



Hazard Mitigation Plan

Columbiana County, Ohio

Released 2019

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN

**RELEASED 2019
FOR THE COUNTY JURISDICTION OF COLUMBIANA COUNTY, OHIO AND THE
MUNICIPAL JURISDICTIONS THEREIN**

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1.0 INTRODUCTION

Purpose

The purpose of the mitigation plan is to identify risks and vulnerabilities from hazards that affect Columbiana 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 *Columbiana 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 *Columbiana County Hazard Mitigation Plan* is “multi-jurisdictional,” meaning that it includes several jurisdictions. Columbiana 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		
<i>Section</i>	<i>Description</i>	<i>Section in Plan</i>
§ 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 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.

Columbiana County, through the direction of the Columbiana County Emergency Management Agency (CCEMA) began the process to update this plan in September of 2018; the CCEMA contracted the services of JH Consulting, LLC, of West Virginia, (the consultant) to aid in the process. The consultant met with CCEMA 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.

PLANNING COMMITTEE MEMBERS AND AFFILIATIONS		
<i>Agency/Affiliation</i>	<i>Name</i>	<i>Title</i>
Buckeye Water	Al DeAngelis	District Manager
Buckeye Water	Todd Brown	N/A
Columbiana County Development Department	Tad Herold	Director
Columbiana County Emergency Management Agency	Brian Rutledge	Deputy Director
Columbiana County Emergency Management Agency	Peggy Clark	Director
Columbiana County Engineer	Troy Graft	Chief Deputy Sanitation Engineer
Columbiana County Health District	Paula Cope	PHEP Program Director
Columbiana County Health District	Wes Vins	Health Commissioner
Columbiana County Port Authority	Penny Traina	Chief Executive Officer
Community Action Agency of Columbiana County	Deb Hill	N/A
East Liverpool Fire	Bill Jones	Fire Chief
Heritage Environmental Services	Raymond Wayne	N/A
National Association of Conservation Districts	Pete Conkle	N/A
Salem Regional Medical Center	Deanna Danner	N/A

The committee came together five times throughout the process. The first meeting was in person at the CCEMA conference room/emergency operations center (EOC) on November 1, 2018. The second meeting took place online via web conference on February 13, 2019. The third meeting was again in person at the CCEMA conference room on March 12, 2019. The next online committee meeting took place at the CCEMA conference room on April 23, 2019. The final in-person committee meeting also took place at the CCEMA conference room on June 11, 2019. See Appendix 1 for agendas, meeting minutes, etc. The CCEMA requested input from neighboring jurisdictions via email; see Appendix 1 for a copy of the email.

As noted in the table above, the CCEMA provided opportunities for local and regional planning agencies (e.g., Buckeye Water) and other partners (e.g., healthcare facilities) to participate. Additionally, the CCEMA invited the following agencies to ensure participation by those with the authority to guide or regulate development in several sectors within Columbiana County.

- Columbiana County Development Department (i.e., community and economic development)
- Columbiana County Engineer (i.e., transportation, water, and sewer infrastructure)
- Columbiana County Health District (i.e., public health)
- Columbiana County Port Authority (i.e., transportation infrastructure and economic development)
- Community Action Agency of Columbiana County (i.e., human services and vulnerable populations)
- Heritage Environmental Services (i.e., environmental considerations)
- National Association of Conservation Districts (i.e., environmental considerations)

Municipal participation was also important. The CCEMA 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. It occurred on October 15, 2019, at the CCEMA conference room. See the table in Section 1.1.2 below for additional information.

The county's consultant made the draft plan available to committee members via a shared Google Drive. The consultant began loading narratives into the shared drive on October 31, 2019, and drafts remained available for review through the end of 2019.

Committee Meeting 1

The first committee meeting gave members the opportunity to familiarize themselves with each other and with the plan; many of the members had served as committee members on previous updates of this plan, and some members were new to the process. The 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.

This first meeting focused mainly on getting reacquainted with the plan and reviewing the projects and goals from the previous update in 2013. The committee members discussed the key items that are important in creating a mitigation strategy; they discussed the problems they face as a county and in their jurisdictions, and they presented ideal solutions that would feed into the overall goals for this updated plan. For further information on the goals and the process by which the committee updated the goals, refer to Section 3.1: Mitigation Goals.

Committee members also discussed the public involvement requirement of the plan; they approved (with minor changes) a survey that the consultant had presented as an example to garner public input.

Committee Meeting 2

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. The consultant presented the eight goals that the committee had discussed changing from hazard-driven to comprehensive in the first meeting; they approved them with minor changes to wording. Then, the discussion turned to updating the hazard list for the plan. The committee decided to keep all of the hazards they included in the previous plan updates but expand the list. The extreme heat profile will now be under the heading of 'extreme temperatures' so it can include cold. A new hazard was added under the 'public health emergency' heading. The modifications bring the total number of hazards profiled in the plan to ten.

Committee Meeting 3

The third committee meeting was an in-person meeting. The consultant distributed the current results of the public survey, and the committee discussed those results. Based on public feedback, the committee felt as if the hazard list was appropriate and that its initial ideas as to

possible projects were valid. The committee then discussed the project list in-depth and decided to significantly revise it, effectively right-sizing the project list and removing vague, redundant, or unfeasible projects. To conclude the meeting, the committee began formulating a plan maintenance process.

Committee Meeting 4

The fourth committee meeting was an online meeting. The consultant distributed the current results of the public outreach efforts. Following a review of survey results, the committee discussed in-person public involvement. To conclude the meeting, members discussed the asset inventory and the plan maintenance process.

Committee Meeting 5

The fifth committee meeting was an in-person meeting. The consultant presented the plan maintenance process developed during Meeting 4, and the committee requested a few minor changes. The consultant then presented the final results of the public outreach surveys. The bulk of the time in Meeting 5 consisted of project prioritization. Committee members updated the project list throughout the meeting.

Planning Meeting (i.e., Meeting 6)

EMA Director Clark provided attendees with an overview of the hazard mitigation planning process and formally offered municipalities the opportunity to continue as a partner to the county's plan. All in attendance agreed to do so. The majority of the rest of the meeting served as an open floor for attendees to share hazard concerns from the perspectives of their jurisdictions. Attendees also shared ideas about projects that could reduce risks in their jurisdictions.

To conclude the meeting, Columbiana 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 those that wished to complete it by hand, and he noted that he would forward a web link to Director Clark for those that would like to complete the survey online (via Survey Monkey). Director Clark forwarded that link via email on Monday, October 21st.

1.1.2 Jurisdictional Involvement

All of the jurisdictions within Columbiana 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 CCEMA or the consultant via phone or email

The following table identifies what activities jurisdictions completed.

COLUMBIANA COUNTY HMP JURISDICTIONAL TASKS								
Community		Attended Planning Meetings	Online Capability Survey	Projects Update	Added New Projects	Provided Info to CCEMA or Consult.	Promoted Public Involve.	Overall Participation Assessment
Columbiana County	County	YES	YES	YES	YES	YES	YES	YES
Columbiana	City	YES		YES	YES			YES
East Liverpool	City	YES		YES	YES			YES
East Palestine	Village	YES	YES	YES	YES	YES		YES
Leetonia	Village			YES	YES	YES		YES
Lisbon	Village		YES	YES				YES
New Waterford	Village		YES	YES	YES			YES
Rogers	Village			YES	YES	YES		YES
Salem	City	YES	YES	YES	YES			YES
Salineville	Village	YES	YES	YES	YES			YES
Summitville	Village			YES	YES	YES		YES
Washingtonville	Village			YES	YES			YES
Wellsville	Village	YES	YES	YES				YES

1.1.3 Public Involvement

The committee approached the public involvement component in two ways to garner input for the plan: 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 committee and CCEMA began posting the survey in mid-February 2019; the survey was open until July 31, 2019. In total, 70 individuals completed the survey. The

public felt most concerned about hazardous materials incidents (50 respondents reported feeling either “concerned” or “very concerned”). Residents also reported concern over weather events, with 43 selecting “concerned” or “very concerned” about severe winter storms and 41 respondents selecting those options for wind and tornado. Residents were the least concerned about dam failures and earthquakes.

Fifty-four (54) of the 70 survey respondents answered a question about mitigation actions they had undertaken at their homes. Of those respondents, 88.89% reported maintaining or removing trees on their property, while 75.93% reported repairing or replacing their roofs. When asked about specific mitigation projects they would support, most respondents selected “upgrading the water and sewer systems” and “planting trees to prevent erosion and promote cooler micro-climates” (73.68% of 57 respondents for each). Survey respondents showed the least support for “buying out properties, relocating homes, or elevating structures that are prone to repetitive flooding” (22.81% of 57 respondents).

The committee utilized the survey data in a number of ways throughout the project. First, as it considered the hazards to include in the plan, members reviewed the hazards that posed concerns to residents. When updating project lists, committee members and participating jurisdictions referenced the types of projects the general public might support based on survey responses.

To garner additional public comment, the CCEMA presented the mitigation planning process at a school preparedness workshop and a Sky Warn training. At these events, the director distributed a condensed public survey and provided education to residents about the hazard mitigation plan. There were 67 responses from these two events. Three questions targeted mitigation and preparedness at the household level.

- Do you have a 72-hour emergency kit in your home? (YES-35 [52.24%], NO-30 [44.78%], I DON'T KNOW-2 [2.99%])
- Do you live in a special flood hazard zone? (YES-2 [2.99%], NO-59 [88.06%], I DON'T KNOW-6 [8.96%])
- If you have homeowner's or renter's insurance, does it include flood insurance? (YES-13 [19.40%], NO-35 [52.24%], I DON'T KNOW-15 [22.39%], I DON'T HAVE INSURANCE-4 [5.97%])

The following table presents the results of a question asking those taking the mini-survey their thoughts on the biggest risk facing Columbiana County. Some respondents marked multiple hazards; for this question, percentages stem from 101 responses.

Risk	Number of Respondents Showing Concern	Percent of Respondents Showing Concern
Hazardous Materials	18	26.87%
Tornado	18	26.87%
Flooding	14	20.90%
Severe Weather	14	20.90%
Wind	10	14.93%
Severe Thunderstorm	8	11.94%
Railroad	4	5.97%
Winter Storm	3	4.48%
Fire	2	2.99%
Public Health	1	1.49%
Radiological	1	1.49%
DID NOT ANSWER	8	11.94%

The CCEMA also asked whether respondents would support the following types of mitigation projects. The numerals indicate the number of respondents that indicated they would support the initiative.

- Supporting educational campaigns aimed at preparing the population for a variety of hazards: 51
- Installing generators in critical facilities such as police and fire stations, hospitals, etc.: 47
- Upgrading the water and sewer systems: 39
- Building shelters for tornadoes and severe weather events: 31
- Promoting the collection and reuse of rainwater such as in rain gardens and green roofs: 22
- Buying out properties or relocating or elevating houses that are prone to repetitive flooding: 13

The CCEMA posted the full draft on its website and publicized its availability. The CCEMA regularly maintains a copy of the county's emergency operations plan and mitigation plan on its website (see <http://www.ccoema.org/links.html>).

1.1.4 Previous Versions

This section contains descriptions of the processes used to update previous versions of the plan (i.e., 2006 and 2015).

First Update (2015)

This 2015 updated version of the *Columbiana County Multi-Jurisdictional All-Hazard Mitigation Plan* was compiled by the CCEMA and its core planning committee (CPC), as well as JH Consulting, LLC of West Virginia. The process was similar to the process used to originally develop the document. In December 2010, the CCEMA, with assistance from the Soil Conservation District compiled a list of potential members for the CPC. The committee included primarily representatives from the county, cities, villages, and the emergency services organizations within the county (i.e., fire, police, etc.). Other organizations that were involved in the process included utility providers, and county engineering staff. In January 2011, the CCEMA hosted a hazard mitigation overview course conducted by the Ohio Emergency Management Agency (OEMA). This course outlined each of the requirements necessary for communities and businesses participating in updating the county Multi-Jurisdictional All-Hazard Mitigation Plan. In February 2011, the CPC met and collectively determined that revision to the existing plan was most appropriate. Stakeholders were to review existing strategies and goals and return updates/additions during follow-up meetings. In May 2011, additional mitigation strategies were added for the following communities; East Palestine, New Waterford, Leetonia, and Hanoverton.

The update process was completed between December, 2010, and February, 2015. It was facilitated through a stakeholders/public meeting. The “stakeholders” meeting were sessions with the CPC. The CCEMA utilized the services of a planning consultant to guide the update process. The consultant provided an objective perspective to ensure that the CPC was achieving the goals that the HMC had intended to achieve in 2006. CPC members consistently reported the actions of the project stakeholders back to the participating jurisdictions. As such, participating jurisdictions and the public were continually updated as to the status of the plan’s preparation.

Feedback received from the CPC and the public provided valuable in the development of the plan. All governmental jurisdictions in Columbiana County were polled in an effort to gather local opinion on prominent hazards and high-priority mitigative actions. As a result, the plan reflected Columbiana County’s specific needs, and proved to be a document county residents felt ownership of, and utilized to make educated decisions to reduce their vulnerability to hazards.

A CPC/public meeting was held during the updating process. The CPC/public meeting was held on September 7, 2012, at the CCEMA facility. The CCEMA invited members of the

CPC to this meeting via memorandum; this meeting was also publicized in the *Morning Journal*, and notice was openly posted at the CCEMA office. The primary topics of discussion were updating the hazard list, discussing any emergencies, or large-scale natural hazard events that had occurred since 2006, updating the asset inventory list, and addressing any new development trends that may have occurred since 2006. 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 Hazard Risk Assessment (HRA) phase of the mitigation plan update was completed using a variety of research techniques. Federal Emergency Management Agency (FEMA) GeoHazards, National Climatic Data Center (NCDC), Spatial Hazard Events and Losses Database for the United States (SHELDUS), and other Internet sites were searched for historical hazard event records. Representatives from JH Consulting, LLC conducted searches of local newspaper archives and existing reports and plans that were on file with the county EMA and participating jurisdictions to assist in the determination of hazard-susceptibility areas. Interviews and other discussions were conducted with numerous local officials, including first responders 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 consultant compiled all project documents and forwarded them to the CCEMA 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 be engaged as participants and to provide input to affect the plan's content, which expedited the adoption process.

During the initial stages of the updating process the CCEMA published an advertisement in the local newspaper inviting the public to the review the original plan at the Columbiana County Emergency Operations Center (EOC) during regular business hours. A public comment form was developed and distributed by the CCEMA 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 CCEMA published an advertisement in the local newspaper inviting the public to review the revised plan at the Columbiana County EOC during regular business hours. Public comment forms 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 CCEMA website.

Original Plan Development (2005)

The approach undertaken in the creation of the original mitigation plan for the county can be described as both comprehensive and collaborative. The comprehensive approach includes following the interim final rule guidelines enacted under the DMA2K and FEMA suggested guidelines for the creation of a mitigation plan. Any additional items that Columbiana County and the core group chose to address as part of the comprehensive analysis of their community were addressed as well.

The collaborative portion of creating the plan included working with the different agencies within Columbiana County and coordinating with all participating jurisdictions. The county could not have a comprehensive plan without the coordination of several other agencies. Information was collected from numerous agencies such as the CCEMA. Columbiana County has 10 incorporated areas within its borders. All 10 incorporated communities chose to participate in this planning effort. There were four core group meetings, and one community meeting for public comment on the draft mitigation plan.

The process to create the Mitigation Plan started with the creation of a “mitigation core group” (core group) of decision makers and implementers. In order to lead the planning efforts effectively and on a countywide basis, other representatives were added. The core group included individuals from the following departments and agencies.

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 Climatic Data Center (NCDC), and other Internet sites were searched for historical hazard event records. 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.

Following the completion of the HRA, the mitigation core group used information such as hazard profiles and loss estimates to formulate mitigation goals, objectives, and strategies. 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.

The core group and the designated leaders of the group made sure that every community that participated in this planning effort was aware of their responsibilities as well as how they could represent their community the best. Some suggestions that were incorporated into the initial invitation to participate in the natural hazard mitigation planning effort included:

- Participate in the core group planning meetings representing your community's interests,
- Supply any historic information (background) on natural disasters for your community to the core group,
- Review and comment on the draft mitigation plan,
- Review and select mitigation activities developed by the core group for your community to implement, and
- Be an advocate for final adoption of the mitigation plan by your community.

The incorporated jurisdictions of the county, as well as other agencies that work within the county, were notified of the mitigation planning process. The Columbiana County Emergency Management Agency (CCEMA) created a master list of jurisdictions they felt necessary to participate in this planning effort. The comprehensive list was reviewed to ensure that all the appropriate agencies as well as jurisdictions would be invited to participate in this effort. A core group representing a wide array of political subdivisions, as well as agency and private businesses, was notified of the mitigation planning process.

Prior to commencing this planning process, in addition to contacting the core group, Columbiana County notified adjacent counties as well as the general public regarding this mitigation planning process. The CCEMA sent letters to adjacent counties with contact information for learning more about the planning effort. Columbiana County also issued a press release dated May 13, 2005 inviting concerned citizens in all jurisdictions of the county. The CCEMA Director was the contact source and his contact information was provided.

A final and critical step in the public involvement program was submittal of the plan to communities for review and adoption. Each community was asked to review the plan and formally adopt it. Because the approval represented an official action by their elected officials, communities notified citizens through postings of the meeting agenda at their respective

government centers when the plan was to be discussed and formally adopted. Copies of the plan were also made available at each community's governmental centers. As noted above, the plan was provided to communities in advance of the public meeting in case local officials had questions or wanted to learn more about the plan in advance of their taking action. The few questions that were raised in advance of the meetings to approve the plan were addressed by CCEMA staff.

Upon incorporation of all comments into the draft mitigation plan, the final mitigation plan will be prepared and submitted to Columbiana County in hard copy and digital form. Each incorporated jurisdiction, as well as any township choosing to adopt this mitigation plan as a separate entity from the county, will also receive a digital copy of the plan.

Each community that participates in this planning effort is responsible for administering the various aspects of the mitigation plan including how the plan will be implemented within their particular community. Implementation of the mitigation plan is crucial. The core group must strategize effectively to put the mitigation plan into action. Columbiana County must follow up to translate the goals and objectives, developed during the planning process, into action steps. It is recommended that a monitoring program be included in the mitigation plan.

1.0 INTRODUCTION

1.2 Description of the Planning Area

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

1.2.1 Columbiana County Details

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

Geography

Columbiana County is one of 88 counties in the State of Ohio; the county is located in the northeastern portion of the state and is considered part of the state's Appalachian Region. It is bordered by Mahoning County, OH on the north, Lawrence County, PA on the northeast, Beaver County, PA on the east, Hancock County, WV and the Ohio River on the southeast, and Jefferson County, OH on the south. Metropolitan cities located within close proximity to Columbiana County include Youngstown, OH (17 miles) and Pittsburgh, PA (50 miles).

According to the U.S. Census, the county has a total area of 532 square miles (mi²); Columbiana County varies in elevation from a low of 652 feet above sea level to a high of 1,447 feet above sea level at Round Knob in Madison Township, yielding a maximum relief of 795 feet. Columbiana County has two main watersheds Watershed: the Little Beaver Creek Watershed and the Yellow Creek Watershed, both of which are part of the Ohio River Tributary Watershed: North.

- The **Little Beaver Creek Watershed** comprises approximately 65% of the land area in Columbiana County. The total land of the watershed is 510 square miles, more than half of which is in Columbiana County.
- The **Yellow Creek Watershed** drains 484 square miles (239 from Yellow Creek and 45 from Little Yellow Creek). The Village of Salineville is the only population-dense municipality in the Yellow Creek Watershed.



COLUMBIANA COUNTY HAZARD MITIGATION PLAN

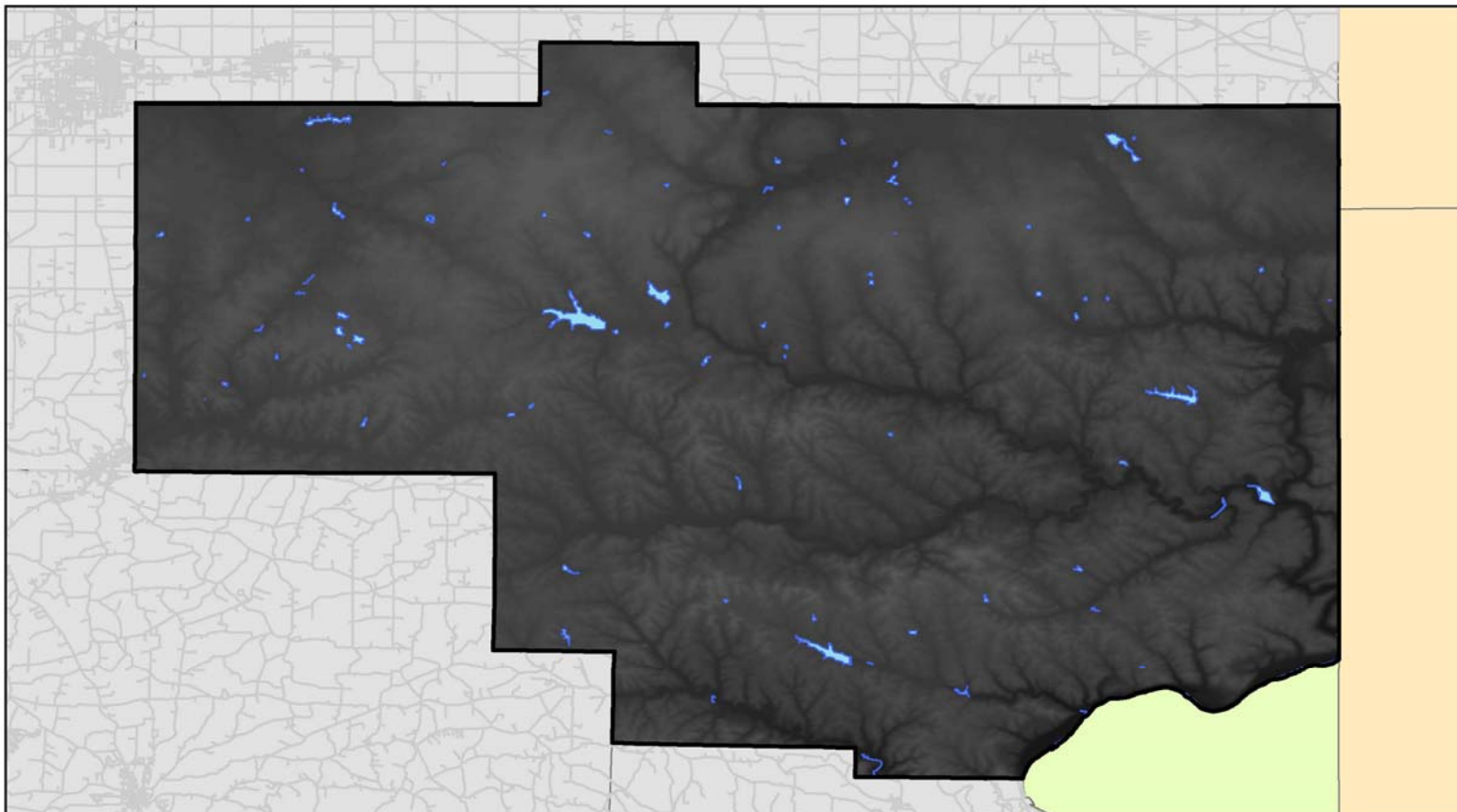
Columbiana County Rivers & Topography

Data Source(s):
ODNR, U.S. Census Bureau

*DISCLAIMER: Data is meant for use as reference only.
Some sources may be intended to be used at national
or regional scales and are thus used beyond their
original intent for demonstrative purposes.*



 Columbiana County
Topography & Elevations
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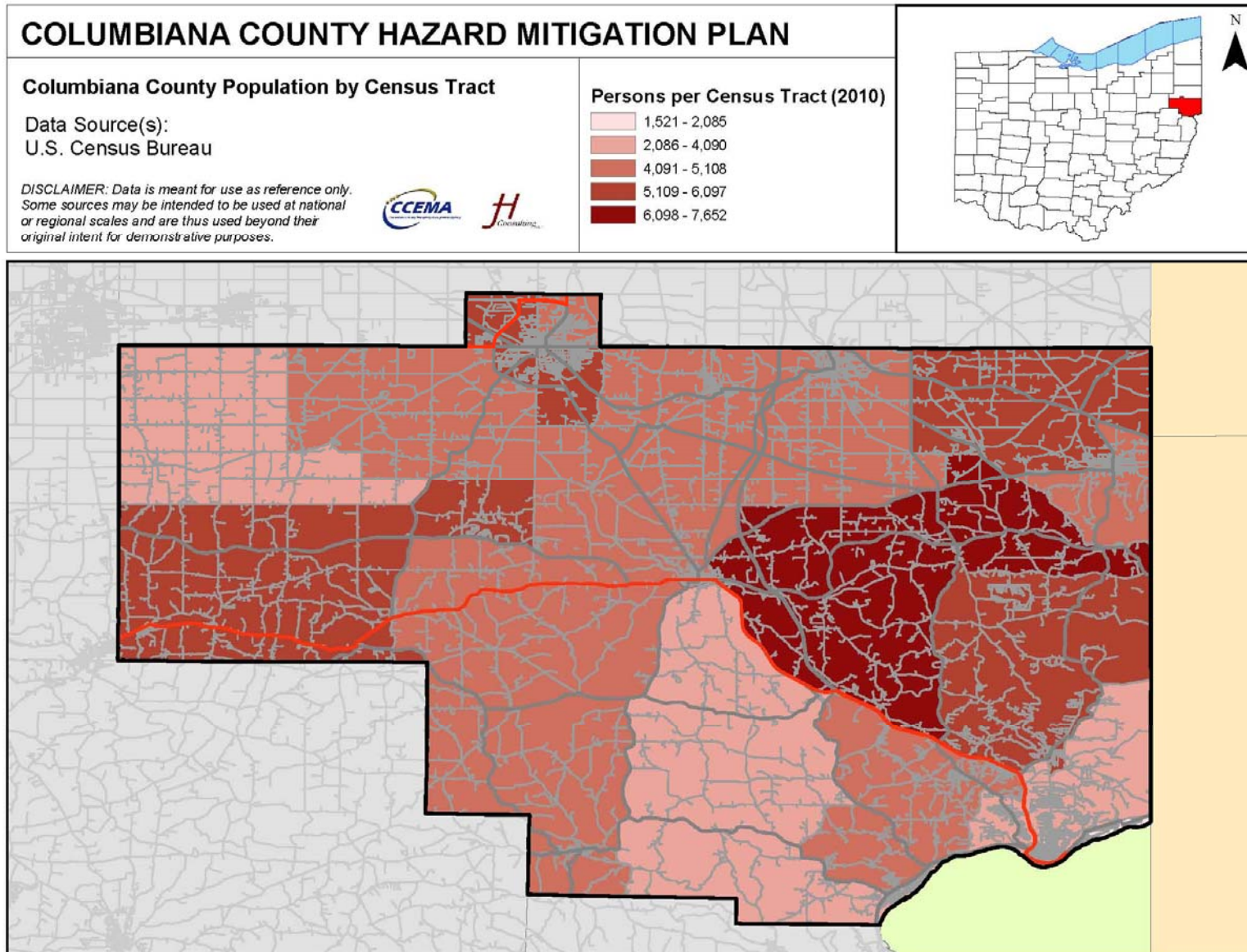


Columbiana County's topography is varied with the northern portion being flat and open, to gently sloping, offering limited protection against strong straight-line winds or tornadoes that may form and touchdown. The southern area of the county, with its rolling hills, has a somewhat higher degree of protection from these hazards.

Demographics

The table to the right presents population estimates for Columbiana County and the municipalities therein. The population density within the incorporated areas of Columbiana County is much higher than in the rural areas; however, unincorporated areas account for the majority of the county's total population. The map below displays the population of Columbiana County by Census tract.

COLUMBIANA COUNTY POPULATION ESTIMATES	
<i>Municipality</i>	<i>Population (2018 est.)</i>
Columbiana County	105,665
Columbiana (City)	6,231
East Liverpool	10,713
Salem	11,715
East Palestine	4,466
Hanoverton	362
Leetonia	1,851
Lisbon	2,668
New Waterford	1,192
Rogers	226
Salineville	1,229
Summitville	124
Washingtonville	756
Wellsville	3,330



Transportation

Columbiana County's transportation infrastructure consists of highways, railways, and air elements. The county contains approximately 58 miles of U.S Highway and 252 miles of State Highway. U.S. Route 30 and Ohio State Route 11 are the major arterial routes through the county.

Railway lines are also a part of the county's transportation network. Norfolk Southern (NS), CSX Transportation, and Columbiana County's Port Authority's regional railroad (Youngstown and Southeastern) serve Columbiana County. These railways pass through or near the municipalities of Columbiana, East Liverpool, East Palestine, Leetonia, New Waterford, Rogers, Salem, Salineville, Summitville, and Wellsville.

Air travel is another component of Columbiana County's transportation system. The county is close to two airports that provide international service, Cleveland Hopkins International Airport (CLE) and Pittsburgh International Airport (PIT). There are two regional airports close to Columbiana County, including Youngstown-Warren Regional Airport (YNG), and Akron-Canton Regional Airport (CAK); they provide general and commercial aviation. The Columbiana County Airport, located between East Liverpool and Lisbon, is a limited-service public airport and home to 28 aircraft. There are also several small public and private airstrips throughout the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

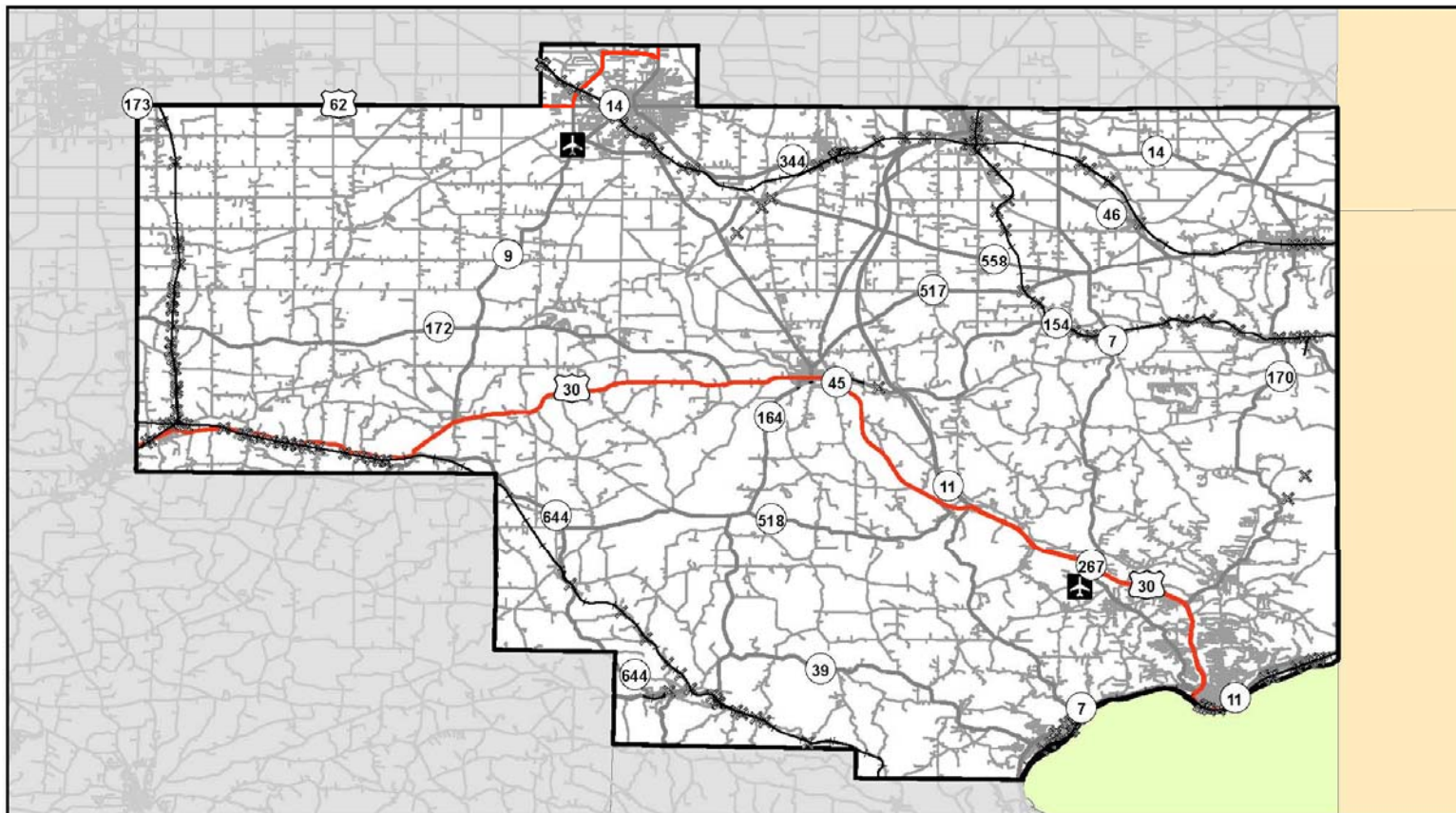
Columbiana County Transportation Infrastructure

Data Source(s):
ODOT, U.S. Census Bureau

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



- Airports
- Railroads
- Railroad Crossings
- US Routes
- State Routes



Economy

Columbiana County has a diverse employment sector. Total employment in the county is 45,200, with an estimated 2,900 persons (or 6.0%) unemployed. According to 2017 data from the Ohio Department of Development, the largest areas of employment are *manufacturing* (with an average employment of 6,036 and wages totaling \$252,732,398) and *trade, transportation and utilities* (with an average employment of 6,036 and wages totaling \$201,611,565). Between 2011 and 2017, the number of private-sector establishments declined by 4.8%. The largest decreases occurred in the *construction* (-12.6%) and *manufacturing* (-10.8%) sectors. The *information* sector experienced an increase of 16.7%, and the *natural resources and mining* sector jumped by 48.3%.

Columbiana County is the home of several tourist attractions, including Beaver Creek State Park, Guilford Lake State Park, Highlandtown Wildlife Area, Leetonia Coke Ovens, Museum of Ceramics, Sandy and Beaver Canal District, Scenic Vista Park, Sheepskin Hollow State Nature Preserve, Thompson House Museum, Yellow Creek State Forest, and Zeppernick Lake State Wildlife Area.

Education

The education system in Columbiana County consists of 37 public schools, at which 14,698 students attend and 963 teachers instruct, as well as three private schools at which another 493 students attend. There are two four-year public college branches in the county: Kent State University at East Liverpool and Kent State at Salem. The graduation rate is currently at 87.0%.

Healthcare

Several health care facilities are located in Columbiana County. Currently, there are two registered hospitals with 351 available beds, including Salem Regional Medical Center and East Liverpool City Hospital. There are also eight licensed residential care facilities with 392 available beds and 12 licensed nursing homes with 923 available beds. The Columbiana County Health District is a public health agency that serves most of the communities and townships in the county. The City of Salem re-established a local health department in 2009 to serve residents of its city.

Land Cover / Climate

The majority of Columbiana County's land area is forest (43.99%). Pasture and hay comprises 19.47% of land use, followed by cultivated crops (18.80%). There are approximately 1,045 individual farms operating in the county, with an average size of 122 acres per farm. Approximately 14% of the county is developed. The county also includes a small portion of shrub/grassland (2.08%), wetlands (0.36%), and open water (0.90%).

Columbiana 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 is seasonal in nature, with wet stormy springs, warm summers, colorful falls, and cold, snowy winters. The average temperature in January is 26°F; the July average temperature is 71°F, creating a mean average temperature of 49°F. Precipitation is distributed evenly throughout the year, with an annual average of approximately 39 inches (39"). Data from the National Weather Service (NWS) indicate that the area experiences approximately 30 inches of snowfall per year, usually during the November to April winter season.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

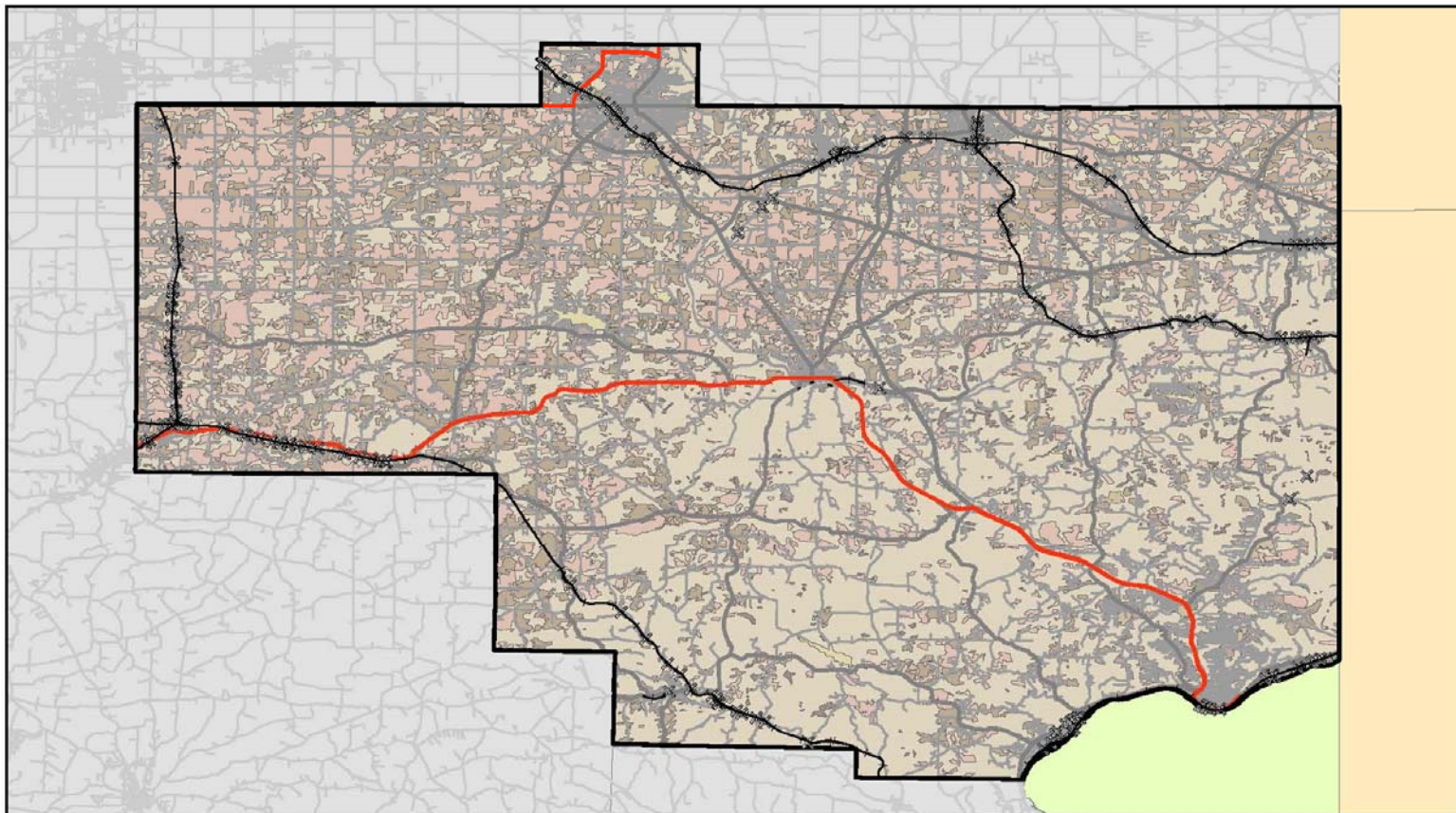
Columbiana County Land Use

Data Source(s):
U.S. Geological Survey

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



- Bare/Mines
- Commercial/Industrial/Transportation
- Crop
- Deciduous Forest
- Evergreen Forest
- Herbaceous Wetlands
- Open Water
- Pasture
- Residential
- Urban/Recreational Grasses
- Woody Wetlands



1.2.2 Municipalities

This section provides demographic and other general details for each of the participating municipalities.

City of Columbiana

The City of Columbiana is a suburb of Youngstown in northern Columbiana County. A portion of the city also lies in southern Mahoning County. Columbiana is 17 miles east of Cleveland, 17 miles south of Youngstown, and 58 miles west of Pittsburgh. Major highways serving the city are State Routes 14, 46, and 164. The city has three public schools and one private school.

According to Census estimates in 2017, Columbiana City has a population of 6,363. The city has a land area of 6.0 square miles and a population density of 1,061.5 people per square mile. There are 3,132 housing units in the city, and the median household income is \$48,259.

City of East Liverpool

The City of East Liverpool sits where Ohio, Pennsylvania, and West Virginia meet, approximately 51 miles east of Canton, 47 miles south of Youngstown, and 39 miles west of Pittsburgh. The major highways serving East Liverpool are U.S. Route 30, State Routes 7, 11, 39, and 267. The Columbiana County Airport is nearby, and the city is only 23 miles from Pittsburgh International Airport (PIT). Three public schools, two private schools, and one online school serve the city.

Estimates from the Census indicate that the City of East Liverpool had a 2017 population of 10,817. The city has 4.56 square miles of land and a population density of 2,453.7 people per square mile. East Liverpool has the highest population density of any municipality in Columbiana County. There are 5,464 housing units in the city, and city residents have a median household income of \$30,430.

City of Salem

The City of Salem is in the northern part of Columbiana County, with a small portion in Mahoning County. Salem is approximately 65 miles from both Pittsburgh and Cleveland. The city's main highways include U.S. Route 62 and State Routes 9, 14, 45, and 344. There are four public schools and one private school in the city, as well as a branch of Kent State University. Salem City contains a large portion of the city's industrial and commercial assets.

Salem has a population of 11,939, making it the most populated municipality in Columbiana County. The city encompasses 6.23 square miles of land area and has a population density of 1,975.9 people per square mile. Salem includes 5,662 housing units and a median household income of \$39,454.

Village of East Palestine

The Village of East Palestine is in the northeastern portion of Columbiana County in Unity Township. State Routes 170 and 558 are the main highways serving the area. There are three public schools in the village. East Palestine is close to two Class II dams: East Palestine River and Werner/Duncan Lake dams.

East Palestine Village has a land area of 2.8 square miles and a 2017 population of 4,565. The village has a land area of 3.15 square miles and a population density of 1,497.7 people per square mile. There are 1,993 housing units in East Palestine Village, and residents have a median household income of \$41,559.

Village of Hanoverton

The Village of Hanoverton is in southeastern Columbiana County. The village is accessible by State Route 9 and U.S. Route 30. Hanoverton has a land area of 0.70 square miles, a population of 362, and a population density of 517.1 people per square mile. There are 178 housing units in the village, and residents have a median household income of \$40,694.

Village of Leetonia

The Village of Leetonia is in north-central Columbiana County in Salem Township, just east of Salem City and adjoining the Village of Washingtonville. The village is accessible by State Route 344, and State Route 11 is nearby. Leetonia has a land area of 2.26 square miles and a population density of 1,671.8 people per square mile. The total population of the village is 2,192. There are 939 housing units in the village, and residents have a median household income of \$51,667.

Village of Lisbon

The Village of Lisbon, in Center Township, is the Columbiana County seat. Major highways serving the area include U.S. Route 30 and State Routes 11, 45, 154, 164, and 517. There are two public schools in the village. The land area of Lisbon Village is 1.11 square miles,

and the population is 2,709. The village's population density is 1,671.8 people per square mile. The village has 1,264 housing units and an estimated median household income of \$31,719.

