being dumped after dark from tanker trucks into a local creek. I notified local police agency and they told me it was nothing. Monitor the transport of toxic chemicals, radioactive substances with reporting to a government agency which would oversee the trip in real time - comparative to an airport control tower. Weigh out and weigh in. No opening of valves during transport to leak substances onto highways.	5/9/2019 8:29 AM
12	National insurrection	5/9/2019 6:01 AM
13	The lack of public transportation if someone were needing to re-locate for awhile	5/8/2019 4:18 PM
14	The lack of common sense among people.	5/8/2019 3:56 PM
15	Aircraft incidents/hazards due to USAFR Base	5/8/2019 3:54 PM
16	Fire	5/8/2019 3:50 PM
17	I don't worry about this type of stuff. I live by the Serenity Prayer and trust God. If an emergency occurs we are prepared to deal with it. Thanks	5/8/2019 3:43 PM
18	I am concerned about the rise in communicable diseases due to parents opting out of vaccinating their children.	5/8/2019 1:18 PM
19	Terrorist attacks, Active shooter	4/29/2019 9:03 AM
20	fire // chemical - or - biological warfare// terrorist	4/26/2019 11:35 PM
21	Civil Disturbance	4/25/2019 10:06 AM
22	Aircraft incidents, rail incidents, pipeline incident (failure)	4/24/2019 4:12 PM
23	The ability for first responders to communicate in a emergency.	4/24/2019 1:14 PM
24	ZOMBIES!!!!	4/24/2019 12:30 PM
25	hazmat response for crash on I-80 near Hubbard Oh exit	4/24/2019 12:04 PM
26	Abandoned underground coal mines.	4/19/2019 2:58 PM
27	Flu epidemic	4/18/2019 4:52 PM





## Q2 In the past 10 years, which hazards do you remember occurring in your community? (Check all that apply)

Answered: 345 Skipped: 4



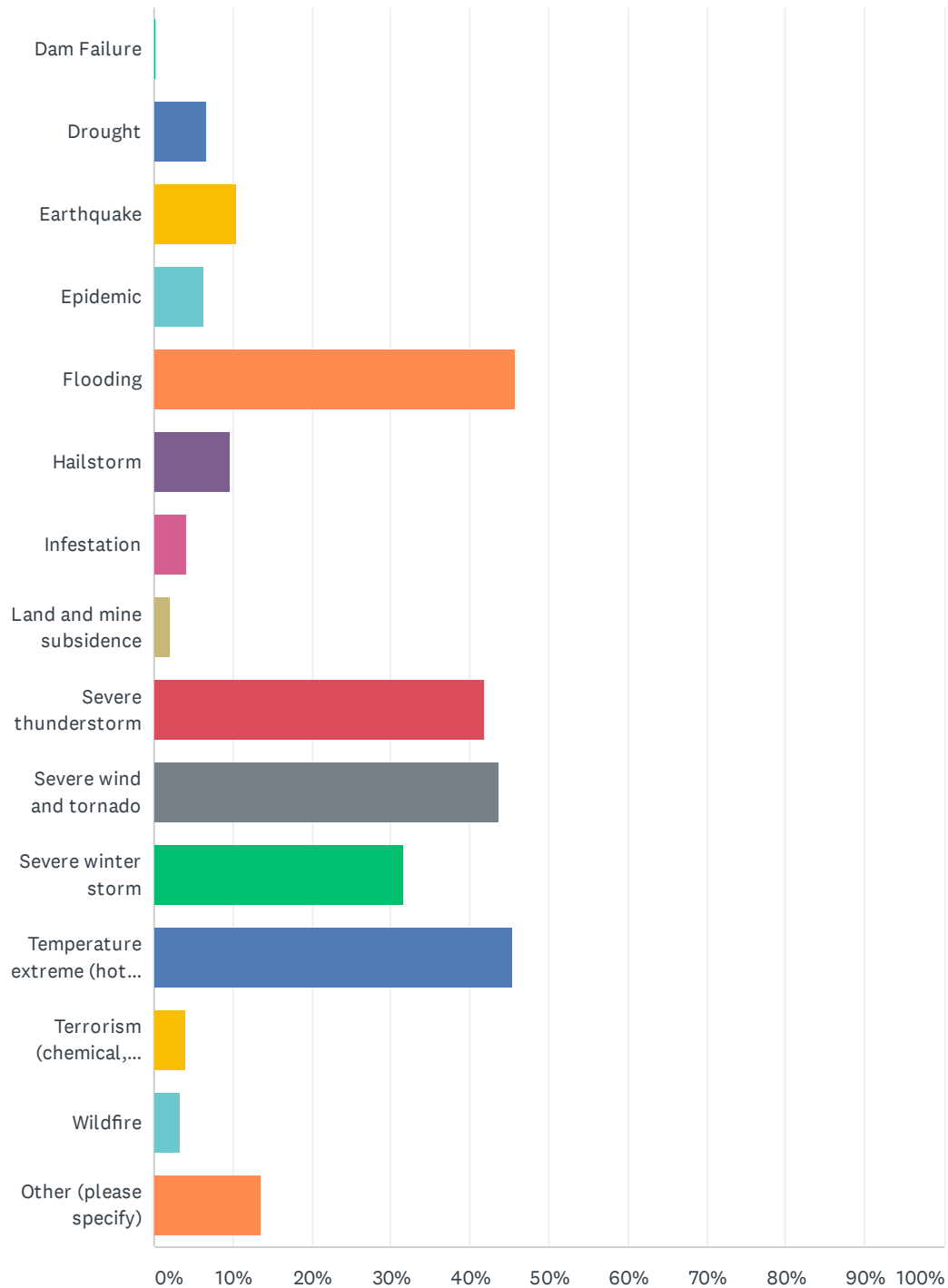
# Trumbull County Hazard Mitigation Survey

ANSWER CHOICES	RESPONSES	
Dam failure	0.58%	2
Drought	15.36%	53
Earthquake	27.54%	95
Epidemic	6.38%	22
Flooding	66.09%	228
Hailstorm	46.96%	162
Infestation	3.77%	13
Land and mine subsidence	4.06%	14
Severe thunderstorm	88.41%	305
Severe wind and tornado	75.65%	261
Severe winter storm	77.10%	266
Temperature extreme (hot & cold)	64.93%	224
Terrorism (chemical, biological, radiological, nuclear, and explosives)	0.58%	2
Wildfire	2.61%	9
Other (please specify)	3.77%	13
Total Respondents: 345		

#	OTHER (PLEASE SPECIFY)	DATE
1	Mass anxiety and hyperness about EA that don't even affect the southern border of the Trumbull Co line!	6/17/2019 12:23 PM
2	Not sure if the earthquake was within the 10 years	5/14/2019 1:17 PM
3	Issues with safe drinking water (main breaks and boil alerts)	5/13/2019 10:08 AM
4	man made hazards I.e. burning garbage	5/10/2019 10:47 AM
5	Actually I just moved to Trumbull from PA last July so n/a for this one	5/10/2019 10:25 AM
6	None	5/10/2019 8:08 AM
7	Tornado of 1985.	5/9/2019 10:49 AM
8	Tormado late May	5/8/2019 4:17 PM
9	none	5/8/2019 4:08 PM
10	The drought I am thinking of was more than 10 years ago, I think.	5/8/2019 3:58 PM
11	Drug epidemic	5/8/2019 3:44 PM
12	opiate epidemic	5/8/2019 3:09 PM
13	house and brush fires	4/26/2019 11:36 PM

### Q3 Have you noticed an increase in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 332 Skipped: 17



# Trumbull County Hazard Mitigation Survey

ANSWER CHOICES	RESPONSES	
Dam Failure	0.30%	1
Drought	6.63%	22
Earthquake	10.54%	35
Epidemic	6.33%	21
Flooding	45.78%	152
Hailstorm	9.64%	32
Infestation	4.22%	14
Land and mine subsidence	2.11%	7
Severe thunderstorm	41.87%	139
Severe wind and tornado	43.67%	145
Severe winter storm	31.63%	105
Temperature extreme (hot & cold)	45.48%	151
Terrorism (chemical, biological, radiological, nuclear, and explosives)	3.92%	13
Wildfire	3.31%	11
Other (please specify)	13.55%	45
Total Respondents: 332		

# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	Unnecessary EA notices that make kids nervous for nothing!	6/17/2019 12:24 PM
2	no/none	5/14/2019 8:28 PM
3	I don't know if there is an intensity	5/14/2019 1:18 PM
4	Issues with safe drinking water.	5/13/2019 10:09 AM
5	None	5/11/2019 9:49 AM
6	None really	5/10/2019 11:17 AM
7	n/a	5/10/2019 10:26 AM
8	n/a	5/9/2019 9:59 PM
9	None	5/9/2019 9:33 AM
10	None	5/9/2019 9:25 AM
11	Constant changes in temperatures within a day/few days.	5/9/2019 9:12 AM
12	No increase in occurrences noticed	5/9/2019 9:09 AM
13	Have not noticed	5/9/2019 9:00 AM
14	no/none	5/9/2019 7:53 AM
15	no	5/9/2019 6:02 AM
16	None	5/8/2019 6:18 PM
17	no	5/8/2019 5:13 PM
18	air quality	5/8/2019 5:05 PM
19	None	5/8/2019 4:18 PM
20	Unknown Loud Booms	5/8/2019 3:55 PM
21	no	5/8/2019 3:47 PM
22	Drug epidemic	5/8/2019 3:45 PM
23	No	5/8/2019 3:08 PM
24	NO	5/8/2019 2:48 PM
25	no	5/8/2019 2:20 PM
26	not really	5/8/2019 2:19 PM
27	none	5/8/2019 1:35 PM
28	none	5/8/2019 1:35 PM
29	no	5/8/2019 1:28 PM
30	none	5/8/2019 1:21 PM
31	No	5/8/2019 1:08 PM
32	Haven't noticed any increase	5/8/2019 12:25 PM
33	none really	5/3/2019 8:52 AM
34	No	4/27/2019 10:55 AM
35	N/A	4/26/2019 9:58 AM
36	None	4/26/2019 8:11 AM
37	no	4/25/2019 11:37 AM

# Trumbull County Hazard Mitigation Survey

38	none	4/25/2019 8:59 AM
39	No increase	4/25/2019 8:15 AM
40	None	4/24/2019 7:52 PM
41	None	4/24/2019 4:45 PM
42	None	4/24/2019 1:23 PM
43	None	4/24/2019 1:16 PM
44	ONLY WHEN THE NEWS SENSENALIZES IT	4/24/2019 12:16 PM
45	Drugs	4/18/2019 4:53 PM

## Q4 To what do you think the increase could be attributed?

Answered: 130   Skipped: 219

# Trumbull County Hazard Mitigation Survey

#	RESPONSES	DATE
1	Other municipalities opening their dams at the wrong time. Consistent release of waters along the Mahoning River would be more beneficial than doing it when severe flooding is occurring. As a resident along the river you can see when other places are releasing water by the level it is at. A consistent release pattern would be more beneficial than just releasing water when it is raining.	1/28/2020 8:14 AM
2	Inadequate storm water management	11/26/2019 6:15 PM
3	EA alerts on TV, radio, texts.	6/17/2019 12:24 PM
4	Climate change/global warming ???	6/7/2019 4:59 PM
5	CLIMATE CHANGE	5/28/2019 1:22 PM
6	I have no idea. climate change	5/15/2019 2:50 PM
7	climate change	5/14/2019 3:33 PM
8	GLOBAL WARMING	5/13/2019 10:41 AM
9	Crumbling infrastructure.	5/13/2019 10:09 AM
10	global warming	5/13/2019 7:59 AM
11	Breakdown of basic infrastructure	5/11/2019 9:16 AM
12	Lack of properly maintained drainage. And the county not caring	5/10/2019 8:39 PM
13	No clue	5/10/2019 3:27 PM
14	Not sure	5/10/2019 2:30 PM
15	Climate change	5/10/2019 1:05 PM
16	Nature	5/10/2019 11:46 AM
17	Climate change	5/10/2019 11:44 AM
18	Climate control	5/10/2019 10:42 AM
19	Global warming	5/10/2019 10:41 AM
20	Weather patterns	5/10/2019 10:40 AM
21	Climate changes	5/10/2019 10:35 AM
22	Not sure.	5/10/2019 10:15 AM
23	Climate change-	5/10/2019 9:34 AM
24	Global warming	5/10/2019 9:32 AM
25	weather cycles	5/10/2019 9:25 AM
26	Climate change	5/10/2019 9:07 AM
27	Climate change	5/10/2019 8:08 AM
28	climate change	5/10/2019 7:08 AM
29	Mother nature	5/10/2019 6:49 AM
30	Some would refer to it as "global warming". "Climate change" may be more accurate; over the past 10 years we have seen shifts in seasons (ending later and following ones starting later) and the severity of storms, particularly winter ones. Further, in the past two years there have been tornadoes in the area in off-season when we've not seen them for quite some time.	5/10/2019 1:39 AM
31	Climate change	5/9/2019 8:23 PM
32	Fracking and climate change	5/9/2019 3:57 PM
33	Changing weather patterns?	5/9/2019 3:31 PM