Village of New Waterford

The Village of New Waterford is in Unity Township in the northeastern part of the county. New Waterford is five miles southeast of Columbiana and four miles northwest of East Palestine. State Route 46 provides access to the village. Bull Creek flows along New Waterford's entire eastern border.

According to 2017 Census estimates, New Waterford has a land area of 0.9 square miles and a population of 1,495. The population density is 1,611 people per square mile. Residents of New Waterford have a median household income of \$37,019.

Village of Rogers

The Village of Rogers is in east-central Columbiana County in Middleton Township, ten miles east of Lisbon. Rogers is accessible by State Routes 7 and 154. 2017 Census estimates indicate that Rogers has a population of 240 and a land area of 0.23 square miles. The population density is 104.2 people per square mile. There are 102 housing units in Rogers Village, and residents have a median household income of \$38,295.

Village of Salineville

The Village of Salineville is in the southern part of Columbiana County in Washington Township. Major highways include State Routes 39, 164, and 644. Yellow Creek flows through the northern portion of village, and Yellow Creek State Forest is just west of the village. There is one school serving the area.

Salineville has a population of 1,208 and a land area of 2.21 square miles. Its population density is 546.6 people per square mile. There are 576 housing units in the village, and residents have a median household income of \$31,815.

Village of Summitville

The Village of Summitville is in Franklin Township, 27 miles east of Canton, and 49 miles west of Pittsburgh. The village is conveniently inside the Youngstown–Warren–Boardman; OH-PA Metropolitan Statistical Area (MSA). The village is accessible utilizing State Route 644,

which runs north/south through the center of town. Brush Creek flows just to the north of the village.

Summitville has a land area of 0.9 square miles (mi²), and the general elevation of the village is 1,109 feet above sea level. According to the 2010 Census, the Village of Summitville has a total population of 135 and contains 55 total housing units, with an average of 2.65 persons per household. The village currently reports a median household income of \$44,617.

Village of Washingtonville

Washingtonville is in the north-central part of Columbiana County, co-located in Mahoning County, with Main Street serving as the border between the two. Washingtonville also borders the Village of Leetonia. The major road serving the village is State Route 14. The total land area of Washingtonville Village is 0.7 square miles, and the population is 872. There are 398 housing units in the village, and the median household income is \$39,034.

Village of Wellsville

The Village of Wellsville is in Yellow Creek Township along the Ohio River. State routes 7, 39, and 45 serve the village, as does a mainline Norfolk Southern Railroad and several river terminals. Wellsville is home to the largest river port in Ohio and recently a gas-to-liquids (GTL) facility. The Wellsville Reservoir, a large Class-I dam, is also near to the village, and a levee along the Ohio River protects areas of town. Wellsville has three public schools.

Wellsville has a population of 3,541 and a land area of 1.8 square miles. The population density is 1,965 people per square miles. The village has 1,743 housing units. Residents of Wellsville have a median household income of \$28,184, the lowest in Columbiana County.

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 in the community as well as ensure its continued operation.

This plan characterizes “assets” under the following headings.

- **People:** Areas of greater population density as well as populations with unique vulnerabilities or diminished response and recovery capabilities. Examples include areas of concentrated populations, areas catering to tourists (i.e., visiting) populations, facilities housing or serving functional and access needs populations and facilities that provide health or social services.

- **Economy:** Important economic drivers specific 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"> • Commercial Buildings • Industrial buildings • Single & multi-family residential buildings 	<ul style="list-style-type: none"> • Water & wastewater • Power utilities • Transportation (roads, railways, waterways) • Communication systems/centers • Energy pipelines and storage 	<ul style="list-style-type: none"> • Hospitals and medical facilities • Police and fire stations • Emergency operations centers • Evacuation shelters • Schools • Airport/heliports <p>HIGH POTENTIAL LOSS FACILITIES</p> <ul style="list-style-type: none"> • Nuclear power plants • Dams • Military & civil defense installations • Locations housing hazardous materials 	<ul style="list-style-type: none"> • Historical assets • Museums • Unique geologic sites • Concert halls • Parks • Stadia

- **Natural Environment:** Resources that are important to the 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 environmental features that are important to protect.

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
GOVERNMENTAL FACILITIES					
Columbiana County Courthouse	203 South Market St., Lisbon, OH	X			
Columbiana City Hall	28 West Friend Street, Columbiana, OH	X			
East Liverpool City Hall	126 West Sixth St., East Liverpool, OH	X			
East Palestine Village Offices	144 North Market Street. East Palestine, OH	X			
Hanoverton Village Offices	Hanoverton, OH	X			
Salem City Hall	231 South Broadway Ave., Salem, OH	X			
Salineville Village Offices	34 Washington Street, Salineville, OH	X			
Wellsville Village Offices	1200 Main Street, Wellsville, OH	X			
Leetonia Village Offices	300 East Main Street, Leetonia, OH	X			
Lisbon Village Offices	203 North Market Street, Lisbon, OH	X			
New Waterford Village Offices	3760 Park Drive, New Waterford, OH	X			
Washingtonville Village Offices	415 South County Road, Washingtonville, OH	X			
Elkrun Township Hall	41725 State Route 154, Lisbon, OH	X			
Fairfield Township Hall	3062 Fairfield School Road, Columbiana, OH	X			
Madison Township Hall	13011 State Route 45, Lisbon, OH	X			
Salem Township Hall	37638 Old State Route 558, Leetonia, OH	X			
TRANSPORTATION INFRASTRUCTURE					
Bridges	Columbiana County	X			
Highways	Columbiana County	X			
Railroads	Columbiana County	X			
Columbiana County Airport	15606 County Airport Rd, East Liverpool, OH	X		X	
Columbiana County Port Authority	7860 Lincole Place, Lisbon, OH 44432	X		X	
PUBLIC UTILITIES					
East Liverpool Water Works	2220 Michigan Ave., East Liverpool, OH	X			
East Palestine Sewer and Water	166 Park Drive, East Palestine, OH	X			
Leetonia Water Board	300 Main St., Leetonia, OH	X			
Salem Sewage Plant	1600 Pennsylvania Ave., Salem, OH	X			
Salineville Water Plant	11271 Salineville Rd NE, Salineville, OH	X			
Washingtonville Water and Sewer	415 Boston St., Washingtonville, OH	X			
Wellsville Filtration Plant	17547 SR 45, Wellsville, OH	X			
Wellsville Sewage Disposal	100 16th St., Wellsville, OH	X			

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
Buckeye Water District	P.O. Box 105, Wellsville, OH 43968	X			
Columbiana City Water Works/Sewer Dept.	Lisbon, OH 44432	X			
Leetonia Sewage Plant	300 Main Street, Leetonia, OH 44431	X			
Lisbon Village Water Department	8077 State Route 164, Lisbon, OH 44432	X			
New Waterford Water / Waste Water Plant	P.O. Box 287, New Waterford, OH 44445	X			
Salineville Sewer Plant	39 State Street, Salineville, OH 43945	X			
EMERGENCY SERVICES					
Columbiana County Sheriff	8473 Countyhome Road, Lisbon, OH	X			
Columbiana County EMA	215 South Market Street, Lisbon, OH 44432	X			
Columbiana County 911 Center	105 South Market Street, Lisbon, OH 44432	X			
Columbiana PD	28 South Vine Street, Columbiana, OH	X			
East Liverpool PD	126 West Sixth Street, East Liverpool, OH	X			
East Palestine PD	75 East Main Street, East Palestine, OH	X			
Leetonia PD	300 East Main Street, Leetonia, OH	X			
Lisbon PD	203 North Market Street, Lisbon, OH	X			
Liverpool Township PD	353 Adam Avenue, East Liverpool, OH	X			
New Waterford PD	3700 Village Park Drive New Waterford, OH	X			
Ohio State Highway Patrol	9423 state Route 45, Lisbon, OH	X			
Perry Township PD	2198 North Ellsworth Avenue, Salem, OH	X			
Salem PD	397 Columbia Street, Salem, OH	X			
Salineville PD	34 Washington Street, Salineville, OH	X			
St. Clair Township PD	15442 Pugh Road Suite 1, Calcutta, OH	X			
Washingtonville PD	415 South County Road, Washingtonville, OH	X			
Wellsville PD	1200 Main Street, Wellsville, OH	X			
Calcutta FD	15455 Pugh Road, Calcutta, OH	X			
Columbiana FD	28 West Friend Street, Columbiana OH	X			
East Liverpool FD	626 St. Clair Ave., East Liverpool, OH	X			
East Palestine FD	67 East Clark Street, East Palestine, OH	X			
Franklin Township VFD	32046 Spruce Street, Summitville, OH	X			
Hanoverton VFD	Hanoverton, OH	X			

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
Guilford Lake FD	32120 Sunset Ave., Hanoverton, OH	X			
Highlandtown VFD	18371 Steubenville Pike Rd., Salineville, OH	X			
Homeworth VFD	4354 Middle Street, Homeworth, OH	X			
Leetonia FD	330 East Main Street, Leetonia, OH	X			
Lisbon FD	Lisbon, OH	X			
Dixonville FD	1181 Anderson Blvd., East Liverpool, OH	X			
Lacroft VFD	2360 Sherwood Ave., East Liverpool, OH	X			
Negley VFD/EMS	Negley, OH	X			
New Waterford FD	3766 East Main St., New Waterford, OH	X			
North Georgetown VFD	North Georgetown, OH	X			
Perry Township VFD	2198 North Ellsworth Avenue, Salem, OH	X			
Rogers Village FD	7580 Farr Street, Rogers, OH	X			
Salem FD	260 South Ellsworth Ave., Salem, OH	X			
Salineville VFD	34 Washington Street, Salineville, OH	X			
Wellsville VFD	1202 Main Street, Wellsville, OH	X			
West Point FD	West Point, OH	X			
Winona FD	Winona, OH	X			
Glenmoor VFD	16320 Annesley Rd., East Liverpool, OH	X			
Air Evac Lifeteam 81	15620 County Airport Rd., East Liverpool, OH	X			
EMT Ambulance	383 North Lincoln Ave., Salem, OH	X			
Lifeteam EMS Inc.	740A Dresden Ave., East Liverpool, OH	X			
KLG Ambulance / MICU	1516B South Lincoln Ave., Salem, OH	X			
North Star Critical Care	16356 SR 267, East Liverpool, OH	X			
Maple-Cotton Funeral Home and EMS	11009 SR 644, Kensington, OH	X			
Ambulance Service Inc.	231 Webber Way, East Liverpool, OH	X			
Columbiana EMS	28 West Friend Street, Columbiana, OH	X			
Leetonia EMS	300 Main Street, Leetonia, OH 44431	X			
New Waterford EMS	3766 West Main Street, New Waterford, OH 44445	X			
East Palestine EMS	67 East Clark Street, East Palestine, OH	X			
HOSPITALS AND NURSING HOMES					
East Liverpool City Hospital	East Liverpool, OH	X	X		
Salem Regional Medical Center	Salem, OH	X	X		

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
Parkside Healthcare Center	930 East Park Ave., Columbiana, OH		X		
Continuing Health Care Solutions	100 Vista Dr., Lisbon, OH		X		
Blossom Nursing and Rehab. Center	109 Blossom Ln., Salem, OH		X		
Calcutta Healthcare Center	48444 Bell School Rd, Calcutta, OH	X			
The Orchards of East Liverpool Convalescent Center	709 Armstrong Ln., East Liverpool, OH		X		
Valley Oaks Care Center	500 Selfridge St., East Liverpool, OH		X		
Salem West Health Care	2511 Bentley Dr., Salem, OH		X		
Salem East Health Care	250 Continental Dr., Salem, OH		X		
Salem North Health Care	230 Continental Dr., Salem, OH		X		
Auburn Skilled Nursing and Rehab	451 Valley Rd., Salem, OH		X		
Circle of Care	1985 East Pershing Street, Salem, OH		X		
Assisted Living Ministry Services	650 St. Clair Ave., East Liverpool, OH		X		
Crossroads at Beaver Creek	13280 Echo Dell Rd., East Liverpool, OH		X		
Grace Woods Senior Living	1166 Benton Rd., Salem, OH		X		
The Renaissance at Vista	100 Vista Dr., Lisbon, OH		X		
Brookdale Salem	1916 South Lincoln Ave., Salem, OH		X		
Whispering Pines Village	937 East Park Ave., Columbiana, OH		X		
St. Mary's Alzheimer's Center	1899 Garfield Road, Columbiana, OH 44408		X		
Great Trail Care Center	400 Carolyn Center, Minerva, OH 44657		X		
Twin Oaks Retirement Center	1166 Benton Road, Salem, OH 44460		X		
Covington Skilled Nursing & Rehab Center	100 Covington Drive, East Palestine, OH 44413		X		
American Health Care	107 Royal Birkdale Drive, Columbiana, OH 44408		X		
Harmony Village	901 S Main Street, Columbiana, OH 44408		X		
Courtyard at Lexington	2345 Lexington Ave., Salem, OH 44460		X		
Century House of Salem	1171 East State Street, Salem, OH 44460		X		
Columbiana County Mental Health	40722 State Route 154, Lisbon, OH 44432		X		
SCHOOLS AND EDUCATIONAL FACILITIES					
Beaver Local HS	46090 Bell School Rd., East Liverpool, OH 43920		X		
Beaver Local MS	46090 Bell School Rd., East Liverpool, OH 43920		X		
Buckeye ES	1200 Buckeye Ave., Salem, OH		X		

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
Beaver Local ES	46090 Bell School Rd., East Liverpool, OH 43920		X		
Columbiana Co. Career and Technical Center	9364 SR 45, Lisbon, OH		X		
Columbiana HS	700 Columbiana-Waterford Rd., Columbiana, OH		X		
Crestview ES	3407 Middleton Rd., Columbiana, OH		X		
Crestview MS/HS	44100 Crestview Rd., Columbiana, OH		X		
David Anderson Jr/Sr HS	260 West Pine St., Lisbon, OH		X		
DAW MS	929 Center Street, Wellsville, OH		X		
East ES	1417 Etruria Street, East Liverpool, OH		X		
East Liverpool Jr./Sr. HS	100 Maine Ave., East Liverpool, OH		X		
East Palestine ES	195 West Grant Street, East Palestine, OH		X		
East Palestine MS	320 West Grant Street, East Palestine, OH		X		
East Palestine HS	360 West Grant Street, East Palestine, OH		X		
Garfield ES	1600 Lincoln Ave., Wellsville, OH		X		
Joshua Dixon ES	333 North Middle St., Columbiana, OH		X		
Lacroft ES	2460 Boring Lane, East Liverpool, OH		X		
Leetonia K-12	450 Walnut Street, Leetonia, OH		X		
Mckinley ES	441 East Chestnut St., Lisbon, OH		X		
North ES	90 Maine Blvd., East Liverpool, OH		X		
Reilly ES	491 Reilly Ave., Salem, OH		X		
Salem Jr./Sr. HS	1200 East Sixth St., Salem, OH		X		
South Side MS	720 Columbiana-Waterford Rd., Columbiana, OH		X		
Southeast ES	2200 Merle Rd., Salem, OH		X		
Southern Local K-12	38095 SR 39, Salineville, OH		X		
United K-12	8143 SR 9, Hanoverton, OH		X		
Wellsville HS	1 Bengal Blvd., Wellsville, OH		X		
Westgate MS	810 West Eighth St., East Liverpool, OH		X		
Act 1 Education Center Jr. HS	9955 Union Ridge Rd., Rogers, OH		X		
East Liverpool Christian School	46682 Florence St., East Liverpool, OH		X		
Heartland Christian School K-12	28 Pittsburgh St., Columbiana, OH		X		
St. Aloysius ES	335 West Fifth St., East Liverpool, OH		X		
St. Paul ES	925 East State St., Salem, OH		X		

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
COMMERCIAL AND INDUSTRIAL					
American Standards Brands	605 South Ellsworth Ave., Salem, OH 44460			X	
Flex-N-Gate/Ventra Salem	Salem, OH 44460			X	
Fresh Mark, Inc.	1735 South Lincoln Ave., Salem, OH 44460			X	
Wal-Mart Stores, Inc.	16280 Dresden Ave., East Liverpool, OH 43920			X	
Pioneer Pottery Inc	761 Dresden Ave., East Liverpool, OH 43920			X	
Zarbana Industries	P.O. Box 46, Columbiana, OH 44408			X	
Miller Casting	1648 Lower Elkton Road, Columbiana, OH 44408			X	
Columbiana Foundry Company	Lisbon Road, Columbiana, OH 44408			X	
POST OFFICES					
Kensington PO	11011 SR 644, Kensington, OH	X			
Summitville PO	15521 SR 644, Summitville, OH	X			
Columbiana PO	149 South Main St. Ste. 2, Columbiana, OH	X			
New Waterford PO	3818 West Main St., New Waterford, OH	X			
Calcutta PO	15713 SR 170, East Liverpool, OH	X			
Winona PO	32036 Winona Rd., Winona, OH	X			
Homeworth PO	4434 Middle St., Homeworth, OH	X			
East Liverpool PO	700 Dresden Ave., East Liverpool, OH	X			
East Palestine PO	269 North Market St., East Palestine, OH	X			
East Rochester PO	24781 US 30, East Rochester, OH	X			
Hanoverton PO	29959 Market St., Hanoverton, OH	X			
Rogers PO	7529 Depot St., Rogers, OH	X			
Salem PO	275 Penn Ave., Salem, OH	X			
Salineville PO	37 West Main St., Salineville, OH	X			
Negley PO	7560 Commerce St., Negley, OH	X			
North Georgetown PO	27416 Main St., North Georgetown, OH	X			
Leetonia PO	235 Main St., Leetonia, OH	X			
Lisbon PO	7983 Dickey Dr., Lisbon, OH	X			
Elkton PO	42188 SR 154, Elkton, OH	X			
Washingtonville PO	195 East Main St., Washingtonville, OH	X			
Wellsville PO	1075 Main St., Wellsville, OH	X			

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
PUBLIC LIBRARIES					
Carnegie Public Library	219 East Fourth St., East Liverpool, OH	X			
Columbiana Public Library	322 North Middle St., Columbiana, OH	X			
East Palestine Memorial Public Library	309 North Market St., East Palestine, OH	X			
Leetonia Community Public Library	181 Walnut St., Leetonia, OH	X			
Lepper Library	303 East Lincoln Way, Lisbon, OH	X			
Salem Public Library	821 East State St., Salem, OH	X			
Wellsville Public Library	115 Ninth St., Wellsville, OH	X			
HISTORICAL FACILITIES					
Hiram Bell Farmstead	43628 State Route 517				X
Burchfield Homestead	867 E. 4th Street, Salem, OH				X
Richard L Cawood Residence	2600 St. Clair Ave., East Liverpool, OH				X
Cherry Valley Coke Ovens	Butcher Road, Leetonia, OH				X
Church Hill Road Covered Bridge	State Route 154				X
Diamond Historic District	Market & E. 6th Street, East Liverpool, OH				X
East Liverpool Historic District	East Liverpool, OH				X
East Liverpool Pottery	2nd and Market Street, East Liverpool				X
Nicholas Eckis House	High Street, Fairfield, OH				X
Elks Club	139 W. 5th Street, East Liverpool, OH				X
Sandy and Beaver Canal District	Beaver Creek State Forest				X
Godwin Knowles House	422 Broadway, East Liverpool, OH				X
Hanna-Kenty House	251 East High Street, Lisbon, OH				X
Hanoverton Canal Town District	U.S. Route 30, Hanoverton, OH				X
Franklin Harris Farmstead	3525 Depot Road, Salem, OH				X
Daniel Howell Hise House	1100 Franklin Ave., Salem, OH				X
Hostetter Inn	32901 State Route 172, Lisbon, OH				X
Ikirt House	200 6th Street, East Liverpool, OH				X
Homer Laughlin House	414 Broadway, East Liverpool, OH				X
Lisbon Historic District	U.S. Route 30, Lisbon, OH				X
Daniel McBean Farmstead	18709 Fife Coal Rd. Wellsville, OH				X
Odd Fellows Temple	120 W. 6th Street, East Liverpool, OH				X
Mary A. Patterson Memorial	E. 4th Street, East Liverpool, OH				X
Potters National Bank	Broadway and 4th St., East Liverpool, OH				X
Salem Downtown Historic District	Salem, OH				X
Charles Nelson Schmick House	110 Walnut Street, Leetonia, OH				X
John Street House	631 N. Ellsworth Ave., Salem, OH				X
Teegarden-Centennial Covered Bridge	Salem, OH				X

COLUMBIANA COUNTY ASSET INVENTORY					
<i>Name or Description of Asset</i>	<i>Address and Jurisdictional Location</i>	Built Environment	People	Economy	Natural Environment
Cassius Clark Thompson House	305 Walnut Street, East Liverpool, OH				X
Travelers Hotel	East Liverpool, OH				X
YMCA	Washington and 4th St., East Liverpool, OH				X

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

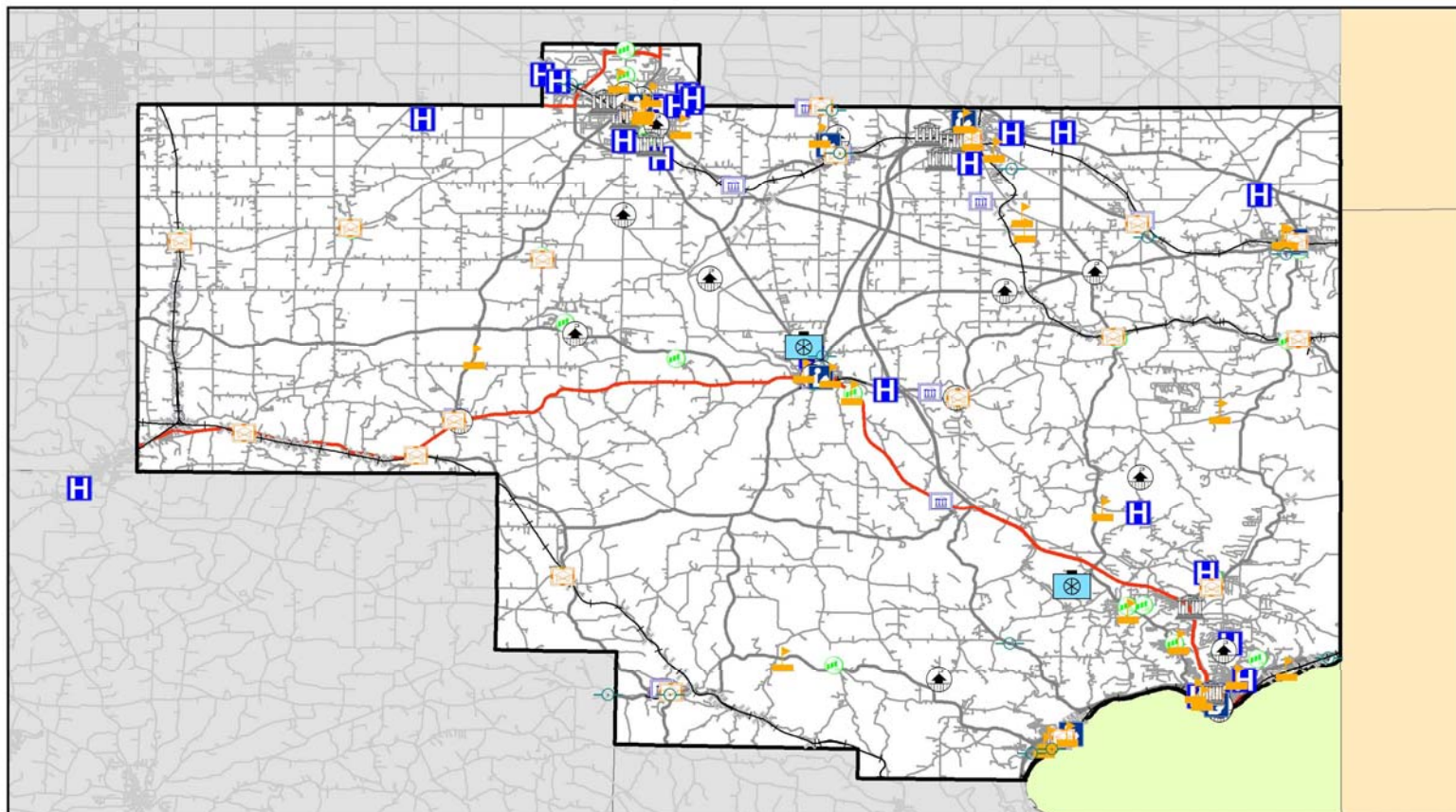
Columbiana County Asset Inventory

Data Source(s):
Planning Committee

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



- | | |
|-----------------------|----------------|
| Emergency Services | Private Sector |
| Governmental Facility | School |
| Healthcare | Transportation |
| Historical | Utility |
| Library | |
| Post Office | |



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 Columbiana 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
Columbiana County	YES	YES	NO	YES	YES	NO ²	YES
Columbiana City	N/A	N/A	N/A	N/A	YES	N/A	N/A
East Liverpool City	N/A	N/A	N/A	N/A	YES	N/A	N/A
East Palestine Village	YES ¹	YES	UNK	YES	YES	NO ²	NO ²
Hanoverton Village	N/A	N/A	N/A	N/A	YES	N/A	N/A
Leetonia Village	N/A	N/A	N/A	N/A	YES	N/A	N/A
Lisbon Village	YES	YES	YES	YES	YES	NO	NO
New Waterford Village	N/A	YES	YES	YES	YES	NO ²	NO ²
Rogers Village	N/A	N/A	N/A	N/A	YES	N/A	N/A
Salem City	UNK	YES	YES	YES	YES	NO	NO
Salineville Village	UNK	NO	NO	NO	YES	NO	NO
Washingtonville Village	N/A	N/A	N/A	N/A	YES	N/A	N/A
Wellsville Village	UNK	UNK	UNK	YES	YES	NO ²	NO ²

UNK – Marked "unknown"

N/A - No answer / Skipped question

1.3.1 Existing Plans and Ordinances

Columbiana County itself and the municipalities therein have a number of capabilities that can support mitigation efforts, including comprehensive plans, building codes, subdivision

¹ Cited participation in the overall county plan.

² Marked "No, but my jurisdiction would be willing to consider it in future budgets."

and land use ordinances, zoning ordinances, and floodplain regulations. In summary, Columbiana 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 Columbiana County maintain comprehensive plans of some sort. Half of the 12 respondents reported the presence of a comprehensive plan. Only one of the remaining respondents answered “no” to the question; the other five respondents selected “unknown.” With local officials such as mayors, fiscal officers, and fire chiefs responding to the survey, this bevy of responses is interesting. Additionally, the Ohio Mid-Eastern Governments Association (OMEGA) serves as a regional planning and development council representing the governments in Columbiana and other surrounding counties. OMEGA 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. Four (33.3%) of the jurisdictional respondents reported having building codes in place, while six (50.0%) did not. Two respondents (16.7%) did not know about the status of building codes in their jurisdiction. Responding township jurisdictions provided mixed answers, with some noting the presence of building codes and others marking “no.”

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). As the CCEMA manages the next update cycle (i.e., through annual meetings and a formal update), an effort to educate local officials on the connections between minor building regulations and hazard mitigation would be beneficial.

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 land, the placement and size of roads, and the location of infrastructure can reduce exposure of development to hazard events. Three respondents (25.0%) indicated their jurisdiction maintains SALDOs, while five (41.7%) indicated their jurisdictions do not. Four respondents (33.3%) selected “unknown.”

Zoning Ordinances

Zoning ordinances allow for local communities to regulate the use of land in order 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. Half of the responding jurisdictions in Columbiana County reported having zoning ordinances in place.

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

Through 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 which exceed NFIP requirements.

FEMA's *Community Status Book* indicates that all 13 jurisdictions in Columbiana County participate in the NFIP. Participants manage their participation in the program in similar ways. They maintain access to copies of flood insurance rate maps (FIRMs) by directing residents to websites or to the appropriate local government offices (e.g., village halls, private insurance agents, etc.) for information. Participants support requests for map updates by referring requestors to the appropriate department or agency (e.g., the county engineer's office). In most cases, municipal zoning offices are in charge of issuing permits for development in special flood hazard areas (SFHAs), though in some instances, a village administrator issues permits.

Currently, no jurisdictions in Columbiana County participate in the Community Rating System (CRS).

Interestingly, a collection of agencies review and utilize base flood elevation data for a variety of projects. Zoning officers, particularly in instances where the zoning official issues permits, are one example. Local fire departments have also used the data in their outreach to the communities they serve. Other jurisdictions reported the municipal council as active participants in considering the data for their areas. This survey response is a promising indicator that myriad local officials have a desire to reduce risks from flooding. Respondents noted designing/locating structures away from SFHAs as the preferred method of minimizing damage to future structures, and designing or locating utilities and services in such ways as to prevent water damage as the preferred method of ensuring substantially-improved construction stays reasonably safe from flood damage.

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 12 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 an 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.

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. The table above identifies which jurisdictions currently budget funds for mitigation projects. East Palestine, New Waterford, and Wellsville indicated a willingness to consider inclusion of funds in future budgets. 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,
- Emergency Management Performance Grants (EMPG),
- Emergency Watershed Protection Program,
- Hazard Mitigation Grant Program (HMGP),
- Flood Mitigation Assistance Program,
- Non-Insured Crop Disaster Assistance Program,
- Pre-Disaster Mitigation Program,
- 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).

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>
Planning & Regulatory	0	1	2
Administrative & Technical	0	1	11
Fiscal	1	1	10
Political	0	6	6

The 2019 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.	0.0%	33.3%	58.3%	0.0%	8.3%
XYZ community restricts public investments or capital improvements within hazard areas.	0.0%	50.0%	50.0%	0.0%	0.0%
XYZ community enforces local development standards (e.g., building codes, floodplain management ordinances, etc.) that go beyond minimum state or federal requirements.	0.0%	16.7%	66.7%	16.7%	0.0%
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.).	0.0%	33.3%	41.7%	16.7%	8.3%

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. Columbiana 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 rd Ed. State Government: Columbus, OH.	Used to support discussions of site-specific flood mitigation.
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	USDHS FEMA. (2005). <i>Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning</i> . Federal Government: Washington, D.C.	Used as general guidance for incorporating historical property and cultural protection.
Technical Information	USDHS FEMA. (2013). <i>Local mitigation planning handbook</i> . Federal Government: Washington, D.C.	Used as general guidance on revised mitigation planning process
Technical Information	USDHS FEMA. (2013). <i>Integrating Hazard Mitigation Into Local Planning</i> . Federal Government: Washington, D.C.	Used as general guidance on existing plan integration for hazard mitigation
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	CCEMA. (n.d.). <i>Columbiana County emergency operations plan</i> . Local Government: Lisbon, OH.	Used as general guidance on existing plan integration for hazard mitigation.
Plan	CCHD. (2015). <i>Columbiana County Health Department emergency operations plan/emergency response plan</i> . Local Government: Lisbon, OH.	Used as general guidance on existing plan integration for hazard mitigation.
Plan	CCHD. (2015). <i>Columbiana County Health Department strategic plan, January 2017-December 2021</i> . Local Government: Lisbon, OH.	Used as general guidance on existing plan integration for hazard mitigation.
Plan	Columbiana County Health Partners (a steering committee made up of senior representatives from East Liverpool City Hospital and Salem Regional Medical Center as well as representatives from local health departments, health and social service organizations, school districts, and county government). (2016). <i>Columbiana County community health improvement plan (CHIP)</i> . Local Government: Lisbon, OH.	Used for informing potential human and social impacts from the hazards identified by the plan.
Plan	(The) Community Action Agency of Columbiana County (CAA). (2015). <i>Columbiana County coordinated public transit-human services transportation plan</i> . Local Government: Lisbon, OH.	Used to identify development trends, available resources, and usage data within the transportation sector (and specifically public transit).
Plan	Ohio Department of Transportation, Division of Planning. (2019). <i>2021-2024 construction projects COLUMBIANA County</i> . State Government: Columbus, OH.	Used to identify development trends within the transportation sector.
Plan	Ohio Mid-Eastern Governments Association (OMEGA). (2017). <i>Regional Transportation Improvement Program (RTIP), SFY 2018 to 2021</i> . Local Government: Cambridge, OH.	Used to identify development trends within the transportation sector.

REFERENCED DOCUMENTS		
<i>Document Type</i>	<i>Document Citation</i>	<i>How Incorporated into Plan</i>
Assessment	Columbiana County Health Partners (a steering committee made up of senior representatives from East Liverpool City Hospital and Salem Regional Medical Center as well as representatives from local health departments, health and social service organizations, school districts, and county government). (2016). <i>Columbiana County community health needs assessment</i> . Local Government: Lisbon, OH.	Used for informing potential human and social impacts from the hazards identified by the plan.
Assessment	Ohio Mid-Eastern Governments Association (OMEGA). (2018). <i>2018 CEDS annual report</i> . Local Government: Cambridge, OH.	Used to identify community and economic development trends.
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.

1.0 INTRODUCTION

1.4 Trends and Predictions

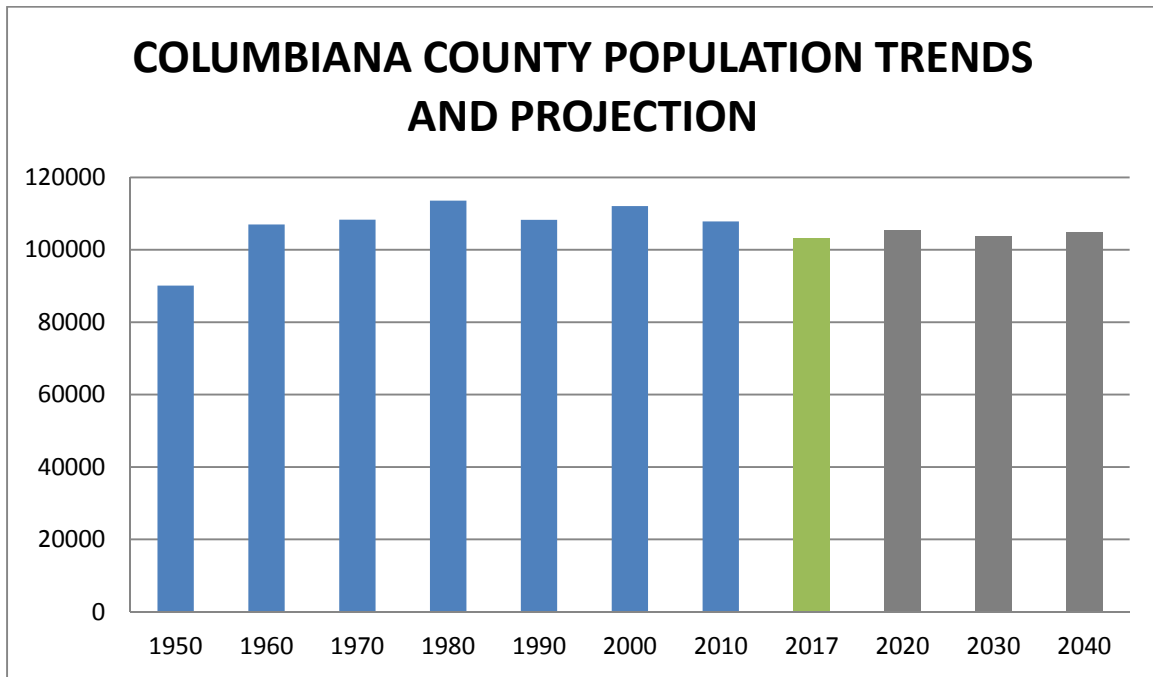
§ 201.6(c)(2)(ii)(c)	Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land-use decisions.
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This section examines various demographic and other development trends in Columbiana County to contextualize future risk to the hazards identified later in this plan.

Population

Hazard Mitigation Relevance: People are some of the most important 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).
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Columbiana 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 1960. Since then, the population has oscillated with each census. Projections for 2020, 2030, and 2040 show the population remaining relatively consistent.



Source: Columbiana County Profile prepared by the Ohio Development Services Agency, Office of Research,
<https://development.ohio.gov/files/research/C1016.pdf>

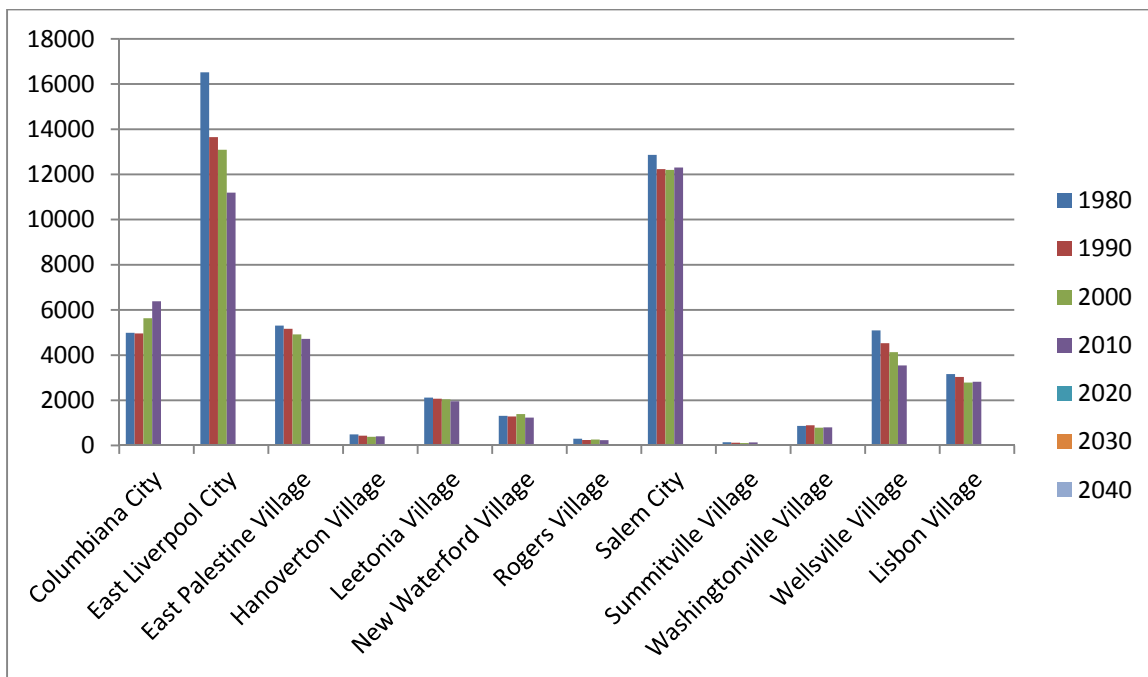
The following table assigns figures to the bars on the above graph.

COLUMBIANA 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>2017</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>
Columbiana County	90,121	107,004	108,310	113,572	108,276	112,075	107,841	103,077	105,380	103,870	104,710

It is also helpful to consider population trends in the population clusters throughout Columbiana County. The Ohio Development Services Agency identifies the following as the “largest places” (2018) in Columbiana County.

POPULATION CHANGE, LARGEST PLACES			
Place	2010 Pop.	Est. 2017	% Change
East Liverpool City	11,195	10,817	-3.38%
East Palestine Village	4,721	4,565	-3.30%
Glenmoor	1,987	2,041	2.72%
Hanoverton Village	408	360	-11.76%
La Croft	1,141	1,313	15.07%
Leetonia Village	1,959	2,192	11.89%
Minerva	3,720	3,486	-6.29%
New Waterford Village	1,238	1,495	20.76%
Rogers Village	237	240	1.27%
Salem City	12,303	11,939	-2.96%
Salineville Village	1,311	1,208	-7.86%
Summitville Village	135	122	-9.63%
Washingtonville Village	801	872	8.86%
Wellsville Village	3,541	3,406	-3.81%

As shown in the above table, the 2017 estimated populations of eight places declined from the 2010 Census estimate, while six places saw population growth. For the following graphic, the populations of all villages consist of 2010 estimates decreased or increased by the 2020, 2030, and 2040 population estimates shown.



Sources:

- 1980, 1990, 2000, and 2010 Census

Residential construction has remained largely steady in Columbiana County. According to the Ohio Development Services Agency, residential construction averaged 66.5 units annually between 2013 and 2017. The following table presents the residential construction data.

RESIDENTIAL CONSTRUCTION 2013-2017					
<i>Criterion</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
Total Units	30	16	50	90	80
Total Valuation	\$4,840	\$2,311	\$6,721	\$11,417	\$10,879
Single-Unit Buildings	28	16	27	32	28
Avg. Cost per Single Unit Building	\$165,713	\$144,409	\$177,879	\$180,290	\$200,054
Multi-Unit Buildings	2	0	23	58	52
Avg. Cost per Multi-Unit Bldg.	\$100,000	%0	\$83,391	\$97,367	\$101,496

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 indicators¹ correspond to data that are available to the Columbiana 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)

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

- **Race & Ethnicity:** Warning messages tend to be issued 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
Columbiana County	27,268	-13.51%	23,584	-7.76%	21,754	16,843	5.64%	17,793	1004.95%	196,604	\$34,226.00	43.01%	\$48,948.00	-7.05%	\$45,498.00	11.5	39.13%	16	-3.75%	15.4	56,373	-4.82%	53,656	-3.09%	51,998
Columbiana City	1,070	4.67%	1,120	-9.20%	1,017	1,426	22.65%	1,749	17.61%	2,057	\$34,560.00	5.51%	\$36,464.00	32.35%	\$48,259.00	25.2	-32.54%	17	-41.76%	9.9	3,406	-3.05%	3,302	2.15%	3,373
East Liverpool City	3,546	-19.94%	2,839	-4.72%	2,705	2,100	-22.19%	1,634	-3.24%	1,581	\$23,138.00	44.48%	\$33,429.00	-8.97%	\$30,430.00	25.2	9.92%	27.7	-4.33%	26.5	7,019	-16.36%	5,871	-1.96%	5,756
East Palestine City	1,330	-17.97%	1,091	2.93%	1,123	820	-5.24%	777	7.08%	832	\$35,738.00	16.53%	\$41,646.00	-0.21%	\$41,559.00	10	38.00%	13.8	-16.67%	11.5	2,545	-5.46%	2,406	2.49%	2,466
Hanoverton Village	96	1.04%	97	-17.53%	80	77	-18.18%	63	1.59%	64	\$36,538.00	8.11%	\$39,500.00	4.43%	\$41,250.00	3.2	128.13%	7.3	135.62%	17.2	207	3.86%	215	-13.02%	187
Leetonia Village	587	-12.95%	511	-2.74%	497	245	6.53%	261	41.76%	370	\$37,714.00	12.31%	\$42,358.00	21.98%	\$51,667.00	7	152.86%	17.7	-36.16%	11.3	1,025	-2.54%	999	13.01%	1,129
New Waterford Village	354	-16.10%	297	23.23%	366	193	2.59%	198	19.19%	236	\$35,000.00	19.29%	\$41,750.00	-11.33%	\$37,019.00	9.5	17.89%	11.2	133.93%	26.2	722	-9.28%	655	30.08%	852
Rogers Village	82	-39.02%	50	-38.00%	31	25	8.00%	27	48.15%	40	\$31,250.00	-4.80%	\$29,750.00	31.51%	\$39,125.00	14.7	247.62%	51.1	-75.54%	12.5	126	-1.59%	124	-6.45%	116
Salem City	2,780	-6.29%	2,605	39.85%	3,643	2,451	-4.20%	2,348	-8.35%	2,152	\$30,006.00	13.11%	\$33,939.00	16.25%	\$39,454.00	11.7	77.78%	20.8	-2.88%	20.2	6,596	-2.73%	6,416	-4.82%	6,107
Washingtonville Village	205	-3.41%	198	-5.56%	187	100	10.00%	110	35.45%	149	\$29,219.00	35.79%	\$39,676.00	14.77%	\$45,536.00	19.9	24.12%	24.7	2.43%	25.3	407	0.98%	411	10.22%	453
Lisbon Village	694	-6.05%	652	0.61%	656	443	-1.58%	436	4.36%	455	\$27,841.00	6.00%	\$29,512.00	7.48%	\$31,719.00	14.1	-7.80%	13	141.54%	31.4	1,120	32.77%	1,487	2.22%	1,520
Jurisdiction	LITERACY					RACE & ETHNICITY																			
	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
Columbiana County	16,983	-24.07%	12,895	-15.65%	10,877	108,071	-4.73%	102,959	-3.52%	99,332	2,468	-2.55%	2,405	-2.33%	2,349	885	59.32%	1,410	28.51%	1,812	3,728	-42.17%	2,156	-9.18%	1,958
Columbiana City	N/A	N/A	729	-53.50%	339	6,239	0.83%	6,291	-0.16%	6,281	38	-5.26%	36	-27.78%	26	50	-16.00%	42	-7.14%	39	N/A	N/A	42	95.24%	82
East Liverpool City	2,501	-27.67%	1,809	-15.70%	1,525	12,153	-15.49%	10,270	-5.74%	9,681	630	-18.89%	511	29.55%	662	231	43.29%	331	4.23%	345	244	-52.05%	117	-29.91%	82
East Palestine City	N/A	N/A	537	-20.67%	426	4,842	-4.23%	4,637	-5.48%	4,383	18	-38.89%	11	681.82%	86	34	-2.94%	33	-27.27%	24	177	-44.07%	99	10.10%	109
Hanoverton Village	48	-31.25%	33	9.09%	36	381	7.09%	408	-19.36%	329	1	-100.00%	-	0.00%	-	4	-100.00%	-	0.00%	24	15	-53.33%	7	71.43%	12
Leetonia Village	253	-5.93%	238	-21.85%	186	2,021	-5.24%	1,915	11.59%	2,137	6	-33.33%	4	75.00%	7	8	262.50%	29	24.14%	36	51	-9.80%	46	-52.17%	22
New Waterford Village	159	-25.16%	119	42.86%	170	1,376	-11.70%	1,215	18.85%	1,444	1	100.00%	2	850.00%	19	15	-26.67%	11	118.18%	24	27	-70.37%	8	-25.00%	6
Rogers Village	44	0.00%	44	-2.27%	43	264	-11.74%	233	2.15%	238	-	0.00%	1	-100.00%	-	2	-50.00%	1	100.00%	2	11	-100.00%	0	0.00%	0
Salem City	1,705	-25.57%	1,269	1.73%	1,291	11,996	-1.68%	11,795	-3.71%	11,357	63	33.33%	84	97.62%	166	72	101.39%	145	31.03%	190	332	-15.66%	280	25.71%	352
Washingtonville Village	110	42.73%	157	-35.67%	101	775	1.42%	786	5.47%	829	1	600.00%	7	-42.86%	4	8	-37.50%	5	-80.00%	1	13	-84.62%	2	11.50%	25
Lisbon Village	464	-44.83%	256	39.45%	357	2,725	0.81%	2,747	-3.82%	2,642	25	28.00%	32	15.63%	37	17	52.94%	26	7.69%	28	103	16.50%	120	0.00%	55

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 2011 and 2016. The following table presents that data.

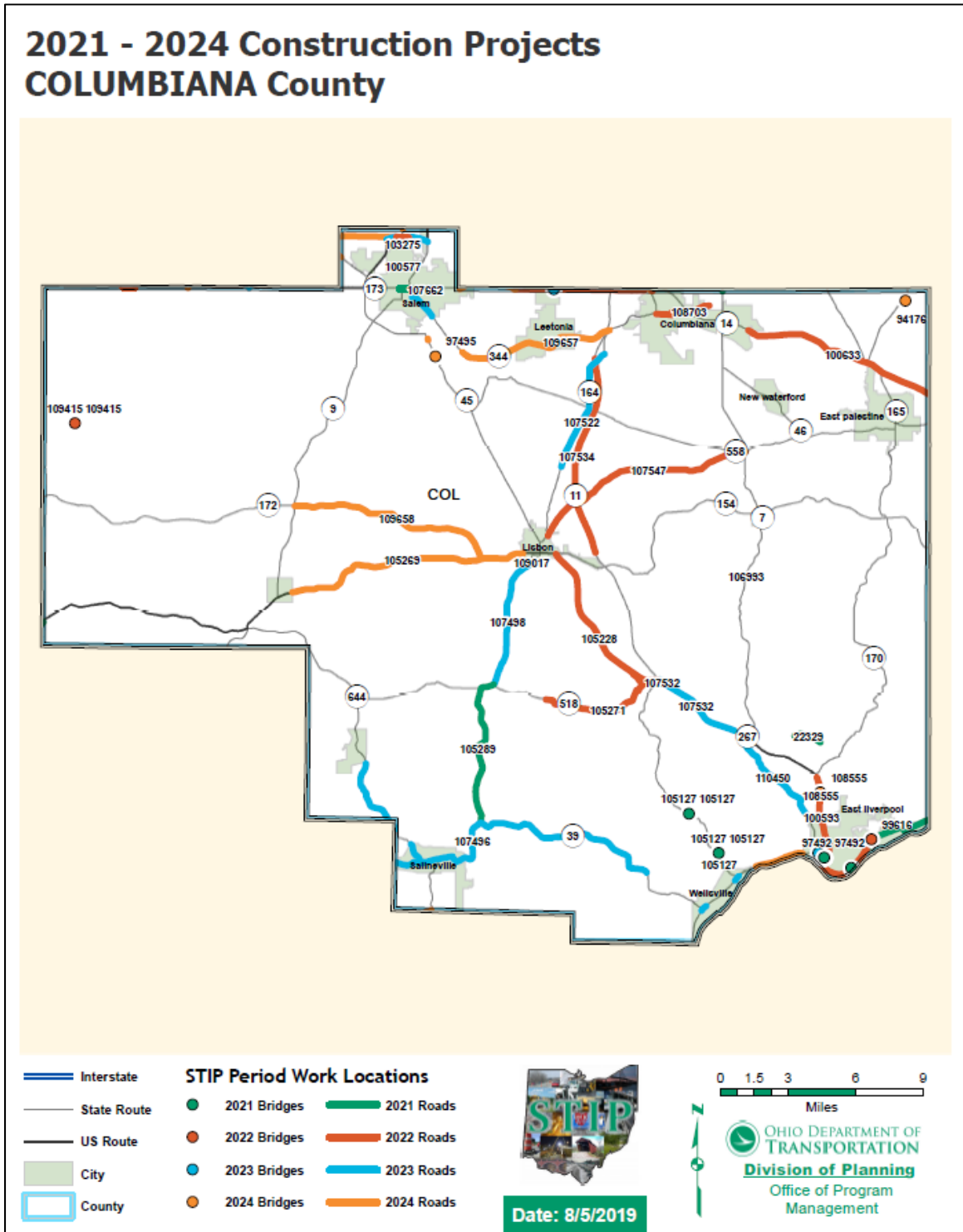
ESTABLISHMENTS, EMPLOYMENT, AND WAGES BY SECTOR, 2011 AND 2016 COMPARISON								
Sector	Number of Establishments		Average Employment		Total Wages		Average Weekly Wage	
	Since 2011 (%)	2016	Since 2011 (%)	2016	Since 2011 (%)	2016 (\$)	Since 2011 (%)	2016 (\$)
Private Sector	-4.8%	1,957	0.3	24,812	12.3%	\$848,506,312	12.1%	\$658
Goods-Producing	-7.8%	404	10.4	7,379	20.1%	\$309,412,943	8.6%	\$806
Natural Resources & Mining	48.3%	43	16.6	379	-2.4%	\$12,351,858	-16.2%	\$327
Construction	-12.6%	188	0.0	964	29.7%	\$44,328,687	29.6%	\$884
Manufacturing	-10.8%	173	11.9	6036	19.9%	\$252,732,398	7.0%	\$805
Service-Producing	-4.0%	1,553	-3.5	1,7433	8.3%	\$539,093,369	12.3%	\$595
Trade, Transportation & Utilities	-6.1%	512	-0.6	6036	7.6%	\$201,611,565	8.3%	\$642
Information	16.7%	21	16.3	1,157	31.7%	\$6,899,923	13.4%	\$845
Financial Services	-1.8%	160	-14.9	720	6.7%	\$28,331,708	25.3%	\$757
Professional & Business Services	-6.0%	234	-6.4	1,720	15.5%	\$63,105,992	23.4%	\$706
Education & Health Services	-2.3%	255	-7.2	5,139	4.7%	\$178,084,572	12.7%	\$666
Leisure & Hospitality	-7.1%	182	2.9	2,679	14.9%	\$32,888,409	11.8%	\$236
Other Services	-0.5%	186	-4.0	977	12.2%	\$28,012,989	16.7%	\$551
Federal Government			3.6	606	6.3%	\$39,187,271	2.6%	\$1,244
State Government			-10.7	326	-10.6%	\$16,961,527	0.2%	\$1,001
Local Government			-2.2	3,881	8.2%	\$143,688,978	10.7%	\$712

Transportation

Hazard Mitigation Relevance: The transportation infrastructure is a key 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 key transportation assets and understanding their potential vulnerabilities can inform projects designed to support their continuity in emergency situations.

Information regarding future transportation projects comes from the Ohio Mid-Eastern Governments Association's (OMEGA's) long-range transportation plan as well as the Ohio

Department of Transportation's (ODOT's) planned road and bridge projects from 2021 through 2024. According to ODOT, most transportation projects will occur in the central and eastern areas of the county (per the figure below).



OMEGA's long-range transportation plan lists 12 projects for Columbiana County, four of which are within the corporate limits of the City of Salem.

- Planning study for US 30 Ohio's Energy Corridor (in progress as of 2015), estimated cost \$750,000
- SR 7 and TR 1131 Bell School Road Intersection Upgrade for Beaver Local Schools (funded for design as of 2015)
- Calcutta/Smith Ferry Road (CR 430) Improvements, programmed for construction in 2017, estimated cost \$4.29M
- McGuffy Drive Improvements
- Completion of Columbia Drive Extension in St. Clair Township, estimated cost \$2.11M
- Complete lake to river pedestrian/bicycle trail
- SR 39 improvements in East Liverpool
- US 62/SR 45 Bypass Connection in Salem
- Overpass on South Lincoln to SR 45 in Salem
- SR 14 Traffic Flow (east side of City, SRMC) in Salem
- Bicycle lanes to reach Greenway Trail in Salem
- 16 school road improvements in Wellsville/Yellow Creek Township to new 500-acre development near SR 7 and the Wellsville Intermodal Facility

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 vulnerability 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.”

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Columbiana County Selected Land Uses

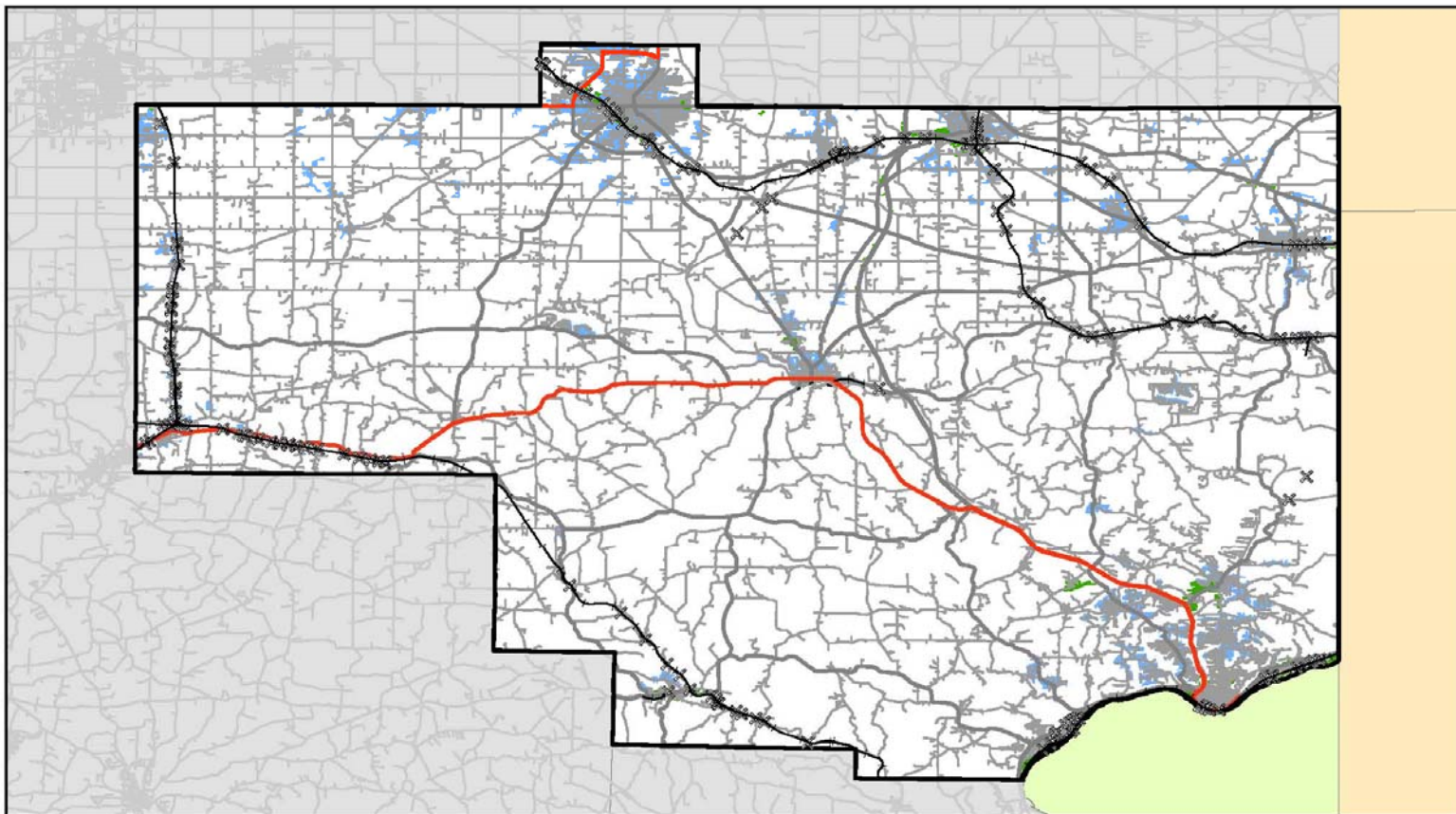
Data Source(s):
U.S. Geological Survey

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



Selected Land Uses

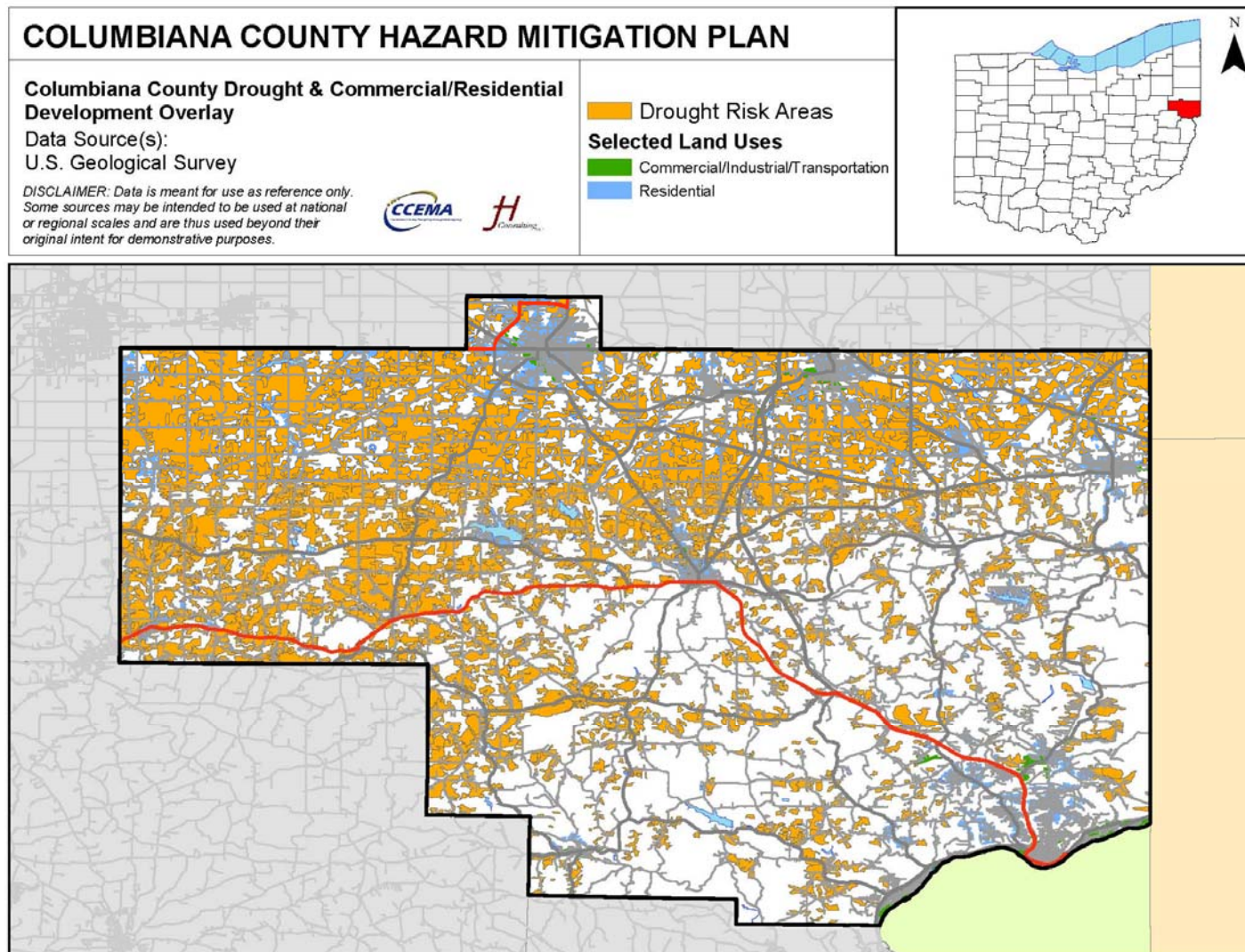
- Commercial/Industrial/Transportation
- Residential



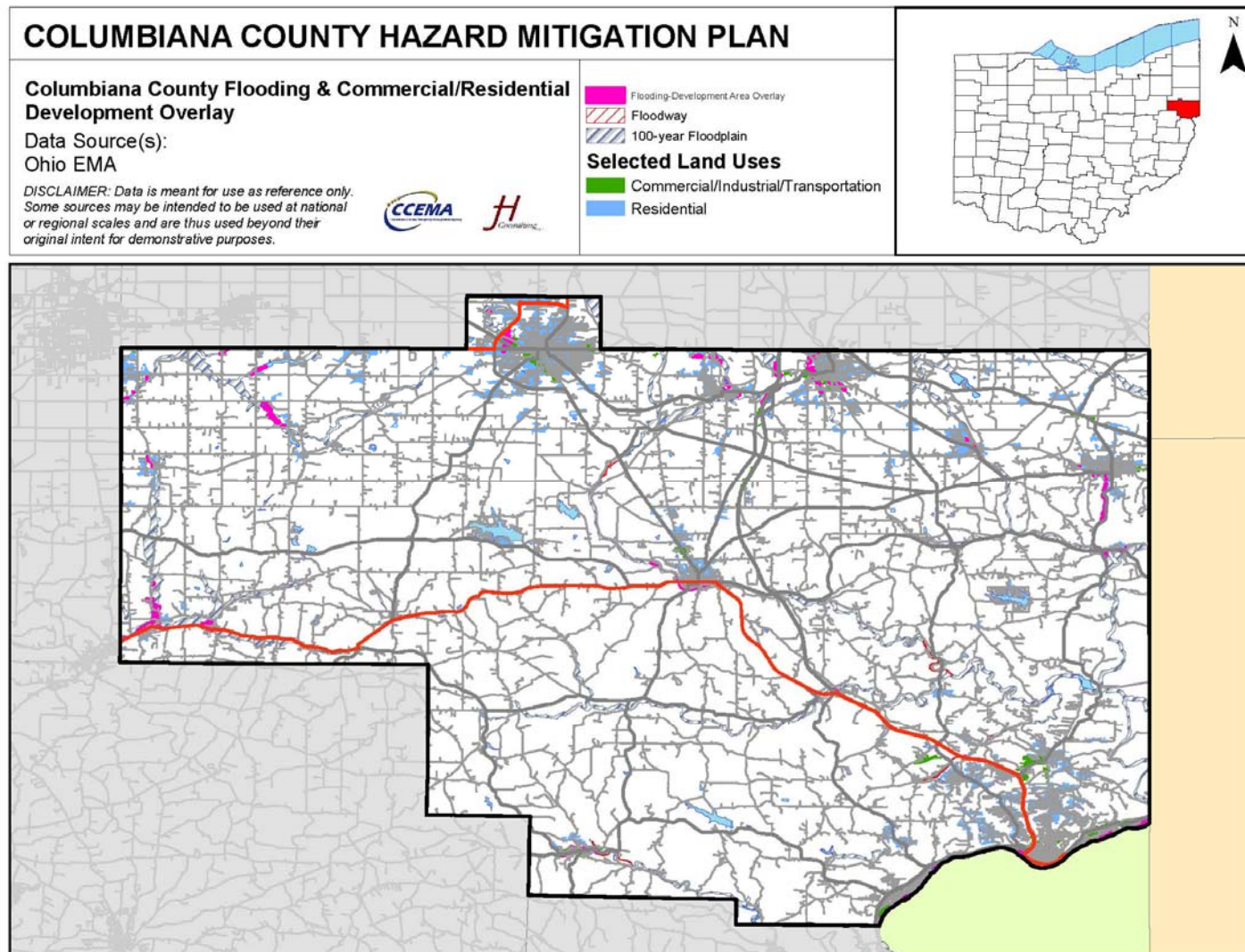
Planned Development and Hazard Areas

When planning for new development, this plan suggests that it is vital to consider areas where new development avoids damages from future hazardous events. In Columbiana County, local officials plan to develop transportation assets and commercial and residential areas. The following map identifies areas targeted for development cross-referenced with various risk areas per the risk assessment in Section 2.0.

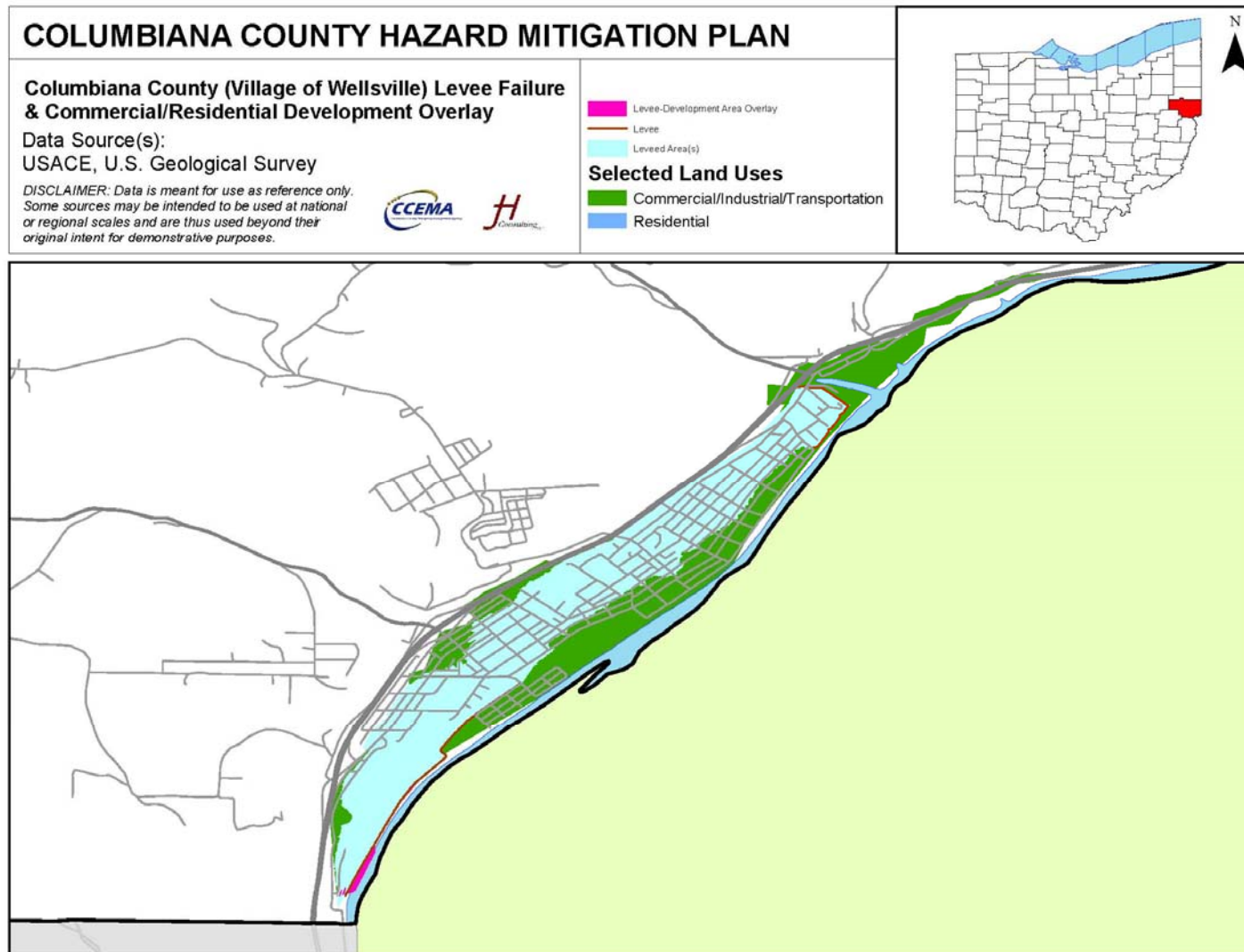
The following graphic shows drought risk areas alongside areas targeted for residential as well as commercial/industrial/transportation development. None of these areas overlap. Drought conditions would not likely impact structures on adjacent properties.



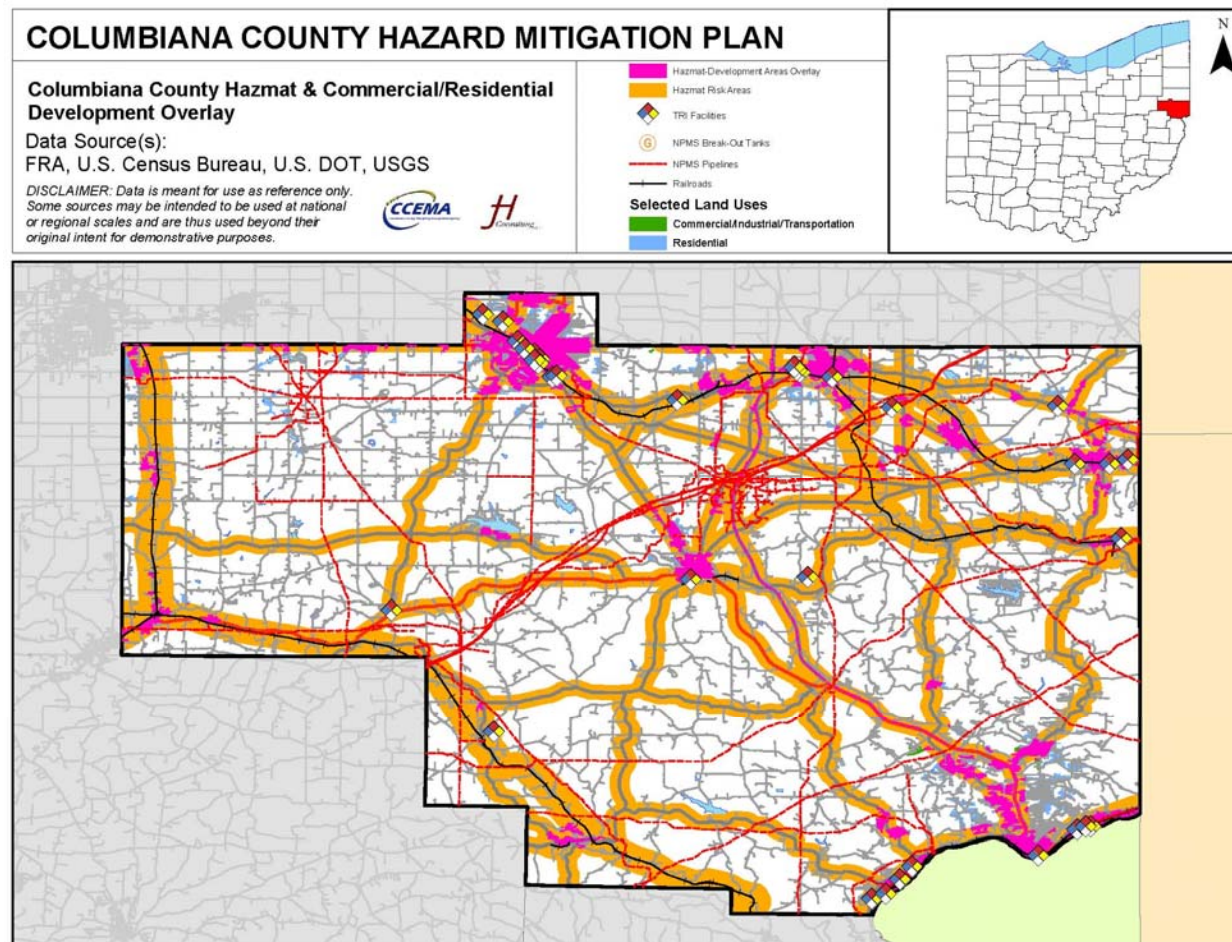
The following graphic shows flooding risk areas alongside areas targeted for residential as well as commercial/industrial/transportation development. Local officials should avoid development in these areas. However, if development occurs, consider elevating structures (or service connections) above the base flood elevation, etc.



The following graphic shows areas in Wellsville protected by the levee alongside areas targeted for residential as well as commercial/industrial/transportation development.



The following graphic shows hazardous materials risk areas alongside areas targeted for residential as well as commercial/industrial/transportation development. Local officials should ensure facilities developed in these areas have shelter-in-place capabilities, to include master switches to shut off fresh air intake, supplies on-hand, etc. Local officials may also reach out to new residents in these areas to ensure they have access to the mass notification system and know the importance of a household emergency plan.



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 Columbiana 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 Hazards 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 majority of this discussion focused on the hazard list from previous versions of the mitigation plan. Committee members felt that some hazard considerations needed broadening, such as extreme heat (changed to “extreme temperatures” to enable consideration of extreme cold situations). The committee also decided to add “public health emergencies” to the plan. Health district representatives on the committee felt the inclusion would reflect apparent spikes in communicable disease occurrences as well as align the mitigation plan with preparedness efforts by public health. Additionally, committee members reviewed the results of the public survey during their third and fourth meetings. Based on public responses, the committee felt the revised hazard list was appropriate. The following table lists the hazards considered by the remainder of this risk assessment.

HAZARDS IDENTIFICATION	
<i>Hazard</i>	<i>Description</i>
Natural Hazards	
Drought	Existing. This hazard includes meteorological, agricultural, hydrological, and socioeconomic droughts.
Earthquake	Existing.
Extreme Temperatures (Heat and Cold)	Revised to include extreme cold temperatures as well as extreme heat.
Flooding	Existing. This hazard includes flash flooding.
Public Health Emergencies	New. Added per committee member request.
Severe Thunderstorms and Hail	Existing.
Severe Wind and Tornado	Existing.
Severe Winter Storms	Existing. This hazard includes blizzards, ice storms, and heavy snow.
Technological Hazards	
Dam and Levee Failure	Revised. Levee failure added to this update.
Hazardous Materials Incidents	Existing. This hazard includes chemical, biological, radiological, nuclear, and explosive incidents.

In addition to these ten 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 Columbiana County are not rugged or severe enough to have avalanches.
- **Coastal Erosion (and Other Lake Hazards):** Columbiana County does not contain any of the Lake Erie shorelines.
- **Geological Hazards (e.g., Erosion, Subsidence, Etc.):** Several jurisdictional representatives (particularly Salineville and Wellsville) discusses subsidence and erosion as it impacts the transportation infrastructure, levees, etc. However, subsidence and erosion are largely site-specific occurrences in Columbiana County. Committee members felt the focus of the hazard list in this document should be those that could impact larger areas (and larger populations) of the county.
- **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 Columbiana 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 Columbiana 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 Columbiana County.
- **Volcano:** The closest monitored volcano is in Yellowstone National Park in Wyoming and is approximately 1,500 miles away. It would not affect Columbiana County.
- **Wildfire:** Though brush fires occur with some regularity in Columbiana County, and those incidents technically align with the National Park Service's definition of wildfire as, "any non-structure fire, other than prescribed fire, that occurs in the wildland," committee members did not feel as if those incidents rise to the level of severity appropriate for inclusion in this plan.

2.0 RISK ASSESSMENT

2.2 Complicating Variables

Direct, calculable 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 difficult to assign a specific dollar value and quantify them accurately. For this plan, the primary focus of loss estimates will be direct consequences of the given hazard.

Countless situations could occur that could result in a disruption to critical systems throughout Columbiana County. Loosely-related variables often considered *cascading hazards*, can complicate some hazards. For example, high winds may cause sporadic damage, but often 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 Columbiana 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

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 impacts 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. Section 1.4 above references several social vulnerability indicators for Columbiana County; those variables will often appear alongside discussions of complicating variables in the profiles below.

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 geographical 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.

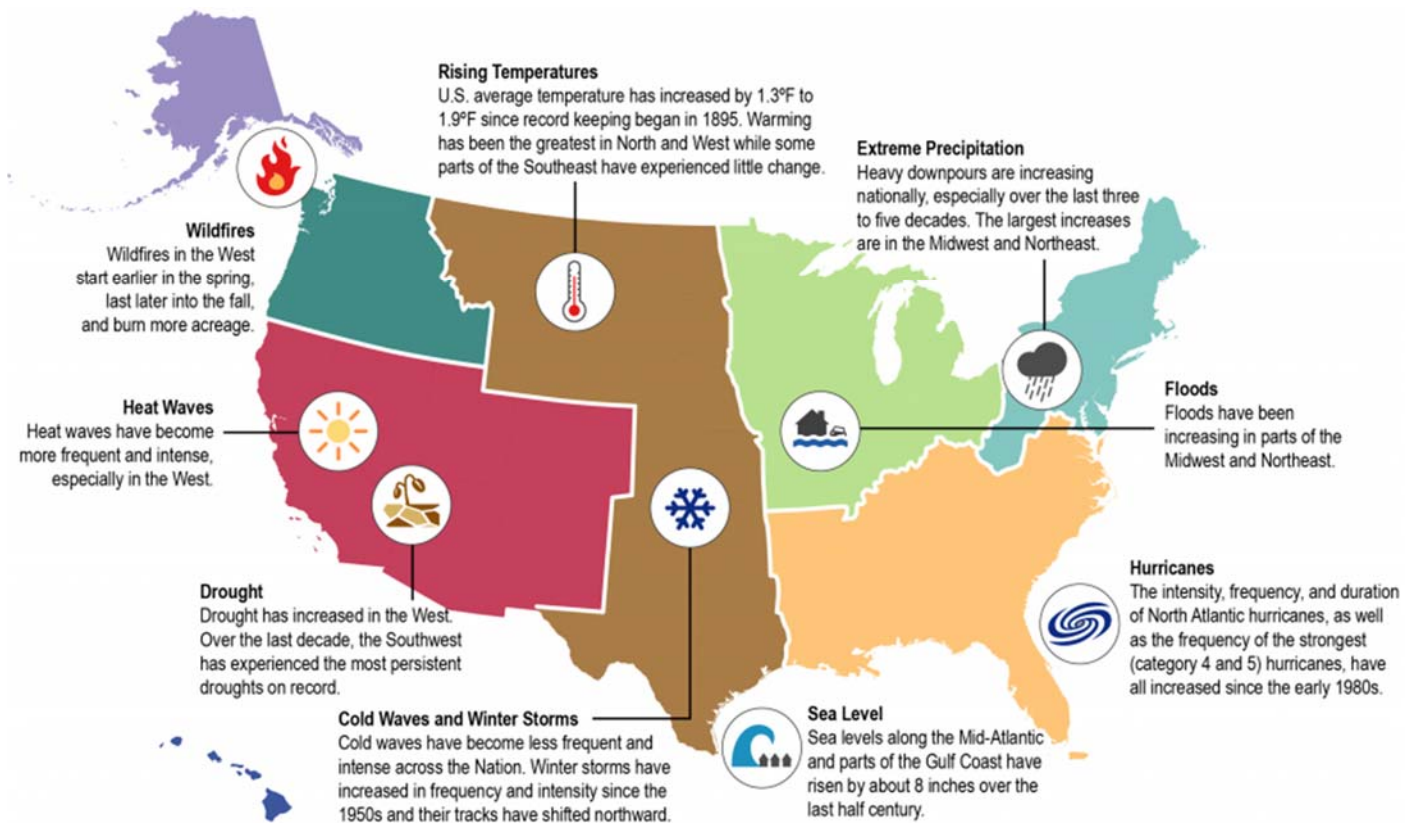
- Since recordkeeping began in 1895, the average U.S. temperature has increased by 1.3°F to 1.9°F, with most of the increase happening since 1970. Also, the first decade of the 2000s was the warmest on record.
- The average precipitation across the U.S. has increased since 1900, with some areas experiencing 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 an increase of 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.



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 a people; these can include income disparity,

class, race or ethnicity, gender, age, disability, health, and literacy (Thomas & Phillips, 2013, pp. 2-3). As noted, see Section 1.4 above for a discussion of potential social vulnerability indicators in Columbiana County. Understanding the overall health status of the community is important 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 risks 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.

2.0 RISK ASSESSMENT

2.3 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 order, loosely grouped by “type” (i.e., natural or technological).

- Natural
 - 2.3.1 Drought
 - 2.3.2 Earthquake
 - 2.3.3 Extreme Temperatures (Heat and Cold)
 - 2.3.4 Flooding
 - 2.3.5 Public Health Emergencies
 - 2.3.6 Severe Thunderstorms and Hail
 - 2.3.7 Severe Wind and Tornado
 - 2.3.8 Severe Winter Storms
- Technological
 - 2.3.9 Dam and Levee Failure
 - 2.3.10 Hazardous Materials Incident

2.0 RISK ASSESSMENT

2.3.1 Drought

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

Hazard Overview

“Drought” is a period of abnormally dry weather, which persists long enough to produce a serious 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 injurious to crops, livestock, or other agricultural commodities. Parched crops may wither and die. Pastures may become insufficient to support livestock. 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. A 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 years, the average amount is fairly 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 the early summer. When little or no rain falls, soils can dry out, and plants can die. When rainfall is less than normal for several weeks, months, or years the flow of streams and rivers declines, water levels in lakes and reservoirs fall, and the depth to 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

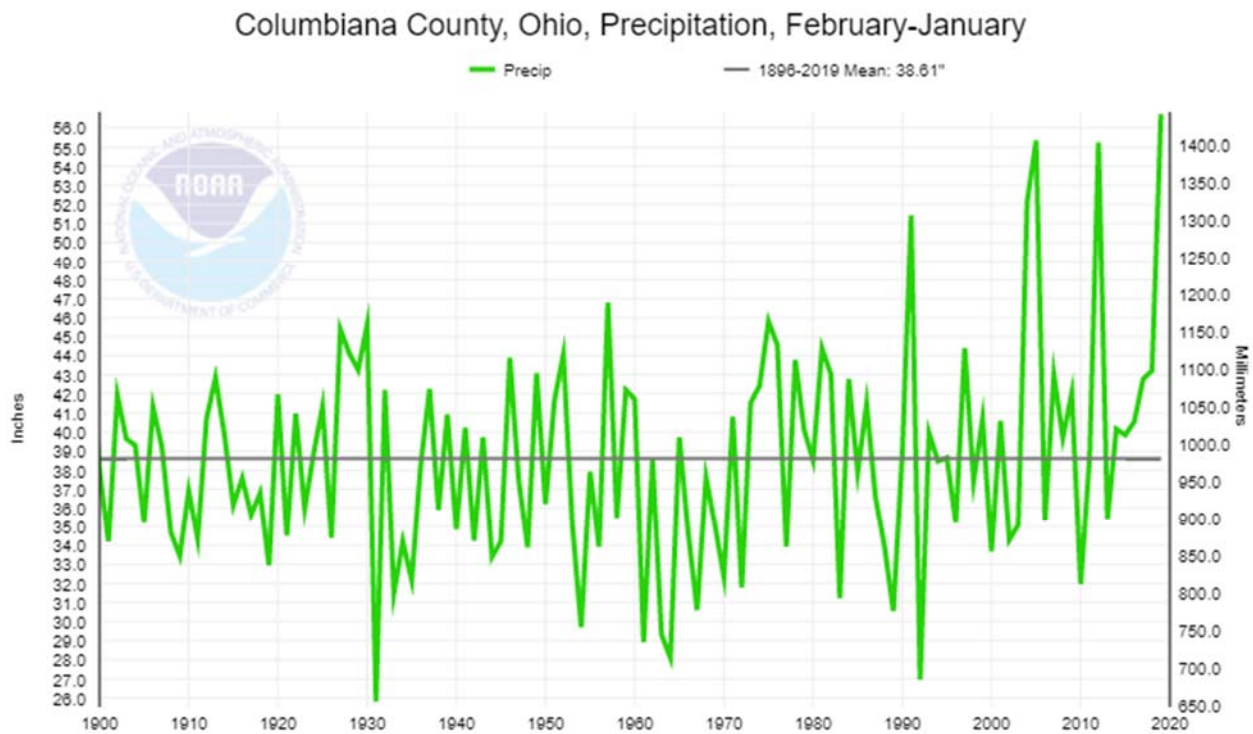
Droughts are a region-wide hazard that can affect all areas and jurisdictions within the region. Droughts are widespread events that may extend to several states in varying degrees of severity. Within Columbiana County, the extent of a drought would be equal or very similar, given the region's geography 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 widely used measure of drought 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 expected or 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 University of Nebraska-Lincoln, U.S. Department of

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	

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.

The following National Weather Service graphic depicts precipitation levels in Columbiana 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 greater precipitation than previous “low” years.