# Trumbull County Hazard Mitigation Survey

34	Area weather	5/9/2019 2:50 PM
35	Global warming	5/9/2019 2:04 PM
36	global warming/environmental issues	5/9/2019 1:22 PM
37	Global warming effects	5/9/2019 11:48 AM
38	Change in weather patterns due to global warming	5/9/2019 11:10 AM
39	Climate Issues, Fracking	5/9/2019 11:04 AM
40	Climate change	5/9/2019 10:13 AM
41	Its just the weather. It is what it is.	5/9/2019 9:50 AM
42	Weather related to climate change. Flooding also, but possibly compounded by increased deforestation and development.	5/9/2019 9:36 AM
43	Global warming	5/9/2019 9:29 AM
44	Global Warming	5/9/2019 9:12 AM
45	fracking and climate	5/9/2019 8:50 AM
46	global warming	5/9/2019 8:48 AM
47	Climate Change	5/9/2019 8:35 AM
48	earthquakes caused by injection wells. Weather changes are global warming.	5/9/2019 8:33 AM
49	do not know for sure	5/9/2019 8:28 AM
50	climate change	5/9/2019 8:07 AM
51	climate change	5/9/2019 7:03 AM
52	Don't o zone issues maybe	5/8/2019 10:42 PM
53	Global Warming, Lack of environmental responsibility by industry for many years...Infestations due to poverty & ability to address due to cost	5/8/2019 10:19 PM
54	Global warming. It's also Biblical.	5/8/2019 8:07 PM
55	Climate change	5/8/2019 6:54 PM
56	World issues and hate speech	5/8/2019 6:47 PM
57	Drugs	5/8/2019 6:34 PM
58	Global warming	5/8/2019 6:33 PM
59	Opioid Epidemic	5/8/2019 5:47 PM
60	global warming	5/8/2019 5:20 PM
61	Human behavior coupled with changing climate	5/8/2019 5:11 PM
62	Climate change - polar vortex instability	5/8/2019 5:05 PM
63	climate change	5/8/2019 5:05 PM
64	More rain	5/8/2019 4:46 PM
65	Changes in climate. Global warming	5/8/2019 4:34 PM
66	Fracking	5/8/2019 4:25 PM
67	don't know	5/8/2019 4:22 PM
68	Global warming	5/8/2019 4:21 PM
69	Not sure	5/8/2019 4:20 PM
70	Not sure.	5/8/2019 4:14 PM

# Trumbull County Hazard Mitigation Survey

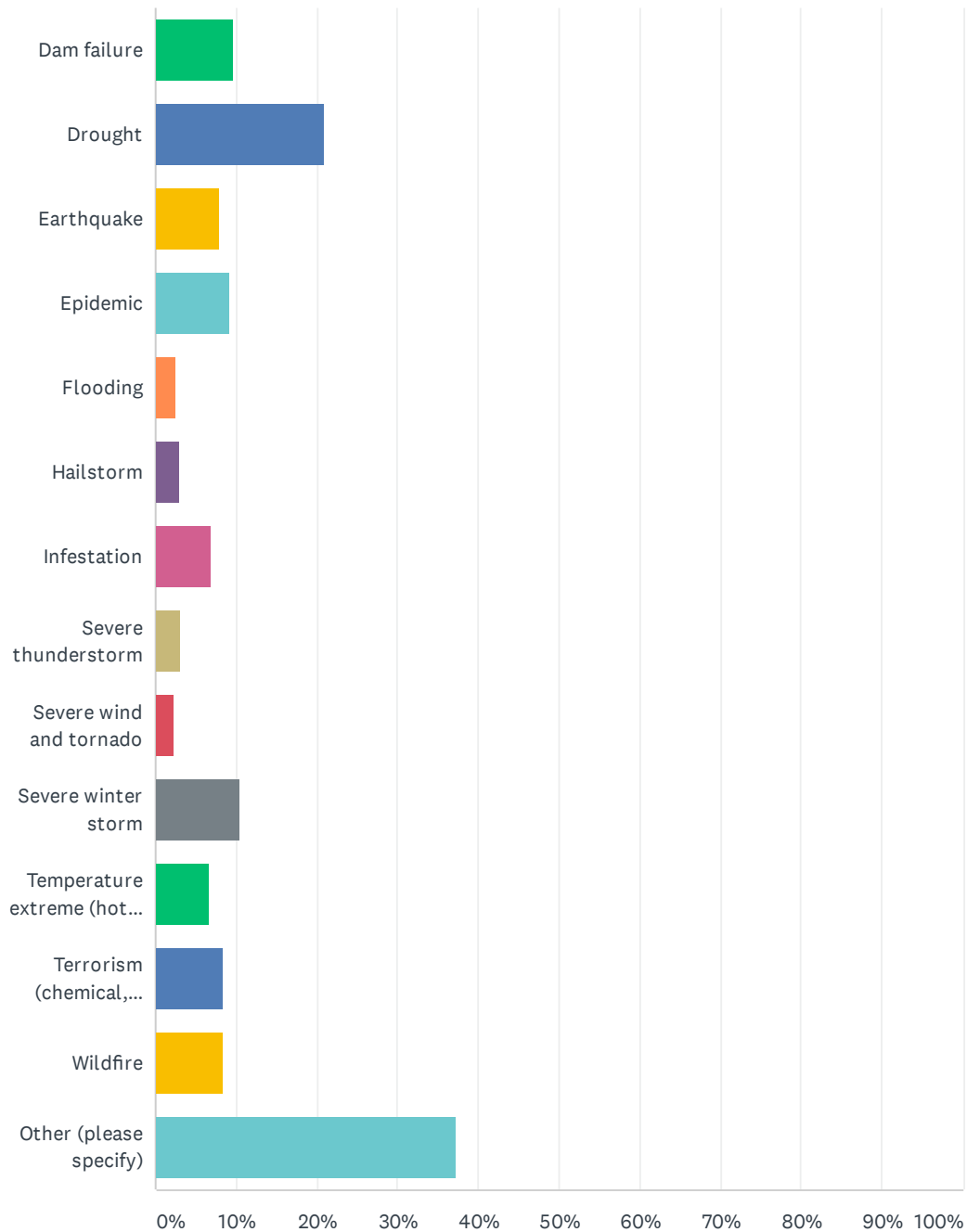
71	climate change	5/8/2019 4:13 PM
72	Global warming	5/8/2019 4:13 PM
73	Global warming	5/8/2019 4:07 PM
74	I do believe in the theory of climate change	5/8/2019 3:59 PM
75	I do not know	5/8/2019 3:55 PM
76	Population and climate changes	5/8/2019 3:51 PM
77	do not know	5/8/2019 3:49 PM
78	Lack of good jobs in the area. Depression. Over medicated people.	5/8/2019 3:45 PM
79	Global warming-environmental hazards-pollution	5/8/2019 3:44 PM
80	Climate change	5/8/2019 3:42 PM
81	around the fracking sites	5/8/2019 3:13 PM
82	Global Warming; access to drugs	5/8/2019 3:10 PM
83	N/A	5/8/2019 3:08 PM
84	Mines settling in the Weathersfield Township area causing land and mine subsidence. Brine injection wells in Trumbull County - some local limitations need to be applied to state law	5/8/2019 2:42 PM
85	Unknown	5/8/2019 2:25 PM
86	Heroin	5/8/2019 2:12 PM
87	global warming	5/8/2019 1:47 PM
88	Climate change	5/8/2019 1:40 PM
89	Changes in weather patterns...global warming	5/8/2019 1:37 PM
90	none	5/8/2019 1:35 PM
91	Global warming and the devolution of society and peace. Hatred and fear are the basis for all terrorist attacks.	5/8/2019 1:20 PM
92	global warming	5/8/2019 1:14 PM
93	?	5/8/2019 12:46 PM
94	Climate change	5/8/2019 12:22 PM
95	Global warming possibly	5/1/2019 10:31 AM
96	I believe some of it is attributed to climate change and lack of infrastructure/maintenance.	4/30/2019 10:34 AM
97	Global warming	4/29/2019 11:51 AM
98	NOT SURE	4/29/2019 9:38 AM
99	Flooding is due to additional construction, more houses, same small catch basins infrastructure needs updated	4/29/2019 9:05 AM
100	No	4/27/2019 10:55 AM
101	people not caring / taking care of our plant & each other	4/26/2019 11:38 PM
102	n/a	4/26/2019 8:13 AM
103	N/A	4/26/2019 8:11 AM
104	Nature	4/25/2019 11:11 PM
105	Heavy rain, lack of proper drainage from rain, sewer blocked or not maintained, creeks blocked by downed trees	4/25/2019 3:05 PM
106	climate change	4/25/2019 1:49 PM

# Trumbull County Hazard Mitigation Survey

107	the natural evolution of earth cycles.	4/25/2019 10:20 AM
108	climate change	4/25/2019 9:57 AM
109	Global warming	4/24/2019 8:23 PM
110	Some is due to poor investment in infrastructure contributing to flooding.	4/24/2019 4:14 PM
111	Change in weather patterns due to ocean temperature rising which in turn, dumps more moisture into the air over the mainland.	4/24/2019 4:10 PM
112	CLIMATE CHANGE AND DUMB USE OF THE EARTH TO INJECT CHEMICALS	4/24/2019 3:35 PM
113	Global warming	4/24/2019 1:45 PM
114	Climate change	4/24/2019 1:29 PM
115	Global warming	4/24/2019 12:30 PM
116	Global warming	4/24/2019 12:28 PM
117	Climate Change, green house effect	4/24/2019 12:25 PM
118	Changes in temperature.	4/24/2019 12:22 PM
119	MEDIA	4/24/2019 12:16 PM
120	Global warming	4/24/2019 12:11 PM
121	?	4/24/2019 12:11 PM
122	injection wells and global warming	4/24/2019 12:03 PM
123	POLLUTION. GOING IN AND OUT OF SPACE BY BRAKING THE OZONES LAYERS.	4/24/2019 11:54 AM
124	Climate change	4/24/2019 11:49 AM
125	Global warming? I don't know	4/24/2019 11:48 AM
126	climate change	4/19/2019 10:34 AM
127	don' t know just increased rain the last 2 years.	4/19/2019 10:05 AM
128	Mother nature	4/19/2019 8:34 AM
129	global warming	4/18/2019 4:16 PM
130	MORE AWARENESS	4/18/2019 2:21 PM

## Q5 Have you noticed a decrease in the occurrences or intensity of any of the following hazards? (Check all that apply, if yes)

Answered: 314 Skipped: 35



# Trumbull County Hazard Mitigation Survey

ANSWER CHOICES	RESPONSES	
Dam failure	9.55%	30
Drought	21.02%	66
Earthquake	7.96%	25
Epidemic	9.24%	29
Flooding	2.55%	8
Hailstorm	2.87%	9
Infestation	7.01%	22
Severe thunderstorm	3.18%	10
Severe wind and tornado	2.23%	7
Severe winter storm	10.51%	33
Temperature extreme (hot & cold)	6.69%	21
Terrorism (chemical, biological, radiological, nuclear, and explosives)	8.28%	26
Wildfire	8.28%	26
Other (please specify)	37.26%	117
Total Respondents: 314		

# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	No change	11/26/2019 6:16 PM
2	Unnecessary EA notices.	6/17/2019 12:25 PM
3	Not noticed a decrease	6/7/2019 5:00 PM
4	no/none	5/14/2019 8:28 PM
5	NA	5/14/2019 3:34 PM
6	no	5/14/2019 1:18 PM
7	no	5/14/2019 10:52 AM
8	NO	5/13/2019 10:42 AM
9	None	5/11/2019 9:49 AM
10	None	5/11/2019 9:17 AM
11	None	5/10/2019 3:11 PM
12	None	5/10/2019 1:05 PM
13	No	5/10/2019 12:52 PM
14	No	5/10/2019 11:45 AM
15	None	5/10/2019 11:17 AM
16	N/A	5/10/2019 11:09 AM
17	n/a	5/10/2019 10:26 AM
18	NA	5/10/2019 9:35 AM
19	No decreased noticed	5/10/2019 9:34 AM
20	None	5/10/2019 8:09 AM
21	None	5/10/2019 7:16 AM
22	none	5/10/2019 7:09 AM
23	n/a	5/9/2019 9:59 PM
24	Na	5/9/2019 4:33 PM
25	Nope	5/9/2019 4:33 PM
26	No decrease noted	5/9/2019 3:58 PM
27	NA	5/9/2019 2:29 PM
28	none	5/9/2019 12:14 PM
29	None	5/9/2019 11:04 AM
30	no	5/9/2019 9:38 AM
31	none	5/9/2019 9:36 AM
32	None	5/9/2019 9:33 AM
33	no decrease	5/9/2019 9:30 AM
34	None	5/9/2019 9:25 AM
35	No	5/9/2019 9:13 AM
36	No decrease in occurrences noticed	5/9/2019 9:10 AM
37	NOT SURE	5/9/2019 9:01 AM

# Trumbull County Hazard Mitigation Survey

38	Have not noticed	5/9/2019 9:01 AM
39	no decreases	5/9/2019 8:51 AM
40	no/none	5/9/2019 7:53 AM
41	none	5/9/2019 7:03 AM
42	no	5/9/2019 6:34 AM
43	none really	5/8/2019 10:20 PM
44	No	5/8/2019 9:10 PM
45	none	5/8/2019 8:34 PM
46	None	5/8/2019 6:54 PM
47	No	5/8/2019 6:48 PM
48	None	5/8/2019 6:33 PM
49	None	5/8/2019 6:19 PM
50	none	5/8/2019 5:21 PM
51	no	5/8/2019 5:13 PM
52	None	5/8/2019 4:47 PM
53	no decrease	5/8/2019 4:25 PM
54	not sure	5/8/2019 4:23 PM
55	None	5/8/2019 4:22 PM
56	none	5/8/2019 4:19 PM
57	no	5/8/2019 4:14 PM
58	No	5/8/2019 4:14 PM
59	none	5/8/2019 4:09 PM
60	N/A	5/8/2019 4:00 PM
61	the lack of our "seasons" fading from one to another. Winter seems to go right to summer with very little spring. Same with the fall.	5/8/2019 4:00 PM
62	survey will not continue without an answer	5/8/2019 3:57 PM
63	none	5/8/2019 3:55 PM
64	none	5/8/2019 3:50 PM
65	no	5/8/2019 3:48 PM
66	no	5/8/2019 3:45 PM
67	No	5/8/2019 3:45 PM
68	na	5/8/2019 3:44 PM
69	none	5/8/2019 3:30 PM
70	No, I haven't	5/8/2019 3:13 PM
71	no	5/8/2019 3:13 PM
72	NO	5/8/2019 2:48 PM
73	None	5/8/2019 2:43 PM
74	no	5/8/2019 2:21 PM
75	no	5/8/2019 2:19 PM