Though it is difficult to anticipate exactly where drought conditions will occur in the future, Columbiana 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 historical Palmer Drought Severity Index (PDSI) values for all months between 1895 and 2018. Columbiana County’s climate division, the Northeast Hills, experienced drought conditions (i.e., incipient, mild, moderate, severe, or extreme drought per the PDSI) in 41.87% 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 5.51% of the months (i.e., 82 out of 1,488 months). The following map displays this information graphically and compares it to the remainder of Ohio.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

ESRL Climate Divisions & Months Spent in Drought

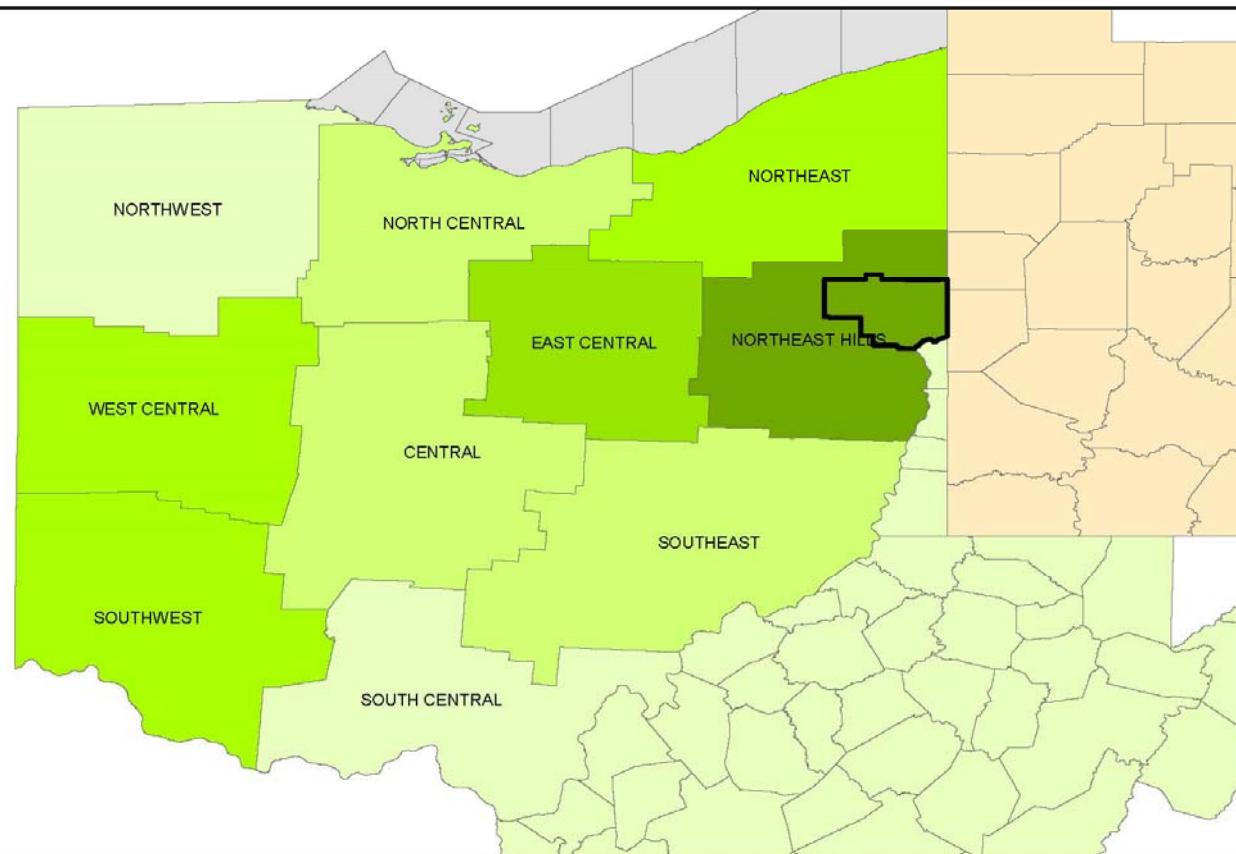
Data Source(s):
NOAA Earth System Research Laboratory

*DISCLAIMER: Data is meant for use as reference only.
Some sources may be intended to be used at national
or regional scales and are thus used beyond their
original intent for demonstrative purposes.*



Months in Severe/Extreme Drought

- 5.51%
- 5.51% - 6.38%
- 6.38% - 7.26%
- 7.26% - 7.80%
- 7.80% - 8.27%



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, there are possible impacts from each level of drought, which appear in the graphic below.

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

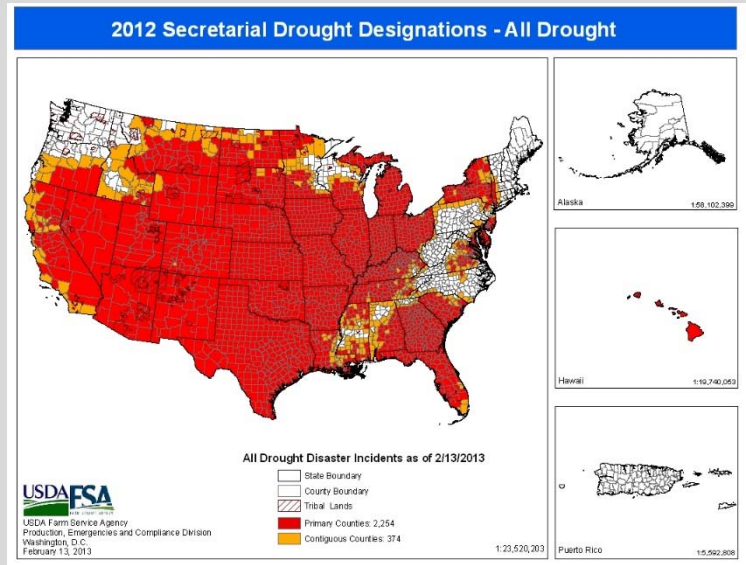
Historical Occurrences

Data sources suggest four droughts have impacted Columbiana County, though the drought of 1999 appears as two of these occurrences. Columbiana 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)

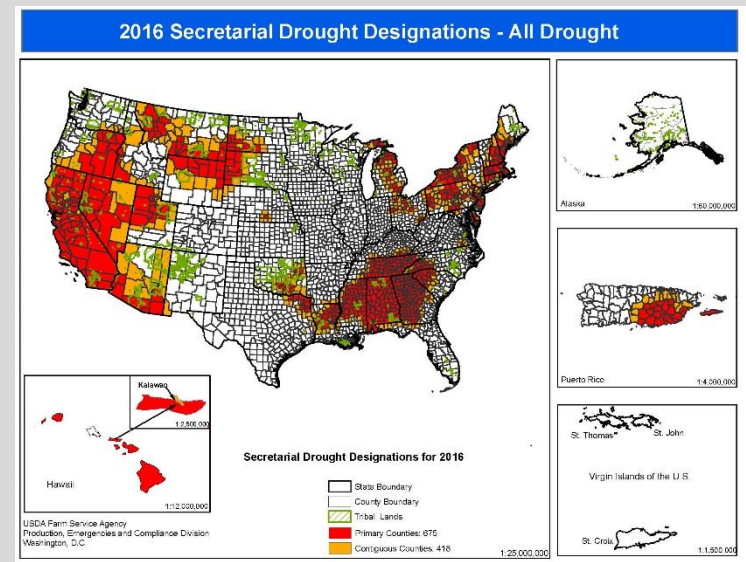
Most locations ended the winter season of 2011-2012 with near-normal precipitation and below-normal snowfall, which led to below-normal snowmelt. March experienced much-above-normal, record-breaking temperatures, which led to above-normal evapotranspiration and an early start to the growing season. This condition, combined with 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 area was 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)

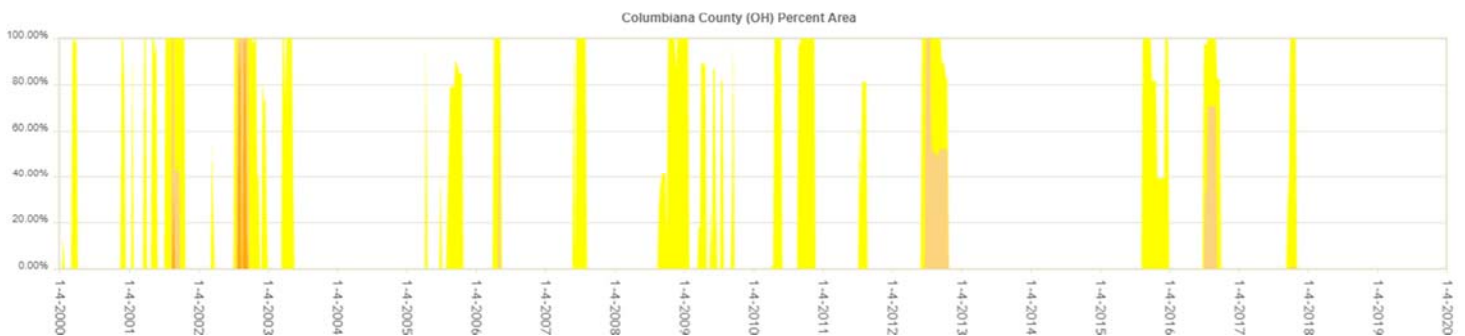
Based on the Palmer Drought Index, severe to extreme drought affected approximately 7% of the contiguous United States at the end of July 2016. About 22% of the contiguous U.S. fell in the moderate to extreme drought category. Columbiana County experienced moderate drought conditions. Columbiana County 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>
8/1/1999	0	0	\$0	\$0
9/1/1999	0	0	\$0	\$0

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 Columbiana County between 2000 and 2019.



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.

USDA CENSUS OF AGRICULTURE DATA – COLUMBIANA 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	1,056	130,952	79,340	75.13	\$76,360,000
2012	1,045	127,846	78,489	75.11	\$99,298,000
2017	1,227	142,422	87,597	71.39	\$106,666,000

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 \$94,108,000). Data on historical occurrences shows no crop damage. 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 \$1,617,500 (for a potential exposure ranging from \$1,618 to \$19,410). The declared incidents cited above note the length of the 2012 drought as from April through August (five months) and the 2016 drought as from May through December (eight months). The average length of historical droughts (receiving a secretarial designation) in Columbiana County is thus 6.5 months (or 26 weeks). Combining these calculations suggests a range of exposure of \$42,055 to \$504,660 per drought.

Risk Assessment

This section summarizes the risk to Columbiana County from drought. The following map image graphically depicts potential risk areas in Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

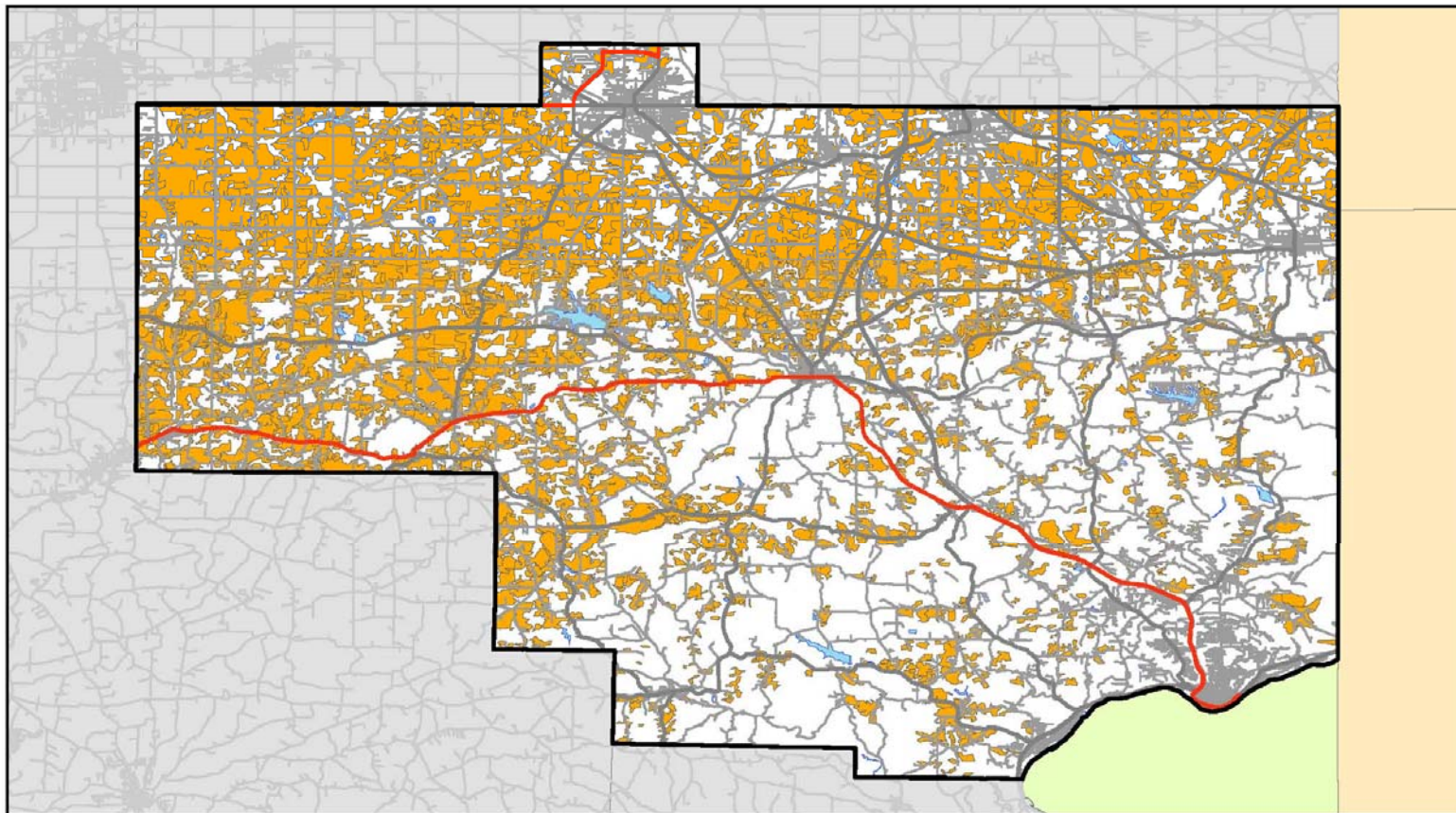
Columbiana County Drought Risk Map

Data Source(s):
U.S. Geological Survey

*DISCLAIMER: Data is meant for use as reference only.
Some sources may be intended to be used at national
or regional scales and are thus used beyond their
original intent for demonstrative purposes.*



 Drought Risk Areas




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 RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	2	Low	Four events in 20 years (i.e., 1999-2019) yields an estimate of 0.20 incidents per annum.
Response	4	Less than half a day	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)	Columbiana County has a land area of 531.89 mi ² (Census, 2019) (or 340,409.6 acres). Given 142,422 acres in farmland (2017 Census of Agriculture), approximately 41.84% of the county's land area of agricultural.
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.
Total	13	Low	

2.0 RISK ASSESSMENT

2.3.2 Earthquake

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

Hazard Overview

Earth consists of four major 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 between “small to feel” and violent incidents that cause significant damage. The U.S. Geological Service (USGS) uses the Modified Mercalli Intensity (MMI) scale to measure the intensity of earthquakes. The MMI scale characterizes the intensity of an earthquake at a given location by the severity of ground shaking at that location and the effects of the shaking on people, manmade 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 scale and 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
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.	2.5
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.	3.0
V	Felt by nearly everyone; many awakened. Some dishes and windows broken. Unstable objects overturned.	3.5
VI	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	4.0
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.	4.5
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	5.0
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.	5.5
X	Some well-built wooden structures are destroyed; most masonry and frame structures with foundations destroyed; train rails bent.	6.0
XI	Few, if any, masonry structures remain standing. Bridges destroyed. Underground pipelines taken out of service. Train rails bent greatly.	6.5
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level are distorted. Objects thrown into the air.	7.0

The area of greatest 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.

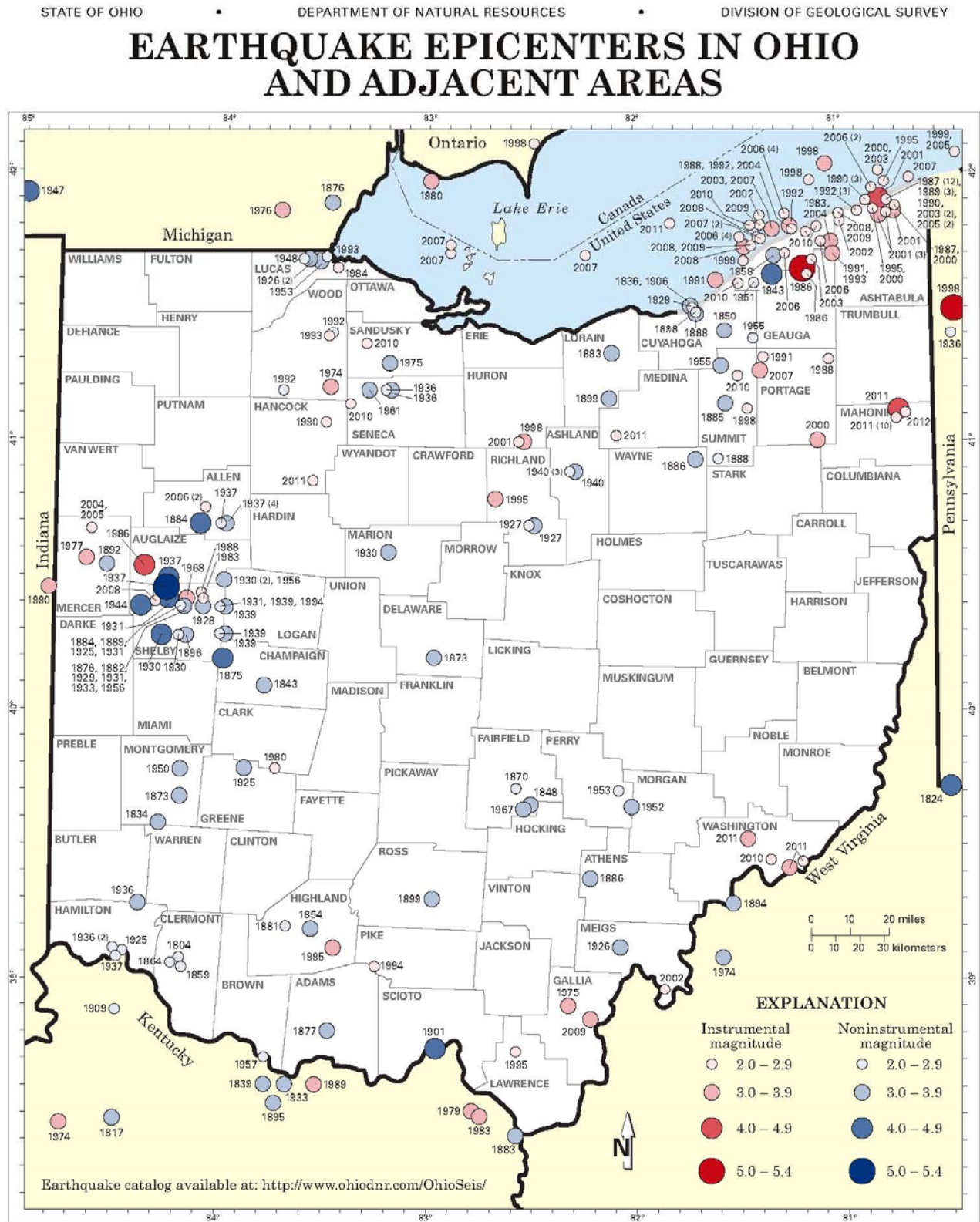
Regulators and researchers have documented earthquakes induced by human activity in the United States, Japan, and Canada (USGS, https://www.usgs.gov/natural-hazards/earthquake-hazards/induced-earthquakes?qt-science_support_page_related_con=4#qt-science_support_page_related_con). The cause of these human-caused earthquakes was 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 greatest human risk during an earthquake is structure movement and collapse. Contents within structures may fall or fail and injure or kill the people inside.

Historical Occurrences

No earthquakes have occurred centered in Columbiana County, though several have taken place in Mahoning County to the north. 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 at New Madrid, Missouri. Residents reportedly felt these earthquakes throughout much of the U.S., including all of Ohio.

December 2012

In December of 2012, 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 Columbiana 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 Columbiana County. The scenario depicts a 5.0 earthquake (the lowest possible magnitude to use in the program) located at Lisbon, the county seat. The following tables describe the expected building damages by occupancy type and the building-related economic loss estimates.

COLUMBIANA COUNTY EXPECTED BUILDING DAMAGE BY OCCUPANCY (HAZUS)										
	None		Slight		Moderate		Extensive		Complete	
	Count	%	Count	%	Count	%	Count	%	Count	%
Agriculture	161.03	0.50	53.19	0.63	56.09	1.20	26.58	1.86	6.11	1.89
Commercial	1,523.33	4.76	494.79	5.83	423.91	9.04	165.67	11.56	37.30	11.57
Education	50.05	0.16	16.08	0.19	14.47	0.31	5.08	0.35	1.32	0.41
Government	48.20	0.15	17.88	0.21	18.96	0.40	6.97	0.49	1.99	0.62
Industrial	446.12	1.39	144.06	1.70	142.80	3.04	61.89	4.32	13.13	4.07
Other Residential	3,085.00	9.64	1,189.80	14.02	1,240.53	26.44	482.46	33.67	98.21	30.47
Religion	208.87	0.65	57.99	0.68	43.41	0.93	16.84	1.18	3.89	1.21
Single Family	26,489.56	82.75	6,513.19	76.74	2,751.46	58.65	667.39	46.58	160.40	49.76
TOTAL	32,012		8,487		4,692		1,433		322	

COLUMBIANA COUNTY HAZUS BUILDING-RELATED ECONOMIC LOSS ESTIMATES (MILLIONS OF DOLLARS)							
Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	1.2335	20.0817	2.1733	1.7611	25.2496
	Capital Related	0.00	0.5252	15.7951	1.3718	0.4753	18.1674
	Rental	7.5646	4.3074	9.1759	0.7056	0.8659	22.6194
	Relocation	26.6398	5.4739	15.4488	3.1409	7.2036	57.9070
	Subtotal	34.2044	11.5400	60.5015	7.3916	10.3059	123.9434
Capital Stock Losses	Structural	40.7226	10.6778	20.4894	11.0113	10.0979	92.9990
	Non-Structural	153.5268	43.6785	52.2665	32.7143	22.6844	304.8705
	Content	60.5567	11.9506	30.2114	23.5464	13.3777	139.6428
	Inventory	0.00	0.00	0.9196	4.9712	0.3160	6.2068
	Subtotal	254.8061	66.3069	103.8869	72.2432	46.4760	543.7191
TOTAL		289.01	77.85	164.39	79.63	56.78	667.66

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	3,579	\$820,599,500
Non-Residential	2,690	\$839,472,200
Critical Facilities	113	\$35,240,400
TOTALS	6,382	\$1,695,312,100


Risk Assessment

This section summarizes the risk to Columbiana County from earthquakes. 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 RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	2	Unlikely to occur in a year	There have been very few earthquakes in Columbiana County.
Response	2	1 Day	Historical data indicate that earthquakes have caused little to no damage in Columbiana County; thus, a 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	No earthquakes have occurred in Columbiana County; those that have occurred in neighboring counties affected all of Columbiana 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 Columbiana County have been low magnitude and have not caused any human injuries or deaths.
Property	1	Less than 10% of property affected	Earthquakes near Columbiana County have been low magnitude and caused little to no damage.
Total	12	Low	

2.0 RISK ASSESSMENT

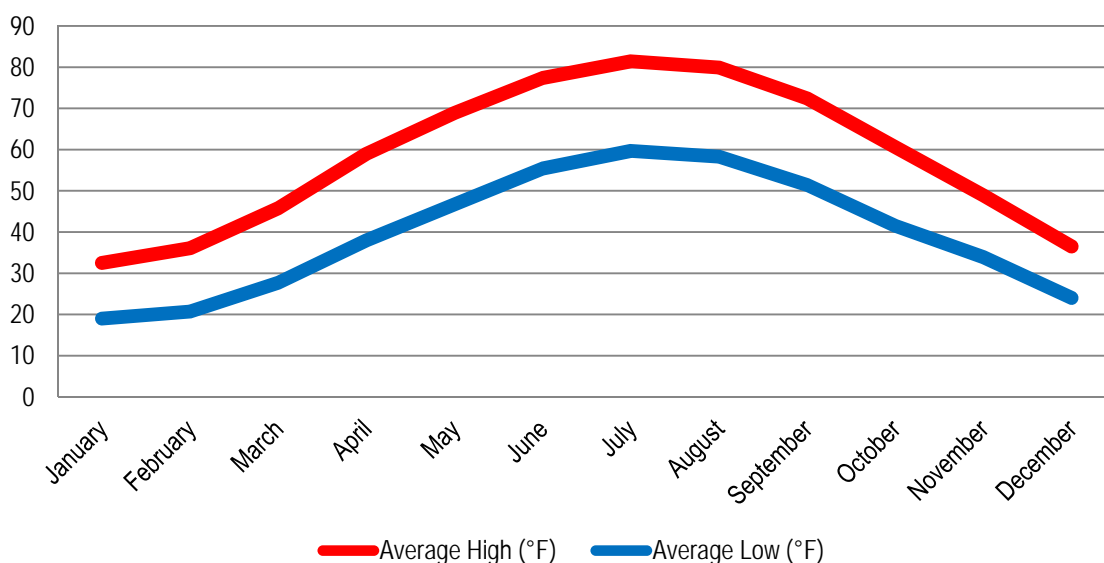
2.3.3 Extreme Temperatures (Heat and Cold)

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 the course of 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 Columbiana 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 Columbiana 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 Columbiana 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. 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

Historical Occurrences

According to the NOAA'S National Centers for Environmental Information, there have been 11 extreme cold events in Columbiana County since 2009, for an average of one event 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>
Columbiana (Zone)	01/16/2009	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	01/22/2013	Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	01/05/2014	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	01/21/2014	Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	01/27/2014	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	02/14/2015	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	02/19/2015	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	02/24/2015	Extreme Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	02/13/2016	Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	12/15/2016	Cold/Wind Chill	0	0	\$0	\$0
Columbiana (Zone)	01/30/2019	Extreme Cold/Wind Chill	0	0	\$0	\$0
Totals			0	0	\$0	\$0

Polar Vortex, January 2014

An arctic front crossed the Upper Ohio Valley on January 6, bringing low temperatures and extreme wind chills. On the morning of January 7, the National Weather Service recorded a low temperature of 14° F below zero with a wind chill of 39° F below zero near East Liverpool. Cold weather continued later into January, with another strong arctic front moving across eastern Ohio on the 27th. Low temperatures in late January near East Lisbon were -22° F on the 28th and -20° F on the 29th.

Polar Vortex, February 2015

Extreme cold temperatures returned for the winter of 2015, as an arctic front crossed eastern Ohio on February 14. East Palestine experienced a wind chill of -24° F on February 15

and a low temperature of -15° F on the morning of the 16th. On February 20, Lisbon experienced a low temperature of -21° F. Temperatures remained well below zero across the region through February 24.

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 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. These conditions are exacerbated by high relative humidity. High humidity 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 impacts 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. As with heat-related illnesses, some populations (i.e., children, elderly, etc.) are more susceptible to the impacts of cold weather.

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 Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

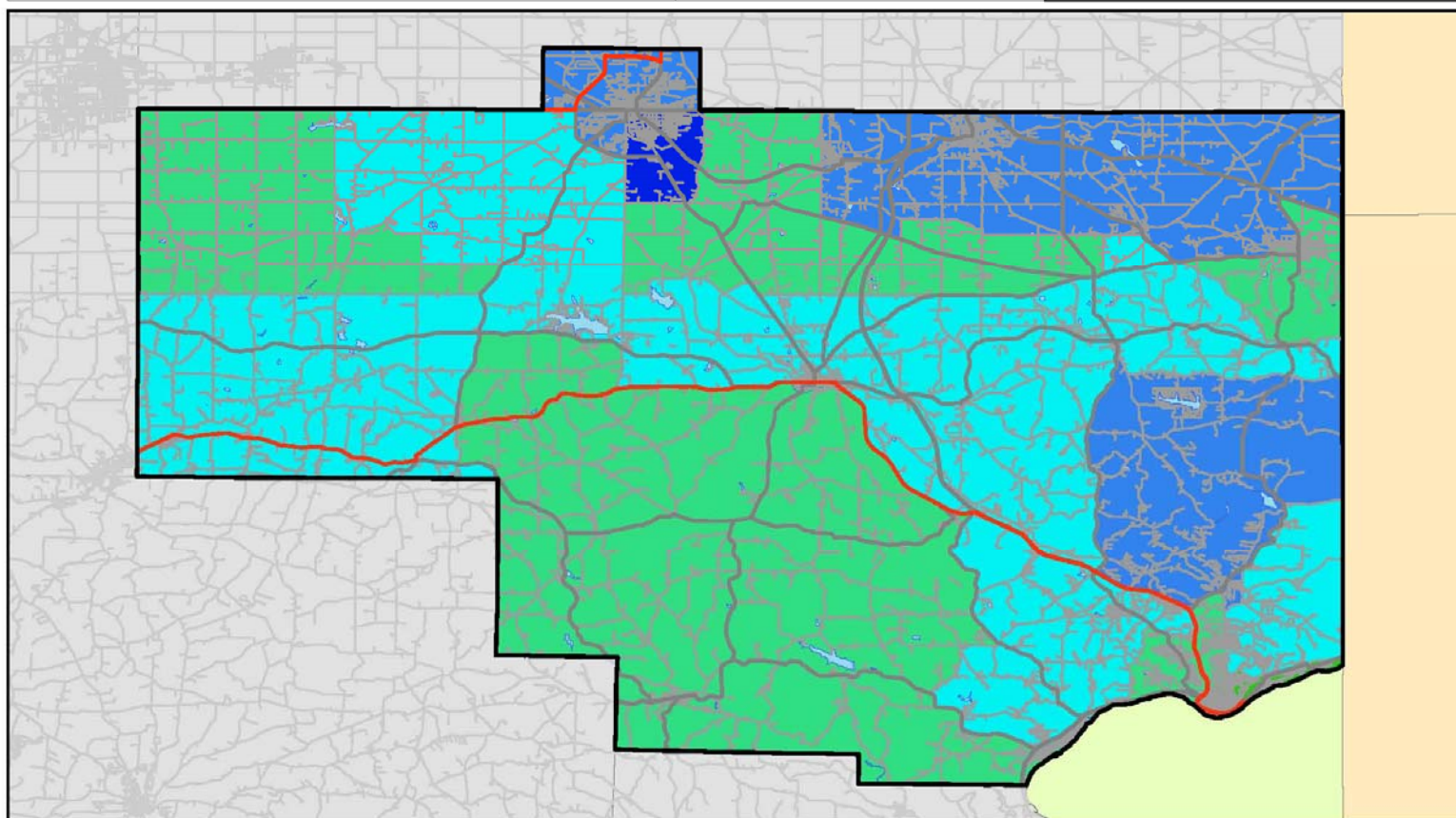
Columbiana County Population (65 and Over) by Tract

Data Source(s):
U.S. Census Bureau

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



Age 65 and Over (2010, by Tract)



COLUMBIANA COUNTY HAZARD MITIGATION PLAN

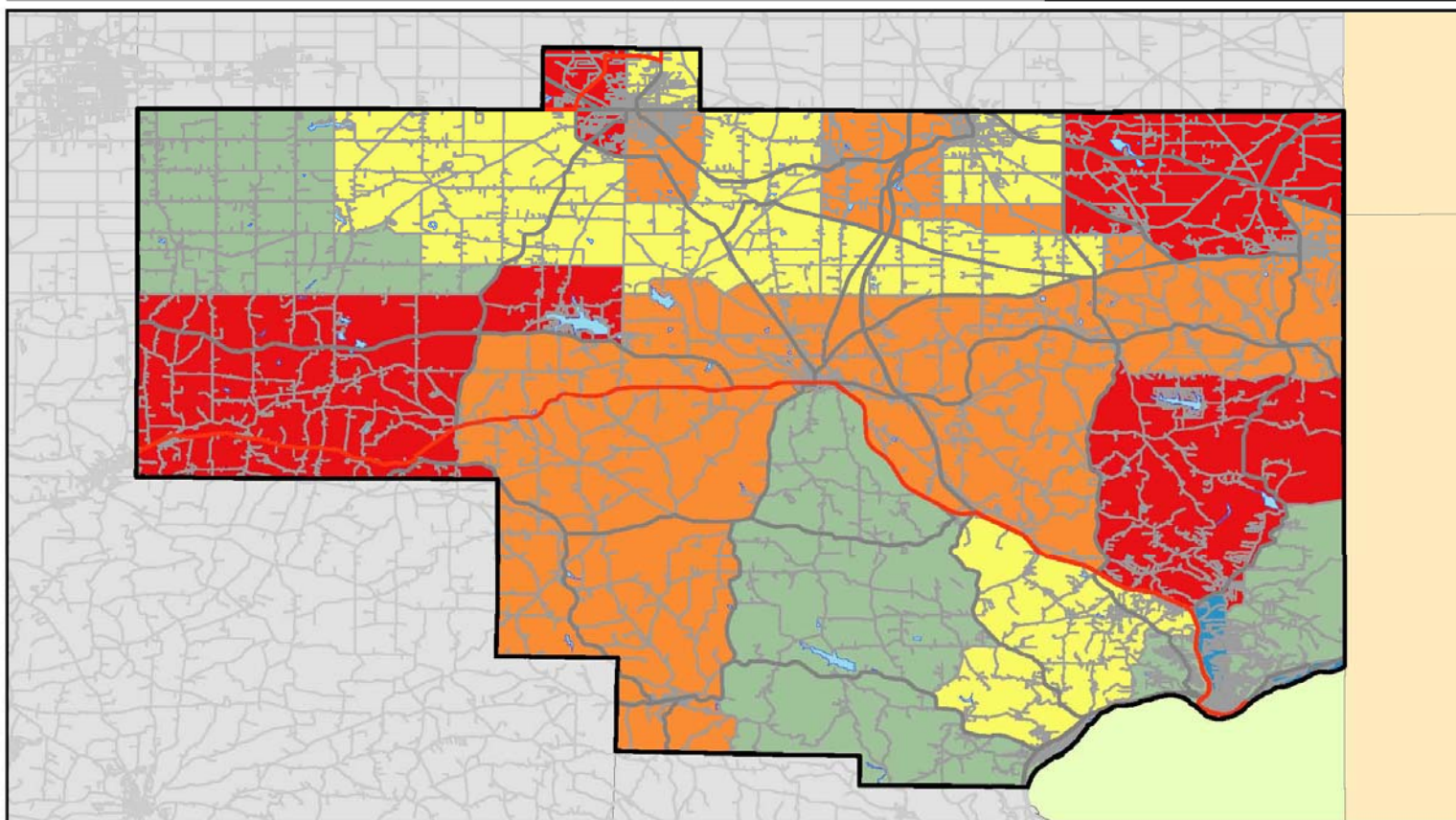
Columbiana County Population (19 and Under) by Tract

Data Source(s):
U.S. Census Bureau

*DISCLAIMER: Data is meant for use as reference only.
Some sources may be intended to be used at national
or regional scales and are thus used beyond their
original intent for demonstrative purposes.*



Age 19 and Under (2010, by Tract)



Losses and Damages

According to the NCEI, there have been no recorded damages from extreme temperatures (hot or cold). However, planners calculated the average losses per event for all extreme heat and cold events recorded by the NCEI for the State of Ohio (1996 to 2019). A breakdown of events was as follows.

- Temperature Extreme-Cold
 - **Cold/Wind Chill:** 33 days with an event and \$4,976,000 in property damage recorded
 - **Extreme Cold/Wind Chill:** 26 days with an event and \$1,625,000 in property damage recorded
 - **Frost/Freeze:** Five days with an event and \$0.00 in property damage recorded
 - **LOSSES (COLD):** \$331,700.00 property damage per event (average)
- Temperature Extreme-Heat
 - **Excessive Heat:** 15 days with an event and \$0.00 in property damage recorded
 - **Heat:** 17 days with an event and \$20,000 in property damage recorded
 - **LOSSES (HEAT):** \$625.00 property damage per event (average)

Together, the average property damage resulting from an extreme temperature event in Ohio is approximately \$222,400.00.


Risk Assessment

This section summarizes the risk to Columbiana County from extreme temperatures. 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.

EXTREME TEMPERATURES RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	4	May or may not occur in a year	Since 2009, there have been 11 extreme temperature occurrences, for an average of one per year. Data indicates, however, that there have been years in that span without an incident. As such, planners indicated the hazard "likely" to occur in a year rather than "will" occur in a year.
Response	1	Less than 24 hours	Extreme temperatures likely will not result in a large-scale mobilized community response.
Onset	1	More than 24 hours	Extreme temperatures are forecasted more than a day in advance and can onset slowly (over the course of days or weeks).
Magnitude	1	Localized	Though 100% of the county's population would likely 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% affected	Extreme temperatures would not adversely impact property.
Total	11	Low	

2.0 RISK ASSESSMENT

2.3.4 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.			
 <p>Vulnerability</p> <p>HIGHEST</p> <p>HIGH</p> <p>MEDIUM</p> <p>LOW</p> <p>LOWEST</p>	Period of Occurrence:	At any time, typically after prolonged periods of precipitation	Hazard Index Ranking: Medium
	Warning Time:	12-24 hours	State Risk Ranking: 4 – High
	Probability:	Highly likely	Severity: Critical
	Type of Hazard:	Natural	Disaster Declarations: DR 630 (1980) DR 870 (1990) DR 951 (1992) DR 1097 (1996) DR 1478 (2003) DR 1484 (2003) DR 1519 (2004) DR 1556 (2004) DR 1580 (2005) DR 4360 (2018) DR 4447 (2019)

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 major 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 structural failure. For more information, see Section 2.3.9 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 probability 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. In fact, 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		
<i>Program</i>	<i>Repetitive Loss</i>	<i>Severe Repetitive Loss</i>
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.

There are 10 repetitive loss properties in Columbiana County, with 26 combined losses. There are no severe repetitive loss properties in the county.

REPETITIVE LOSS PROPERTIES, COLUMBIANA COUNTY							
<i>Community Name (Jurisdiction)</i>	<i>Occupancy</i>	<i>Zone</i>	<i>Losses</i>	<i>Building Payments</i>	<i>Contents Payments</i>	<i>Total Paid</i>	<i>Average Payment</i>
Columbiana County	Single Family	AE	2	\$10881.29	\$19959.41	\$30840.70	\$15420.35
Columbiana County	Single Family	A	2	\$11558.51	\$0.00	\$11558.51	\$5779.26
Columbiana County	Single Family	X	3	\$19270.45	\$4000.00	\$23270.45	\$7756.82
Columbiana County	Single Family	X	2	\$75070.66	\$1863.40	\$76967.06	\$38483.53
East Palestine	Other Residential	A	2	\$12355.41	\$0.00	\$12355.41	\$3177.71
Hanoverton	Other Non- Residential	A	2	\$6242.84	\$0.00	\$6242.84	\$3121.42
Hanoverton	Single Family	X	5	\$27644.16	\$9807.01	\$37451.17	\$7490.23
Lisbon	Single Family	A	2	\$5262.33	\$1686.17	\$6948.50	\$3474.25
Wellsville	Single Family	A14	3	\$11533.89	\$0.00	\$11533.89	\$3844.63
Wellsville	Single Family	C	3	\$4567.27	\$1408.75	\$5976.02	\$1992.01

Impacts and Vulnerability

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

EFFECTS OF FLOODING	
<i>Type</i>	<i>Description</i>
Primary Impacts	<ul style="list-style-type: none"> • 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. • Massive amounts of erosion can be accomplished by floodwaters. Such erosion can undermine bridge structures, levees, and buildings causing their collapse. • 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. • 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. • Flooding of farmland usually results in crop loss. Livestock, pets, and other animals are often carried away and drown. • Humans that get caught in the high-velocity floodwaters are often drowned by the water. • Floodwaters can concentrate garbage, debris, and toxic pollutants that can cause the secondary effects of health hazards.

EFFECTS OF FLOODING	
Type	Description
Secondary Impacts	Disruption of services - <ul style="list-style-type: none"> • 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. • Gas and electrical service may be disrupted. • Transportation systems may be disrupted, resulting in shortages of food and clean-up supplies. In underdeveloped countries, food shortages often lead to starvation.
Long-Term (Tertiary) Impacts	<ul style="list-style-type: none"> • Location of river channels may change as the result of flooding, new channels develop, leaving the old channels dry. • Sediment deposited by flooding may destroy farmland (although silt deposited by floodwaters could also help to increase agricultural productivity). • 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). • Insurance rates may increase. • Corruption may result from misuse of relief funds. • Destruction of wildlife habitat.

Historical Occurrences

There have been 29 floods and 41 flash floods in Columbiana County since 1996, for an average of 1.3 floods and 1.9 flash floods per year. These events have caused a combined \$5.846 million in damage. The following table outlines the instances of flooding.

HISTORICAL OCCURRENCES – FLOOD (Source: NCEI Storm Events Database)						
Location	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Columbiana (Zone)	01/19/1996	Flood	0	0	440.00K	0.00K
Columbiana (Zone)	04/14/2002	Flood	0	0	5.00K	0.00K
Columbiana (Zone)	07/08/2003	Flood	0	0	0.00K	0.00K
Columbiana (Zone)	07/28/2003	Flood	0	0	0.00K	0.00K
Columbiana (Zone)	01/04/2004	Flood	0	0	0.00K	0.00K
Columbiana (Zone)	05/22/2004	Flood	0	0	30.00K	0.00K
Columbiana (Zone)	09/08/2004	Flood	0	0	300.00K	0.00K
Columbiana (Zone)	09/17/2004	Flood	0	0	475.00K	0.00K
Columbiana (Zone)	01/06/2005	Flood	0	0	0.00K	0.00K
Columbiana (Zone)	01/07/2005	Flood	0	0	30.00K	0.00K
Summitville	03/04/2008	Flood	0	0	25.00K	0.00K
Wellsville (Johnson Area)	03/04/2008	Flood	0	0	25.00K	0.00K
Lisbon	03/04/2008	Flood	0	0	10.00K	0.00K
Clarkson	03/05/2008	Flood	0	0	50.00K	0.00K
Highlandtown	03/05/2008	Flood	0	0	40.00K	0.00K
New garden	06/26/2008	Flood	0	0	50.00K	0.00K
Wellsville	06/02/2010	Flood	0	0	25.00K	0.00K
East Liverpool	02/28/2011	Flood	0	0	75.00K	0.00K
East Palestine	04/16/2011	Flood	0	0	5.00K	0.00K
Clarkson	05/12/2011	Flood	0	0	0.00K	0.00K
Elkton	05/13/2011	Flood	0	0	10.00K	0.00K

HISTORICAL OCCURRENCES – FLOOD (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>
Logtown	05/13/2011	Flood	0	0	10.00K	0.00K
Salem	07/04/2011	Flood	0	0	0.00K	0.00K
Leetonia	07/04/2011	Flood	0	0	5.00K	0.00K
Columbia	07/04/2011	Flood	0	0	5.00K	0.00K
Unity	08/19/2011	Flood	0	0	25.00K	0.00K
Wellsville	08/08/2013	Flood	0	0	0.00K	0.00K
Columbiana	06/30/2015	Flood	0	0	2.00K	0.00K
Salem	01/12/2017	Flood	0	0	0.00K	0.00K
TOTALS			0	0	1.642M	0.00K

The following table summarizes Columbiana County's past flash floods.