# Trumbull County Hazard Mitigation Survey

76	No	5/8/2019 1:48 PM
77	none	5/8/2019 1:48 PM
78	None	5/8/2019 1:41 PM
79	none	5/8/2019 1:36 PM
80	notice no decrease in any	5/8/2019 1:36 PM
81	None	5/8/2019 1:30 PM
82	no	5/8/2019 1:29 PM
83	none	5/8/2019 1:21 PM
84	No, I have not	5/8/2019 1:21 PM
85	NO	5/8/2019 1:08 PM
86	No	5/8/2019 1:02 PM
87	none	5/8/2019 12:46 PM
88	Not really	5/8/2019 12:38 PM
89	None	5/8/2019 12:25 PM
90	Noticed no decrease	5/8/2019 12:23 PM
91	about the same	5/3/2019 8:52 AM
92	none	5/1/2019 11:29 AM
93	no decrease noted.	4/30/2019 10:35 AM
94	No	4/27/2019 10:55 AM
95	na	4/26/2019 11:38 PM
96	N/A	4/26/2019 9:58 AM
97	None	4/26/2019 8:12 AM
98	no	4/25/2019 11:37 AM
99	none	4/25/2019 9:00 AM
100	.	4/25/2019 8:44 AM
101	no decrease	4/25/2019 8:15 AM
102	NO	4/24/2019 11:14 PM
103	n/a	4/24/2019 8:23 PM
104	None	4/24/2019 7:52 PM
105	NONE	4/24/2019 3:36 PM
106	none	4/24/2019 2:03 PM
107	None	4/24/2019 1:23 PM
108	None	4/24/2019 1:16 PM
109	none	4/24/2019 12:31 PM
110	No	4/24/2019 12:26 PM
111	NO	4/24/2019 12:17 PM
112	I have not noticed any decreases	4/24/2019 11:50 AM
113	none of the above	4/19/2019 10:35 AM



# Trumbull County Hazard Mitigation Survey

114	Not really	4/19/2019 8:22 AM
115	no	4/18/2019 3:43 PM
116	none	4/18/2019 3:31 PM
117	NONE	4/18/2019 2:16 PM

## Q6 To what do you think the decrease could be attributed?

Answered: 89   Skipped: 260

# Trumbull County Hazard Mitigation Survey

#	RESPONSES	DATE
1	It's Ohio...it rains a lot.	1/28/2020 8:15 AM
2	Na	6/7/2019 5:00 PM
3	Not sure	5/28/2019 1:22 PM
4	There has been more rain then it not raining.	5/15/2019 2:51 PM
5	NA	5/14/2019 3:34 PM
6	NA	5/13/2019 10:42 AM
7	Unsure	5/13/2019 10:19 AM
8	weather patterns change	5/13/2019 8:00 AM
9	NA	5/10/2019 1:05 PM
10	Nature	5/10/2019 11:47 AM
11	Climate control	5/10/2019 10:43 AM
12	Not many at risk dams.	5/10/2019 10:17 AM
13	None- not applicable	5/10/2019 9:35 AM
14	Haven't noticed a decrease	5/10/2019 9:34 AM
15	Climate change	5/10/2019 9:08 AM
16	Heavy rains	5/10/2019 8:53 AM
17	Mother nature	5/10/2019 6:51 AM
18	Wetter seasons.	5/10/2019 1:40 AM
19	Climate change	5/9/2019 8:23 PM
20	not sure about this	5/9/2019 3:31 PM
21	Less Fracking	5/9/2019 2:50 PM
22	planning	5/9/2019 1:23 PM
23	don't know	5/9/2019 12:14 PM
24	Climate change	5/9/2019 11:11 AM
25	N/A	5/9/2019 11:04 AM
26	It is what it is	5/9/2019 9:50 AM
27	None	5/9/2019 9:13 AM
28	not certain	5/9/2019 9:05 AM
29	nature	5/9/2019 8:51 AM
30	Not sure.	5/9/2019 8:36 AM
31	weather affected by global warming	5/9/2019 8:33 AM
32	climate change	5/9/2019 8:08 AM
33	Lack of political leadership and political conflagration	5/9/2019 6:04 AM
34	Ozone issues	5/8/2019 10:43 PM
35	Climate change	5/8/2019 10:28 PM
36	I haven't noticed a decrease	5/8/2019 10:20 PM
37	Global warming	5/8/2019 8:14 PM

# Trumbull County Hazard Mitigation Survey

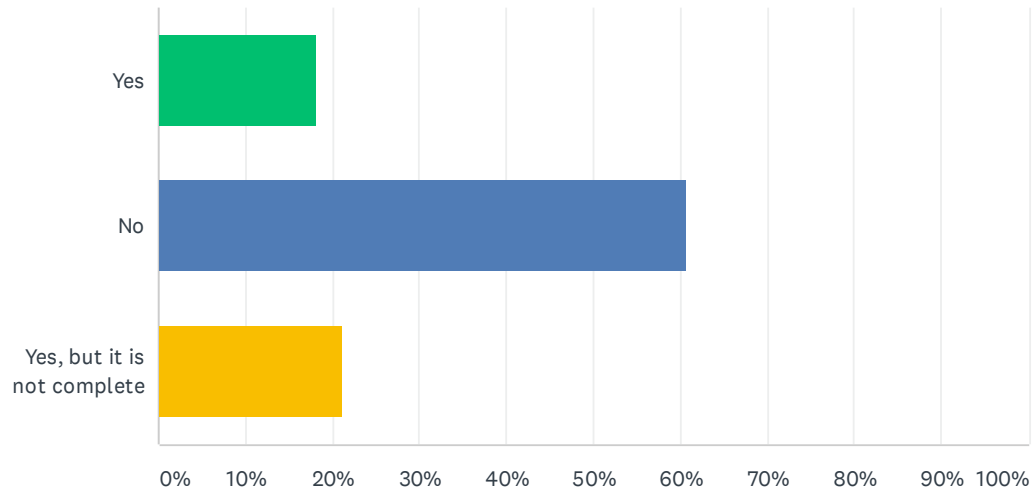
38	Not sure	5/8/2019 8:09 PM
39	N/A	5/8/2019 6:54 PM
40	No real significant decrease	5/8/2019 6:48 PM
41	NA	5/8/2019 6:33 PM
42	Law enforcement	5/8/2019 5:47 PM
43	Engineering and design	5/8/2019 5:12 PM
44	better emergency response	5/8/2019 5:09 PM
45	We do not lack for water generally	5/8/2019 5:06 PM
46	climate change	5/8/2019 5:06 PM
47	None	5/8/2019 4:47 PM
48	no decrease	5/8/2019 4:25 PM
49	Not sure	5/8/2019 4:15 PM
50	Global warming	5/8/2019 4:07 PM
51	I'm thinking the changing climate on our earth	5/8/2019 4:00 PM
52	Climate change	5/8/2019 3:51 PM
53	N/A	5/8/2019 3:13 PM
54	Don't know	5/8/2019 3:08 PM
55	haven't noticed any decreases seems status quo	5/8/2019 2:43 PM
56	Better awareness	5/8/2019 2:26 PM
57	n/a	5/8/2019 2:13 PM
58	shut down the gas rig and changed their depths allowed	5/8/2019 1:47 PM
59	Weather cycles	5/8/2019 1:38 PM
60	global warming	5/8/2019 1:36 PM
61	global warming	5/8/2019 1:14 PM
62	No	5/8/2019 1:02 PM
63	Not sure	5/8/2019 12:38 PM
64	I have not noticed a decrease in the last 10 years.	5/8/2019 12:23 PM
65	I am not seeing a decrease in any areas.	4/30/2019 10:35 AM
66	Increased public health awareness, action	4/29/2019 11:52 AM
67	Global warming?	4/29/2019 9:06 AM
68	na	4/26/2019 11:38 PM
69	n/a	4/26/2019 8:14 AM
70	N/A	4/26/2019 8:12 AM
71	nature	4/25/2019 11:12 PM
72	increase in housing taking over fields that used to catch fire by what evermeans	4/25/2019 3:06 PM
73	pro active safe guards	4/25/2019 2:20 PM
74	increase in the severity and frequency of hurricanes.	4/25/2019 10:26 AM
75	public health education	4/25/2019 9:58 AM

## Trumbull County Hazard Mitigation Survey

76	The last real drought of significance I recall was in 88. We have had some years where there was drought conditions but to the extreme in 88. No idea on contributing cause. While global warming etc can be blamed, I think there are multiple contributing factors.	4/24/2019 4:17 PM
77	Change in weather patterns due to the ocean's rising temperature which in turn puts more moisture into the atmosphere which comes down over the main land.	4/24/2019 4:11 PM
78	NOT APPLICABLE	4/24/2019 3:36 PM
79	Vaccinations as far as epidemic, and we get too much rain here for wildfires.	4/24/2019 1:49 PM
80	Safer standards for the oil and gas industry	4/24/2019 1:30 PM
81	climate change	4/24/2019 1:24 PM
82	N/A	4/24/2019 12:26 PM
83	global warming	4/24/2019 12:14 PM
84	?	4/24/2019 12:12 PM
85	global worming	4/24/2019 12:07 PM
86	N/A	4/24/2019 11:50 AM
87	mother nature	4/19/2019 3:49 PM
88	More rain	4/19/2019 8:34 AM
89	prepared if concern for epidemic chair of command	4/18/2019 4:18 PM

## Q7 Do you have a 72-hour emergency kit in your home?

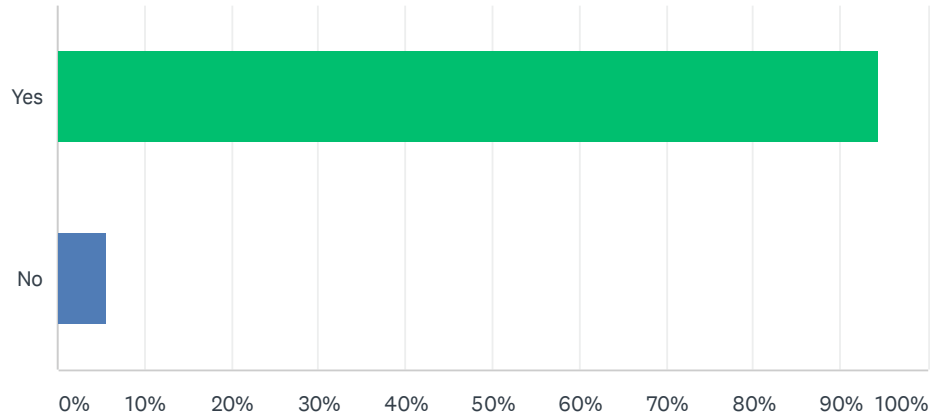
Answered: 313 Skipped: 36



ANSWER CHOICES	RESPONSES	
Yes	18.21%	57
No	60.70%	190
Yes, but it is not complete	21.09%	66
TOTAL		313

## Q8 Do you have homeowner or renter's insurance?

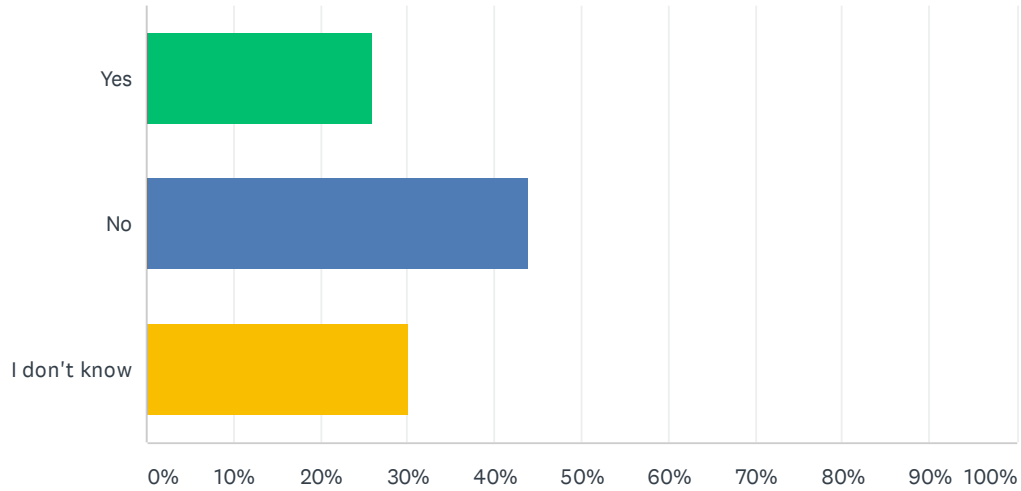
Answered: 314 Skipped: 35



ANSWER CHOICES	RESPONSES	
Yes	94.27%	296
No	5.73%	18
TOTAL		314

## Q9 Does your homeowner or renter's insurance include flood insurance?

Answered: 296 Skipped: 53

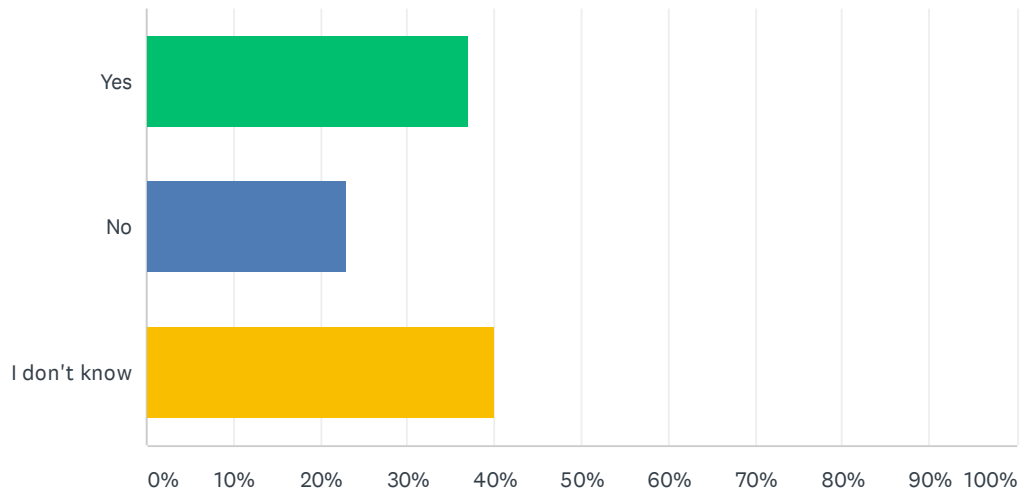


ANSWER CHOICES	RESPONSES	
Yes	26.01%	77
No	43.92%	130
I don't know	30.07%	89
TOTAL		296



## Q10 Does your homeowner or renter's insurance include sewer backup insurance?

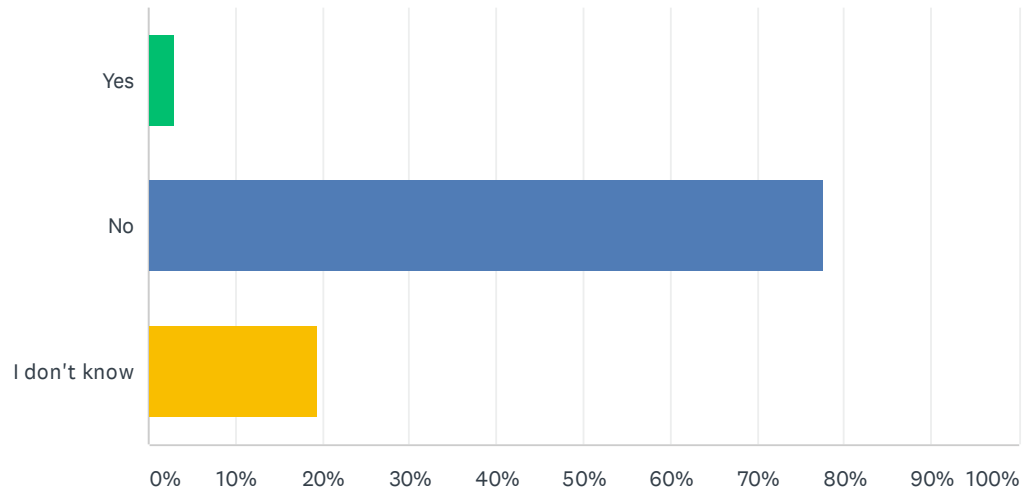
Answered: 295 Skipped: 54



ANSWER CHOICES		RESPONSES	
Yes		36.95%	109
No		23.05%	68
I don't know		40.00%	118
TOTAL			295

## Q11 Do you live in a special flood hazard area (SFHA)?

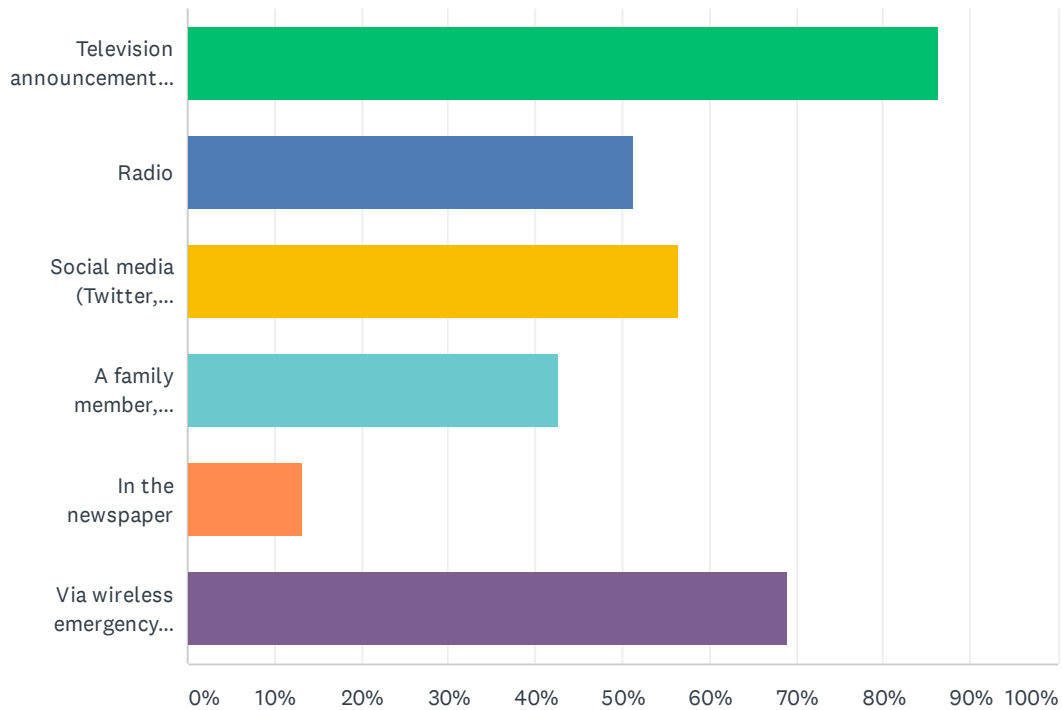
Answered: 312 Skipped: 37



ANSWER CHOICES	RESPONSES	
Yes	2.88%	9
No	77.56%	242
I don't know	19.55%	61
TOTAL		312

## Q12 How do you find out about upcoming hazards such as the ones previously mentioned? (Select all that apply)

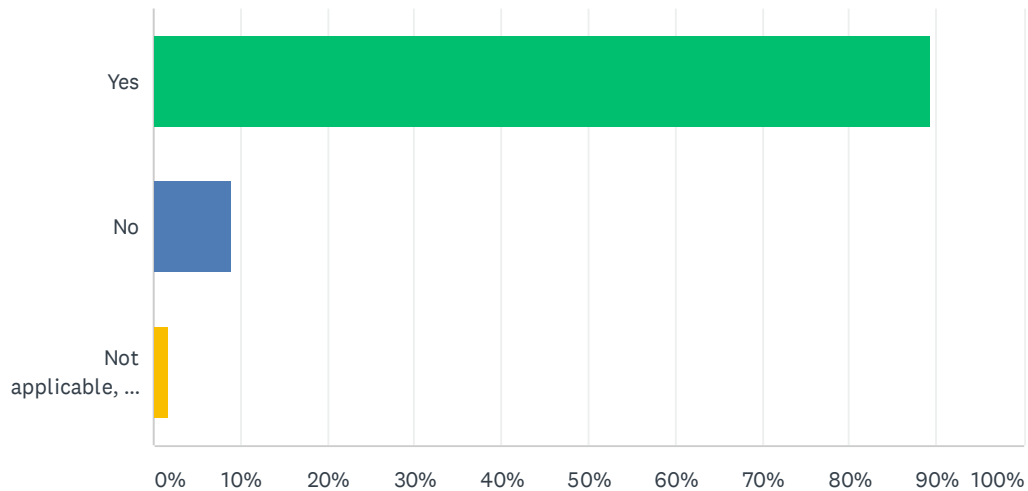
Answered: 310 Skipped: 39



ANSWER CHOICES	RESPONSES	
Television announcements or the news	86.45%	268
Radio	51.29%	159
Social media (Twitter, Facebook, etc.)	56.45%	175
A family member, neighbor, friend, or acquaintance	42.58%	132
In the newspaper	13.23%	41
Via wireless emergency notifications (e.g., text message)	69.03%	214
Total Respondents: 310		

### Q13 Do you receive timely, accurate, and effective notifications from these sources that allow you to make appropriate decisions about what to do?

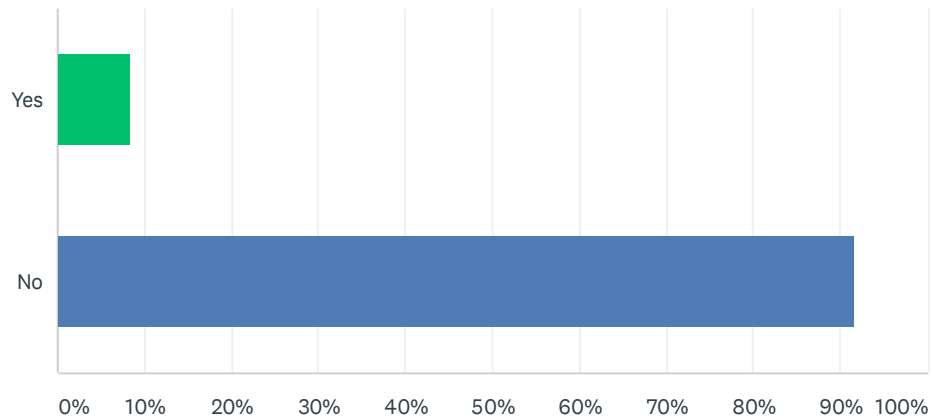
Answered: 310 Skipped: 39



ANSWER CHOICES		RESPONSES	
Yes		89.35%	277
No		9.03%	28
Not applicable, I do not receive notifications		1.61%	5
TOTAL			310

## Q14 Have you ever evacuated your home or community due to a hazard when officials suggested or mandated you do so?

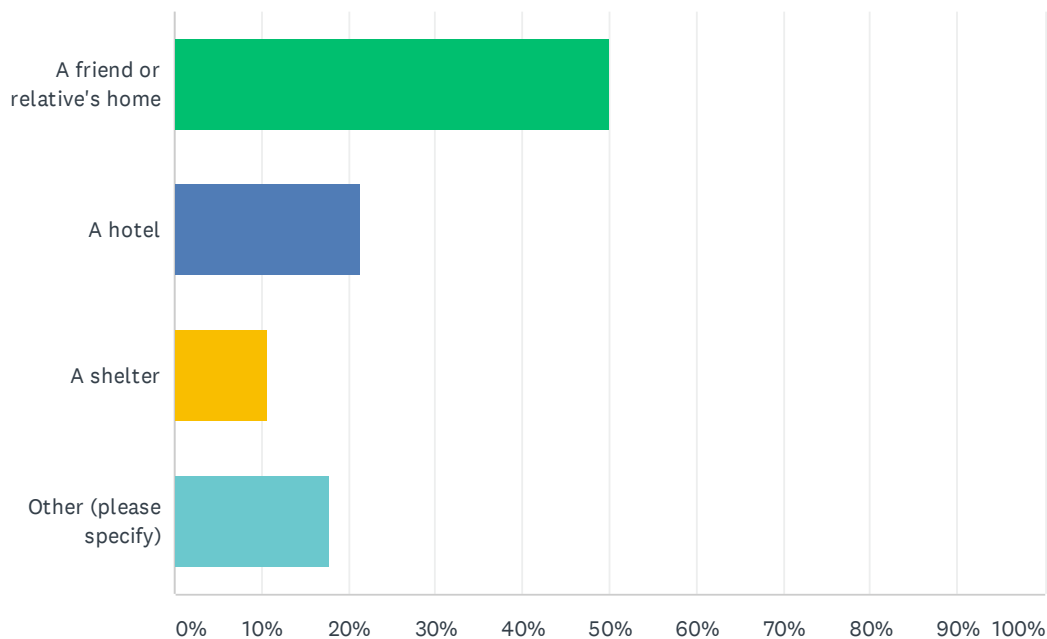
Answered: 308 Skipped: 41



ANSWER CHOICES	RESPONSES	
Yes	8.44%	26
No	91.56%	282
TOTAL		308

## Q15 To where did you evacuate?

Answered: 28 Skipped: 321

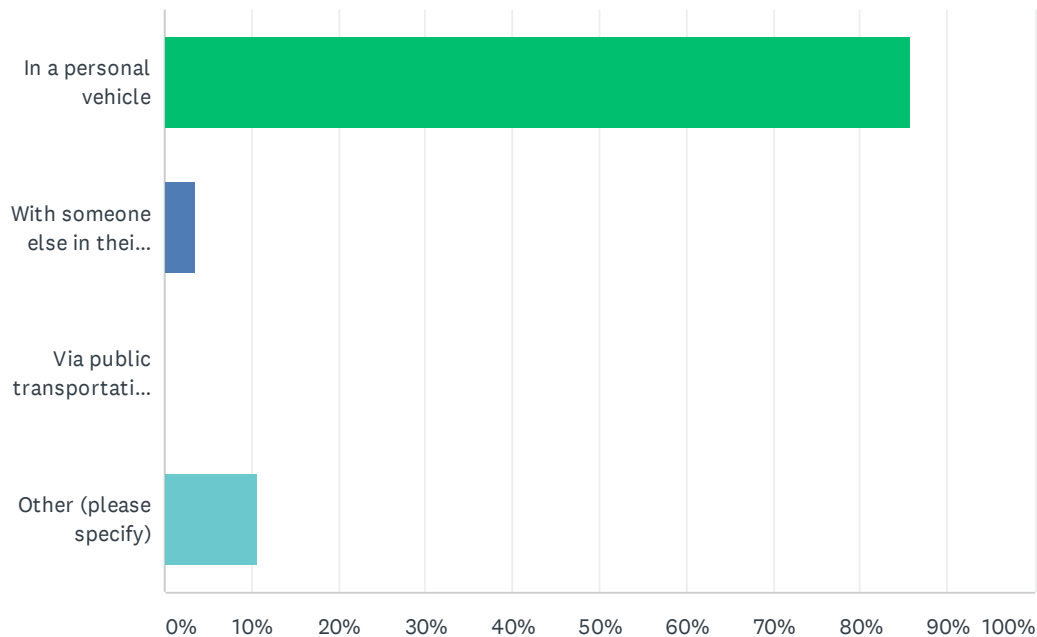


ANSWER CHOICES	RESPONSES	
A friend or relative's home	50.00%	14
A hotel	21.43%	6
A shelter	10.71%	3
Other (please specify)	17.86%	5
TOTAL		28

#	OTHER (PLEASE SPECIFY)	DATE
1	work	5/8/2019 3:15 PM
2	fire station	4/26/2019 11:43 PM
3	never had to or was asked to leave home	4/25/2019 10:39 AM
4	Basement of home or work depending on the emergency	4/24/2019 1:10 PM
5	Was never asked or mandated to evacuate	4/19/2019 8:24 AM