HISTORICAL OCCURRENCES – FLASH FLOOD (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>
Salem	1/19/1996	Flash Flood	0	0	20.00K	0.00K
Salem	5/10/1996	Flash Flood	0	0	5.00K	0.00K
Franklin Square	5/11/1996	Flash Flood	0	0	0.00K	0.00K
Franklin Square	5/11/1996	Flash Flood	0	0	0.00K	0.00K
New Garden	5/17/1996	Flash Flood	0	0	50.00K	0.00K
Elkton	12/11/1996	Flash Flood	0	0	0.00K	0.00K
Elkton	12/12/1996	Flash Flood	0	0	0.00K	0.00K
Salem	5/25/1997	Flash Flood	0	0	1.00K	0.00K
Rogers	6/2/1997	Flash Flood	0	0	0.00K	0.00K
North Georgetown	6/3/1997	Flash Flood	0	0	0.00K	0.00K
Columbiana	6/18/1997	Flash Flood	0	0	0.00K	0.00K
East Portion	1/7/1998	Flash Flood	0	0	0.00K	0.00K
Salem	6/2/1998	Flash Flood	0	0	0.00K	0.00K
Lisbon	6/30/1998	Flash Flood	0	0	0.00K	0.00K
East Liverpool	6/30/1998	Flash Flood	0	0	25.00K	0.00K
Homeworth	4/8/2000	Flash Flood	0	0	0.00K	0.00K
Gavers	6/12/2000	Flash Flood	0	0	0.00K	0.00K
Lisbon	7/8/2003	Flash Flood	0	0	150.00K	0.00K
Elkton	7/8/2003	Flash Flood	0	0	100.00K	0.00K
Bayard	7/8/2003	Flash Flood	0	0	100.00K	0.00K
Homeworth	7/27/2003	Flash Flood	0	0	30.00K	0.00K
Hanoverton	8/9/2003	Flash Flood	0	0	0.00K	0.00K
Salem	8/9/2003	Flash Flood	0	0	0.00K	0.00K
Washingtonville	5/22/2004	Flash Flood	0	0	0.00K	0.00K
East Palestine	6/15/2004	Flash Flood	0	0	0.00K	0.00K
Lisbon	6/17/2004	Flash Flood	0	0	0.00K	0.00K
Winona	8/27/2004	Flash Flood	0	0	3.200M	0.00K
Rogers	7/5/2005	Flash Flood	0	0	0.00K	0.00K
Salem	8/9/2007	Flash Flood	0	0	25.00K	0.00K
Salem	8/20/2007	Flash Flood	0	0	50.00K	0.00K
Salem	6/17/2009	Flash Flood	0	0	50.00K	0.00K
Leetonia	3/22/2010	Flash Flood	0	0	50.00K	0.00K

HISTORICAL OCCURRENCES – FLASH FLOOD (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>
Washingtonville	3/22/2010	Flash Flood	0	0	150.00K	0.00K
West Portion	3/22/2010	Flash Flood	0	0	10.00K	0.00K
East Liverpool	7/10/2013	Flash Flood	0	0	75.00K	0.00K
East Liverpool	7/10/2013	Flash Flood	0	0	50.00K	0.00K
East Liverpool	7/10/2013	Flash Flood	0	0	35.00K	0.00K
Homeworth	7/10/2013	Flash Flood	0	0	25.00K	0.00K
Gavers	6/10/2018	Flash Flood	0	0	1.00K	0.00K
Salineville	6/10/2018	Flash Flood	0	0	0.00K	0.00K
Salineville	6/10/2018	Flash Flood	0	0	2.00K	0.00K
TOTALS			0	0	4.204M	0.00K

August 28, 2004, Flash Flood

On August 28, 2004, six inches of rain fell in just six hours in the county. The flash flooding caused significant damage in Columbiana County. Rushing waters along State Route 45 washed out a bridge, leaving a 65x125 ft. hole in the road. By 11:15 p.m., the flooding had spread to Lisbon. Other townships affected by the flash flood include Salem, Hanover, Butler, Center, and West. At least 100 homes suffered flood damage, with several damaged beyond repair. Several roads and bridges were washed out. Approximately 4,000 residents lost electricity, and the town of Lisbon lost water due to water line damage from the storm.

Hurricanes Frances and Ivan Remnants (2004)

In September 2004, two hurricanes, Frances and Ivan, hit the area in nine days. Frances made landfall on September 6 and progressed northeast through the U.S. and Canada. During September 8-9, most of eastern Ohio received 4" or more of rainfall. In Columbiana County, there were road closures countywide due to flooding. Mill Creek flooded the Lisbon area. Route 30 was closed from Hanover to Kensington, and State Road 154 near Elkton was covered in three feet of water. The most recorded rainfall was in West Point, which reported seven inches, Union received 4.3 inches, and Salem received 4.1 inches.

Just nine days after the rains from Hurricane Frances, remnants of Hurricane Ivan reached Columbiana County. Mudslides and floods closed roads in East Liverpool. Route 518 near Summitville was flooded by Will Creek. This flood-damaged or destroyed 119 structures and the recorded rainfall was seven inches in the southern part of the county.

Loss and Damages

Floods have caused \$1.6 million in damages in Columbiana County since 1996, and flash floods have caused an additional \$4.2 million in damages in that same time. This gives a combined loss per year of \$263,636 per year, or \$82,857 per event. Further, FEMA can estimate losses from flood to buildings in Columbiana 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 outlines 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	1	33	1	33	1	33	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	1	100	0	0	0	0	0	0	0	0
Residential	14	17	33	40	13	16	6	7	5	6	11	13
TOTAL	15		35		14		6		5		11	

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	0	0	0	0	0	0	0	0	0	0	0	0
Manufactured Housing	0	0	0	0	0	0	0	0	0	0	1	100
Masonry	1	50	1	50	0	0	0	0	0	0	0	0
Steel	0	0	0	0	0	0	0	0	0	0	0	0
Wood	13	16	32	41	13	16	6	8	5	6	10	13

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

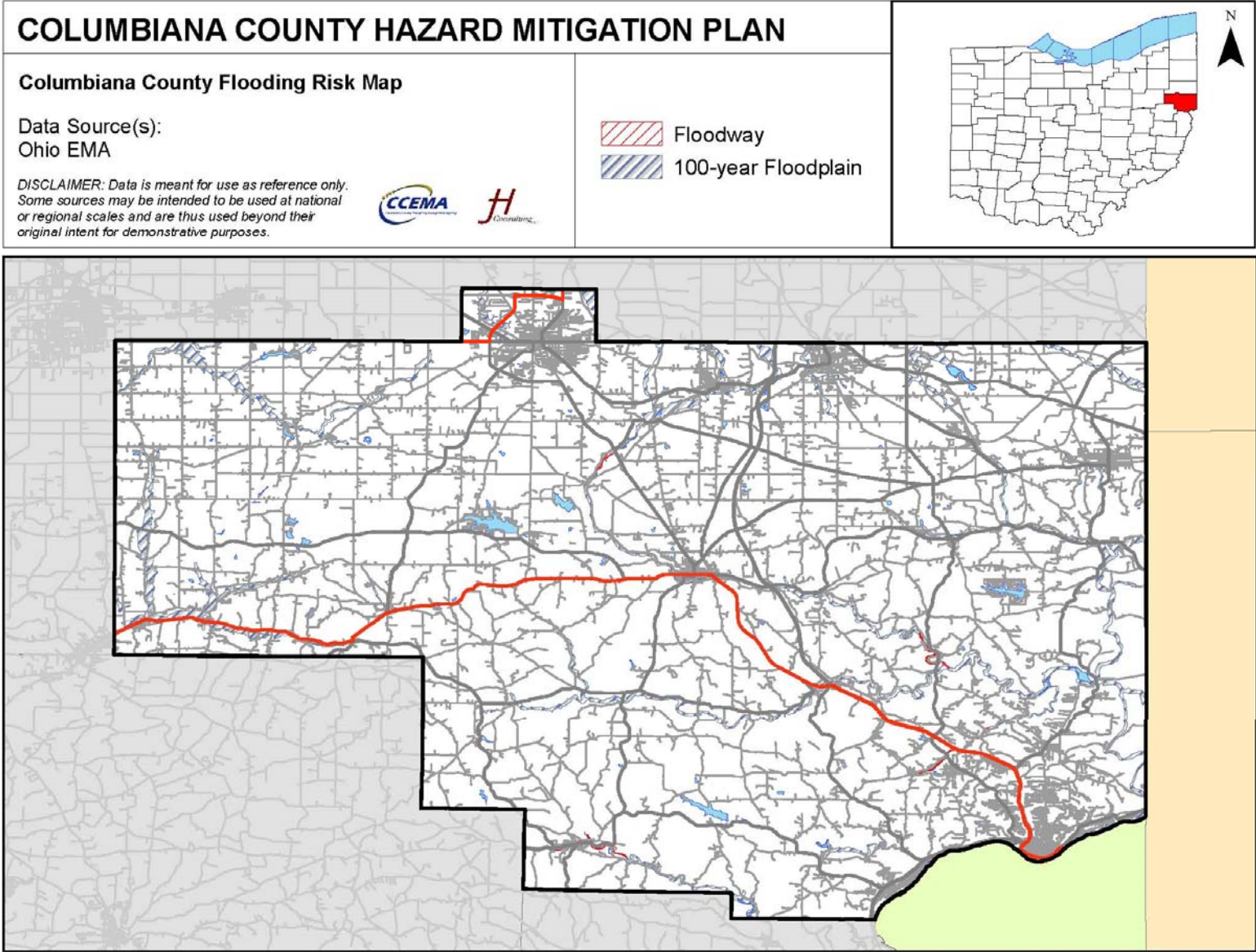
BUILDING-RELATED ECONOMIC LOSS ESTIMATES (MILLIONS OF DOLLARS)						
<i>Category</i>	<i>Area</i>	<i>Residential</i>	<i>Commercial</i>	<i>Industrial</i>	<i>Others</i>	<i>Total</i>
Building Loss	Building	28.94	6.22	2.93	1.30	39.39
	Content	12.74	17.51	6.41	6.47	43.12
	Inventory	0.00	0.33	1.03	0.08	1.44
	Subtotal	41.67	24.06	10.37	7.84	83.95
Business Interruption	Income	0.09	13.88	0.12	1.72	15.82
	Relocation	6.80	2.68	0.17	0.93	10.58
	Rental Income	2.05	1.89	0.03	0.14	4.10
	Wage	0.24	13.75	0.21	23.99	38.19
	Subtotal	9.18	32.20	0.53	26.78	68.69
TOTAL		50.85	56.27	10.90	34.62	152.64

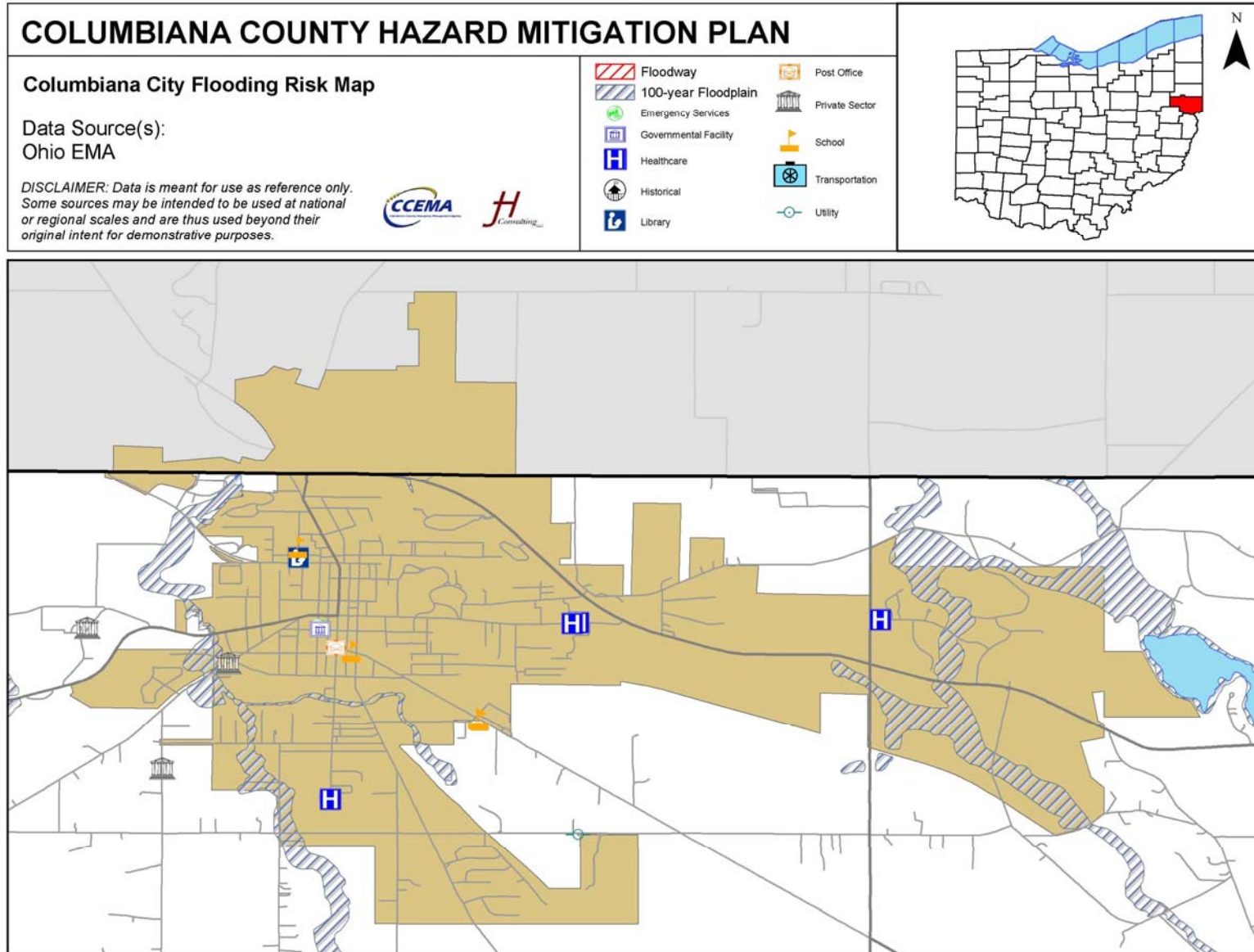
To complete the SHARPP vulnerability assessment, the Ohio EMA's "loss estimate workbook for HAZUS results" provided the figures included in the following table.

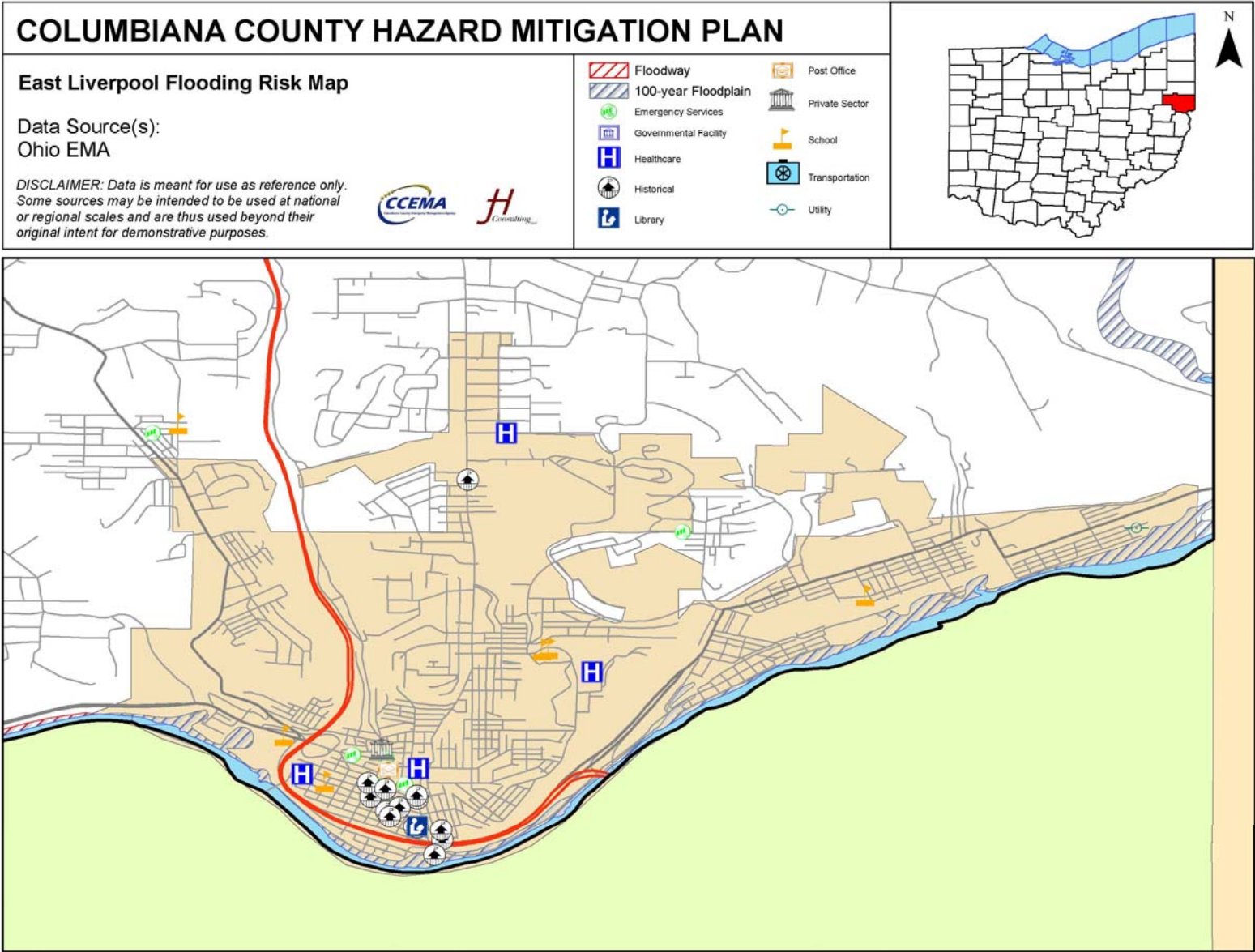
FLOODING EXPOSURE ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	4,762	\$1,176,655,000
Non-Residential	1,324	\$326,431,000
Critical Facilities	303	\$74,715,000
TOTALS	6,388	\$1,577,801,000

Risk Assessment

This section summarizes the risk to Columbiana County from flooding. The map images graphically depict potential risk areas in Columbiana County.







COLUMBIANA COUNTY HAZARD MITIGATION PLAN

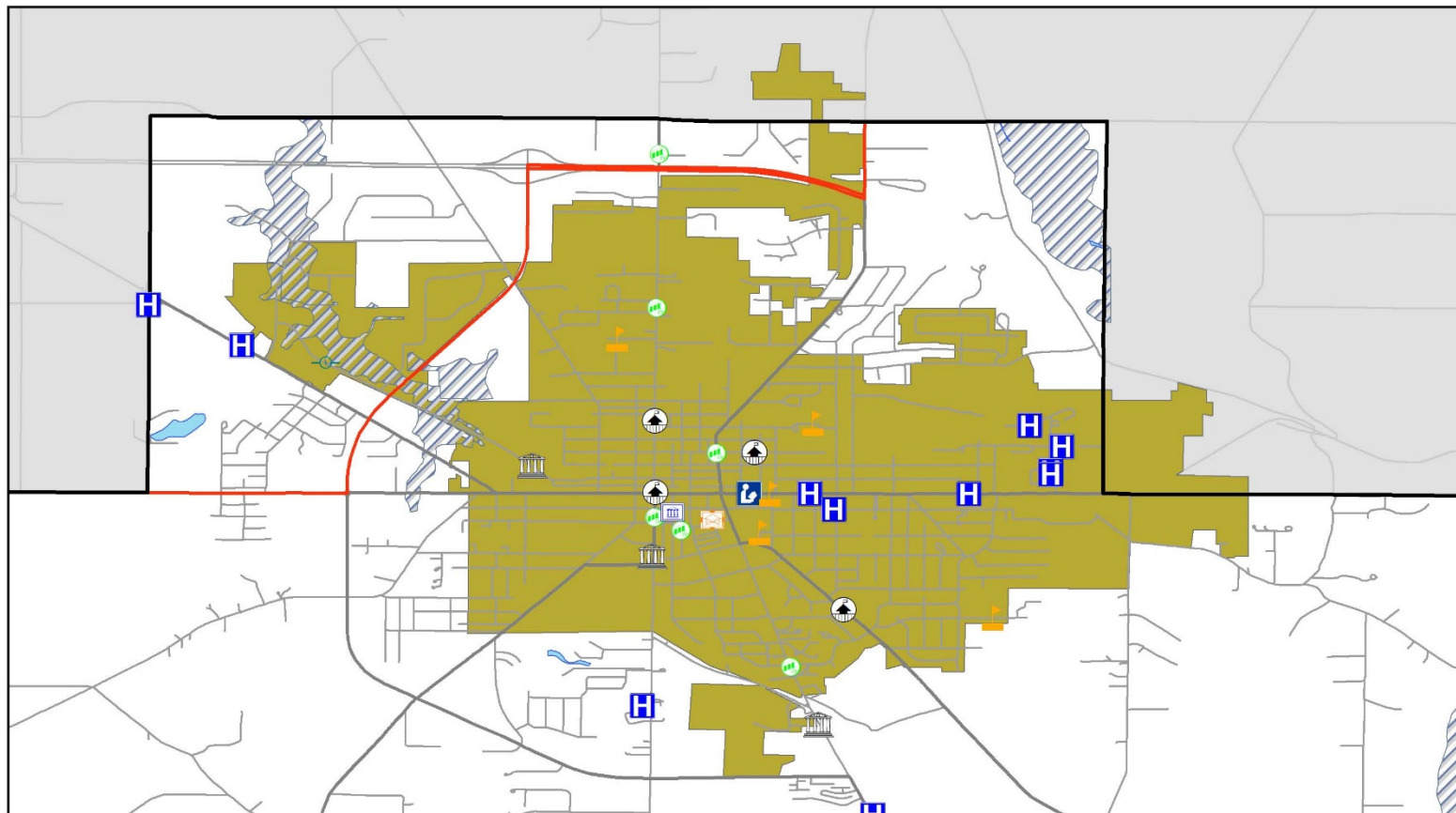
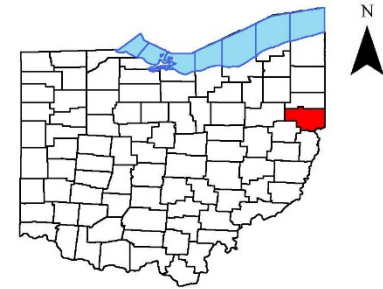
Salem Flooding Risk Map

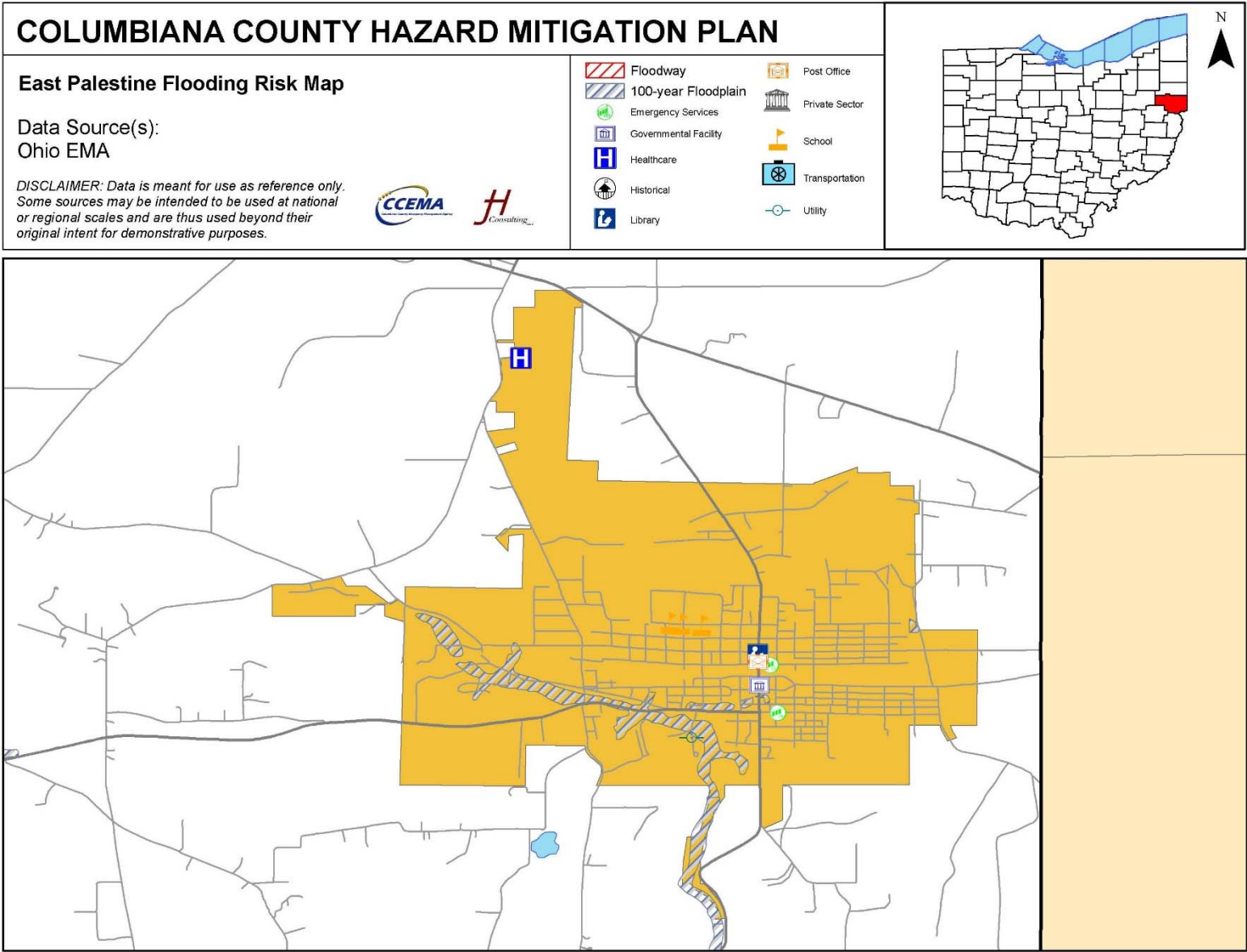
Data Source(s):
Ohio EMA

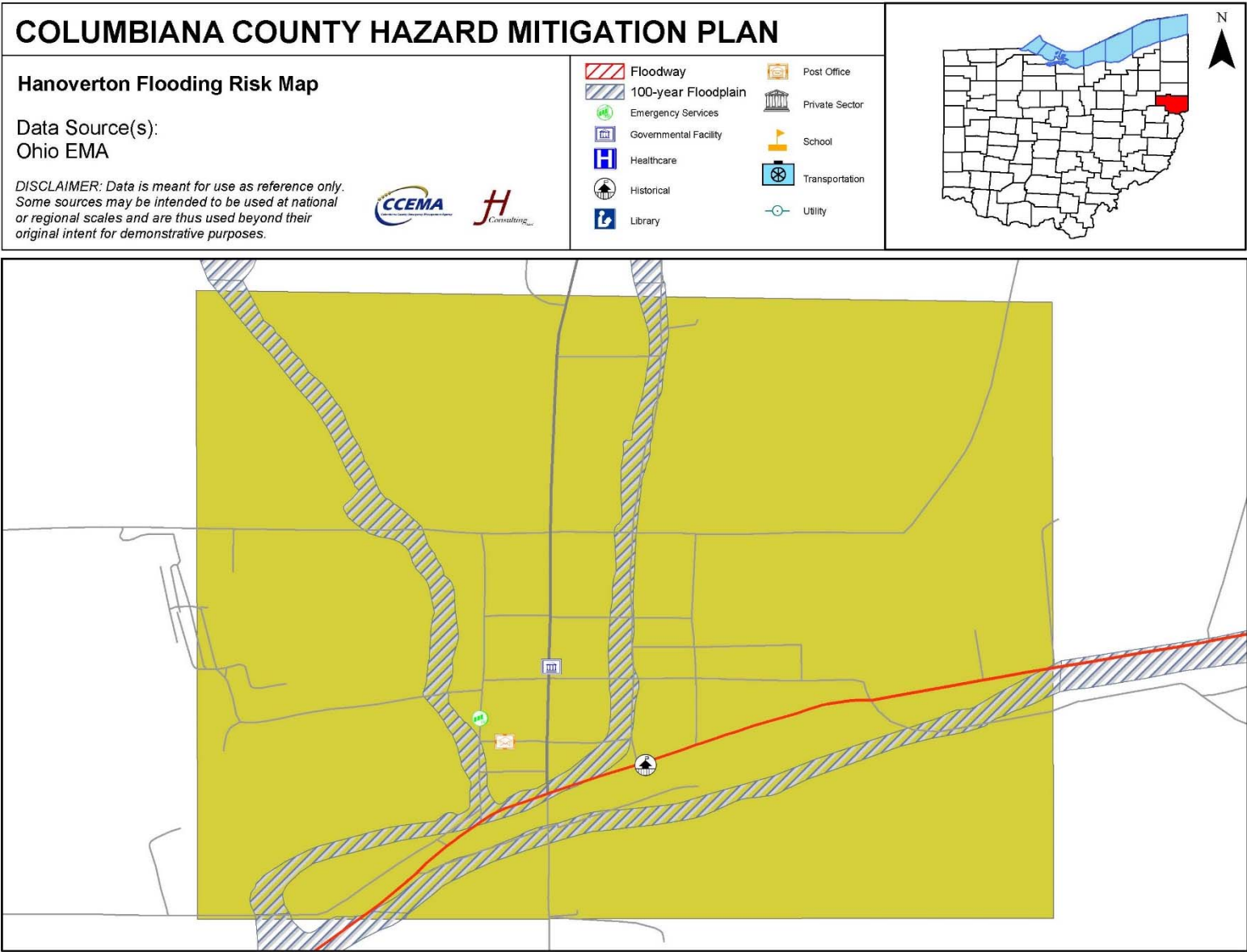
DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.

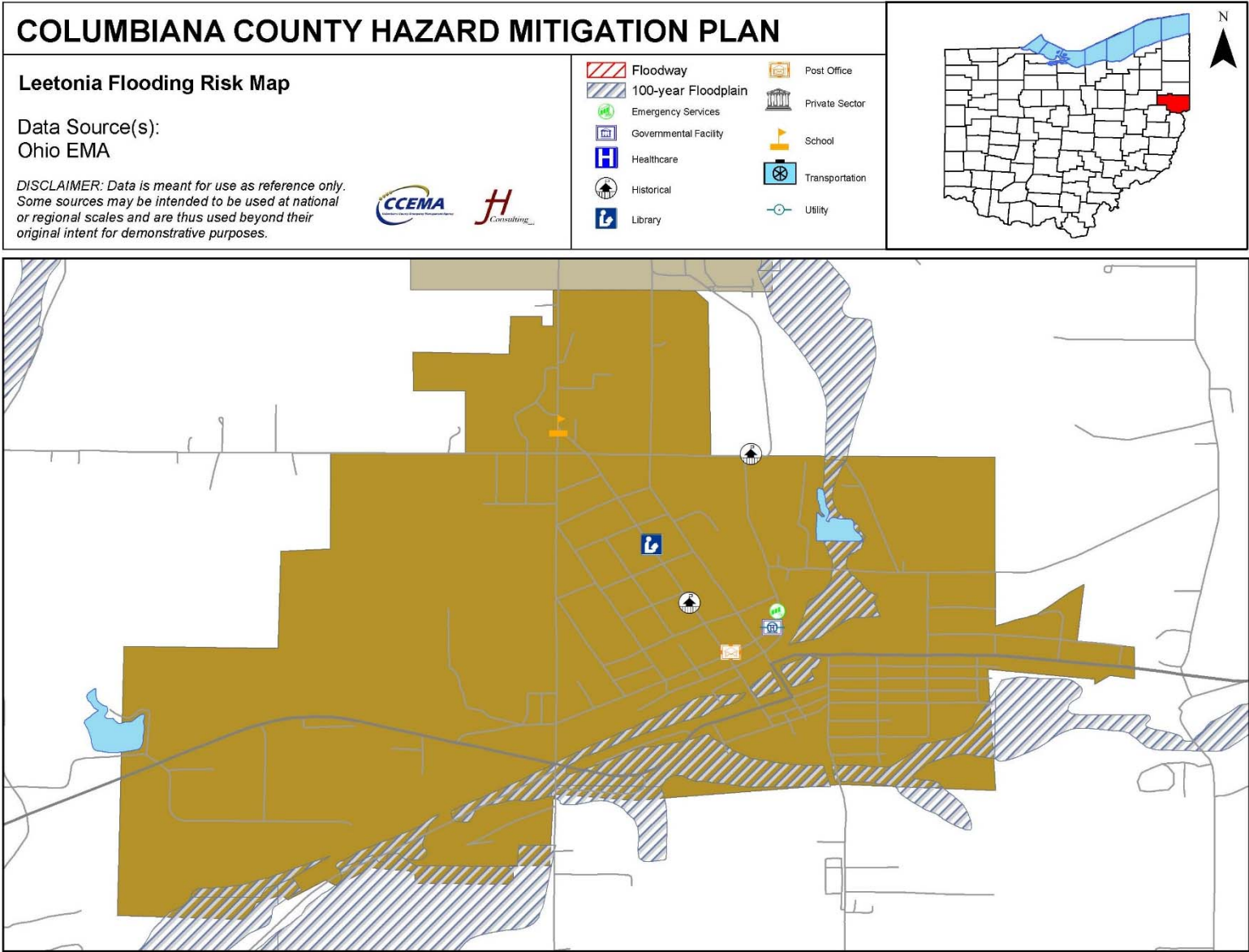


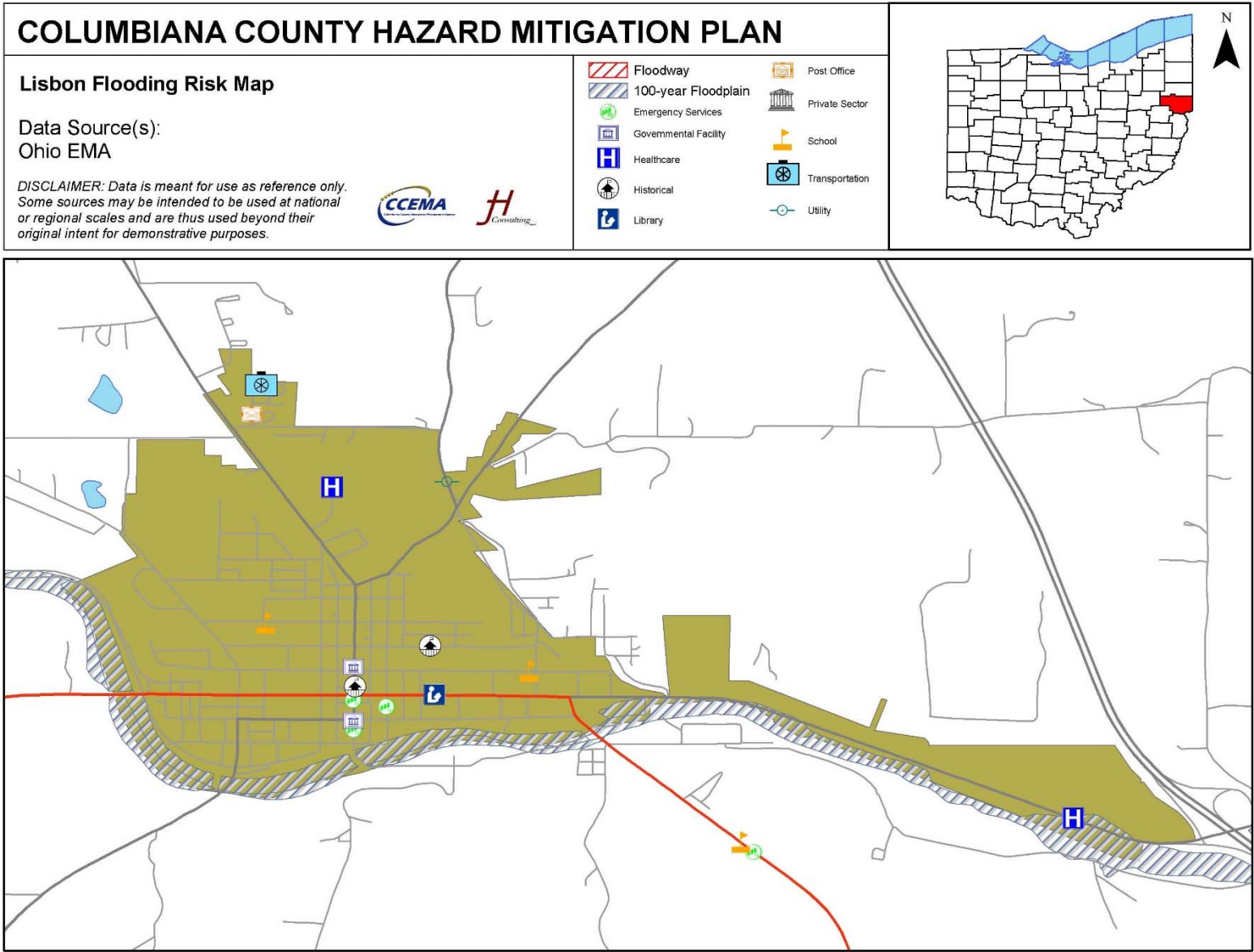
- | | |
|-----------------------|----------------|
| Floodway | Post Office |
| 100-year Floodplain | Private Sector |
| Emergency Services | School |
| Governmental Facility | Transportation |
| Healthcare | Utility |
| Historical | |
| Library | |