## Q16 How did you evacuate?

Answered: 28 Skipped: 321

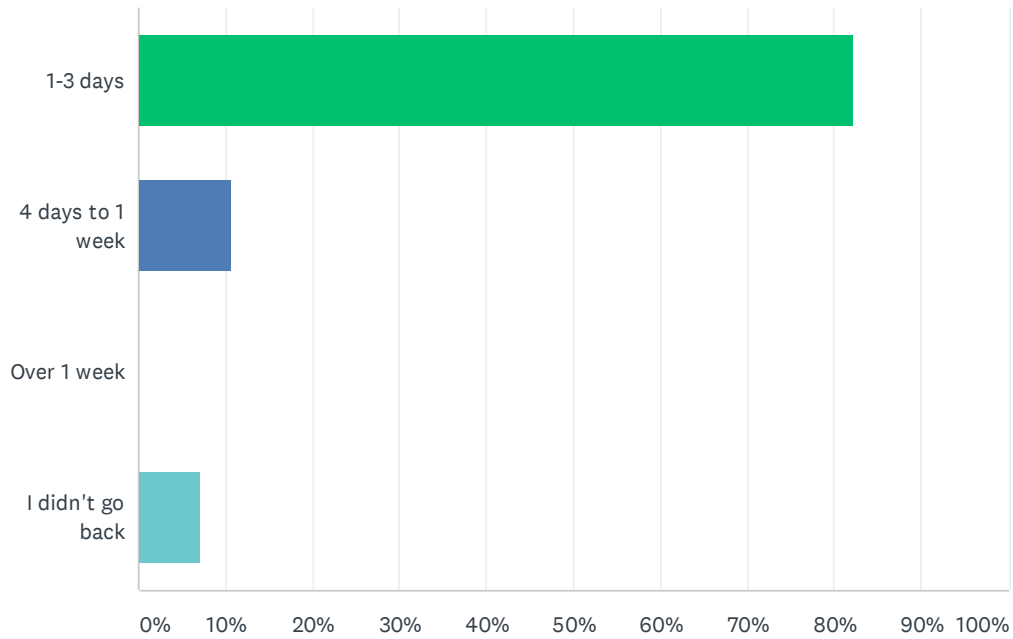


ANSWER CHOICES		RESPONSES	
In a personal vehicle		85.71%	24
With someone else in their vehicle		3.57%	1
Via public transportation or transportation provided by the county/city/village/etc.		0.00%	0
Other (please specify)		10.71%	3
TOTAL			28

#	OTHER (PLEASE SPECIFY)	DATE
1	does not apply	4/25/2019 10:39 AM
2	on foot	4/24/2019 1:10 PM
3	see above	4/19/2019 8:24 AM

## Q17 How long were you away from home?

Answered: 28 Skipped: 321



ANSWER CHOICES	RESPONSES	
1-3 days	82.14%	23
4 days to 1 week	10.71%	3
Over 1 week	0.00%	0
I didn't go back	7.14%	2
TOTAL		28



## Q18 Please indicate the reason you did not evacuate

Answered: 0 Skipped: 349

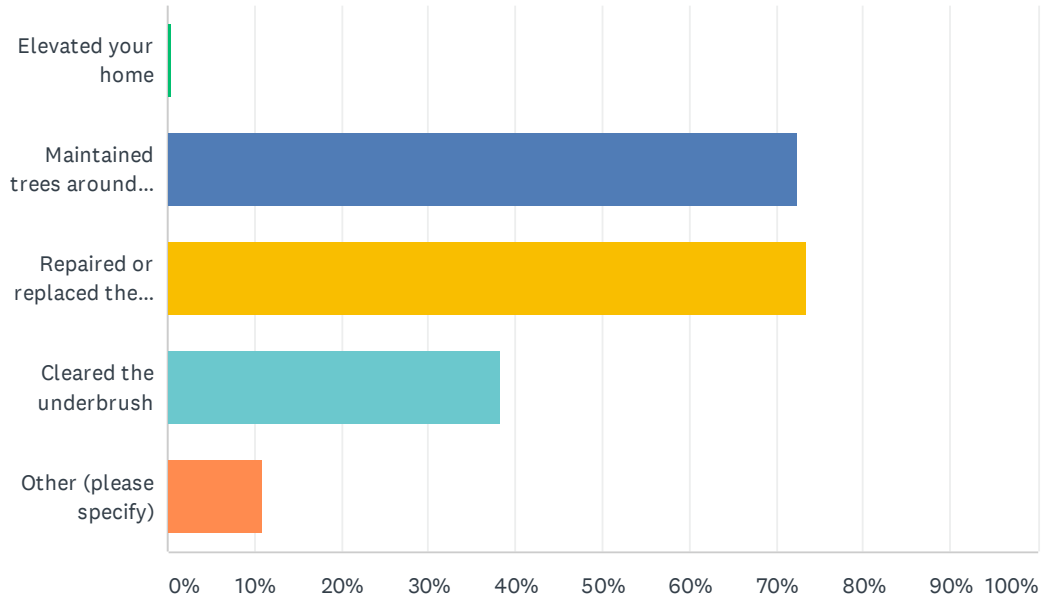
 No matching responses.

ANSWER CHOICES	RESPONSES	
I/we did not receive notification in time to leave	0.00%	0
I/we do not own a vehicle	0.00%	0
It is too expensive to evacuate	0.00%	0
It was not necessary to evacuate, the danger was over exaggerated	0.00%	0
Other (please specify)	0.00%	0
Total Respondents: 0		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

## Q19 Have you ever... (check all that apply)

Answered: 285 Skipped: 64



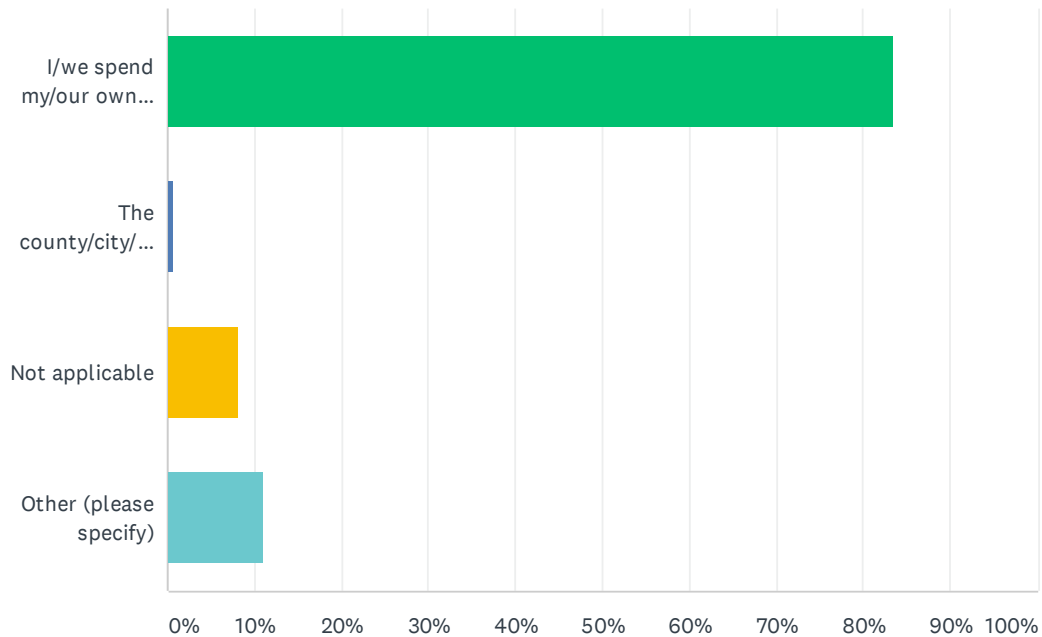
ANSWER CHOICES	RESPONSES	
Elevated your home	0.35%	1
Maintained trees around the house or removed problematic trees	72.28%	206
Repaired or replaced the roof	73.33%	209
Cleared the underbrush	38.25%	109
Other (please specify)	10.88%	31
Total Respondents: 285		

# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	backflow valve reduced yard flooding.	1/28/2020 8:17 AM
2	Landlord, mandated by the city.	6/17/2019 12:28 PM
3	condo association does all of that.	5/15/2019 2:53 PM
4	no/none	5/14/2019 8:30 PM
5	Downspouting and drainage	5/14/2019 3:36 PM
6	no	5/14/2019 3:30 PM
7	Improved drainage	5/11/2019 7:53 AM
8	no	5/10/2019 1:53 PM
9	No	5/10/2019 11:47 AM
10	Building maintenance	5/10/2019 9:38 AM
11	no	5/10/2019 7:11 AM
12	I Rent, my landlord takes care of these type of things.	5/9/2019 4:34 PM
13	cleaned out creeks and ditches	5/9/2019 1:02 PM
14	installed sewer backwater flap, waterproofed basement and replaced drain tiles	5/9/2019 8:39 AM
15	no/none	5/9/2019 7:55 AM
16	no	5/9/2019 6:36 AM
17	none	5/8/2019 10:21 PM
18	No	5/8/2019 4:24 PM
19	none	5/8/2019 4:11 PM
20	na	5/8/2019 3:46 PM
21	repaired swails to reduce yard flooding - cleaned catch basin grates to reduce street flooding in my neighborhood	5/8/2019 2:45 PM
22	no	5/8/2019 12:48 PM
23	none	5/1/2019 11:30 AM
24	Removed shrubbery affecting water, sewre pipes	4/29/2019 11:54 AM
25	n/a	4/24/2019 8:25 PM
26	I'm a farmer. I'm constantly maintaining my land.	4/24/2019 4:13 PM
27	No	4/24/2019 1:24 PM
28	N/A	4/19/2019 8:24 AM
29	Made improvements to home	4/18/2019 4:55 PM
30	had county assist in water drainage to help with flooding on our road.	4/18/2019 4:20 PM
31	none	4/18/2019 3:44 PM

## Q20 If you have done any of the previous to your property, how was it paid for?

Answered: 291 Skipped: 58



ANSWER CHOICES	RESPONSES	
I/we spend my/our own money	83.51%	243
The county/city/village paid for it	0.69%	2
Not applicable	8.25%	24
Other (please specify)	11.00%	32
Total Respondents: 291		

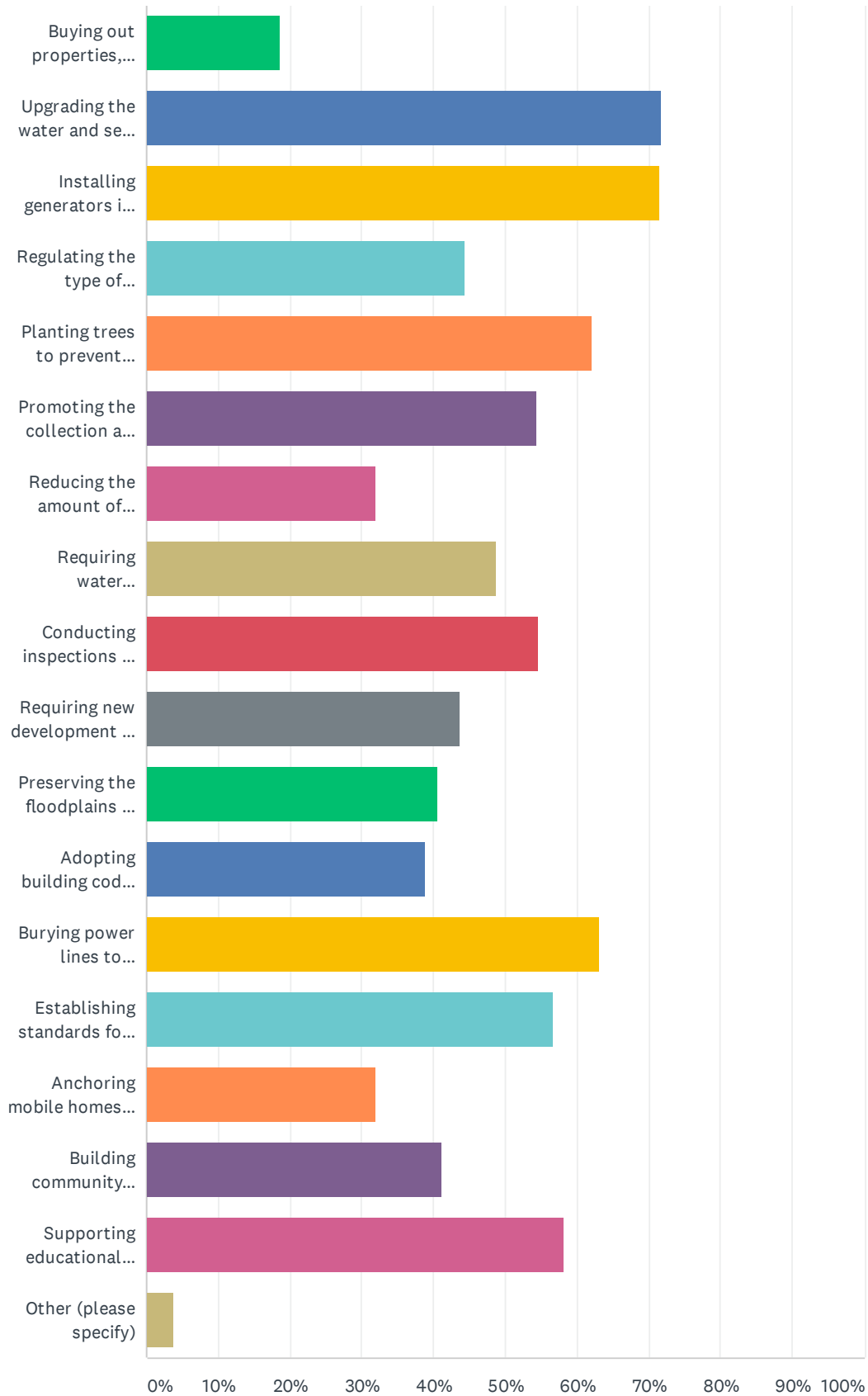
# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	Landlord, mandated or he was facing huge fines. Boy was he angry about the fines--they should have fined him triple!	6/17/2019 12:28 PM
2	Condo fees	5/15/2019 2:53 PM
3	no/none	5/14/2019 8:30 PM
4	roof-insurance	5/10/2019 10:48 AM
5	Insurance	5/10/2019 10:36 AM
6	Insurance paid for it	5/10/2019 9:09 AM
7	Insurance	5/10/2019 7:29 AM
8	Insurance	5/9/2019 2:08 PM
9	Paid for by the apartment owners	5/9/2019 11:14 AM
10	Insurance	5/9/2019 11:06 AM
11	Insurance	5/9/2019 8:35 AM
12	no/none	5/9/2019 7:55 AM
13	insurance	5/9/2019 2:00 AM
14	HOA paid	5/8/2019 5:13 PM
15	No	5/8/2019 4:24 PM
16	Home insurance for act of God	5/8/2019 4:20 PM
17	none	5/8/2019 4:11 PM
18	na	5/8/2019 3:46 PM
19	do the work ourselves	5/8/2019 3:15 PM
20	insurance	5/8/2019 3:07 PM
21	HOME OWNERS INSURANCE	5/8/2019 2:51 PM
22	insurance	5/8/2019 1:16 PM
23	did not do	5/8/2019 12:48 PM
24	Condo association paid for it	5/8/2019 12:24 PM
25	insurance	5/3/2019 8:54 AM
26	utility company has trimmed around wires	4/26/2019 8:52 AM
27	insurance	4/25/2019 11:14 PM
28	insurance	4/25/2019 10:00 AM
29	insurance	4/24/2019 4:18 PM
30	ROOF WIND DAMAGE WE PAID DEDUCTIBLE HOMEOWNER INSURANCE PAID FOR THE REST	4/24/2019 12:25 PM
31	Insurance	4/24/2019 11:54 AM
32	N/A	4/18/2019 3:44 PM

**Q21 Please indicate the types of mitigation actions you would support; these could be something you can do, or an initiative by your officials (check all that apply)**

Answered: 291   Skipped: 58

## Trumbull County Hazard Mitigation Survey



# Trumbull County Hazard Mitigation Survey

ANSWER CHOICES	RESPONSES	
Buying out properties, relocating homes, or elevating structures that are prone to repetitive flooding	18.56%	54
Upgrading the water and sewer systems	71.82%	209
Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.	71.48%	208
Regulating the type of development that is permitted in areas that are dangerous due to hazards	44.33%	129
Planting trees to prevent erosion and promote cooler micro-climates	62.20%	181
Promoting the collection and reuse of rainwater such as in rain gardens and green roofs	54.30%	158
Reducing the amount of surface pavement to reduce flooding and the heat island effect	31.96%	93
Requiring water conservation during drought conditions	48.80%	142
Conducting inspections of new construction and enforcing existing building codes	54.64%	159
Requiring new development to construct on-site retention basins for excessive stormwater runoff and as a firefighting water source	43.64%	127
Preserving the floodplains as open space	40.55%	118
Adopting building codes that go above and beyond the basic requirements of construction	38.83%	113
Burying power lines to provide uninterrupted power during severe weather	63.23%	184
Establishing standards for all utilities regarding tree pruning around lines	56.70%	165
Anchoring mobile homes and roof-mounted and ground equipment	31.96%	93
Building community shelters for tornadoes and severe weather events	41.24%	120
Supporting educational campaigns aimed at preparing the population for a variety of hazards	58.08%	169
Other (please specify)	3.78%	11
Total Respondents: 291		

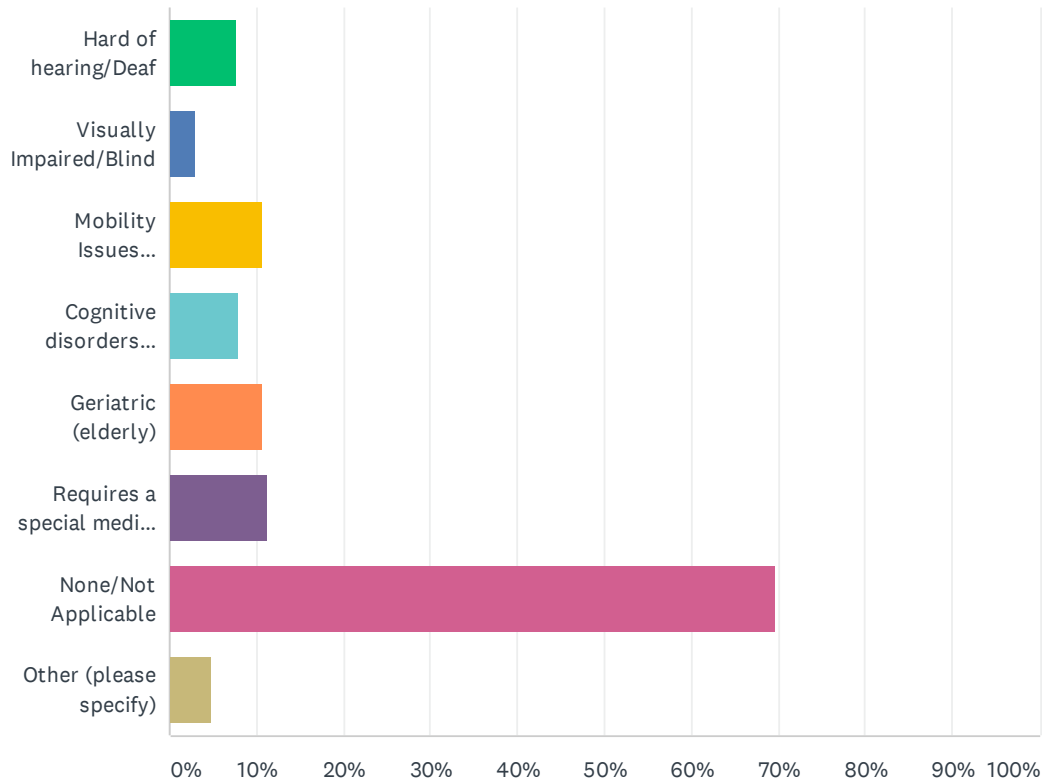


# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	The continued use and training needed for neighborhood/community volunteer watch programs already in place. Utilize the tools already in the shed. How can the city partner more with neighborhoods especially when it comes to disasters?	1/28/2020 8:21 AM
2	Review EA announcement directives. Redundant, over-saturated--for nothing! 1/4 of EA blurbs have no or inadequate sound. 1/2 the time, EA banners bOuNcE, making it hard to read. TOO MANY AGENCIES OR OFFICES! NO one place the public can call to report issues with announcements. NWS in Pitts do not know that Trumbull Co north is much different than Trumbull Co south. WE are not northwestern PA!	6/17/2019 12:36 PM
3	Fix issues with water/sewer systems	5/13/2019 10:55 AM
4	Along with burying power lines, this should be a requirement for the power company to be responsible for them to the meter on the house. Public utilities are just that: public. Not everything should be on the property owner.	5/10/2019 1:45 AM
5	I like my neighborhood the way it is.	5/9/2019 9:52 AM
6	none	5/8/2019 4:13 PM
7	Free and convenient training programs for communities to assist with post-incidents issues	5/8/2019 4:01 PM
8	undecided	5/8/2019 12:48 PM
9	Funding is always an issue	5/8/2019 12:40 PM
10	None	4/24/2019 1:24 PM
11	Local zoning enforcement	4/18/2019 4:56 PM

## Q22 Do you, or someone who resides in your residence, have a special need that emergency service providers should be aware of in an emergency? (Check all the apply)

Answered: 274 Skipped: 75



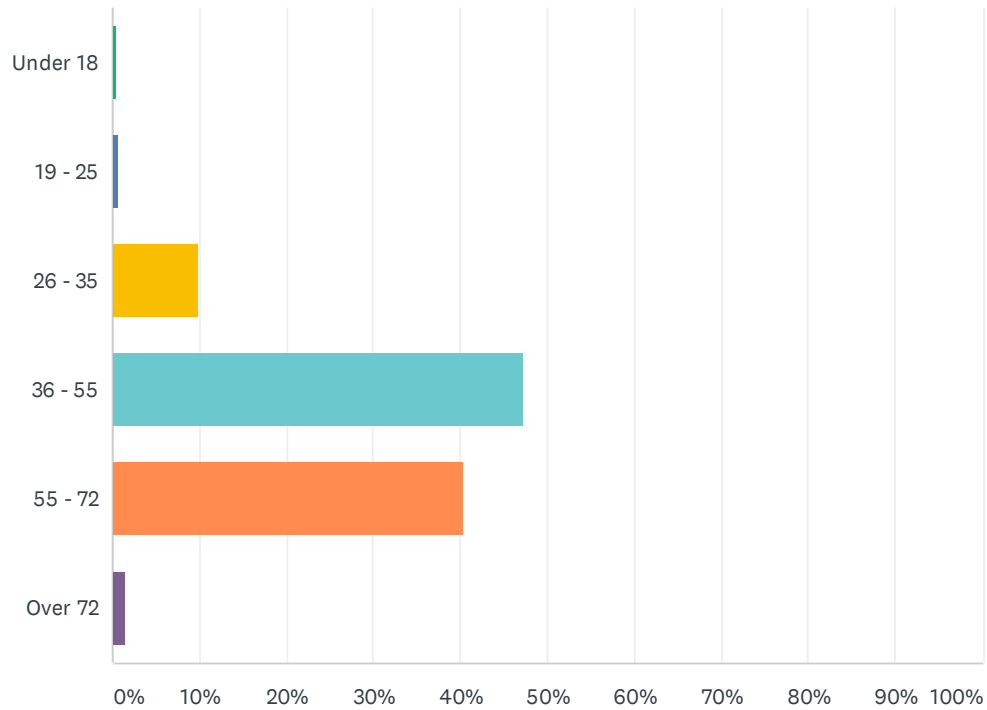
ANSWER CHOICES	RESPONSES	
Hard of hearing/Deaf	7.66%	21
Visually Impaired/Blind	2.92%	8
Mobility Issues (non-ambulatory, confined to a wheelchair, requires the use of a can or walker)	10.58%	29
Cognitive disorders (includes autism, depression, etc.)	8.03%	22
Geriatric (elderly)	10.58%	29
Requires a special medical device (such as a Ventilator, CPAP machine, or drugs that require refrigeration [i.e., insulin])	11.31%	31
None/Not Applicable	69.71%	191
Other (please specify)	4.74%	13
Total Respondents: 274		

# Trumbull County Hazard Mitigation Survey

#	OTHER (PLEASE SPECIFY)	DATE
1	Dementia- loss of routine makes the dementia much more difficult.	1/28/2020 8:22 AM
2	Mobility equipment, cane / walker. Need help out door because house sinking, now 18" step down.	6/17/2019 12:40 PM
3	Not at home, but as an owner of a home health care agency -all is probably applicipable	6/7/2019 5:08 PM
4	CANCER PATIENT	5/13/2019 10:49 AM
5	None	5/8/2019 6:57 PM
6	medication refrigeration	5/8/2019 4:02 PM
7	no	5/8/2019 3:50 PM
8	NONE	5/8/2019 2:53 PM
9	I am sure that someone in my communitiy has each disability	5/8/2019 2:48 PM
10	HOME O2	4/24/2019 11:21 PM
11	None	4/24/2019 2:32 PM
12	Dog	4/19/2019 8:38 AM
13	husband has a clotting disorder	4/18/2019 3:09 PM

## Q23 Please provide your age

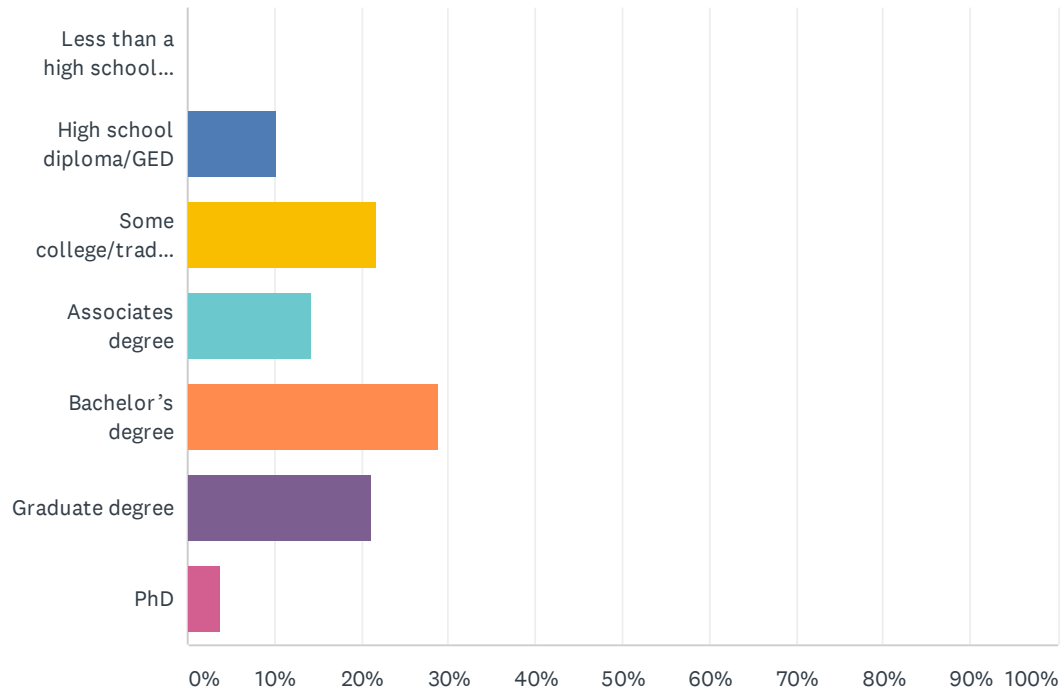
Answered: 294 Skipped: 55



ANSWER CHOICES	RESPONSES	
Under 18	0.34%	1
19 - 25	0.68%	2
26 - 35	9.86%	29
36 - 55	47.28%	139
55 - 72	40.48%	119
Over 72	1.36%	4
TOTAL		294