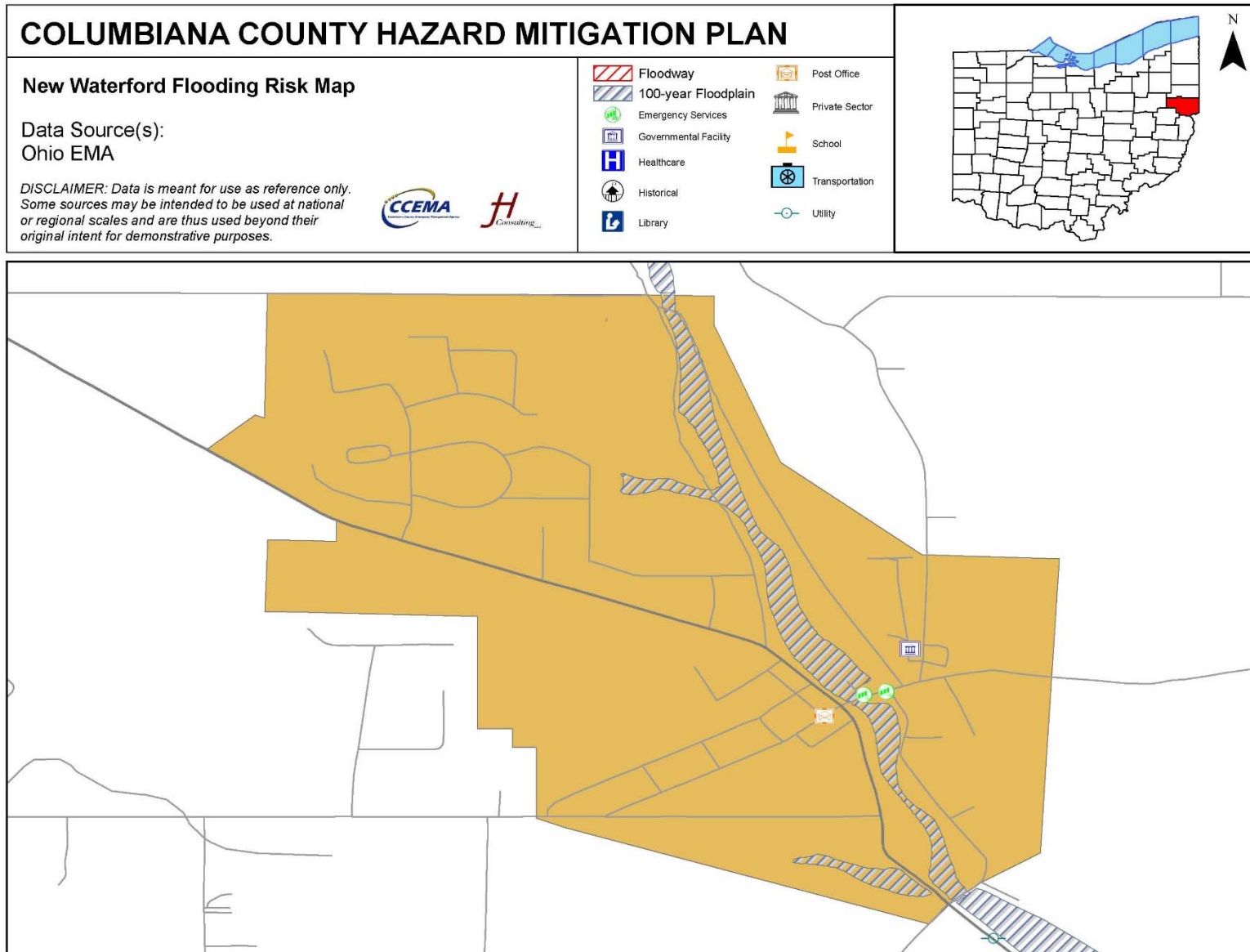


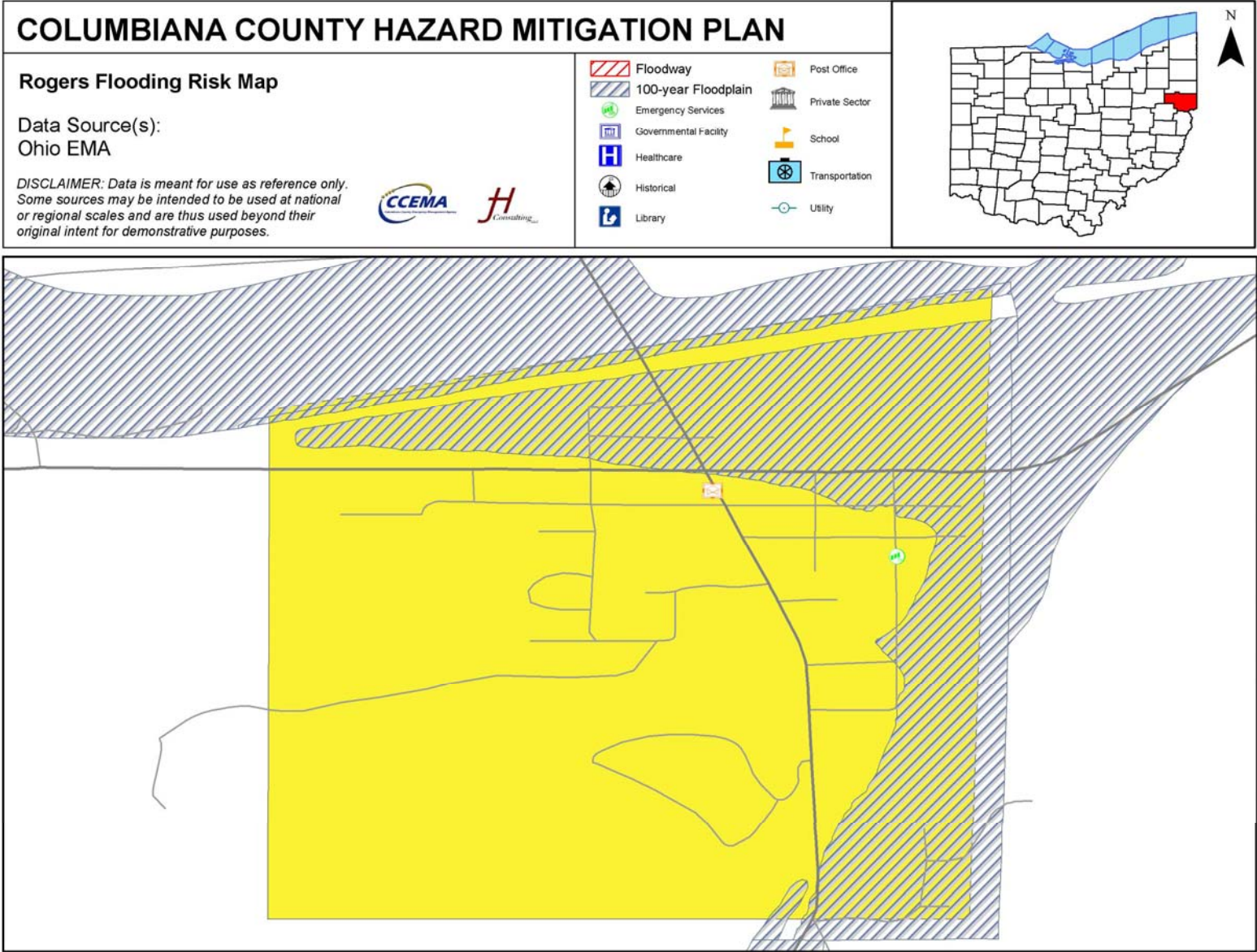


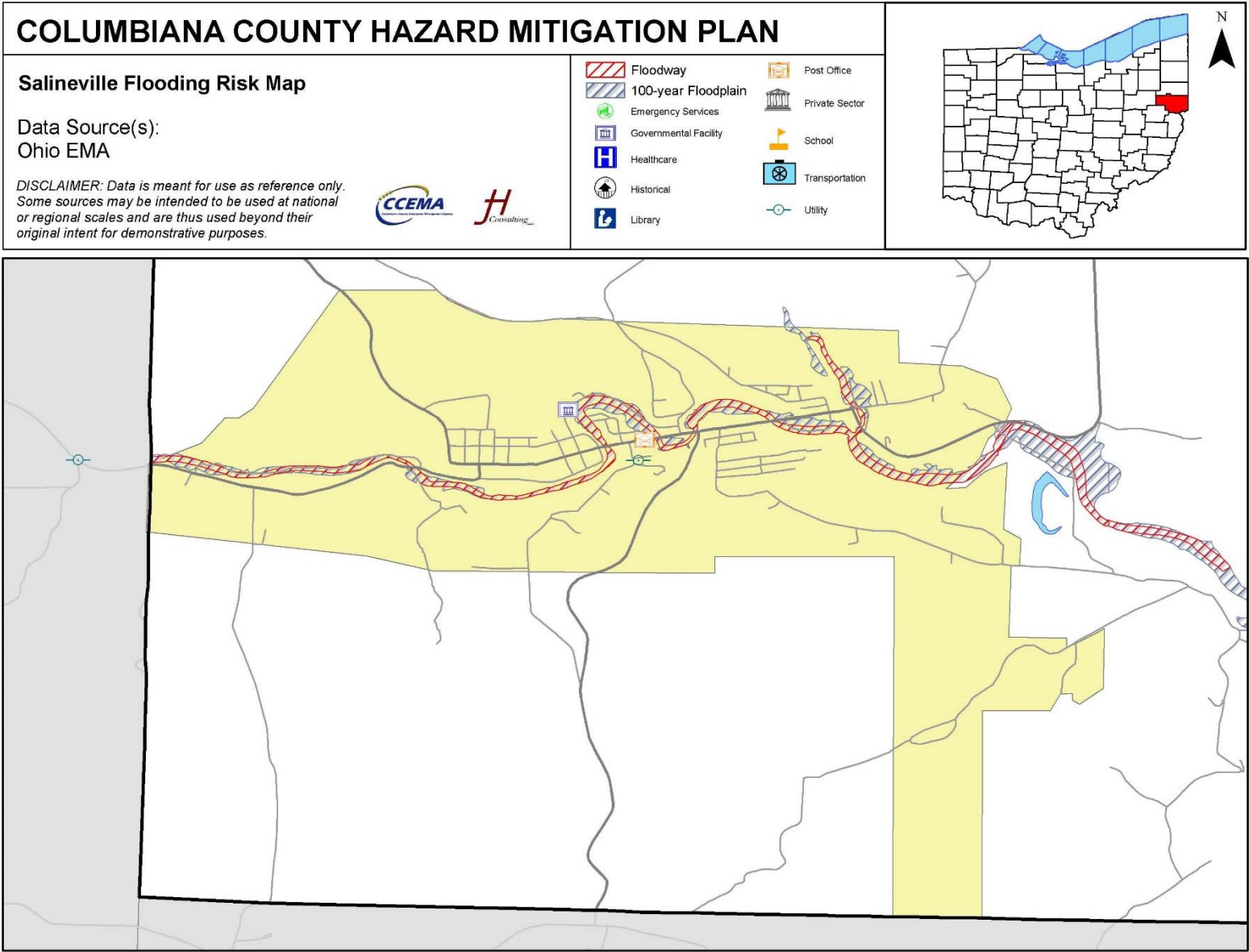


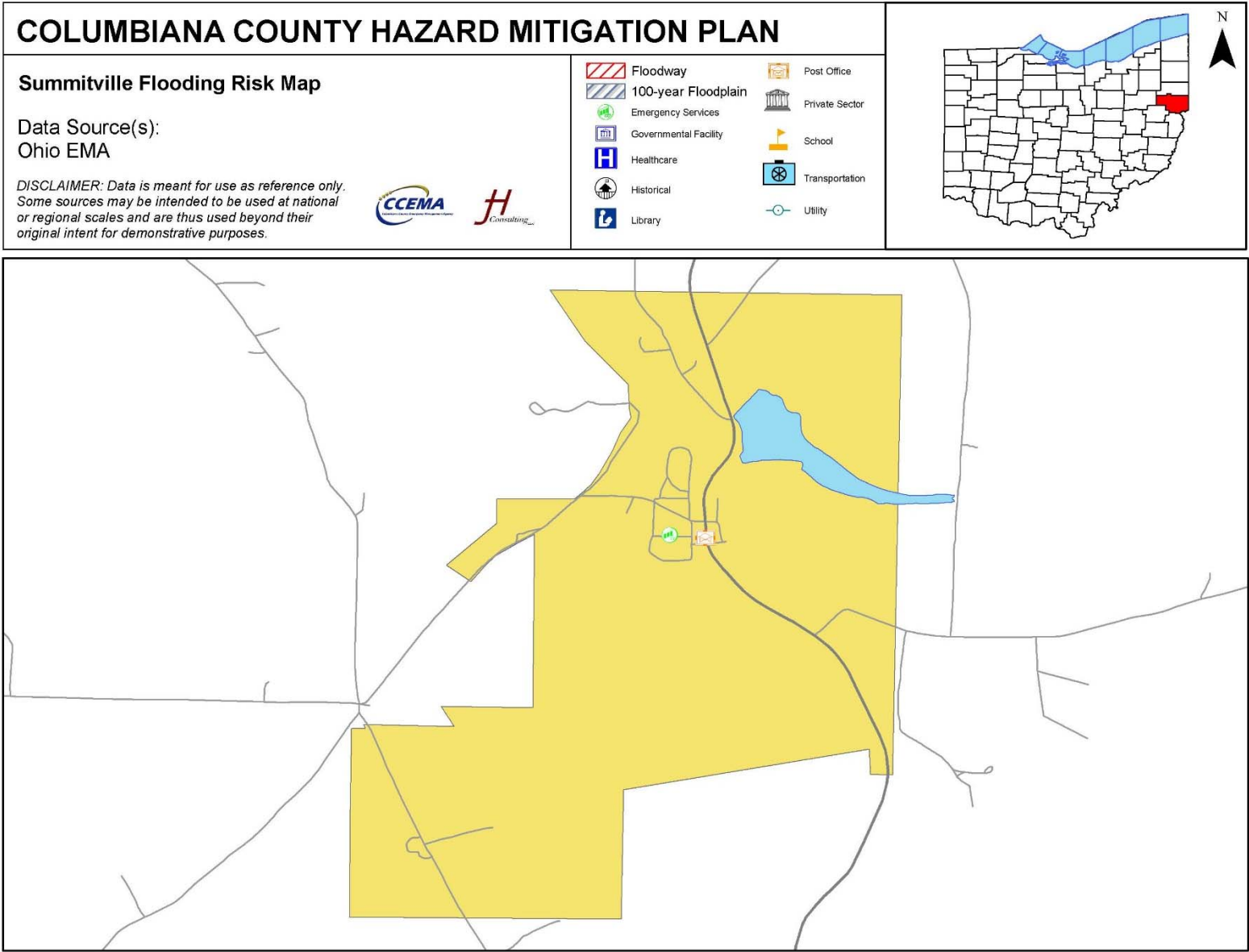


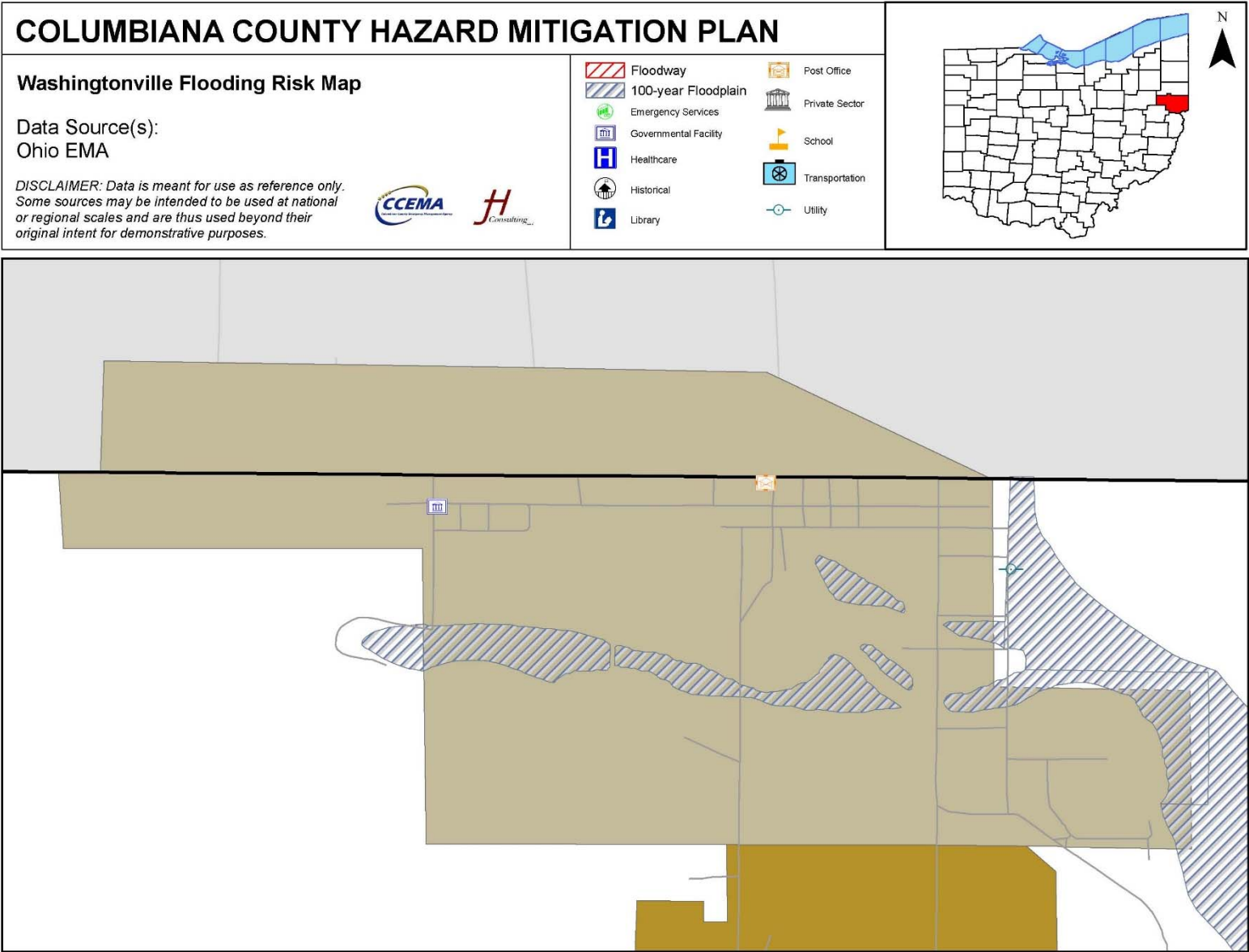


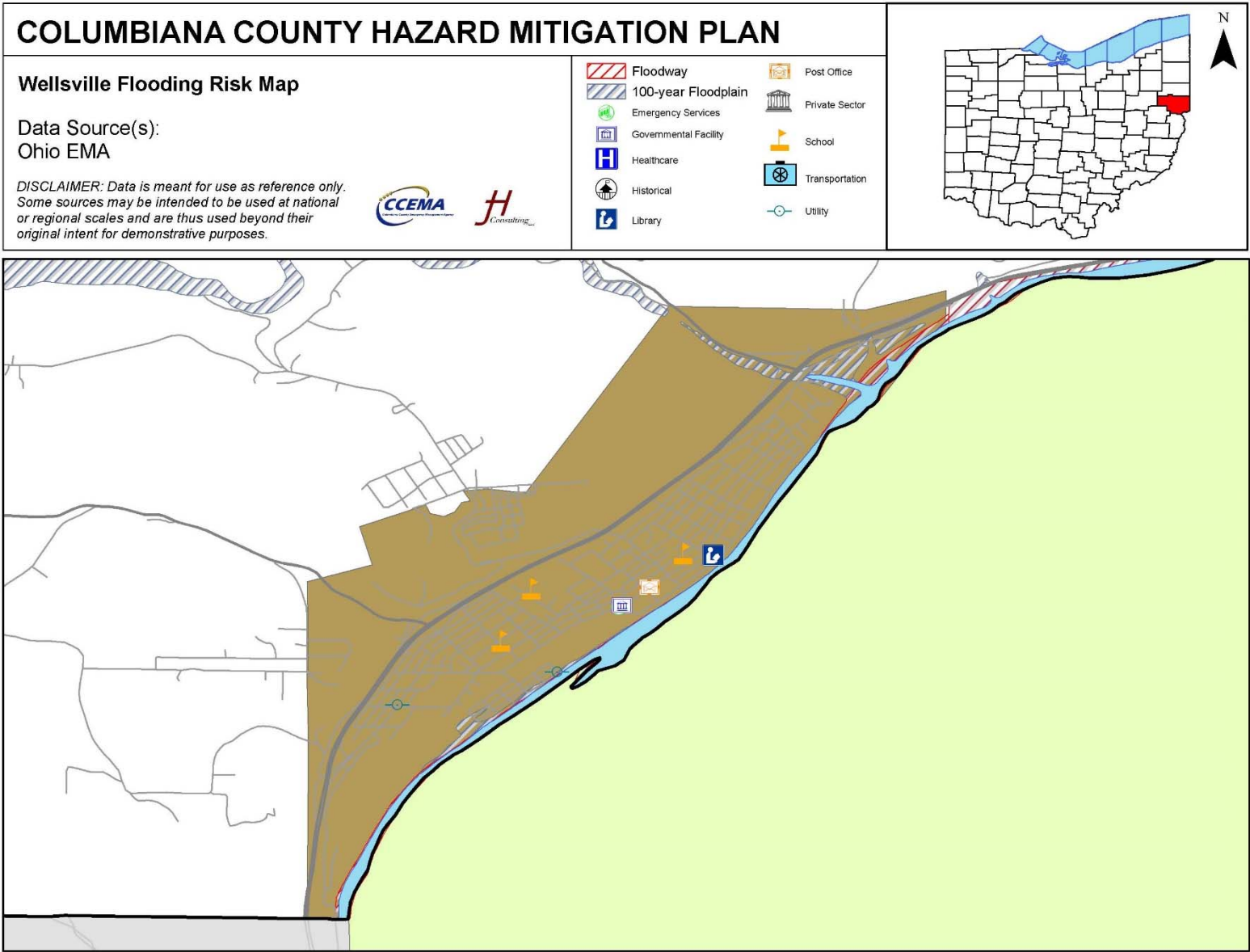












The following table identifies the assets located in flood risk areas.


ASSET	ADDRESS	CITY	TYPE				
			<i>General</i>	<i>Built</i>	<i>People</i>	<i>Economy</i>	<i>Natural</i>
Columbiana County Mental Health	40722 State Route 154	Lisbon	Healthcare		X		
East Liverpool Pottery	112 E 2nd Street	East Liverpool	Historical				X
Salem Sewage Plant	1600 Pennsylvania Avenue	Salem	Utility	X			
Washingtonville Water and Sewer	415 Boston Street	Washingtonville	Utility	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 RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	5	Excessive	Based on historical data, there have been 70 flood-related incidents in 22 years, for an average of 3.18 incidents per year.
Response	3	More than 1 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	1	Less than 24 hours	The HAZUS-MH analysis indicates that three commercial/industrial structures are vulnerable to flooding conditions; as such, the general economy of the county would likely resume operations within one day.
Human	2	Low (some injuries)	There have not been any recorded injuries or deaths associated with floods in Columbiana County. However, flooding is capable of producing injury.
Property	1	Less than 10%	Historical data indicates that the average property damage per event is \$82,857, which is less than 10% of potentially-impacted property in the county.
TOTAL	19	Medium	

2.0 RISK ASSESSMENT

2.3.5 Public Health Emergency

A public health emergency occurs when there is a sudden increase in the number of cases of a disease above what is normally expected in a certain area.			
	Vulnerability	Period of Occurrence: At any time	Hazard Index Ranking: Medium
		Warning Time: Months to days	State Risk Ranking: Not ranked
		Probability: Likely	Severity: Critical
		Type of Hazard: Natural	Disaster Declarations: None

Hazard Overview

The World Health Organization (WHO) defines a public health emergency (the condition that requires the governor to declare a state of public health emergency) as "an occurrence or imminent threat of an illness or health condition, caused by bioterrorism, epidemic or pandemic disease, or (a) novel and highly fatal infectious agent or biological toxin, that poses a substantial risk of a significant number of human facilities or incidents or permanent or long-term disability. The declaration of a state of public health emergency permits the governor to suspend state regulations, change the functions of state agencies" (WHO, 2019). According to the Centers for Disease Control and Prevention (CDC, 2012), there are various levels of disease occurrence.

- **Endemic** refers to the constant presence and usual prevalence of a disease or infectious agent in a population within a geographic area; it is the amount of a particular disease that is usually present in a community or baseline.
- **Sporadic** refers to a disease that occurs infrequently and irregularly.
- **Hyperendemic** refers to persistent, high levels of disease occurrence.
- **Cluster** refers to an aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known.
- **Epidemic** refers to an increase, often sudden, in the number of cases of a disease above normal expectations for an area or season. Epidemics occur when an agent and

susceptible hosts are present in adequate numbers, and the agent can pass from a source to the susceptible hosts. More specifically, an epidemic may result from:

- a recent increase in amount or virulence of the agent,
 - the recent introduction of the agent into a setting where it has not been before,
 - an enhanced mode of transmission so that more susceptible persons are exposed,
 - a change in the susceptibility of the host response to the agent, and
 - factors that increase host exposure or involve introduction through new portals of entry.
- **Outbreak** carries the same definition of an epidemic but often for a more limited geographic area.
 - **Pandemic** refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people.

Some diseases are so rare in a given population that a single case warrants an epidemiologic investigation (e.g., rabies, plague, polio); other diseases occur more commonly so that only deviations from the norm warrant investigation. Though they typically develop over a period of days or months, public health emergencies can develop with little or no warning and quickly inundate local medical care providers. A fast-developing epidemic can last several days and extend into several weeks. In some extreme cases, they can last for several months. An epidemic can occur at any time of the year, but the warm summer months, when bacteria and microorganism growth are at their highest, present the greatest risk.

Location and Extent

While the presence of a particular disease does not always constitute a public health emergency, certain diseases are more likely than others to meet this threshold. The Ohio Department of Health (ODH) classifies diseases due to their severity or potential for epidemic spread. Local officials must report Class A notifiable diseases immediately upon recognition that a case, suspected case, or positive laboratory result exists. Class A diseases include the following.

- Anthrax
- Botulism, foodborne
- Cholera
- Diphtheria
- Influenza A, novel virus
- Measles
- Meningococcal disease

- Middle East respiratory syndrome (MERS)
- Plague
- Rabies, human
- Rubella, not congenital
- Severe acute respiratory syndrome (SARS)
- Smallpox
- Tularemia
- Viral hemorrhagic fevers (Ebola, Lassa fever, etc.)
- Yellow Fever

Class B notifiable diseases must be reported the next business day following the existence of a case, suspected case, or a positive laboratory result is known. Class B diseases include the following.

- Amebiasis
- Abnormal neuroinvasive and non-neuroinvasive diseases, including
 - Chikungunya virus
 - Eastern equine encephalitis virus disease
 - La Cross virus disease
 - Powassan virus disease
 - St. Louis encephalitis
 - West Nile virus infection
 - Western equine encephalitis disease
 - Zika virus infection
 - Other arthropod-borne disease
- Babesiosis
- Botulism
- Brucellosis
- Campylobacteriosis
- Chancroid
- *Chlamydia trachomatis* infection
- Coccidioidomycosis
- Creutzfeldt-Jakob disease
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- Escherichia coli, Shiga toxin-producing
- Ehrlichiosis/Anaplasmosis
- Giardiasis
- Gonorrhea
- Haemophilus influenza, invasive disease
- Hantavirus
- Hemolytic Uremic Syndrome
- Hepatitis A
- Hepatitis B, non-perineal
- Hepatitis B, perineal
- Hepatitis C
- Hepatitis D
- Hepatitis E
- Influenza-associated hospitalization
- Influenza-associated pediatric mortality

- Legionellosis
- Leprosy (Hansen disease)
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Meningitis, aseptic
- Meningitis, other bacterial
- Mumps
- Pertussis
- Poliomyelitis
- Psittacosis
- Q fever
- Rubella, congenital
- Salmonellosis
- Shigellosis
- Spotted fever rickettsiosis
- *Staphylococcus aureus*, vancomycin-resistant or intermediate resistant
- Streptococcal disease, group A, invasive
- Streptococcal disease, Group B, newborn
- Streptococcal toxic shock syndrome (STSS)
- *Streptococcus pneumoniae*, invasive disease
- Syphilis
- Tetanus
- Toxic shock syndrome (TSS)
- Trichinellosis
- Tuberculosis (TB)
- Typhoid fever
- Varicella (chickenpox)
- Yersiniosis

These diseases can be spread either by direct contact, indirect contact, insect bites, or food contamination.

- **Direct Contact:** Includes person-to-person, animal-to-person, and mother-to-child transmission of disease.
 - **Person-to-person** transmission occurs when an ill individual touches, kisses, or coughs or sneezes on someone who is not infected.
 - **Animal-to-person** transmission occurs when an infected animal bites or scratches a person, or a person handles infected animal waste.
 - **Mother-to-child** transmission occurs when a woman passes infectious agents to her child through the placenta or breast milk.
- **Indirect Contact:** Occurs when the infectious agent lingers on an inanimate object such as a table or doorknob. For example, someone ill with influenza could touch a doorknob

and leave some of the virus behind. Another person who touches that doorknob is then at risk of becoming ill with influenza.

- **Insect Bites:** Also known as vector-borne contact, insects can carry diseases from the environment. When the insect bites a person, the disease-causing agent transfers to the person who can become ill. An example of this type of transmission is malaria caused by a disease-carrying mosquito bite.
- **Food Contamination:** This occurs when food is contaminated with disease-causing agents. Examples would be undercooked hamburger or unpasteurized milk or juice.

Impacts and Vulnerability

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.

A public health emergency, such as an infectious disease, would impact some subpopulations more than others. For example, children, the elderly, pregnant women, and the uninsured, unvaccinated, and chronically ill are all more likely than the general population to experience these cascading effects of public health emergencies.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

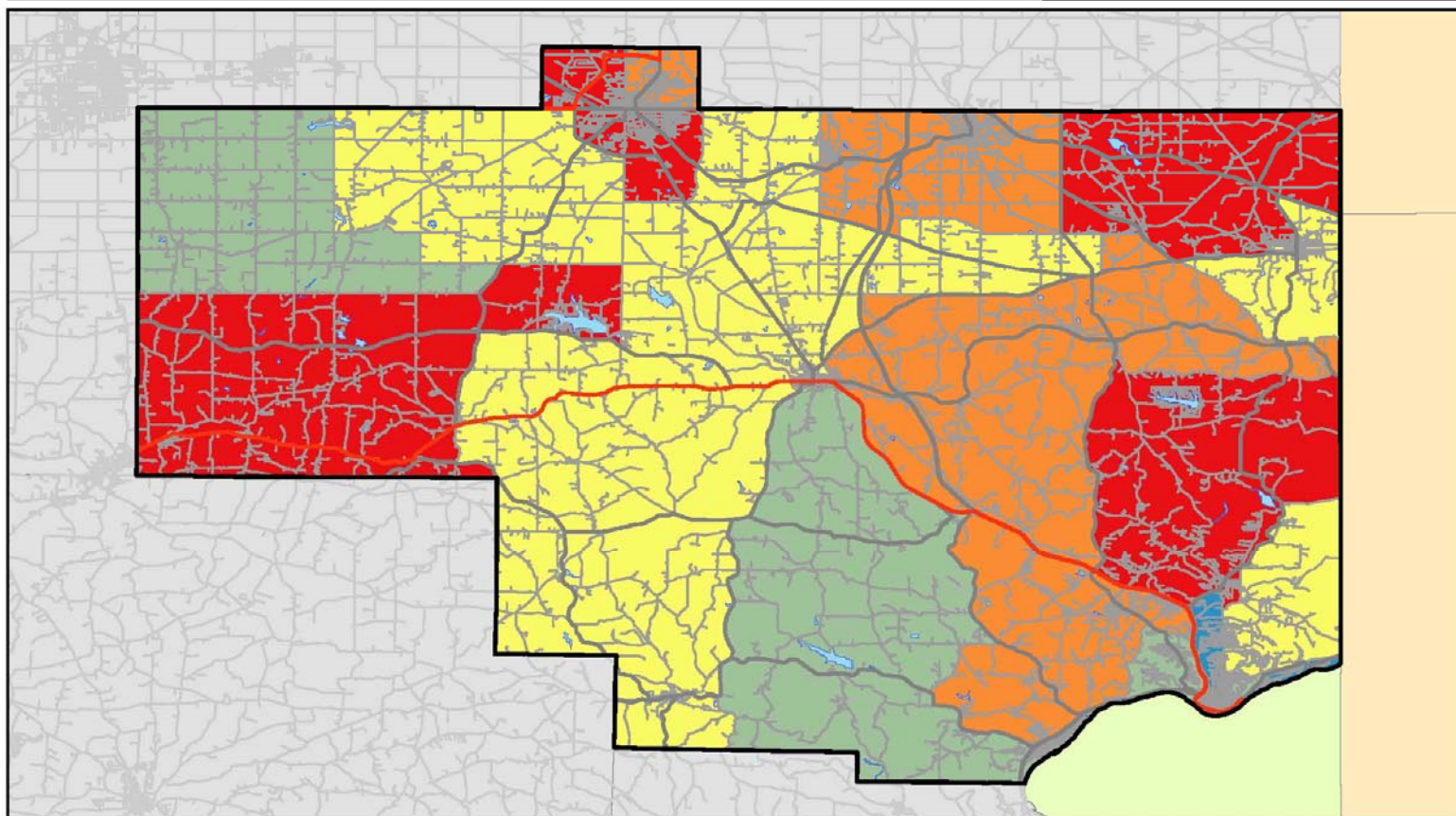
Columbiana County Vulnerable Populations (by Age)

Data Source(s):
U.S. Census Bureau

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



Vulnerable Populations (Under 19, Over 65)



Historical Occurrences

The following table summarizes recent disease outbreaks declared by the CDC and the Ohio Department of Health (ODH) from 2010-2019. The outbreaks listed below were widespread and had a substantial impact on public health in the U.S. and globally.

FEDERAL AND STATE OUTBREAKS, 2010-2019		
Year(s)	Agent	Reporting Agency
2010	<i>Salmonella</i>	CDC
2011	<i>Listeria monocytogenes</i>	CDC
2012	Meningitis, Fungal	CDC
2012	West Nile Virus	CDC
2012	<i>E. coli</i> O145	CDC
2013	Cyclosporiasis	CDC
2013	MERS (Middle East Respiratory Syndrome)	CDC
2014	Ebola virus	CDC
2014-2015	Enterovirus	CDC
2014-Present	Chikungunya virus	CDC
2016-2017	Zika virus	CDC
2017-Present	Hepatitis A	CDC, ODH
2019	Measles	CDC, ODH

The ODH keeps records of certain notifiable diseases reported within the state. The following table presents reported cases of select notifiable diseases for Columbiana County from 2008 to 2017.

REPORTED CASES OF NOTIFIABLE DISEASES, COLUMBIANA COUNTY											
Disease	Year										Average
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
General Infectious Diseases											
Amebiasis	0	0	0	0	0	0	0	0	0	0	0
Botulism	0	0	0	0	0	0	0	0	0	0	0
Botulism (infant)	0	0	0	0	0	0	0	0	0	0	0
Campylobacteriosis	5	10	6	14	11	5	7	9	16	12	9.5
Coccidioidomycosis	0	0	0	0	0	0	0	0	0	1	0.1
Creutzfeldt-Jakob Disease (CJD)	0	0	0	0	0	0	0	0	1	0	0.1
Cryptosporidiosis	9	4	6	5	1	1	1	3	4	3	3.7
Cyclosporiasis	NR	NR	NR	NR	NR	0	0	0	0	0	0
Escherichia coli, Shiga Toxin-Producing	2	1	0	4	2	0	1	1	1	1	1.3
O157:H7	2	1	0	3	0	0	1	0	1	0	0.8
Not O157:H7	0	0	0	1	2	0	0	0	0	0	0.3
Unknown serotype	0	0	0	0	0	0	0	1	0	0	0.1
Giardias	7	13	8	4	5	6	9	8	3	6	6.9

REPORTED CASES OF NOTIFIABLE DISEASES, COLUMBIANA COUNTY											
Disease	Year										Average
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
<i>Haemophilus influenzae</i> , Invasive Disease	2	2	0	1	0	0	0	1	2	0	0.8
Hemolytic Uremic Syndrome (HUS)	1	1	0	0	0	0	0	0	0	0	0.2
Hepatitis A	0	0	1	0	0	0	0	0	0	0	0.1
Hepatitis B, Acute	2	0	1	0	0	0	0	0	1	NR	0.44
Hepatitis B, Perinatal Infection	3	8	5	0	0	0	0	4	5	0	2.5
Hepatitis C, acute	0	1	0	0	0	1	3	5	4	NR	1.56
Hepatitis C, Chronic	66	19	30	NR	NR	NR	139	122	153	NR	88.17
Hepatitis E	0	NR	0	NR	0	NR	NR	0	0	0	0
Legionellosis	2	2	2	4	3	2	2	5	10	9	4.1
Listeriosis	1	0	1	0	0	0	1	0	3	1	0.7
Meningitis, Aseptic	3	0	5	5	4	5	2	3	5	5	3.7
Meningitis, Other Bacterial*	0	0	0		0	0	1	0	0	2	0.33
Salmonellosis	6	18	7	19	9	12	13	17	19	12	13.2
Shigellosis	4	0	1	0	0	0	2	1	0	1	0.9
Staphylococcus aureus , Intermediate Resistance to Vancomycin (VISA)	0	0	0	0	0	0	0	0	0	0	0
Streptococcal Disease, Group A, Invasive	3	1	0	4	4	2	1	3	6	5	2.9
Streptococcal Disease, Group B, in Newborn	0	0	0	0	0	0	1	0	0	0	0.1
Streptococcal Toxic Shock Syndrome (STSS)	1	0	0	0	0	0	0	0	0	1	0.2
Toxic Shock Syndrome (TSS)	0	0	0	NR	0	0	0	0	0	0	0
Typhoid Fever	0	0	0	0	0	0	0	0	0	0	0
Vibriosis	0	0	0	0	0	0	2	0	0	0	0.2
<i>Vibrio parahaemolyticus</i> Infection	0	0	0	0	0	0	2	0	0	0	0.2
<i>Vibrio vulnificus</i> Infection	0	0	0	0	0	0	0	0	0	0	0
Other (Not Cholera)	0	0	0	0	0	0	0	0	0	0	0
Yersiniosis	0	1	2	0	1	0	0	1	0	0	0.5
Outbreaks											
Community	0	0	0	0	0	0	0	0	0	0	0
Foodborne	0	0	0	0	0	0	0	0	1	0	0.1
Healthcare Associated	0	0	0	0	0	0	0	0	0	0	0
Institutional	0	0	0	0	0	0	0	0	0	0	0
Waterborne	0	0	0	0	0	0	0	0	0	0	0
Zoonotic	0	0	0	0	0	0	0	0	0	0	0
Vaccine-Preventable											
Influenza-Associated Hospitalization	NR	53	4	0	27	25	33	36	34	127	37.7
Influenza-Associated Pediatric Mortality*	0	0	NR	NR	0	0	0	0	0	2	0.25
Influenza A Virus, Novel Human Infection*	NR	2	NR	NR	0	0	0	0	0	0	0.29

REPORTED CASES OF NOTIFIABLE DISEASES, COLUMBIANA COUNTY											
Disease	Year										Average
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Measles	0	0	0	NR	0	NR	0	0	NR	0	0
Measles, Imported	0	0	0	NR	0	NR	0	0	NR	0	0
Meningococcal Disease		0	NR	0	0	0	0	0	0	0	0
Mumps	0	0	1	0	0	0	0	0	1	1	0.3
Pertussis	2	3	2	1	1	3	0	3	4	3	1.25
<i>Streptococcus pneumoniae</i> , Invasive Disease	20	16	17	19	11	15	8	13	8	7	13.4
Ages < 5 Years*	4	2	0	1	0	1	0	0	0	0	0.8
Drug Resistant, Ages 5+ Years*	5	2	7	5	3	3	2	2	0	3	3.2
Drug Susceptible, Ages 5+ Years*	11	12	10	13	8	11	6	11	8	4	9.4
Varicella (Chicken Pox)	18	17	9	4	3	0	6	4	3	2	9.4
Zoonoses											
Babesiosis*	0	NR	NR	NR	NR	NR	NR	0	NR	0	0
Chikungunya Virus Infection*	0	NR	NR	NR	NR	NR	0	0	0	0	0
Dengue	0	0	0	0	0	0	0	0	0	0	0
Ehrlichiosis/Anaplasmosis	0	0	0	0	0	0	0	0	0	0	0
<i>Anaplasma phagocytophilum</i> *	0	0	0	0	0	0	0	0	0	0	0
<i>Ehrlichia chaffeensis</i> *	0	0	0	0	0	0	0	0	0	0	0
La Crosse Virus Disease*	0	0	0	0	0	0	1	0	0	0	0.1
Leptospirosis	0	0	0	0	NR	NR	0	NR	0	0	0
Lyme Disease	1	0	0	1	4	1	4	5	6	0	2.2
Malaria	0	0	0	0	1	0	0	0	0	0	0.1
Q Fever	0	0	0	0	0	0	0	0	0	0	0
Q Fever, Chronic	0	0	0	0	0	0	0	0	0	0	0
Rabies, Animal*	0	2	0	0	1	0	1	0	4	1	0.9
Spotted Fever Rickettsiosis*	0	0	0	0	0	0	0	0	0	0	0
Tularemia	0	0	NR	0	NR	0	0	0	0	0	0
West Nile Virus Infection	0	0	0	0	1	0	0	0	0	0	0.1
Zika Virus Infection*	NR	NR	NR	NR	NR	NR	NR	NR	0	0	0
SUBTOTALS	180	191	125	108	102	93	249	258	303	209	

Source: Ohio Department of Health

A number of cases reported above average

A steady increase above average for at least three consecutive years

Steady decrease above average for at least three consecutive years

When comparing the outbreak table with those diseases reported in Columbiana County, Hepatitis A and West Nile Virus appear on both. One case of each appeared in Columbiana County. The case of Hepatitis A occurred in 2010, while the instance of West Nile was in 2012. The ODH declared the West Nile outbreak in 2012, consistent with the Columbiana County data. The Hepatitis A outbreak began in 2017 (well after the Columbiana County occurrence), and it carries forward.

Loss and Damages

Losses based on historical health-related incidents are difficult to estimate. According to a study by Molinari et al. (2007), seasonal influenza results in a substantial economic impact, estimated, in part, at \$16.3 billion in lost earnings. By population, Columbiana County represents 0.03% of the United States population. Since seasonal influenza primarily impacts the human population, using Columbiana County's composition of the U.S. as a multiplier (i.e., 0.0003) and applying it to the potential economic impact, lost earnings in the county could reach \$4,829,000 each year.

Although that number appears high, it equates to approximately \$80.77 per year for each person listed by the U.S. Census Bureau as "in civilian labor force" for the county. Public health emergencies rarely affect structures. They affect people, and at times, the operations of critical facilities, businesses, and other community assets.


Risk Assessment

This section summarizes the risk to Columbiana County from public health emergencies. 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.