## Q24 Please indicate your level of education

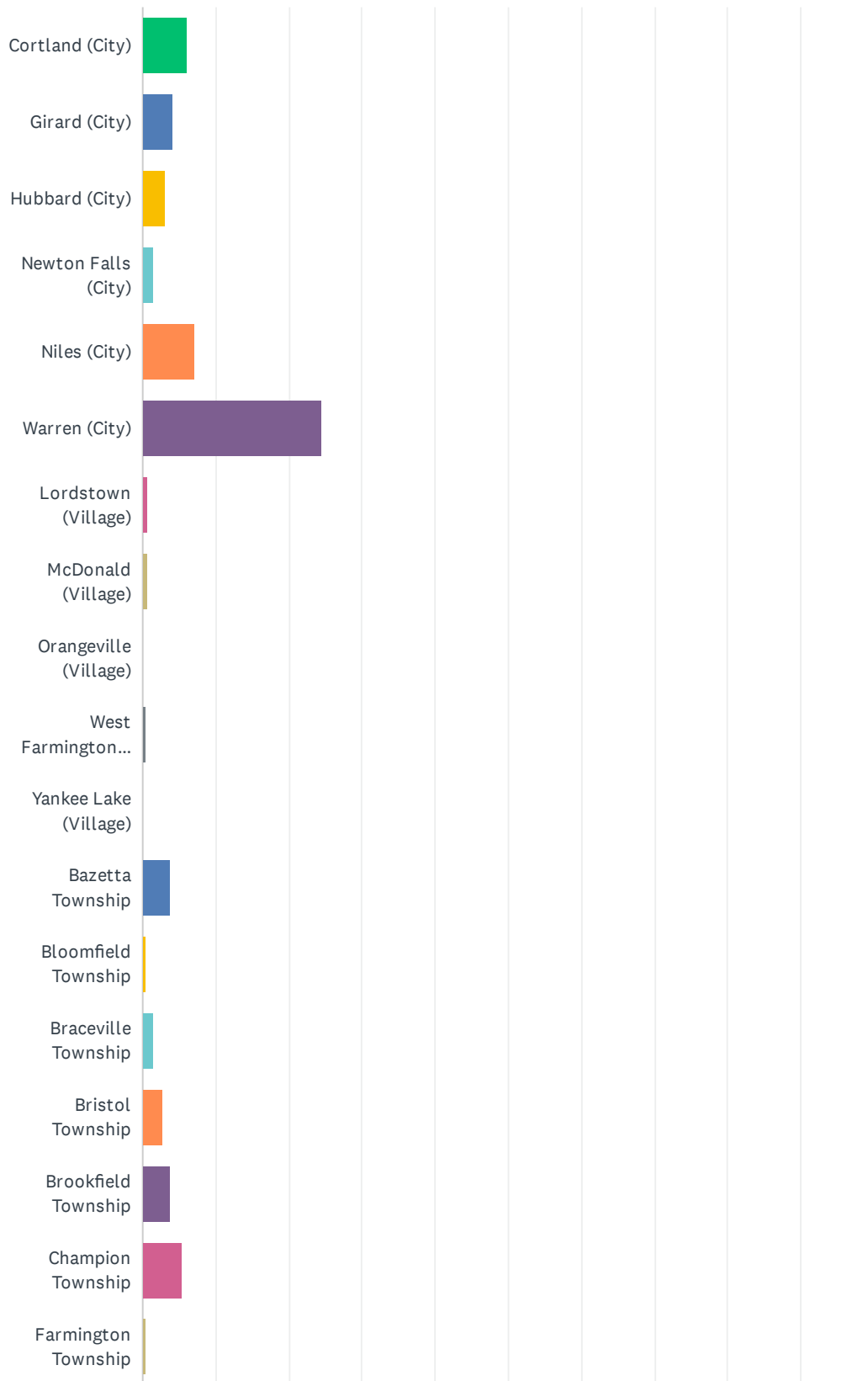
Answered: 294 Skipped: 55



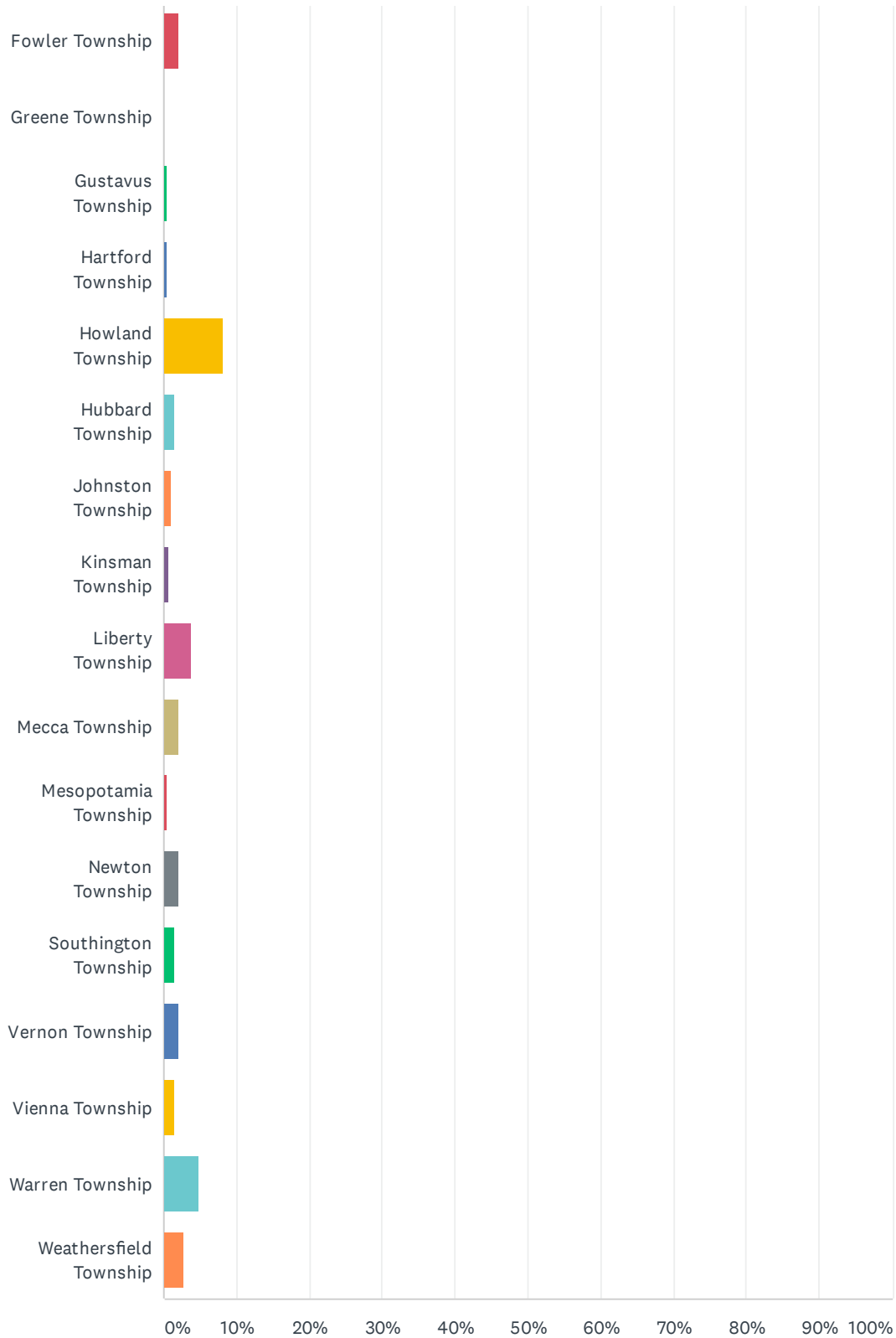
ANSWER CHOICES	RESPONSES	
Less than a high school diploma	0.00%	0
High school diploma/GED	10.20%	30
Some college/trade school	21.77%	64
Associates degree	14.29%	42
Bachelor's degree	28.91%	85
Graduate degree	21.09%	62
PhD	3.74%	11
TOTAL		294

## Q25 In which community do you live (or work, if you do not live in Trumbull County)?

Answered: 294 Skipped: 55



## Trumbull County Hazard Mitigation Survey



# Trumbull County Hazard Mitigation Survey

ANSWER CHOICES	RESPONSES	
Cortland (City)	6.12%	18
Girard (City)	4.08%	12
Hubbard (City)	3.06%	9
Newton Falls (City)	1.36%	4
Niles (City)	7.14%	21
Warren (City)	24.49%	72
Lordstown (Village)	0.68%	2
McDonald (Village)	0.68%	2
Orangeville (Village)	0.00%	0
West Farmington (Village)	0.34%	1
Yankee Lake (Village)	0.00%	0
Bazetta Township	3.74%	11
Bloomfield Township	0.34%	1
Braceville Township	1.36%	4
Bristol Township	2.72%	8
Brookfield Township	3.74%	11
Champion Township	5.44%	16
Farmington Township	0.34%	1
Fowler Township	2.04%	6
Greene Township	0.00%	0
Gustavus Township	0.34%	1
Hartford Township	0.34%	1
Howland Township	8.16%	24
Hubbard Township	1.36%	4
Johnston Township	1.02%	3
Kinsman Township	0.68%	2
Liberty Township	3.74%	11
Mecca Township	2.04%	6
Mesopotamia Township	0.34%	1
Newton Township	2.04%	6
Southington Township	1.36%	4
Vernon Township	2.04%	6



## Trumbull County Hazard Mitigation Survey

Vienna Township	1.36%	4
Warren Township	4.76%	14
Weathersfield Township	2.72%	8
TOTAL		294

Q26 Please write any comments here.

Answered: 23   Skipped: 326

# Trumbull County Hazard Mitigation Survey

#	RESPONSES	DATE
1	For FB and Twitter are you the Trumbull County EMA? It's difficult to find you. You may want to add the full name and add the EMA as a tag to find you. And get the amateur radio operators in the area involved. Most are very bright and dedicated and could give you lots of important insight.	1/28/2020 8:34 AM
2	#20. Hey, you need to list Professional -- more than HS but not any of the degrees listed. Not BA or MA. But schooling for a Professional degree & license,	6/17/2019 12:45 PM
3	Tried calling - busy Had a question about my agency's cooperatiom and collaboration with our local, state, and federal emergency preparedness officals efforts to maintain an integrated response during emergency. Loretta Cell - 330.716.4847	6/7/2019 5:15 PM
4	Thank you for asking!	5/14/2019 3:38 PM
5	Thanks for the opportunity. I learned a few things just doing the survey and I appreciate it.	5/10/2019 10:30 AM
6	Please make sure this information (including the survey) is emailed to community leaders to complete and review (e.g., police and fire chiefs and elected officials). Development should also involve these individuals.	5/10/2019 1:48 AM
7	None	5/9/2019 11:10 AM
8	we need to preserve the wetlands by forbidding further development. Enough vacant land/buildings are available for renewal without demolishing another part of our ecosystem. Land with standing timber should not be sold exclusively for lumber and stripped of its trees. It's another instance where the natural habitat is destroyed without repair. The terms of land sale should include a stated amount of trees harvested as well as terms of repair and replanting. The trash of dead brush and wood left behind is a fire hazard during hot dry summers.	5/9/2019 9:01 AM
9	no/none	5/9/2019 7:57 AM
10	Thank you!	5/8/2019 5:54 PM
11	I live in Summit County but work in Trumbull Co.	5/8/2019 5:16 PM
12	I realize this is not your area, however, I wish someone could control the media from making every rain fall appear as a disaster. At some point, viewers will quit paying attention to them ".crying wolf" and when a real disaster takes place, we will not be ready.	5/8/2019 5:14 PM
13	MORE TEXT ALERTS IN REGARDS TO SEVERE WEATHER. A BETTER WAS TO REACH OUT TO THE COMMUNITY TO SIGN UP FOR TEXT ALERTS IF THEY ARE AVAILABLE. MOST YOUNGER PEOPLE RELY ON THERE CELL PHONES TO GET INFORAMTION RATHER THAN THE NEWS. SO TEXT ALERTS IS GOING TO HELP GET THE INFORAMTION IN PEOPLES HANDED QUICKER WHICH WILL ALLOW FOR A FAST RESPONSE TIME. THANK YOU!	5/8/2019 4:28 PM
14	thank you Together we can change our community	5/8/2019 4:23 PM
15	This survey did not address the critical hazard mitigation areas. Basically this was a useless survey, that will help nothing with preparedness. This is survey is schmooze or a feel good for the EMA.	5/8/2019 2:15 PM
16	Keep up the good work!	4/29/2019 11:57 AM
17	Let's HOPE all the POLITICIANS fill this out also. Many of them are CLUELESS on Mitigation, Planning, The whole ICS system.	4/29/2019 9:10 AM
18	I work in howland / fowler / champion . I live in fowler & Cortland I maintain 2 legal residences.	4/26/2019 11:50 PM
19	n/a	4/26/2019 8:16 AM
20	there is no answer to question 14 if you were never asked to evacuate or leave home.	4/25/2019 10:42 AM
21	If we do not take careful use of our earth, it will cost us more in the long run (money, life, and property) than if we address the problems early	4/24/2019 3:39 PM
22	Question 24 asked for a response only if you did not live or work in Trumbull County but then it would not let you continue w/o answering and Trumbull County was not on the drop down list????!! Had to pick Niles (city)!!!	4/24/2019 1:18 PM

## Trumbull County Hazard Mitigation Survey

23

The continuous tornado false alarms must stop. A real tornado will happen and no one will pay attention because of hundreds of false alarms.

---

4/18/2019 2:48 PM

## TRUMBULL COUNTY HAZARD MITIGATION PLAN 2019

*Mitigation* is any action you or your community takes to reduce the negative impacts of hazards such as weather or floods.