HEALTH-RELATED EMERGENCIES RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	4	Low	The above table suggests that an average of 2.62 occurrences of the cited diseases will occur annually.
Response	5	More than one month	For large outbreaks, public health officials may remain in response for a substantial period of time.
Onset	1	Over 24 hours	Health emergencies evolve slowly, usually over days to months.
Magnitude	1	Localized (Less than 10% of land area affected)	Health emergencies do not impact land areas; they impact the human population, the patterns of which may spread over the area.
Business	2	1 week	Large outbreaks may diminish economic activity; the loss estimate in this profile consists of impacts to earnings.
Human	2	Low (some injuries)	Public health emergencies impact the human population, and by nature, results in injuries. This figure is low because most health-related emergencies result in illnesses (rather than deaths).
Property	1	Less than 10% of property affected	Public health emergencies do not impact structures and property.
TOTAL	16	Medium	

2.0 RISK ASSESSMENT

2.3.6 Severe Thunderstorm and Hail

A severe thunderstorm is one that produces a tornado, winds in excess of 58 miles per hour, or hail or one inch in diameter or larger.				
	Vulnerability	Period of Occurrence:	At any time, typically during the summer months	Hazard Index Ranking: Low
		Warning Time:	12-24 hours	State Risk Ranking: 4-High
		Probability:	Highly likely	Severity: Limited
		Type of Hazard:	Natural	Disaster Declarations: DR 630 (1980) DR 738 (1985) DR 870 (1990) DR 951 (1992) DR 1097 (1996) DR 1478 (2003) DR 1484 (2003) DR 1519 (2004) DR 1556 (2004) EM 3346 (2012) DR 4360 (2018) DR 4447 (2019)

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"> • Non-damaging hail • Microbursts • Weak tornadoes
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"> • Heavy rainfall • Downbursts • Hail • Weak tornadoes
Mesoscale Convective System (MCS)	Well organized system of thunderstorms	Up to 12 hours or more	55 mph or more	<ul style="list-style-type: none"> • Torrential rainfalls • Derechos • Tornadoes

TYPES OF THUNDERSTORMS				
<i>Type</i>	<i>Description</i>	<i>Duration</i>	<i>Wind Speeds</i>	<i>Associated Hazards</i>
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"> • Significant rain after the storm • Derechos
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"> • Tornadoes • Hail

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

- **Lightning:** 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.
- **Hail:** 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

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 is known to cause fires in structures and open land or forests, while 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	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

Historical Occurrences

Columbiana County has experienced 294 thunderstorm events on 179 days since 1969. This rate is an average of 5.8 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>
7/4/1969	0	0	\$0.00	\$0.00
7/4/1969	0	0	\$0.00	\$0.00
8/30/1973	0	0	\$0.00	\$0.00
9/22/1973	0	0	\$0.00	\$0.00
9/22/1973	0	0	\$0.00	\$0.00
3/5/1974	0	0	\$0.00	\$0.00
4/14/1974	0	0	\$0.00	\$0.00
6/5/1975	0	0	\$0.00	\$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>
2/16/1976	0	0	\$0.00	\$0.00
2/16/1976	0	0	\$0.00	\$0.00
5/13/1980	0	0	\$0.00	\$0.00
6/7/1980	0	0	\$0.00	\$0.00
6/28/1980	0	0	\$0.00	\$0.00
7/17/1980	0	0	\$0.00	\$0.00
8/2/1980	0	0	\$0.00	\$0.00
4/28/1981	0	0	\$0.00	\$0.00
4/28/1981	0	0	\$0.00	\$0.00
1/4/1982	0	0	\$0.00	\$0.00
3/31/1982	0	0	\$0.00	\$0.00
5/2/1983	0	0	\$0.00	\$0.00
5/2/1983	0	0	\$0.00	\$0.00
7/17/1983	0	0	\$0.00	\$0.00
7/21/1983	0	0	\$0.00	\$0.00
7/21/1983	0	0	\$0.00	\$0.00
7/21/1983	0	0	\$0.00	\$0.00
10/13/1983	0	0	\$0.00	\$0.00
10/13/1983	0	0	\$0.00	\$0.00
6/22/1985	0	0	\$0.00	\$0.00
3/10/1986	0	0	\$0.00	\$0.00
7/8/1986	0	0	\$0.00	\$0.00
4/27/1987	0	0	\$0.00	\$0.00
5/18/1987	0	0	\$0.00	\$0.00
6/8/1987	0	0	\$0.00	\$0.00
6/29/1987	0	0	\$0.00	\$0.00
5/9/1988	0	0	\$0.00	\$0.00
7/30/1988	0	0	\$0.00	\$0.00
8/2/1988	0	0	\$0.00	\$0.00
8/15/1988	0	0	\$0.00	\$0.00
6/27/1989	0	0	\$0.00	\$0.00
9/6/1990	0	0	\$0.00	\$0.00
9/14/1990	0	0	\$0.00	\$0.00
4/9/1991	0	0	\$0.00	\$0.00
5/1/1991	0	0	\$0.00	\$0.00
6/11/1991	0	0	\$0.00	\$0.00
6/30/1991	0	0	\$0.00	\$0.00
7/7/1991	0	0	\$0.00	\$0.00
7/7/1991	0	0	\$0.00	\$0.00
5/2/1992	0	0	\$0.00	\$0.00
7/20/1992	0	0	\$0.00	\$0.00
9/21/1992	0	0	\$0.00	\$0.00
8/31/1993	0	0	\$5,000.00	\$0.00
9/2/1993	0	0	\$5,000.00	\$0.00
6/19/1994	0	0	\$50,000.00	\$0.00
5/10/1995	0	0	\$2,000.00	\$0.00
6/21/1995	0	0	\$0.00	\$0.00
6/21/1995	0	0	\$1,000.00	\$0.00
6/21/1995	0	0	\$1,000.00	\$0.00
6/21/1995	0	0	\$1,000.00	\$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>
6/21/1995	0	0	\$0.00	\$0.00
6/21/1995	0	0	\$0.00	\$0.00
6/27/1995	0	0	\$1,000.00	\$0.00
6/29/1995	0	0	\$1,000.00	\$0.00
6/29/1995	0	0	\$1,000.00	\$0.00
7/13/1995	0	0	\$0.00	\$0.00
7/13/1995	0	0	\$2,000.00	\$0.00
7/15/1995	0	0	\$0.00	\$0.00
7/15/1995	0	0	\$1,000.00	\$0.00
7/15/1995	0	0	\$1,000.00	\$0.00
8/11/1995	0	0	\$1,000.00	\$0.00
8/13/1995	0	0	\$0.00	\$0.00
11/5/1995	0	0	\$2,000.00	\$0.00
7/16/1996	0	0	\$2,000.00	\$0.00
5/3/1997	0	0	\$12,000.00	\$0.00
5/3/1997	0	0	\$15,000.00	\$0.00
7/18/1997	0	0	\$3,000.00	\$0.00
7/18/1997	0	0	\$30,000.00	\$0.00
7/18/1997	0	0	\$2,000.00	\$0.00
8/16/1997	0	0	\$5,000.00	\$0.00
8/16/1997	0	0	\$2,000.00	\$0.00
8/16/1997	0	0	\$20,000.00	\$0.00
5/29/1998	0	0	\$2,000.00	\$0.00
5/29/1998	0	0	\$2,000.00	\$0.00
5/29/1998	0	0	\$2,000.00	\$0.00
5/31/1998	0	0	\$6,000.00	\$0.00
5/31/1998	0	0	\$8,000.00	\$0.00
6/12/1998	0	0	\$0.00	\$0.00
6/16/1998	0	0	\$1,000.00	\$0.00
6/16/1998	0	0	\$2,000.00	\$0.00
6/27/1998	0	0	\$3,000.00	\$0.00
6/30/1998	0	0	\$5,000.00	\$0.00
6/30/1998	0	0	\$2,000.00	\$0.00
6/30/1998	0	0	\$50,000.00	\$0.00
7/21/1998	0	0	\$1,000.00	\$0.00
7/22/1998	0	0	\$1,000.00	\$0.00
7/22/1998	0	0	\$3,000.00	\$0.00
7/22/1998	0	0	\$3,000.00	\$0.00
8/25/1998	0	0	\$2,000.00	\$0.00
11/10/1998	0	0	\$2,000.00	\$0.00
7/9/1999	0	0	\$3,000.00	\$0.00
7/9/1999	0	0	\$100,000.00	\$0.00
7/9/1999	0	0	\$2,000.00	\$0.00
7/9/1999	0	0	\$50,000.00	\$0.00
7/29/1999	0	0	\$3,000.00	\$0.00
7/29/1999	0	0	\$3,000.00	\$0.00
7/31/1999	0	0	\$3,000.00	\$0.00
9/29/1999	0	0	\$3,000.00	\$0.00
10/13/1999	0	0	\$3,000.00	\$0.00
4/20/2000	0	0	\$2,000.00	\$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>
6/2/2000	0	0	\$2,000.00	\$0.00
6/2/2000	0	0	\$2,000.00	\$0.00
6/2/2000	0	0	\$5,000.00	\$0.00
6/16/2000	0	0	\$2,000.00	\$0.00
6/16/2000	0	0	\$2,000.00	\$0.00
7/14/2000	0	0	\$2,000.00	\$0.00
7/14/2000	0	0	\$2,000.00	\$0.00
8/6/2000	0	0	\$100,000.00	\$0.00
9/20/2000	0	0	\$2,000.00	\$0.00
7/1/2001	0	0	\$1,000.00	\$0.00
8/9/2001	0	0	\$2,000.00	\$0.00
8/9/2001	0	0	\$2,000.00	\$0.00
3/9/2002	0	0	\$10,000.00	\$0.00
5/12/2002	0	0	\$25,000.00	\$0.00
5/14/2002	0	0	\$5,000.00	\$0.00
6/4/2002	0	0	\$2,000.00	\$0.00
6/4/2002	0	0	\$5,000.00	\$0.00
6/5/2002	0	0	\$2,000.00	\$0.00
8/22/2002	0	0	\$5,000.00	\$0.00
9/3/2002	0	0	\$2,000.00	\$0.00
9/3/2002	0	0	\$10,000.00	\$0.00
11/10/2002	0	0	\$10,000.00	\$0.00
11/10/2002	0	0	\$1,000.00	\$0.00
11/10/2002	0	0	\$2,000.00	\$0.00
4/20/2003	0	0	\$2,000.00	\$0.00
5/10/2003	0	0	\$1,000.00	\$0.00
7/4/2003	0	0	\$1,000.00	\$0.00
7/4/2003	0	0	\$8,000.00	\$0.00
7/7/2003	0	0	\$0.00	\$0.00
7/8/2003	0	0	\$10,000.00	\$0.00
7/8/2003	0	0	\$0.00	\$0.00
7/8/2003	0	0	\$1,000.00	\$0.00
7/8/2003	0	0	\$1,000.00	\$0.00
7/8/2003	0	0	\$0.00	\$0.00
7/8/2003	0	0	\$0.00	\$0.00
7/8/2003	0	0	\$5,000.00	\$0.00
7/8/2003	0	0	\$20,000.00	\$0.00
7/8/2003	0	0	\$15,000.00	\$0.00
7/10/2003	0	0	\$30,000.00	\$0.00
7/18/2003	0	0	\$1,000.00	\$0.00
7/18/2003	0	0	\$1,000.00	\$0.00
5/21/2004	0	0	\$30,000.00	\$0.00
5/21/2004	0	0	\$5,000.00	\$0.00
5/22/2004	0	0	\$0.00	\$0.00
5/24/2004	0	0	\$0.00	\$0.00
6/13/2004	0	0	\$0.00	\$0.00
6/13/2004	0	0	\$0.00	\$0.00
6/14/2004	0	0	\$2,000.00	\$0.00
6/24/2004	0	0	\$1,000.00	\$0.00
8/20/2004	0	0	\$2,000.00	\$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>
4/20/2005	0	0	\$5,000.00	\$0.00
6/10/2005	0	0	\$5,000.00	\$0.00
6/28/2005	0	0	\$5,000.00	\$0.00
6/30/2005	0	0	\$2,000.00	\$0.00
7/5/2005	0	0	\$8,000.00	\$0.00
7/26/2005	0	0	\$5,000.00	\$0.00
8/20/2005	0	0	\$25,000.00	\$0.00
11/6/2005	0	0	\$15,000.00	\$0.00
5/25/2006	0	0	\$4,000.00	\$0.00
7/10/2006	0	0	\$6,000.00	\$0.00
8/3/2006	0	0	\$4,000.00	\$0.00
8/3/2006	0	0	\$5,000.00	\$0.00
8/3/2006	0	0	\$6,000.00	\$0.00
6/8/2007	0	0	\$0.00	\$0.00
6/21/2007	0	0	\$2,000.00	\$0.00
6/21/2007	0	0	\$0.00	\$0.00
6/27/2007	0	0	\$3,000.00	\$0.00
8/9/2007	0	0	\$500,000.00	\$0.00
8/9/2007	0	0	\$50,000.00	\$0.00
8/9/2007	0	0	\$35,000.00	\$0.00
6/26/2008	0	0	\$50,000.00	\$0.00
6/28/2008	0	0	\$75,000.00	\$0.00
6/29/2008	0	0	\$50,000.00	\$0.00
6/29/2008	0	0	\$75,000.00	\$0.00
5/28/2009	0	0	\$10,000.00	\$0.00
6/17/2009	0	0	\$50,000.00	\$0.00
6/17/2009	0	0	\$50,000.00	\$0.00
6/23/2010	0	0	\$100,000.00	\$0.00
10/26/2010	0	0	\$20,000.00	\$0.00
4/20/2011	0	0	\$50,000.00	\$0.00
5/12/2011	0	0	\$20,000.00	\$0.00
6/7/2011	0	0	\$50,000.00	\$0.00
6/7/2011	0	0	\$50,000.00	\$0.00
6/7/2011	0	0	\$35,000.00	\$0.00
6/7/2011	0	0	\$25,000.00	\$0.00
7/4/2011	0	0	\$5,000.00	\$0.00
7/4/2011	0	0	\$5,000.00	\$0.00
7/11/2011	0	0	\$10,000.00	\$0.00
7/18/2011	0	0	\$5,000.00	\$0.00
7/18/2011	0	0	\$5,000.00	\$0.00
7/18/2011	0	0	\$10,000.00	\$0.00
7/22/2011	0	0	\$20,000.00	\$0.00
7/22/2011	0	0	\$10,000.00	\$0.00
8/19/2011	0	0	\$35,000.00	\$0.00
8/25/2011	0	0	\$50,000.00	\$0.00
8/25/2011	0	0	\$50,000.00	\$0.00
8/25/2011	0	0	\$50,000.00	\$0.00
7/4/2012	0	0	\$15,000.00	\$0.00
7/7/2012	0	0	\$5,000.00	\$0.00
7/15/2012	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>
7/24/2012	0	0	\$75,000.00	\$0.00
7/24/2012	0	0	\$40,000.00	\$0.00
7/26/2012	0	0	\$35,000.00	\$0.00
7/26/2012	0	0	\$50,000.00	\$0.00
8/8/2012	0	0	\$500.00	\$0.00
8/8/2012	0	0	\$500.00	\$0.00
8/8/2012	0	0	\$500.00	\$0.00
9/22/2012	0	0	\$25,000.00	\$0.00
9/22/2012	0	0	\$10,000.00	\$0.00
9/22/2012	0	0	\$40,000.00	\$0.00
9/22/2012	0	0	\$2,000.00	\$0.00
9/22/2012	0	0	\$25,000.00	\$0.00
4/10/2013	0	0	\$1,000.00	\$0.00
4/10/2013	0	0	\$1,000.00	\$0.00
6/13/2013	0	0	\$500.00	\$0.00
6/25/2013	0	0	\$5,000.00	\$0.00
6/25/2013	0	0	\$1,000.00	\$0.00
6/25/2013	0	0	\$1,000.00	\$0.00
6/25/2013	0	0	\$2,000.00	\$0.00
6/25/2013	0	0	\$2,000.00	\$0.00
7/10/2013	0	0	\$30,000.00	\$0.00
7/23/2013	0	0	\$5,000.00	\$0.00
7/23/2013	0	1	\$100,000.00	\$0.00
7/23/2013	0	0	\$20,000.00	\$0.00
11/1/2013	0	0	\$50,000.00	\$0.00
11/17/2013	0	0	\$25,000.00	\$0.00
11/17/2013	0	0	\$15,000.00	\$0.00
11/17/2013	0	0	\$35,000.00	\$0.00
4/4/2014	0	0	\$5,000.00	\$0.00
4/4/2014	0	0	\$15,000.00	\$0.00
6/11/2014	0	0	\$100,000.00	\$0.00
6/11/2014	0	0	\$5,000.00	\$0.00
6/18/2014	0	0	\$10,000.00	\$0.00
6/24/2014	0	0	\$2,000.00	\$0.00
6/24/2014	0	0	\$3,000.00	\$0.00
6/24/2014	0	0	\$3,000.00	\$0.00
7/13/2014	0	0	\$30,000.00	\$0.00
12/24/2014	0	0	\$1,000.00	\$0.00
4/9/2015	0	0	\$5,000.00	\$0.00
4/9/2015	0	0	\$5,000.00	\$0.00
4/9/2015	0	0	\$5,000.00	\$0.00
5/11/2015	0	0	\$8,000.00	\$0.00
5/11/2015	0	0	\$5,000.00	\$0.00
5/11/2015	0	0	\$5,000.00	\$0.00
6/12/2015	0	0	\$2,000.00	\$0.00
6/12/2015	0	0	\$3,000.00	\$0.00
6/12/2015	0	0	\$4,000.00	\$0.00
6/12/2015	0	0	\$2,000.00	\$0.00
6/12/2015	0	0	\$15,000.00	\$0.00
6/14/2015	0	0	\$5,000.00	\$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>
6/18/2015	0	0	\$10,000.00	\$0.00
6/18/2015	0	0	\$5,000.00	\$0.00
8/3/2015	0	0	\$5,000.00	\$0.00
6/16/2016	0	0	\$10,000.00	\$0.00
8/5/2016	0	0	\$2,000.00	\$0.00
8/28/2016	0	0	\$5,000.00	\$0.00
8/28/2016	0	0	\$5,000.00	\$0.00
1/12/2017	0	0	\$5,000.00	\$0.00
2/25/2017	0	0	\$25,000.00	\$0.00
5/1/2017	0	0	\$1,000.00	\$0.00
5/1/2017	0	0	\$5,000.00	\$0.00
5/31/2017	0	0	\$5,000.00	\$0.00
6/13/2017	0	0	\$250.00	\$0.00
6/18/2017	0	1	\$0.00	\$0.00
6/29/2017	0	0	\$2,500.00	\$0.00
6/29/2017	0	0	\$500.00	\$0.00
7/10/2017	0	0	\$2,500.00	\$0.00
8/4/2017	0	0	\$5,000.00	\$0.00
8/4/2017	0	0	\$5,000.00	\$0.00
11/5/2017	0	0	\$2,000.00	\$0.00
11/5/2017	0	0	\$2,000.00	\$0.00
11/5/2017	0	0	\$2,000.00	\$0.00
5/4/2018	0	0	\$0.00	\$0.00
6/3/2018	0	0	\$500.00	\$0.00
6/3/2018	0	0	\$500.00	\$0.00
6/10/2018	0	0	\$0.00	\$0.00
9/21/2018	0	0	\$0.00	\$0.00
9/21/2018	0	0	\$0.00	\$0.00
9/21/2018	0	0	\$0.00	\$0.00
9/21/2018	0	0	\$0.00	\$0.00
10/2/2018	0	0	\$1,000.00	\$0.00
3/14/2019	0	0	\$0.00	\$0.00
3/14/2019	0	0	\$0.00	\$0.00
4/14/2019	0	0	\$2,000.00	\$0.00
4/14/2019	0	0	\$2,000.00	\$0.00
4/14/2019	0	0	\$5,000.00	\$0.00
5/28/2019	0	0	\$0.00	\$0.00
5/28/2019	0	0	\$0.00	\$0.00
6/29/2019	0	0	\$5,000.00	\$0.00
7/11/2019	0	0	\$0.00	\$0.00
7/11/2019	0	0	\$0.00	\$0.00
8/8/2019	0	0	\$0.00	\$0.00
9/28/2019	0	0	\$0.00	\$0.00
TOTALS	0	2	\$3,402,750.00	\$0.00

According to the National Centers for Environmental Information's Storm Events Database, there have been 128 hail events reported on 80 different days since 1983, for an average of 3.6 events per year. There have been 57 events over 39 different days with hail

greater than one inch in diameter, which appear in the table below. These hail events caused a total of \$550,000 in property damage and \$600,000 in crop damage.

HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
<i>Location</i>	<i>Date</i>	<i>Magnitude (in.)</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>	<i>Report Source</i>
Columbiana County	5/27/1985	1	0	0	\$0.00	\$0.00	N/A
Columbiana County	8/6/1986	1.75	0	0	\$0.00	\$0.00	N/A
Columbiana County	11/20/1988	1	0	0	\$0.00	\$0.00	N/A
Columbiana County	7/30/1992	1	0	0	\$0.00	\$0.00	N/A
NC Portion	8/2/1993	1	0	0	\$0.00	\$50,000.00	N/A
West Point	6/19/1994	1	0	0	\$50,000.00	\$0.00	N/A
Salem	8/12/1994	1	0	0	\$0.00	\$50,000.00	N/A
N Portion	9/25/1994	1.75	0	0	\$500,000.00	\$500,000.00	N/A
Homeworth	5/1/1996	1	0	0	\$0.00	\$0.00	N/A
North Georgetown	6/2/1998	1	0	0	\$0.00	\$0.00	Trained Spotter
Salem	6/2/1998	1.13	0	0	\$0.00	\$0.00	Trained Spotter
Fredericktown	6/2/1998	1	0	0	\$0.00	\$0.00	Trained Spotter
Columbiana	6/2/1998	3	0	0	\$0.00	\$0.00	Trained Spotter
Leetonia	6/2/1998	3	0	0	\$0.00	\$0.00	Trained Spotter
Fredericktown	6/12/1998	1	0	0	\$0.00	\$0.00	Trained Spotter
New Garden	6/30/1998	1	0	0	\$0.00	\$0.00	Trained Spotter
East Palestine	7/9/1999	1	0	0	\$0.00	\$0.00	Trained Spotter
Salineville	4/9/2001	1	0	0	\$0.00	\$0.00	Law Enforcement
New Garden	4/28/2002	1.25	0	0	\$0.00	\$0.00	Trained Spotter
East Palestine	7/18/2003	1	0	0	\$0.00	\$0.00	Trained Spotter
East Liverpool	8/27/2003	1	0	0	\$0.00	\$0.00	General Public
Bayard	4/17/2004	1	0	0	\$0.00	\$0.00	General Public
Wellsville	8/19/2004	1.25	0	0	\$0.00	\$0.00	General Public
Lisbon	6/13/2007	1	0	0	\$0.00	\$0.00	Trained Spotter
Salem	7/26/2008	1.75	0	0	\$0.00	\$0.00	Trained Spotter
Hanoverton	7/21/2009	1	0	0	\$0.00	\$0.00	Public
Lisbon	3/22/2010	1	0	0	\$0.00	\$0.00	Trained Spotter
Hanoverton	5/7/2010	1	0	0	\$0.00	\$0.00	Public
Salineville	6/2/2010	1	0	0	\$0.00	\$0.00	Law Enforcement
Hanoverton	9/7/2010	1	0	0	\$0.00	\$0.00	Trained Spotter
Summitville	3/23/2011	1	0	0	\$0.00	\$0.00	Trained Spotter

HISTORICAL OCCURRENCES, HAIL > 1 IN. (Source: NCEI Storm Events Database)							
<i>Location</i>	<i>Date</i>	<i>Magnitude (in.)</i>	<i>Deaths</i>	<i>Injuries</i>	<i>Property Damage</i>	<i>Crop Damage</i>	<i>Report Source</i>
Hanoverton	3/23/2011	1	0	0	\$0.00	\$0.00	Trained Spotter
Columbia	3/23/2011	1	0	0	\$0.00	\$0.00	Trained Spotter
Salineville	3/23/2011	1	0	0	\$0.00	\$0.00	Trained Spotter
Lisbon	5/13/2011	1	0	0	\$0.00	\$0.00	Public
Leetonia	7/4/2011	1	0	0	\$0.00	\$0.00	State Official
Unity	7/3/2012	1	0	0	\$0.00	\$0.00	Public
Leetonia	7/4/2012	1	0	0	\$0.00	\$0.00	Law Enforcement
Wellsville	7/24/2012	1.75	0	0	\$0.00	\$0.00	Law Enforcement
Wellsville	6/13/2013	1.75	0	0	\$0.00	\$0.00	Public
Homeworth	7/23/2013	1	0	0	\$0.00	\$0.00	Public
North Georgetown	7/23/2013	1	0	0	\$0.00	\$0.00	Public
East Palestine	7/23/2013	1	0	0	\$0.00	\$0.00	Trained Spotter
West Point	7/23/2013	1	0	0	\$0.00	\$0.00	Law Enforcement
East Liverpool	7/23/2013	1	0	0	\$0.00	\$0.00	Public
Salineville	7/23/2013	1.25	0	0	\$0.00	\$0.00	Public
East Palestine	5/14/2014	1	0	0	\$0.00	\$0.00	Public
East Liverpool	5/14/2014	3	0	0	\$0.00	\$0.00	Social Media
East Liverpool	5/14/2014	1.75	0	0	\$0.00	\$0.00	Public
East Liverpool	5/14/2014	1	0	0	\$0.00	\$0.00	Public
Negley	5/14/2014	1	0	0	\$0.00	\$0.00	Trained Spotter
Glasgow	8/12/2014	1.25	0	0	\$0.00	\$0.00	Trained Spotter
Salineville	4/9/2015	1	0	0	\$0.00	\$0.00	Public
Lisbon	4/9/2015	1.5	0	0	\$0.00	\$0.00	Social Media
West Point	4/9/2015	2.75	0	0	\$0.00	\$0.00	Social Media
Unity	5/18/2017	1	0	0	\$0.00	\$0.00	Social Media
Hanoverton	5/15/2018	1	0	0	\$0.00	\$0.00	Public

Loss and Damages

Severe thunderstorms and hail can impact all areas and jurisdictions of Columbiana County. Severe thunderstorms have caused \$3.4 million in damages in Columbiana County over the past 50 years. Ohio EMA's Hazard Mitigation Plan (2019 update) estimates the annual countywide damage due to severe thunderstorms to be \$209,085.80, or \$2.03 per person. This is slightly lower than the \$2.66 annual damage per capita of Ohio Region 3 (which includes Columbiana County).

Hailstorms have caused significant damage in Ohio, with \$187,455,392 in damages over the past ten years, or approximately \$18 million per year. Columbiana County's annual damage from hail is approximately \$128,895.17, or \$1.25 per person, per year. Columbiana County's average annual per capita loss from hail is slightly smaller 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 \$3,402,750. Planners considered the entire building stock as exposed and used the worst-case scenario Columbiana 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	10	\$2,460,033
Non-Residential	3	\$778,686
Critical Facilities	1	\$164,031
TOTALS	14	\$3,402,750


Risk Assessment

This section summarizes the risk to Columbiana County from severe thunderstorms and hail. 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 AND HAIL RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	4	High	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.
Response	3	1 week	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	2	Limited	Severe thunderstorms could affect large portions of the county, but the most severe impacts would be localized. Hail could affect 10-25% of the county's land area.
Business	1	Less than 24 hours	Businesses would not typically close for a thunderstorm or hailstorm. Damages from a significant storm may cause a temporary (less than 24 hour) disruption of services.
Human	1	Minor	There have been two reports of injury due to severe thunderstorms, and no reported injuries or deaths due to hail 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%	Thunderstorms and hailstorms are localized events, and would not cause significant property damage.
TOTALS	14	Low	

2.0 RISK ASSESSMENT

2.3.7 Severe Wind and Tornadoes

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.			
 <p>Vulnerability</p> <p>HIGHEST</p> <p>HIGH</p> <p>MEDIUM</p> <p>LOW</p> <p>LOWEST</p>	Period of Occurrence:	At any time, typically when warm and cold air temperatures are present together	Hazard Index Ranking: Medium
	Warning Time:	Less than 6 hours	State Risk Ranking: 4-High
	Probability:	Likely	Severity: Critical
	Type of Hazard:	Natural	Disaster Declarations: 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.

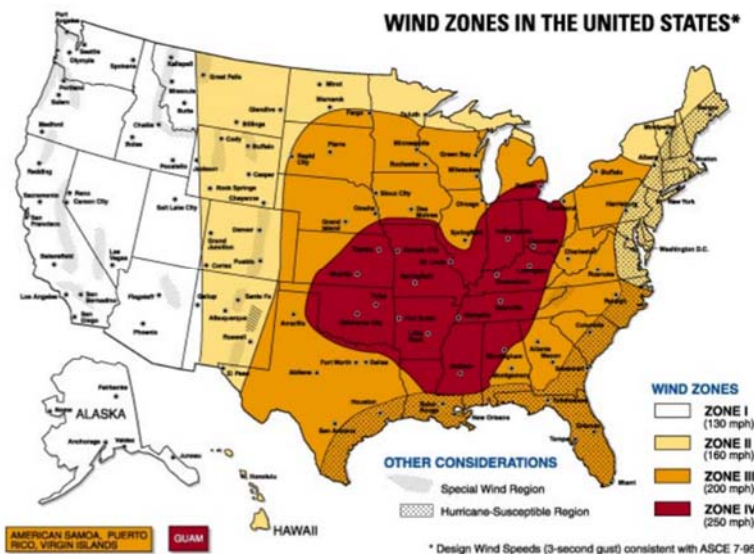
- **Straight-line Wind:** Straight-line wind is a term used to define any thunderstorm wind not associated with rotation, and it is used mainly to differentiate from tornadic winds.
- **Downburst:** Downburst is the general term for all localized strong wind events caused by a strong downdraft within 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

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 Columbiana 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, Columbiana 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 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	Light Damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to signboards.
1	86-110	Moderate Damage. Surface peeled off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
2	111-135	Considerable Damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
3	136-165	Severe Damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
4	166-200	Devastating Damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
5	200+	Incredible Damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly through the air in excess of 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.

Historical Occurrences

Columbiana County has experienced numerous severe wind and tornado events. There have been 12 events with high wind that caused a combined \$1.35 million in property damage. There have also been 17 tornadoes, causing 27 injuries and \$28.875 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>
Columbiana County	03/11/1955	04:25	Tornado	F2	0	0	250.00K	0.00K
Columbiana County	06/13/1967	13:30	Tornado	F1	0	0	2.50K	0.00K
Columbiana County	07/24/1967	18:30	Tornado	F2	0	2	250.00K	0.00K
Columbiana County	06/03/1973	18:30	Tornado	F1	0	0	0.25K	0.00K
Columbiana County	07/26/1973	15:00	Tornado	F1	0	1	25.00K	0.00K
Columbiana County	10/12/1978	17:25	Tornado	F3	0	4	2.500M	0.00K
Columbiana County	06/21/1981	13:21	Tornado	F0	0	0	2.50K	0.00K
Columbiana County	05/31/1985	17:35	Tornado	F2	0	20	25.000M	0.00K
Columbiana County	08/09/1987	15:25	Tornado	F1	0	0	25.00K	0.00K
Columbiana County	07/22/1990	17:30	Tornado	F0	0	0	25.00K	0.00K
Columbiana County	07/22/1990	19:00	Tornado	F0	0	0	25.00K	0.00K
Columbiana County	07/12/1992	17:30	Tornado	F0	0	0	2.50K	0.00K
Columbiana County	09/21/1992	16:30	Tornado	F1	0	0	250.00K	0.00K
Lacroft	04/15/1993	23:30	Tornado	F0	0	0	500.00K	0.00K
Lisbon	06/21/1995	17:30	Tornado	N/A	0	0	2.00K	0.00K
Columbiana County	12/12/2000	02:30	High Wind	52 kts. E	0	0	50.00K	0.00K
Columbiana County	03/09/2002	18:15	High Wind	N/A	0	0	10.00K	0.00K
Columbiana County	02/12/2003	02:30	High Wind	55 kts. EG	0	0	1.00K	0.00K
Columbiana County	03/05/2004	16:07	High Wind	50 kts. EG	0	0	0.00K	0.00K
Columbiana County	12/01/2006	15:00	High Wind	55 kts. EG	0	0	30.00K	0.00K
Columbiana County	01/09/2008	01:30	High Wind	50 kts. EG	0	0	35.00K	0.00K
Columbiana County	01/30/2008	01:00	High Wind	50 kts. EG	0	0	50.00K	0.00K
Columbiana County	09/14/2008	19:45	High Wind	50 kts. EG	0	0	1.000M	0.00K
Columbiana County	02/12/2009	02:55	High Wind	50 kts. EG	0	0	100.00K	0.00K
Columbiana County	12/09/2009	13:00	High Wind	50 kts. EG	0	0	0.00K	0.00K
Columbiana County	04/28/2011	05:00	High Wind	50 kts. EG	0	0	75.00K	0.00K
Summitville	07/23/2013	16:27	Tornado	EF0	0	0	5.00K	0.00K
Calcutta	11/05/2017	19:18	Tornado	EF1	0	0	10.00K	0.00K
Columbiana County	02/24/2019	07:00	High Wind	50 kts. EG	0	0	0.00K	0.00K
TOTALS					0	27	30.226M	0.00K

December 12, 2000

A strengthening area of low pressure and an associated cold front swept across the area during the overnight hours, bringing high winds to portions of east-central Ohio. In general,

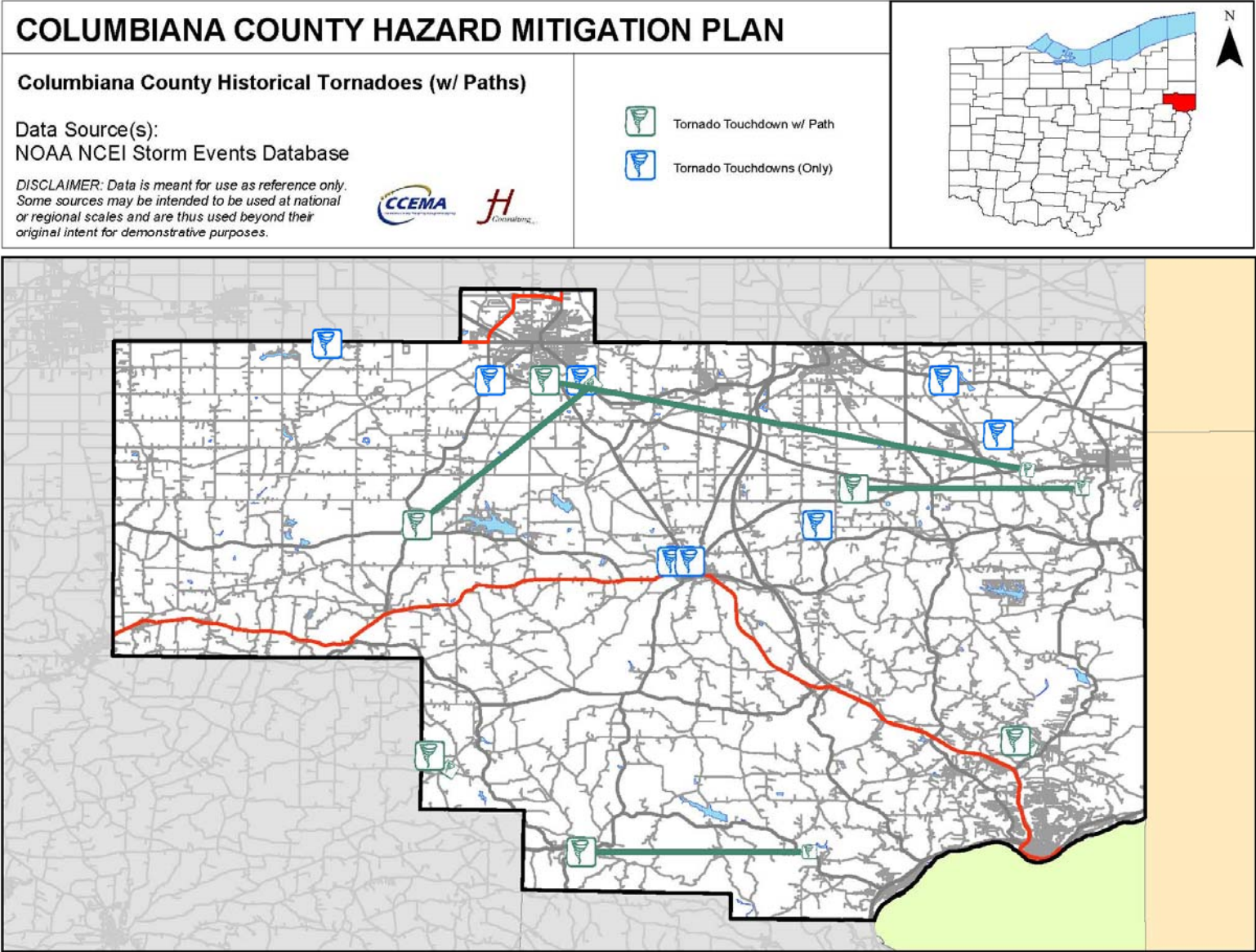
damage consisted of downed trees and power lines, but several instances of property damage also occurred. In Columbiana County, the winds blew the roof off of a mobile home in Lisbon. In Salem, a large tree blew over onto a house, causing minor damage to the roof.

Tornadoes, May 31, 1985

At approximately 6:00 p.m. on May 31, 1985, an EF2 tornado struck southern Columbiana County. The tornado was a part of 21 tornadoes that spawned in northeast Ohio and western Pennsylvania that day. It touched down for a total of 15 miles in at least four locations throughout the county. The tornado injured 20 people and caused \$25 million in damages, making it the worst tornado event in the county since recordkeeping began.

November 5, 2017

The most recent tornado (at the time of this update) occurred near Calcutta. The National Weather Service (NWS) in Pittsburgh confirmed the estimated EF1 tornado. It produced mostly tree damage to hardwood and softwood trees. It started near Vernon Dell Tractor and moved eastward into the town of Calcutta. There were several trees that fell behind the YMCA, and the rooftop cooling units at “the Y” were ripped off.



Loss and Damages

High wind caused a total of \$1.35 million in property damage in Columbiana County over 20 years. The average loss per non-tornadic severe wind incident was \$112,500, which can serve as the severe wind loss estimate. Tornadoes caused an additional \$28.875 million in damages over 64 years. The average damage per event was \$1.7 million, which serves as the tornado loss estimate. The worst-case on record was the 1985 tornado, which caused \$25 million in damages.

As noted, severe wind events and tornadoes can impact all areas and jurisdictions of Columbiana County. The historical worst-case scenario loss was \$25,000,000, which was a rare event (with no other event coming close to that amount). A more realistic worst-case scenario would be the \$1,000,000 loss experienced during a September 2008 severe wind event. Planners considered the entire building stock as exposed and used the more realistic scenario Columbiana County event as the representative historical occurrence for completion of the following table.

SEVERE WIND AND TORNADOES LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	3	\$723,000
Non-Residential	1	\$229,000
Critical Facilities	1	\$48,000
TOTALS	5	\$1,000,000


Risk Assessment

This section summarizes the risk to Columbiana County from wind and tornadoes. 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	4	High	NOAA has listed 12 high wind events and 17 tornadoes since 1955, but the frequency of events has increased. There was a wind event or tornado nearly every year since 2000, with some years experiencing multiple events.
Response	3	1 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 as effectively predicted.
Magnitude	1	Limited	Less than 10% of land area affected. Though destructive, a tornado would not affect a significant portion of the county.
Business	2	1 Week	Typical business activity should resume within the week for those affected by high wind and tornadoes.
Human	3	Medium	In all cases of high wind and tornadoes, there were no deaths, and in most cases, there were no injuries. Few events led to multiple injuries.
Property	1	>10% of property affected	Tornadoes are localized events, and a single event would not affect more than 10% of property in the county.
TOTAL	18	Medium	

2.0 RISK ASSESSMENT

2.3.8 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-3029 (1977) 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; rather, 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 related to 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. 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 Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

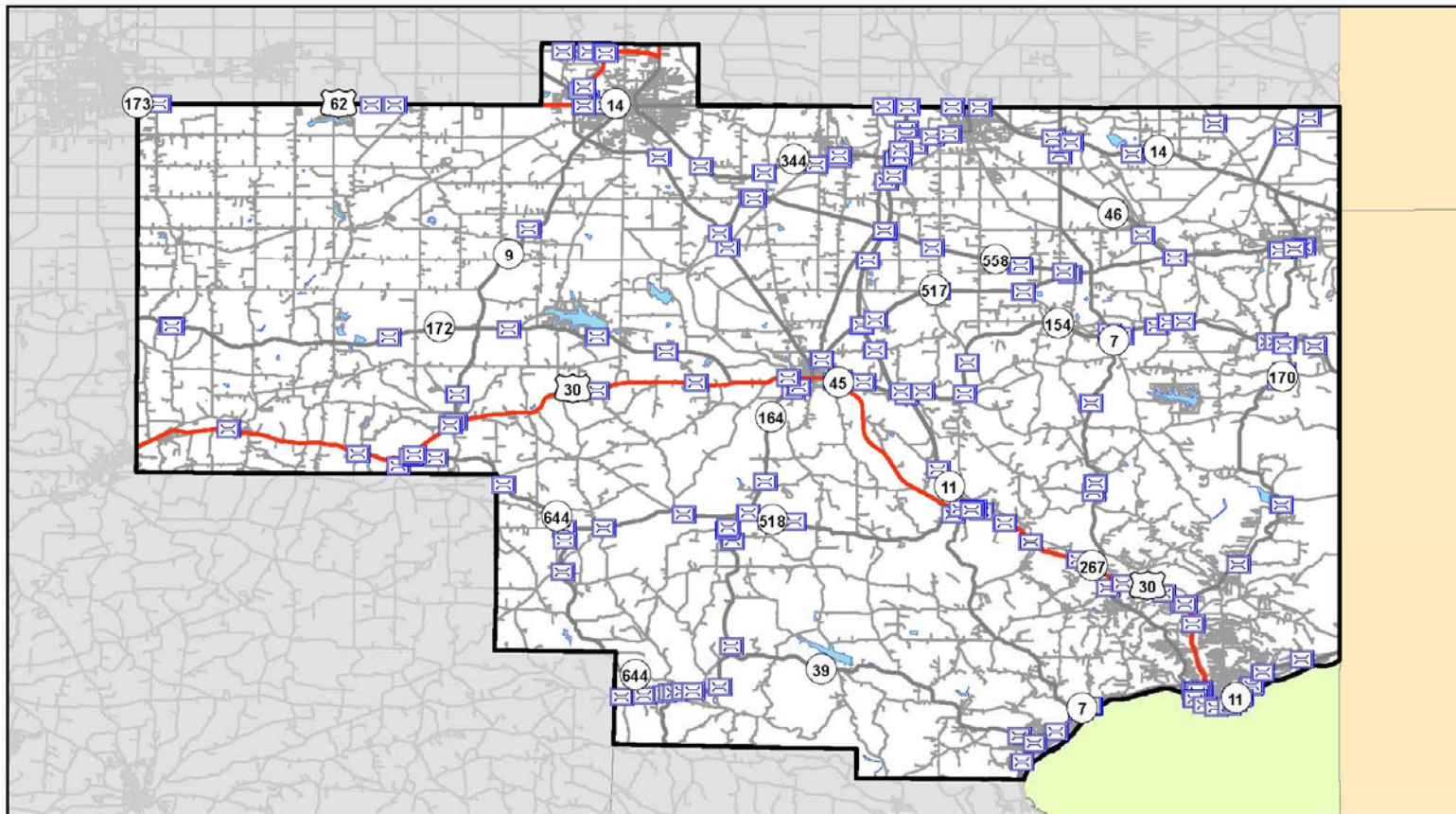
Columbiana County Bridges

Data Source(s):
ODOT

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



- Bridge Locations
- US Routes
- State Routes



Historical Occurrences

According to the NOAA National Centers for Environmental Information Storm Event Database, there have been 29 winter storm, ice storm, and heavy snow events in Columbiana 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>
Columbiana (Zone)	1/2/1999	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	1/8/1999	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	1/13/1999	Winter Storm	0	0	5.00K	0.00K
Columbiana (Zone)	3/9/1999	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	12/13/2000	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/16/2003	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	12/5/2003	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	12/14/2003	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	2/5/2004	Ice Storm	0	0	0.00K	0.00K
Columbiana (Zone)	1/22/2005	Ice Storm	0	0	2.00K	0.00K
Columbiana (Zone)	3/1/2005	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	2/13/2007	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	2/12/2008	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	3/7/2008	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	1/9/2009	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	1/27/2009	Ice Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/5/2010	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	2/15/2010	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	1/31/2011	Ice Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/1/2011	Ice Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/21/2011	Heavy Snow	0	0	0.00K	0.00K

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>
Columbiana (Zone)	3/10/2011	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	12/26/2012	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	11/26/2013	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	2/4/2014	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/15/2016	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	1/12/2018	Winter Storm	0	0	0.00K	0.00K
Columbiana (Zone)	2/7/2018	Heavy Snow	0	0	0.00K	0.00K
Columbiana (Zone)	1/18/2019	Winter Storm	0	0	0.00K	0.00K
TOTALS			0	0	7.00K	0.00K

January 2005 Ice Storm

Snow began at approximately 4:00 a.m., and it changed to freezing rain and sleet at about 10 or 11:00 a.m. By 3:00 p.m., the ice was approximately ¼" thick. The incident resulted in approximately \$2,000 in property damage in Columbiana County alone.

November 2018 Winter Storm

The November 2018 winter storm significantly affected Columbiana County. According to the Lisbon Morning Journal, a layer of ice covered with two inches of wet snow caused electric lines throughout the county to fall. Large portions of the county, including the entirety of East Palestine Village, were without power. Fire departments and the American Red Cross opened warming shelters for residents.

Loss and Damages

Winter storms caused \$7,000 in damages in Columbiana County over 20 years, with an average of \$241 per event. This likely underestimates damages caused to infrastructure and power lines. Severe winter storms can impact all areas and jurisdictions of Columbiana 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	6	\$1,590,500
Non-Residential	2	\$503,400
Critical Facilities	1	\$106,100
TOTALS	9	\$2,200,000


Risk Assessment

This section summarizes the risk to Columbiana County from severe winter storms. 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 RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	4	High	NOAA has listed 29 events since 1999, for an average of 1.45 events per year. On any given year, severe winter weather is likely.
Response	3	1 week	Clearing snow and ice from infrastructure, 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 Columbiana 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 not caused any injuries or deaths in Columbiana County.
Property	4	More than 50% affected	More than 50% of the county's property will 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 Columbiana and surrounding counties.
TOTAL	19	Medium	

2.0 RISK ASSESSMENT

2.3.9 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.			
	Vulnerability	Period of Occurrence:	At any time, typically after a period of prolonged precipitation causing damages or a prolonged period of drought causing erosion
		Warning Time:	Over 24 hours
		Probability:	High
		Type of Hazard:	Technological
		Hazard Index Ranking:	Lowest
		State Risk Ranking:	3-Medium
		Severity:	Limited
		Disaster Declarations:	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.).

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.

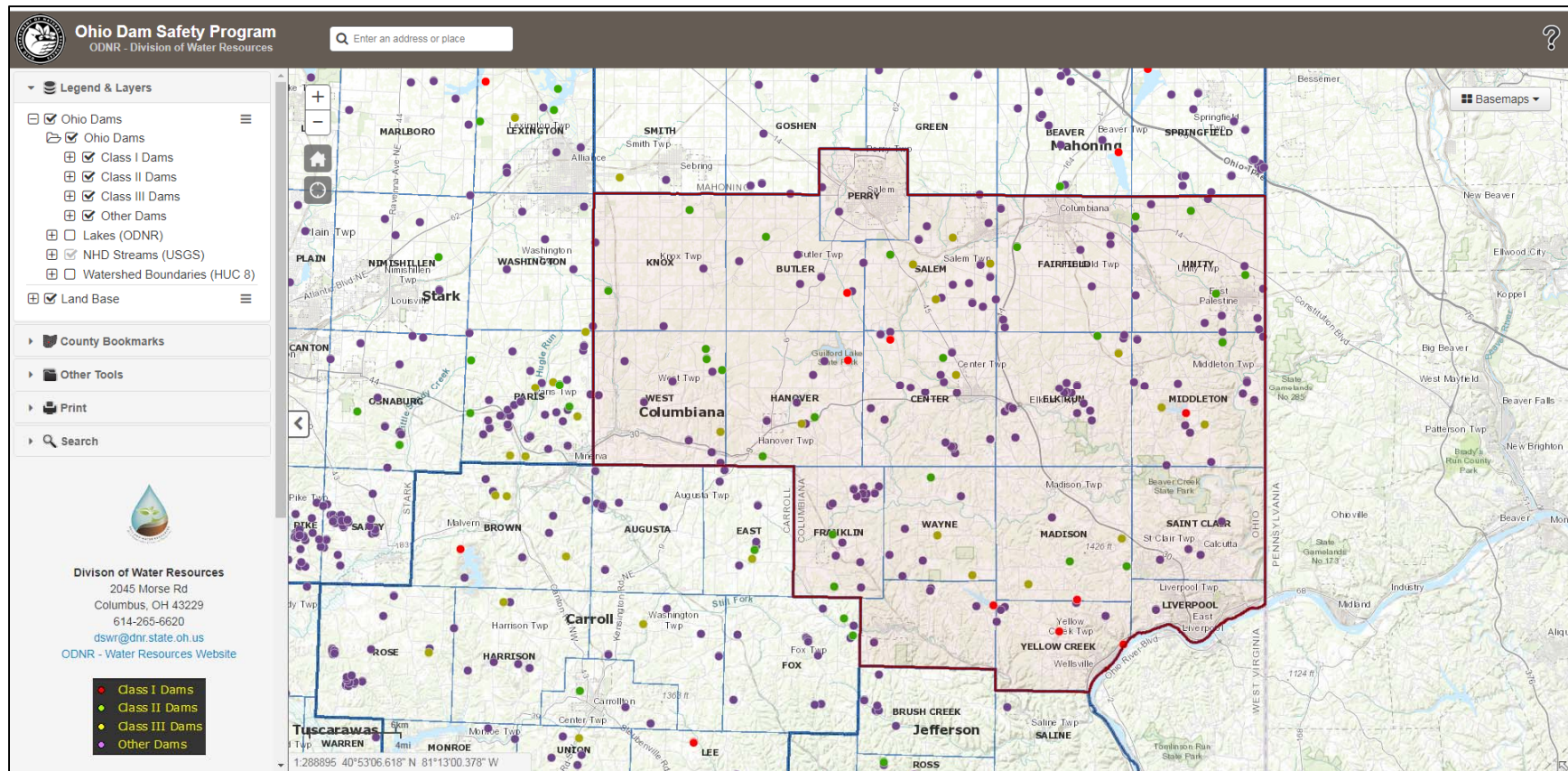
- **Class I:** A storage volume greater than five thousand acre-feet or a height of greater than sixty feet.
- **Class II:** A total storage volume greater than five thousand acre-feet or a height greater than forty feet.
- **Class III:** A total storage volume greater than fifty acre-feet or a height 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.