1. Do you live or work in Trumbull County? ☐ Yes ☐ No

2. What is the name of your city/village?

---

3. What hazard (see back) represents the biggest risk?

---

4. Do you have a 72-hour emergency kit in your home?

☐ Yes ☐ No ☐ I don't know

5. Do you live in a special flood hazard zone?

☐ Yes ☐ No ☐ I don't know

6. How would you rate your ability to recover from disasters?

☐ Not capable w/o assistance ☐ Can accomplish minimal actions

☐ Can fully recover w/o assistance

7. What mitigation efforts would you support in your community?  
Check all that apply.

- ☐ Buying out properties or relocating or elevating houses that are prone to repetitive flooding
- ☐ Upgrading the water and sewer systems
- ☐ Installing generators in critical facilities such as police and fire stations, hospitals, etc.
- ☐ Promoting the collection and reuse of rainwater such as in rain gardens and green roofs
- ☐ Building shelters for tornadoes and severe weather events
- ☐ Supporting educational campaigns aimed at preparing the population for a variety of hazards

## TRUMBULL COUNTY HAZARD MITIGATION PLAN 2019

*Mitigation* is any action you or your community takes to reduce the negative impacts of hazards such as weather or floods.

1. Do you live or work in Trumbull County? ☐ Yes ☐ No

2. What is the name of your city/village?

---

3. What hazard (see back) represents the biggest risk?

---

4. Do you have a 72-hour emergency kit in your home?

☐ Yes ☐ No ☐ I don't know

5. Do you live in a special flood hazard zone?

☐ Yes ☐ No ☐ I don't know

6. How would you rate your ability to recover from disasters?

☐ Not capable w/o assistance ☐ Can accomplish minimal actions

☐ Can fully recover w/o assistance

7. What mitigation efforts would you support in your community?  
Check all that apply.

- ☐ Buying out properties or relocating or elevating houses that are prone to repetitive flooding
- ☐ Upgrading the water and sewer systems
- ☐ Installing generators in critical facilities such as police and fire stations, hospitals, etc.
- ☐ Promoting the collection and reuse of rainwater such as in rain gardens and green roofs
- ☐ Building shelters for tornadoes and severe weather events
- ☐ Supporting educational campaigns aimed at preparing the population for a variety of hazards

## **HAZARDS LIST**

Dam & Levee Failure  
Drought  
Earthquake  
Epidemic  
Flooding  
Hailstorm  
Infestation  
Land & Mine Subsidence  
Severe Thunderstorm  
Severe Wind & Tornado  
Severe Winter Storm  
Temperature Extreme (Heat & Cold)  
Terrorism (Domestic & International)  
Wildfire

## **HAZARDS LIST**

Dam & Levee Failure  
Drought  
Earthquake  
Epidemic  
Flooding  
Hailstorm  
Infestation  
Land & Mine Subsidence  
Severe Thunderstorm  
Severe Wind & Tornado  
Severe Winter Storm  
Temperature Extreme (Heat & Cold)  
Terrorism (Domestic & International)  
Wildfire

## TRUMBULL COUNTY HAZARD MITIGATION PLAN COMMUNITY ISSUES FORUM ~ MITIGATION TALKING POINTS

### Purpose

- Disasters cause loss of life, damage buildings and infrastructure, and can impact a community's economic, social, and environmental well-being.
- In short, they can be disruptive, and the recovery from major disasters can take years.
- Mitigation represents an effort to minimize losses to life and property from these hazards.
- The state and federal governments require communities to compile a hazard mitigation plan, and the presence of the plan is necessary to ensure eligibility for several grant sources.
- Communities update mitigation plans regularly, and Trumbull County is in the process of updating its plan.
- Think about what would make the impacts to the hazards you've experience, like severe weather, less disruptive.
  - Would better access to water and sewer help?
  - Would better storm drainage help?
  - Would have better homeowners' insurance coverage help?
  - Would better paying jobs help people recovery more quickly and effectively?
- Ideally, this plan is a dynamic document that includes comments from governmental officials and the public. Currently, the cities, villages, and townships in Trumbull County are participating and nearly 350 people have completed an online public survey. The process is succeeding; however, we want to make sure the public can participate in as many ways as possible.

### Specific Items for Public Consideration

We want to better understand how you see hazards relating to other issues your community faces. Feel free to provide any comments, but think specifically about the following.

- What hazards are you concerned about?
- What types of projects would you be willing to do to address those hazards?
  - What would you support your governmental leaders doing?
  - What would you be willing to do at your home?

Please consider taking the online survey. There are numerous questions that are multiple choice, but there are also spaces for your comments.



### LOCAL HAZARD MITIGATION PLANNING

#### Hazard Mitigation Planning for Resilient Communities

Disasters can cause loss of life; damage buildings and infrastructure; and have devastating consequences for a community's economic, social, and environmental well-being. Hazard mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. In other words, hazard mitigation keeps natural hazards from becoming natural disasters.

Hazard mitigation is best accomplished when based on a comprehensive, long-term plan developed before a disaster strikes. Mitigation planning is the process used by state, tribal, and local leaders to understand risks from natural hazards and develop long-term strategies that will reduce the impacts of future events on people, property, and the environment.

#### The Local Mitigation Planning Process

The mitigation plan is a community-driven, living document. The planning process itself is as important as the resulting plan because it encourages communities to integrate mitigation with day-to-day decision making regarding land use planning, floodplain management, site design, and other functions. Mitigation planning includes the following elements:

**Public Involvement** – Planning creates a way to solicit and consider input from diverse interests, and promotes discussion about creating a safer, more disaster-resilient community. Involving stakeholders is essential to building community-wide support for the plan. In addition to emergency managers, the planning process involves other government agencies, businesses, civic groups, environmental groups, and schools.

**Risk Assessment** – Mitigation plans identify the natural hazards and risks that can impact a community based on historical experience, estimate the potential frequency and magnitude of disasters, and assess potential losses to life and property. The risk assessment process provides a factual basis for the activities proposed in the mitigation strategy.

**Mitigation Strategy** – Based on public input, identified risks, and available capabilities, communities develop mitigation goals and objectives as part of a strategy for mitigating hazard-related losses. The strategy is a community's approach for implementing mitigation activities that are cost-effective, technically feasible, and environmentally sound as well as allowing strategic investment of limited resources.

#### Disaster Mitigation Act of 2000

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by the Disaster Mitigation Act of 2000, is intended to “reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters.”

Under this legislation, state, tribal, and local governments must develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance through the Hazard Mitigation Assistance Programs. The regulatory requirements for local hazard mitigation plans can be found at Title 44 Code of Federal Regulations §201.6.

For more information about FEMA's Hazard Mitigation Assistance Grants, visit: [www.fema.gov/hazard-mitigation-assistance](http://www.fema.gov/hazard-mitigation-assistance).



## Benefits of Hazard Mitigation

Mitigation is an investment in your community's future safety and sustainability. Mitigation planning helps you take action now, before a disaster, to reduce impacts when a disaster occurs. Hazard mitigation planning helps you think through how you choose to plan, design, and build your community and builds partnerships for risk reduction throughout the community. Consider the critical importance of mitigation to:

- Protect public safety and prevent loss of life and injury.
- Reduce harm to existing and future development.
- Maintain community continuity and strengthen the social connections that are essential for recovery.
- Prevent damage to your community's unique economic, cultural, and environmental assets.
- Minimize operational downtime and accelerate recovery of government and business after disasters.
- Reduce the costs of disaster response and recovery and the exposure to risk for first responders.
- Help accomplish other community objectives, such as capital improvements, infrastructure protection, open space preservation, and economic resiliency.

Having a hazard mitigation plan will increase awareness of hazards, risk, and vulnerabilities; identify actions for risk reduction; focus resources on the greatest risks; communicate priorities to state and federal officials; and increase overall awareness of hazards and risks.

## Mitigation Activities for Risk Reduction

Possible mitigation activities may include:



Adoption and enforcement of regulatory tools, including ordinances, regulations, and building codes, to guide and inform land use, development, and redevelopment decisions in areas affected by hazards.



Acquisition or elevation of flood-damaged homes or businesses retrofit public buildings, schools, and critical facilities to withstand extreme wind events or ground shaking from earthquakes.



Creating a buffer area by protecting natural resources, such as floodplains, wetlands, or sensitive habitats. Additional benefits to the community may include improved water quality and recreational opportunities.



Implement outreach programs to educate property owners and the public about risk and about mitigation measures to protect homes and businesses.

## Mitigation Plan Implementation & Monitoring

History shows that hazard mitigation planning and the implementation of risk reduction activities can significantly reduce the physical, financial, and emotional losses caused by disasters. Putting the plan into action will be an ongoing process that may include initiating and completing mitigation projects and integrating mitigation strategies into other community plans and programs. Monitoring the plan's implementation helps to ensure it remains relevant as community priorities and development patterns change.

## Planning Guidance, Tools, and Resources

FEMA provides a variety of guidance, tools, and resources to help communities develop hazard mitigation plans. These resources and more can be found online at: [www.fema.gov/hazard-mitigation-planning-resources](http://www.fema.gov/hazard-mitigation-planning-resources).

- [Hazard mitigation planning laws, regulations, and policies](#) guide development of state, local, and tribal FEMA-approved hazard mitigation plans.
- The [Local Mitigation Planning Handbook](#) is the official guide for governments to develop, update, and implement local plans. The Handbook includes guidance, tools, and examples communities can use to develop their plans.
- [Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards](#) provides ideas for mitigation actions.
- Visit [www.fema.gov/hazard-mitigation-planning-training](http://www.fema.gov/hazard-mitigation-planning-training) for more information on available online and in-person mitigation planning training.

**TRUMBULL COUNTY HAZARD MITIGATION PLAN**  
**PLANNING COMMITTEE MEETING #4**  
**NOTES**

Date: Monday, June 10, 2019  
Time: 10:30 a.m.  
Duration: Approximately 30 minutes  
Location: Web Conference (via GoToMeeting)

The Trumbull County Hazard Mitigation Planning Committee met via web conference on June 10<sup>th</sup> to continue the process of updating the county's multi-jurisdictional hazard mitigation plan. The following committee members attended the meeting.

- Kayla Grizer, Trumbull Co. EMA
- Linda Beil, Trumbull Co. EMA
- Steve Gerberry, Trumbull Co. Engineer
- Sandy Swann, Trumbull County Combined Health District
- Jeff Harvey, JH Consulting, LLC

The content portion of the meeting included presentation of the final online public survey results, discussion of the community needs meetings held June 3 and 6, and updates on the asset inventory and project status processes.

At the May 8<sup>th</sup> meeting, Jeff noted the survey yielded 119 results, and committee members agreed to disseminate the online survey again. Between May 9 and June 10, survey responses increased to 345. Jeff presented an abbreviated overview of the results. The top three hazards under the “very concerned” heading were wind and tornado (88 respondents, 25.66%), severe winter storms (67 respondents, 19.65%), and hazardous materials (54 respondents, 15.79%). The top three hazards under the “not at all concerned” heading were dam failure (247 respondents, 72.43%), drought (195 respondents, 57.18%), and earthquake \$167 respondents, 49.41%). Respondents felt that temperature extremes (hot and cold), flooding, and severe wind/tornado situations were increasing in intensity. Finally, respondents were agreeable to the following types of mitigation projects.

- Upgrading the water and sewer systems (207 respondents)
- Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.

(206 respondents)

- Burying power lines to provide uninterrupted power during severe weather (181 respondents)
- Planting trees to prevent erosion and promote cooler micro-climates (180 respondents)
- Supporting education campaigns aimed at preparing the population for a variety of hazards (167 respondents)

Committee members then agreed to close the survey. A full summary appears attached to these minutes.

The Warren City Health Department sponsored two community meetings on June 3 and 6, 2019. Bob Pinti with the health department provided a brief overview of the process and distributed “mini surveys” to attendees at these meetings. Though Bob could not attend the call, Linda reported that he received approximately 27 written mini-surveys at the first meeting (i.e., June 3).

Jeff then provided two brief updates as to the planning process. He thanked everyone for their work on updating the asset inventory from the previous plan and indicated there was still time to submit updates to that list. He then referenced a revised version of the previous project list. At the May 8<sup>th</sup> meeting, Jeff provided committee members with a copy of the projects from the previous version of the plan. Committee members noted the presence of several projects complete by virtue of agencies (e.g., ODNR) accomplishing the tasks as part of the regular duties. Further, there were several public information projects that the county could consolidate to make the total number of projects more manageable. Jeff agreed to revise the project list and submit it with the minutes of the May 8<sup>th</sup> meeting.

The minutes included the revised project list, but in the process of updating it, Jeff felt it would be beneficial to explain the edits so committee members could see how the revised list relates to the previous list. When removing projects from the list, Jeff added a strike-through the text. He wrote proposed revisions for the 2019 plan (i.e., projects and status updates) in red text. Finally, he placed consolidated/removed projects (with proposed status statements) at the end of the file. The revised list appears attached to these minutes.

To close the meeting, the committee discussed the next meeting date (for an in-person session). Committee members looked at mid-to-late July, but since several members could not attend the call, Jeff agreed to submit a Doodle poll to gauge the best date. Based on the results of that poll, the next meeting of the committee will be via teleconference on July 26, 2019, at 10:00 a.m. There will likely be an additional meeting after the July 26<sup>th</sup> session, and it will be in-person.

**Trumbull HMP Mtg. #5**

Fri, Jul 26, 2019 10:00 AM - 11:00 AM EDT

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/150351981>

You can also dial in using your phone.

United States: [+1 \(872\) 240-3311](tel:+18722403311)

Access Code: 150-351-981

Joining from a video-conferencing room or system?

Depending on your device, dial:

150351981@67.217.95.2 or 67.217.95.2##150351981

## APPENDIX 5: CITATIONS

This appendix assures proper attribution to the many data sources used throughout the hazard mitigation plan.

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## **APPENDIX 6: CROSSWALKS AND RESOLUTIONS**

The appendix contains space to include the approved crosswalks per the Ohio Emergency Management Agency and Federal Emergency Management Agency, Region V. It will also house copies of the adopting resolutions upon plan approval.