The U.S. Army Corps of Engineers (UCACE) maintains the National Inventory of Dams (NID). According to the NID, there are 37 dams in Columbiana County. The Ohio Department of Natural Resources (ODNR) also maintains a database of dams and levees in the state. Ohio’s Region 3, which includes Columbiana 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). Columbiana County is home to 131 total dams, per ODNR’s listing, with seven Class I, 36 Class II and III, and 21 Class IV Dams. The remaining 67 are “other.” The difference between the ODNR and NID’s number of dams in Columbiana County is likely due to regulatory differences between the agencies.

LIST OF CLASS I-III DAMS IN COLUMBIANA 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>
Beaver Lake Dam	Class II	Private	17.7	1072	N	Y
Bibbee's Little Rock Lake Dam	Class III	Private	27	184	N	Y
Big Rock Lake Dam	Class III	Private	32.2	159	N	Y
Buckeye Water District Reservoir	Class I	Local Government	56	32.4	Y	Y
Caldwell Spruce Lake Dam	Class III	Private	21.3	49	N	N
Csonka Brothers Pond Dam	Class II	Private	24	57	N	Y
Dickey Lake Dam	Class III	Private	13.5	54.6	N	Y
East Palestine Reservoir Dam	Class II	Local Government	18.1	31.6	Y	Y
Flying Finn Lake Dam	Class II	Private	29.3	155	N	Y
Fritz Pond Dam	Class III	Private	26.4	79.2	N	Y
Guilford Lake Dam	Class I	State	34.5	5650	Y	Y
Hammond Lake II Dam	Class III	Private	17	70	N	Y
Hide Away Hollow Dam	Class III	Private	19.6	30.4	N	N
Highlandtown Lake Dam	Class I	State	44	5710	Y	Y
Hillyer Lake Dam	Class III	Private	18.5	28.1	N	N
Ismond Pond Dam	Class III	State	27	86	N	Y
Lake Cha-Vel Dam	Class II	Private	35	155	N	Y
Lake Copeland Dam	Class II	Private	27.8	261.8	N	Y
Lake P NA Dam	Class II	Private	17	139	Y	Y
Lake Tomahawk Dam	Class I	Private	61.9	2589	N	Y
Lower Wallace Lake Dam	Class II	Private	22	62.4	N	Y
Ludwig Dam	Class III	Private	14.8	54.9	N	Y
Manfull Lake Dam	Class II	Private	18	88	N	Y
Maroscher Lake Dam	Class III	Private	14.6	37	N	N
Mill Pond Lake Dam	Class II	Private	21.9	72.2	N	Y
Paradise Lake Dam	Class II	Private	30.2	318	N	Y
Rayls Lake Dam	Class II	Private	22.4	65.2	N	Y
Salem Regional Campus Lake Dam	Class II	State	26	49.7	N	Y
Salem Reservoir (South Embankment)	Class I	Local Government	47.6	2182	Y	Y
Shrontz's Lake Dam	Class II	Private	15.9	31.5	N	N
Sevakeen Country Club Lake Dam	Class II	Private	16.5	77.5	Y	Y
Slates Lake Dam	Class II	Private	27.8	70	N	Y
Spring Valley Lake Dam	Class III	Private	14	58.2	N	Y
Spring Valley Park Lake Dam	Class I	Local Government	28.5	391.4	Y	Y
Summitcrest Farm Pond Dam	Class II	Private	38.9	66	N	Y
Summitville Lake Dam	Class II	Private	26.3	179.2	N	Y

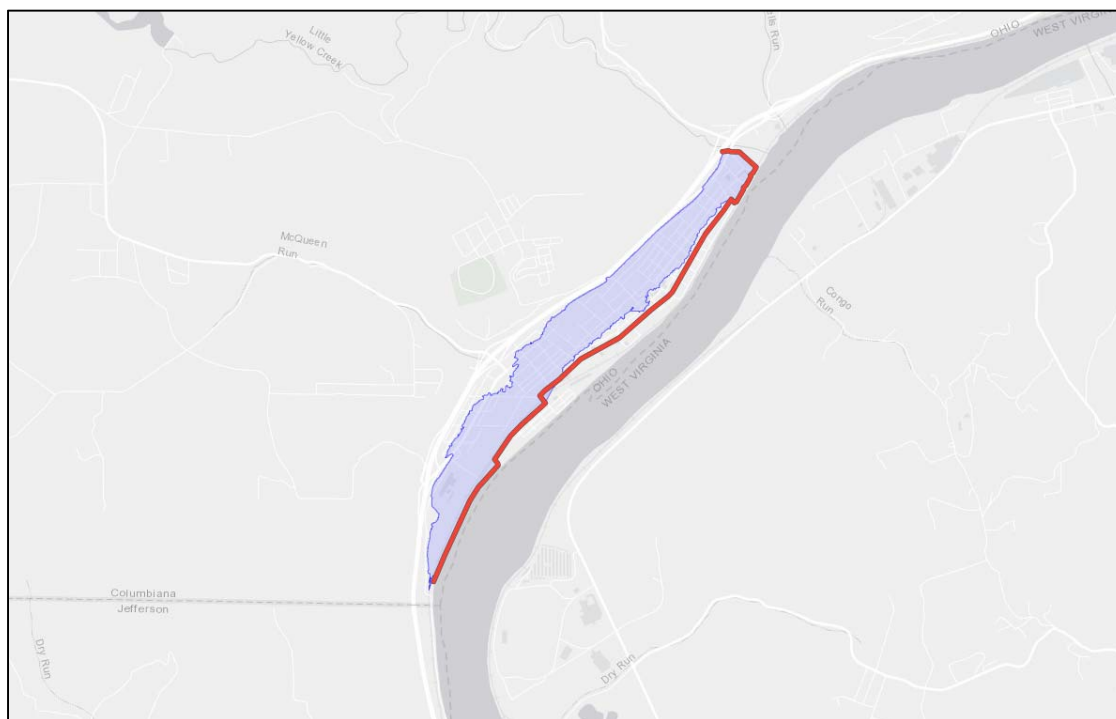
LIST OF CLASS I-III DAMS IN COLUMBIANA COUNTY (Source: ODNR)						
<i>Dam Name</i>	<i>ODNR Hazard Class.</i>	<i>Owner Type</i>	<i>Height (Ft.)</i>	<i>Storage (acre-ft.)</i>	<i>EAP (Y/N)</i>	<i>Also in NID (Y/N)</i>
Sunshine Lakes Dam	Class II	Private	37.5	211	N	Y
Wellsville Reservoir Dam	Class I	Local Government	61.5	410	N	Y
Werner/Duncan Lake Dam	Class II	Private	19.1	49	N	Y
Westville Lake Dam	Class II	Local Government	29	1039	N	Y
Woodland Lake Dam	Class II	Private	19	109	N	Y
Zepernick Lake Dam	Class II	State	13.8	214.9	N	Y

The following graphic shows the locations of dams in Columbiana 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).



The USACE also maintains the National Levee Database (NLD). There is one levee system located in Columbiana County, in Wellsville Village. The Wellsville levee system was constructed in 1942 to prevent flooding from the Ohio River. The system, which consists of north and south sections, contains 1.06 miles of embankment and 0.37 miles of floodwall. Per a May 2016 assessment, there are 1,868 people at risk and 1,113 structures (with a combined property value of \$250M) at risk behind the structure. USACE classifies the risk associated with Wellsville levee system as moderate (LSAC 3) for prior to overtopping and low (LSAC 4) for overtopping.

The USACE notes uncertainties associated with the structure's risk levels. There are concerns regarding seepage and piping as well as stability under full load conditions. These concerns largely derive from unknown foundation materials, the presence of large trees, encroachments, burrowing animal activity, the age of multiple culverts in the area, etc. Fortunately, the potential for overtopping is low; high river levels in preceding days would allow for reasonable warning time (USACE, 2016). The image below shows the location of the levee in the Village of Wellsville.



Impact 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 impacts of dam failure.

Class	Downstream Impact
Class I	<ul style="list-style-type: none"> • Probable loss of life • Structural damage to high-value property (i.e., homes, industries, major public utilities).
Class II	<ul style="list-style-type: none"> • Disruption of a public water supply or wastewater treatment facility, the release of health-hazardous industrial or commercial waste, or other health hazards • Flooding of residential, commercial, industrial, or publicly owned structures • Flooding of high-value property • 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 • Damage or disruption to railroads or public utilities • Damage to downstream class I, II or III dams or levees, or other dams or levees of high value. • Damage to dams or levees can include but is not limited to, overtopping of the structure
Class III	<ul style="list-style-type: none"> • 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 • Damage or disruption to local roads including but not limited to roads not otherwise listed as major roads.
Class IV	<ul style="list-style-type: none"> • Losses restricted mainly to the dam.

There are several clusters of dams throughout Columbiana County. Clusters in central Elk Run Township, northeastern Franklin Township, and southeastern Salem Township are all “Other” dams, and most likely contribute to minimal risk. The USACE lists Wellsville as the nearest downstream town from three high-hazard dams: the Wellsville Reservoir Dam on Little Yellow Creek, the Highlandtown Lake Dam on Little Yellow Creek, and the Buckeye Water District Reservoir off stream of Little Yellow Creek.

Similarly, the impacts of levee failures correspond to the class of the structures. Ohio Administrative Code Rule 150:21-13-09 specifies levees classes as follows.

- **Class I:** Probable loss of human life, structural collapse of at least one residence or one commercial or industrial business
- **Class II:** Disruption of a public water supply or wastewater treatment facility, or other health hazards; flooding of residential, commercial, industrial, or publicly owned structures; flooding of high-value property; 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 a chief; damage or disruption to railroads or public utilities

- **Class III:** Property losses including but not limited to rural buildings not otherwise described in this rule; damage or disruption to local roads including but not limited to roads not otherwise listed in this rule
- **Class IV:** A levee having a height of not more than three feet; losses restricted mainly to the levee owner's property and rural lands

The previous section lists potential impacts at the Wellsville structure. The ODNR, Dam Safety Program classifies the Wellsville Levee as a Class I (OEMA, 2019).

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. Seven of Columbiana County's dams appear on the NPDP incident list, as listed below.

DAM INCIDENTS IN COLUMBIANA COUNTY			
<i>Dam Name</i>	<i>Class</i>	<i>Incident Type</i>	<i>Date</i>
Beaver Lake Dam	Class II	Inadequate Spillway Capacity	10/26/1999
Lake P'NA Dam	Class II	Inadequate Spillway Capacity	8/10/2000
Lake Tomahawk Dam	Class I	Inadequate Spillway Capacity	10/26/1999
Lower Wallace Lake Dam	Class II	Inadequate Spillway Capacity	6/12/2001
Rayls Lake Dam	Class II	Inadequate Spillway Capacity	5/17/2001
Spring Valley Park Lake Dam	Class I	Inadequate Spillway Capacity	3/19/1996
Woodland Lake Dam	Class II	Concrete Deterioration	7/21/1998

There have been no recorded levee failures in Ohio. The northern portion of the Wellsville Levee has been loaded up to 50%, and the southern portion has never been loaded.

Loss and Damages

The owners of nine dams in Columbiana County submitted emergency action plans (EAPs) to the Columbiana County Emergency Management Agency. Those plans identified downstream hazards. For this estimate, planners averaged the number of impacted structures specifically noted in the EAPs (per structure). Figures in the HAZUS database (i.e., 46,946 structures with a total replacement value of \$11,601,664,000) suggest a generalized, rounded value of \$247,128 per structure. Planners used that figure to calculate loss estimates for SHARPP entry. NOTE: The percent composition of structures also comes from HAZUS.

DAM AND LEVEE FAILURE LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential (72% of structures in county)	14	\$3,459,792
Non-Residential (23% of structures in county)	5	\$1,235,640
Critical Facilities (5% of structures in county)	1	\$247,128
TOTALS	20	\$4,942,560

Risk Assessment

This section summarizes the risk to Columbiana County from dam and levee failures. The following table identifies the assets located in Wellsville that are within the protected area of the village's levee.


ASSET	ADDRESS	CITY	TYPE				
			<i>General</i>	<i>Built</i>	<i>People</i>	<i>Economy</i>	<i>Natural</i>
Garfield Elementary School	1600 Lincoln Avenue	Wellsville	School		X		
Wellsville High School	1 Bengal Boulevard	Wellsville	School		X		
Buckeye Water District	1925 Clark Avenue	Wellsville	Utility	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.

DAM AND LEVEE FAILURE RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	4	High	There have been seven dam incidents and zero levee failures in Columbiana County since 1999 (for an average of 0.4 incidents per annum).
Response	1	Less than 1 day	Due to frequent inspections of dams in Columbiana County and minimal recorded historical damage downstream, the response to an event would be expected to be minimal.
Onset	1	More than 24 hours	Because dams are frequently inspected, and their inundation can be predicted based on weather, warning of a critical failure is expected. Further, high river levels on the Ohio River would likely yield warning time for a potential overtopping of the Wellsville levee.
Magnitude	1	Less than 10% of land area	Most dams are in rural areas, and the single levee protects less than one square mile of land area.
Business	1	Less than 24 hours	Most dams are in rural areas, and the single levee protects less than one square mile of land area. 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 loss of the dam itself and the owner's property.
TOTAL	10	Lowest	

2.0 RISK ASSESSMENT

2.3.10 Hazardous Materials Incident

A hazardous material is a chemical or biological material that may pose a threat to life, health, property, or the environment. For this profile, the hazardous materials incidents include only those that are not intentional.			
 HIGHEST HIGH MEDIUM LOW LOWEST	Vulnerability	Period of Occurrence: At any time	Hazard Index Ranking: Medium
	Warning Time: Less than 6 hours	State Risk Ranking: Not ranked	
	Probability: Likely	Severity: Limited	
	Type of Hazard: Technological	Disaster Declarations: None	

Hazard Overview

A hazardous material is a substance or material which, because of its chemical, physical or biological nature, poses a threat to life, health, or property if released from a confined setting. A release may occur by spilling, leaking, emitting toxic vapors, or any other process that enables the material to escape its container, enter the environment, and create a potential hazard. Several common hazardous materials include those that are explosive, flammable or combustible, poisonous or radioactive. Related combustible hazardous materials include oxidizers and reactive materials, while toxins produced by etiological (biological) agents are types of poison that can cause disease.

A hazmat release while in transit is of great concern to the U. S. Department of Transportation (DOT). While fixed sites store and use hazardous materials, the materials are usually produced elsewhere and shipped to a fixed facility by rail car, truck, or onboard ships or barges. Signs or placards denoting the hazard identify the vehicles carrying hazardous materials. The possibility of release is present at any time. Hazardous materials constantly move through Ohio on interstate highways, the rail system, and on shipping lanes in rivers and tributaries.

The hauling, storage, and use of hazardous materials play a vital role in the economy of our nation. Over four billion tons of hazardous materials are transported annually, and 100,000 trucks haul hazardous materials on the country's highways each day. Almost half of all freight trains carry hazardous materials. The transportation infrastructure utilized to move hazardous

materials through Columbiana County is spread throughout the county, with a slight concentration in the southeastern corner of the county along the Ohio River. An incident causing the accidental release of a hazardous material is spontaneous, with little time of warning. Further, the recovery and clean-up activities involved in a hazmat incident may require several hours, days, or even weeks to complete. Hazardous materials can release as a secondary result of a natural disaster like an earthquake or flood. In either case, buildings or vehicles can release their hazardous materials inventories when structurally compromised or involved in traffic accidents.

Location and Extent

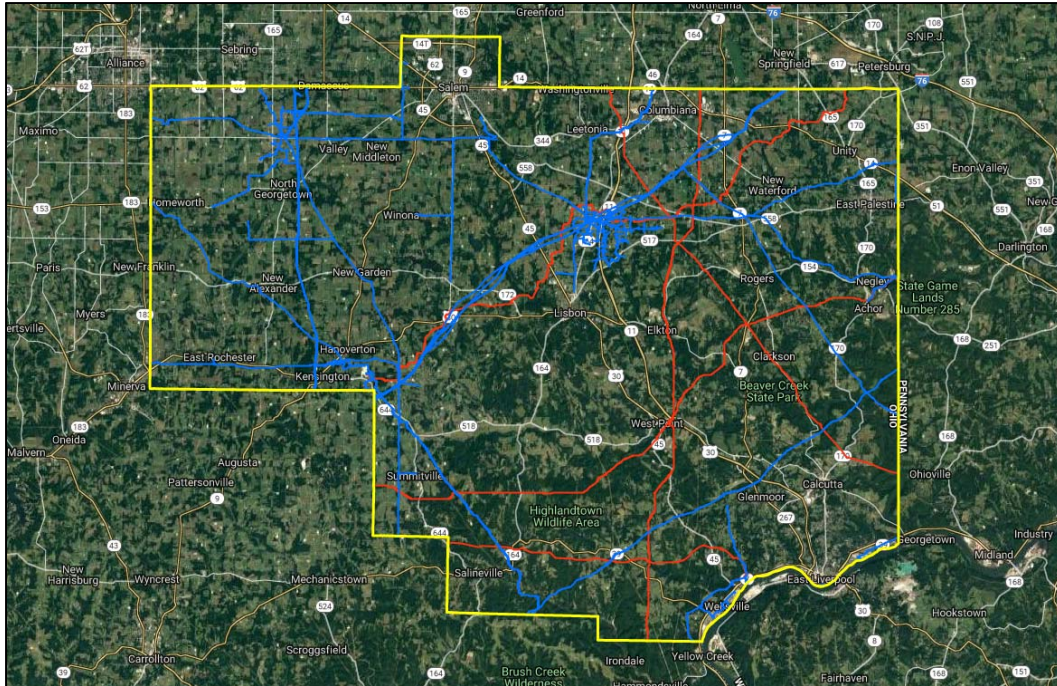
Two major agencies collect data as they relate to hazardous materials incidents the Pipeline and Hazardous Materials Safety Administration (PHMSA) governed by the U.S. DOT and the National Response Center (NRC), governed by the U.S. Coast Guard (USCG). The types of materials that can cause a hazmat release are wide-ranging and may include chlorine, sodium hydroxide, sulfuric acid, radioactive isotopes, anhydrous ammonia, gasoline, and other hydrocarbons, as well as medical/biological waste from hospitals or clinics. Hazardous materials subject to reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA) or Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) include these four groups.

- **Extremely Hazardous Substances (EHS):** These are materials with acutely toxic properties that may do irreversible damage or cause death to people or harm the environment when released or used outside their intended use. Examples include ammonia, chlorine, and sulfuric acid.
- **Hazardous Substances:** These are any materials posing a threat to human health and the environment or any substance designated by the U.S. Environmental Protection Agency (EPA) to be reported if a designated quantity of the substance is spilled into the waters of the United States or otherwise released into the environment.
- **Hazardous Chemicals:** If present at a chemical facility in certain amounts, these substances require a safety data sheet (SDS) under the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects such as cancer, burns, or dermatitis.
- **Toxic Chemicals:** Chemicals or chemical categories that appear on the list because of their chronic or long-term toxicity.

While hazardous materials spills, leaks or accidents may occur anywhere in Columbiana County, they are more likely to occur on transportation routes (such as roads or railways) and at facilities that routinely handle hazardous materials (such as gas stations, chemical companies, and other Tier II reporting or Toxic Release Inventory [TRI] facilities). Columbiana County's major highway routes transverse the county. The rail system is limited, with one line located in the westernmost portion of the county and another in the northernmost portion.

In Columbiana County, 32 fixed facilities report to the EPA's Toxic Release Inventory. These facilities are primarily located in Columbiana City, East Liverpool, East Palestine, and Salem. There is one EPA Superfund site located in Lisbon. This site, the former Chemlime Corp. facility, is not on the National Priorities List. In addition to these facilities/locations, there is one brownfield property located in Columbiana City. This site is a 37.31-acre plot, the former National Refractories location. Brownfield properties are those formerly used for industrial or commercial purposes, where future use is affected by either real or perceived environmental contamination. The extent of damage for hazardous material incidents can vary from a small spill on a road to contamination of source water via storm drains, rivers, and streams.

Columbiana County is home to 300.48 miles of gas transmission pipelines and 113.80 of hazardous liquid pipelines. Transmission lines traverse all areas of the county with clusters between Lisbon and Columbiana, as well as north of North Georgetown. Hazardous liquid pipelines also appear throughout the county; however, they appear more frequently in the central and eastern portions. The following image, taken from the National Pipeline Mapping System (NPMS) (PHMSA, 2019), shows the locations of pipelines. Red lines are hazardous liquid lines, while blue lines are transmission pipelines.



Impacts and Vulnerability

Due to the wide variety of substances used, transported, and stored in the area, it is difficult to assign an overall impact of these substances to public health, the environment, the economy, and the infrastructure. Some spills cause minor if any damage to the area. For example, spilling a few gallons of gasoline on concrete during transfer causes minimal economic impact; rarely does the spilled substance cause any environmental impacts. This is not to say that all spills are minor; some can be very harmful to human health and the environment and costs thousands, if not millions of dollars to clean up. Spills into waterways and those that reach the groundwater are of particular concern due to the threat they impose to drinking water and subsequently public health, the environment, and fauna in the area.

Additionally, transportation-based hazard incidents have the potential to result in cascading impacts. For example, a rail-based incident could isolate a community in Columbiana County as well as several other communities in the region. Officials from such operators as CSX Transportation concur. In a recent interview, the company's hazmat manager out of Pittsburgh noted that a significant problem associated with rail incidents, particularly those involving hazardous materials, is that a stopped train can block several roadway intersections, essentially cutting some areas off. These blocks not only hinder evacuation from those areas but also emergency services access to those areas. The following map shows the location of railroad/highway crossings in Columbiana County; there are 181 crossings.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN


Columbiana County Railway/Highway Crossings

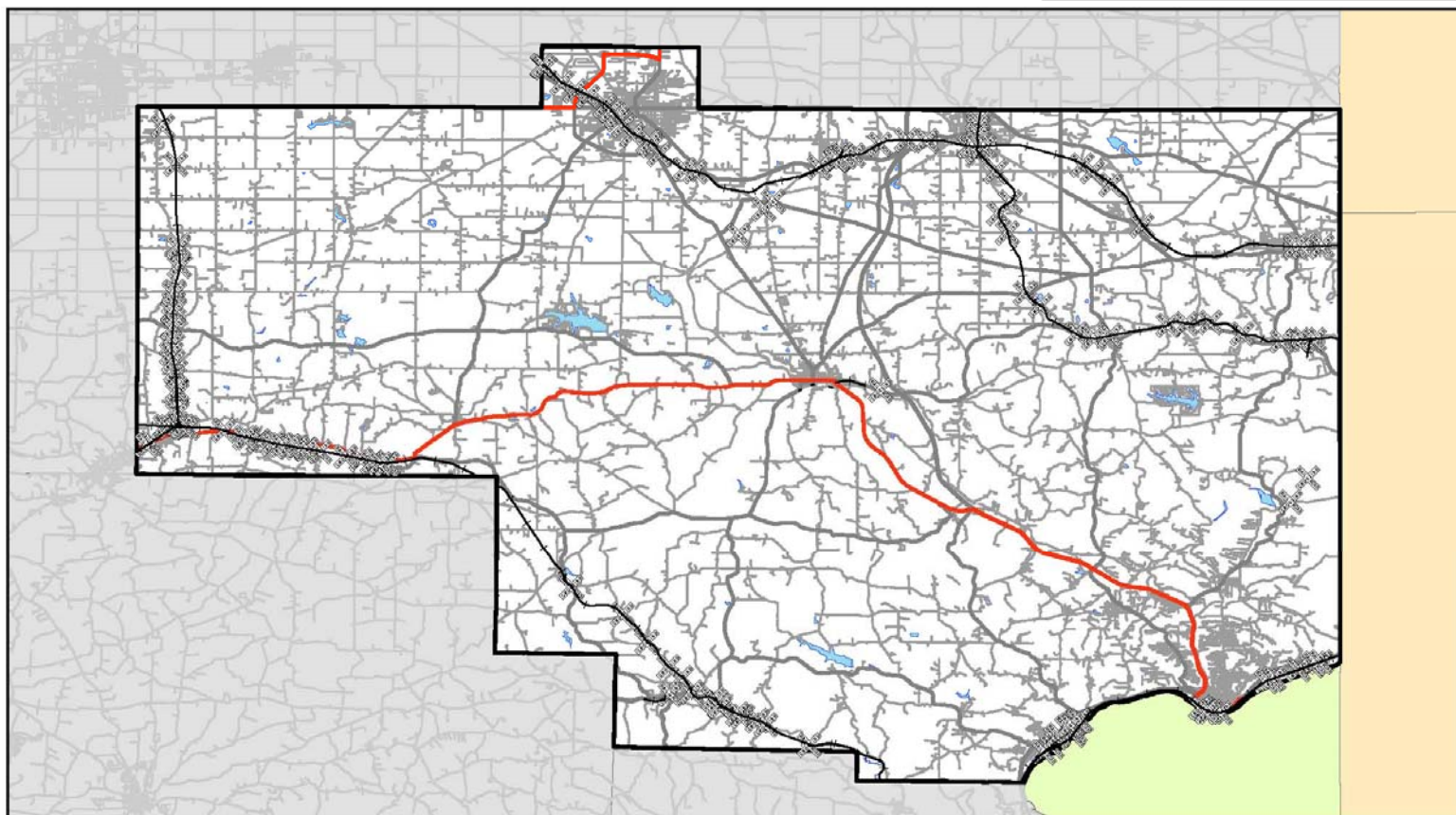
Data Source(s):

FRA, U.S. Census Bureau, U.S. DOT

DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.



-  Railroads
-  Railroad Crossings
-  US Routes
-  State Routes



Hazardous materials incidents can occur rapidly over a large area. The chemical, physical, and biological properties of hazardous materials pose a potential risk to life, health, the environment, and property when not properly contained. Many factors determine the impact of a potential incident, including quick and solid decision-making by emergency officials, location and type of release, evacuation and shelter-in-place needs, public health concerns, and relevant economic considerations. Additionally, while most incidents are generally brief, the resulting recovery and cleanup may take time to exact.

If evacuation is necessary due to a chemical emergency, road closures and traffic jams may result. If a large-scale evacuation is deemed necessary, it can pose serious long-term economic consequences to the involved population area. A delay in the resumption of industry commerce may cause economic losses for both business owners and employees. Also, an evacuation ordered on short-notice could cause serious problems for businesses requiring time to shut down specialized equipment. Public or private emergency response organizations agencies may be challenged by the expenses dictated by a hazardous material release and may need to wait an uncomfortable length of time for the responsible party to reimburse any outstanding costs, further straining the economic resources of the region.

A major incident involving significant injuries may severely tax regional medical services, as medical facilities aren't generally designed to handle mass amounts of victims on short notice. Consequently, in the event of a major incident, hospitals and other medical facilities must still be able to provide their customary level of service to all patients, regardless of whether they were incident victims or not.

Historical Occurrences

There have been 30 incidents at fixed facilities, 344 highway (or mobile) incidents, two waterway incidents, 18 rail incidents (with a release), and five pipeline incidents involving hazardous materials in Columbiana County. The total approximate number of occurrences in Columbiana County between 2010 and 2019 are 399 incidents. The source of information for these incidents in the National Response Center (NRC) (USCG, 2019). The following list outlines the findings.

- **Fixed Facilities:** According to the Coast Guard's NRC, there have been 30 incidents at fixed facilities between 2010 and 2019. Nine were due to natural phenomena, seven to "dumping," one to operator error, and four "other." The cause of nine incidents was unknown.

- **Transportation:** Ohio experienced 10,961 transportation-based hazardous material incidents in the ten years (2010-2019) (PHMSA, 2019).
 - **Highway:** According to PHMSA, there were 344 highway incidents in Columbiana County between 2010 and 2019; these account for 3.14% of the total highway incidents in the state.

HIGHWAY INCIDENTS IN COLUMBIANA COUNTY 2010-2019											
City	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Columbiana	3	7	22	15	26	50	60	44	34	74	335
East Liverpool	1		1				2			2	6
Leetonia		1									1
Salem								1			1
Salineville				1							1
Total	4	8	23	16	26	50	62	45	34	76	344

Source: PHMSA, 2019

- According to the NRC (USGC, 2019), there were 10 mobile incidents (indicating that they are related to transportation, including highway incidents) in Columbiana County between 2010 and 2019.
- **Waterway:** According to the NRC, two incidents involving vessels occurred; callers reported barges sinking, one near East Liverpool in 2018 and another near Wellsville in 2014.
 - **Rail:** PHMSA did not record rail incidents in Columbiana County during the period 2010 to 2019. The NRC noted 18, with the cause of ten of them as “equipment failure.”
- **Pipeline:** According to the NRC, five incidents involving pipelines occurred. Incidents have occurred in a variety of locations, include one each in Hanoverton, Wellsville, East Liverpool, Columbiana, and Minerva.

Loss and Damages

The NRC does not provide losses or damages, but PHMSA provides loss data for some incidents. The Columbiana County PHMSA data included 159 incidents with “damages” reported. Those reported damages were \$642,534, or an average of \$4,041 per incident.

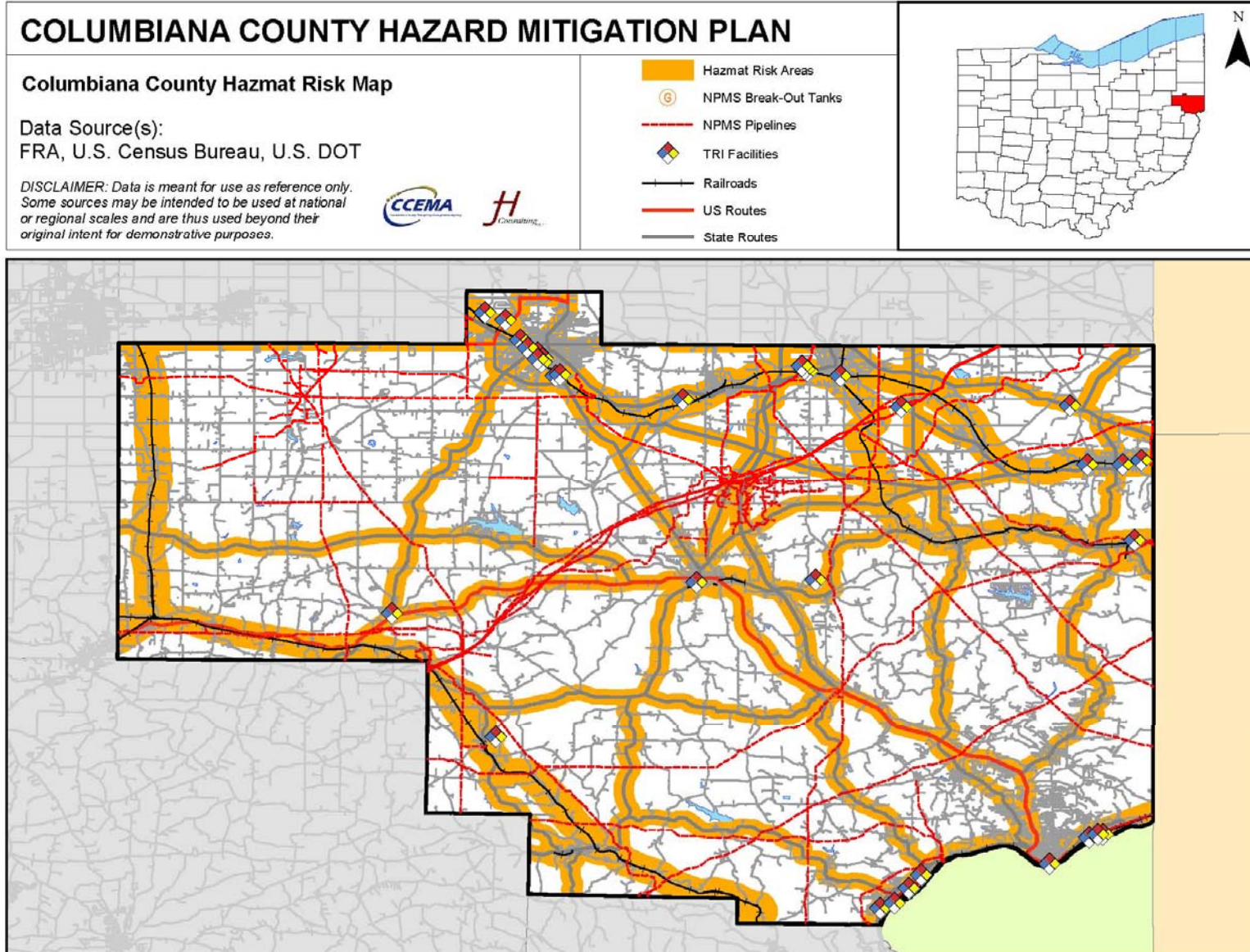
Further, these losses were over a period of ten years. Another perspective on these estimated losses would be an average of approximately \$64,250 per year.

The average estimated loss comprises 0.00001% of the total building stock exposure in Columbiana County. Planners thus applied that percentage to the categorized number of structures and exposure to derive SHARPP loss figures.

HAZMAT LOSS ESTIMATE – SHARPP DATA ENTRY		
<i>Structure Type</i>	<i>Number</i>	<i>Loss Estimate</i>
Residential	1	\$46,450.00
Non-Residential	1	\$14,703.00
Critical Facilities	1	\$3,097.00
TOTALS	3	\$64,250.00

Risk Assessment

This section summarizes the risk to Columbiana County from hazardous material incidents. The map image graphically depicts potential risk areas in Columbiana County.



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

ASSET	ADDRESS	CITY	TYPE				
			<i>General</i>	<i>Built</i>	<i>People</i>	<i>Economy</i>	<i>Natural</i>
Ambulance Service Inc.	231 Webber Way	East Liverpool	Emergency Services	X			
Calcutta Fire Department	15455 Pugh Road	Calcutta	Emergency Services	X			
Columbiana County 911 Center	105 South Market Street	Lisbon	Emergency Services	X			
Columbiana County EMA	215 South Market Street	Lisbon	Emergency Services	X			
Columbiana County Sheriff	8473 Countryhome Road	Lisbon	Emergency Services	X			
Columbiana EMS	28 West Friend Street	Columbiana	Emergency Services	X			
Columbiana Fire Department	28 West Friend Street	Columbiana	Emergency Services	X			
Columbiana Police Department	28 South Vine Street	Columbiana	Emergency Services	X			
East Liverpool Fire Department	626 St. Clair Avenue	East Liverpool	Emergency Services	X			
East Liverpool Police Department	126 West Sixth Street	East Liverpool	Emergency Services	X			
East Palestine EMS	67 East Clark Street	East Palestine	Emergency Services	X			
East Palestine Fire Department	67 East Clark Street	East Palestine	Emergency Services	X			
East Palestine Police Department	75 East Main Street	East Palestine	Emergency Services	X			
EMT Ambulance	383 North Lincoln Avenue	Salem	Emergency Services	X			
Franklin Township Volunteer Fire Department	32046 Spruce Street	Summitville	Emergency Services	X			
Glenmoor Volunteer Fire Department	16320 Annesley Road	East Liverpool	Emergency Services	X			
Guilford Lake Fire Department	32120 Sunset Avenue	Hanoverton	Emergency Services	X			
Hanoverton Volunteer Fire Department	10235 Second Street	Hanoverton	Emergency Services	X			
Highlandtown Volunteer Fire Department	18371 Steubenville Pike Road	Salineville	Emergency Services	X			
Homeworth Volunteer Fire Department	4354 Middle Street	Homeworth	Emergency Services	X			
KLG Ambulance / MICU	1516B South Lincoln Avenue	Salem	Emergency Services	X			
Lacroft Volunteer Fire Department	2360 Sherwood Avenue	East Liverpool	Emergency Services	X			

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
Leetonia EMS	300 Main Street	Leetonia	Emergency Services	X			
Leetonia Fire Department	330 East Main Street	Leetonia	Emergency Services	X			
Leetonia Police Department	300 East Main Street	Leetonia	Emergency Services	X			
Lifeteam EMS Inc.	740A Dresden Avenue	East Liverpool	Emergency Services	X			
Lisbon Fire Department	113 S Jefferson Street	Lisbon	Emergency Services	X			
Lisbon Police Department	203 North Market Street	Lisbon	Emergency Services	X			
Liverpool Township Police Department	353 Adam Avenue	East Liverpool	Emergency Services	X			
Maple-Cotton Funeral Home and EMS	11009 SR 644	Kensington	Emergency Services	X			
Negley Volunteer Fire Department/EMS	50683 Richardson Avenue	Negley	Emergency Services	X			
New Waterford EMS	3766 East Main Street	New Waterford	Emergency Services	X			
New Waterford Fire Department	3766 East Main Street	New Waterford	Emergency Services	X			
New Waterford Police Department	3700 Village Park Drive	New Waterford	Emergency Services	X			
North Star Critical Care	16356 SR 267	East Liverpool	Emergency Services	X			
Ohio State Highway Patrol	9423 SR 45	Lisbon	Emergency Services	X			
Perry Township Volunteer Fire Department	2198 North Ellsworth Avenue	Salem	Emergency Services	X			
Rogers Village Fire Department	7580 Farr Street	Rogers	Emergency Services	X			
Salem Fire Department	260 South Ellsworth Avenue	Salem	Emergency Services	X			
Salem Police Department	397 Columbia Street	Salem	Emergency Services	X			
Salineville Police Department	34 Washington Street	Salineville	Emergency Services	X			
Salineville Volunteer Fire Department	34 Washington Street	Salineville	Emergency Services	X			
St. Clair Township Police Department	15442 Pugh Road	Calcutta	Emergency Services	X			
Washingtonville Police Department	415 South County Road	Washingtonville	Emergency Services	X			
Wellsville Police Department	1200 Main Street	Wellsville	Emergency Services	X			
Wellsville Volunteer Fire Department	1202 Main Street	Wellsville	Emergency Services	X			

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
Columbiana City Hall	28 West Friend Street	Columbiana	Governmental Facility	X			
Columbiana County Courthouse	203 South Market Street	Lisbon	Governmental Facility	X			
East Liverpool City Hall	126 West Sixth Street	East Liverpool	Governmental Facility	X			
East Palestine Village Offices	144 North Market Street	East Palestine	Governmental Facility	X			
Elkrun Township Hall	41725 State Route 154	Lisbon	Governmental Facility	X			
Hanoverton Village Offices	10180 1st Street	Hanoverton	Governmental Facility	X			
Leetonia Village Offices	300 East Main Street	Leetonia	Governmental Facility	X			
Lisbon Village Offices	203 North Market Street	Lisbon	Governmental Facility	X			
Madison Township Hall	13011 State Route 45	Lisbon	Governmental Facility	X			
New Waterford Village Offices	3760 Park Drive	New Waterford	Governmental Facility	X			
Salem City Hall	231 South Broadway Ave	Salem	Governmental Facility	X			
Salem Township Hall	37638 Old State Route 556	Leetonia	Governmental Facility	X			
Salineville Village Offices	34 Washington Street	Salineville	Governmental Facility	X			
Washingtonville Village Offices	415 South County Road	Washingtonville	Governmental Facility	X			
Wellsville Village Offices	1200 Main Street	Wellsville	Governmental Facility	X			
American Health Care	107 Royal Birkdale Drive	Columbiana	Healthcare		X		
Assisted Living Ministry Services	650 St. Clair Avenue	East Liverpool	Healthcare		X		
Blossom Nursing and Rehab. Center	109 Blossom Lane	Salem	Healthcare		X		
Brookdale Salem	1916 South Lincoln Avenue	Salem	Healthcare		X		
Century House of Salem	1171 East State Street	Salem	Healthcare		X		
Circle of Care	19895 East Pershing Street	Salem	Healthcare		X		
Columbiana County Mental Health	40722 State Route 154	Lisbon	Healthcare		X		
Continuing Health Care Solutions	100 Vista Drive	Lisbon	Healthcare		X		
East Liverpool City Hospital	425 W 5th Street	East Liverpool	Healthcare	X	X		
Grace Woods Senior Living	1166 Benton Road	Salem	Healthcare		X		
Harmony Village	901 S Main Street	Columbiana	Healthcare		X		

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
Parkside Healthcare Center	930 East Park Avenue	Columbiana	Healthcare		X		
Salem East Health Care	250 Continental Drive	Salem	Healthcare		X		
Salem North Health Care	230 Continental Drive	Salem	Healthcare		X		
Salem Regional Medical Center	1995 E State Street	Salem	Healthcare	X	X		
Salem West Health Care	2511 Bentley Drive	Salem	Healthcare		X		
The Renaissance at Vista	100 Vista Drive	Lisbon	Healthcare		X		
Twin Oaks Retirement Center	1166 Benton Road	Salem	Healthcare		X		
Valley Oaks Care Center	500 Selfridge Street	East Liverpool	Healthcare		X		
Whispering Pines Village	937 East Park Avenue	Columbiana	Healthcare		X		
Burchfield Homestead	867 E 4th Street	Salem	Historical				X
Cassius Clark Thompson House	305 Walnut Street	East Liverpool	Historical				X
Charles Nelson Schmick House	110 Walnut Street	Leetonia	Historical				X
Cherry Valley Coke Ovens	999 Cherry Valley Road	Leetonia	Historical				X
Church Hill Road Covered Bridge	42164 SR 154	Lisbon	Historical				X
Daniel Howell Hise House	1100 Franklin Avenue	Salem	Historical				X
Diamond Historic District	410 Market Street	East Liverpool	Historical				X
East Liverpool Historic District	112 E 5th Street	East Liverpool	Historical				X
East Liverpool Pottery	112 E 2nd Street	East Liverpool	Historical				X
Elks Club	139 W 5th Street	East Liverpool	Historical				X
Godwin Knowles House	422 Broadway Street	East Liverpool	Historical				X
Hanna-Kenty House	251 East High Street	Lisbon	Historical				X
Hanoverton Canal Town District	30093 US 30	Hanoverton	Historical				X
Hiram Bell Farmstead	43628 SR 517	Columbiana	Historical				X
Homer Laughlin House	414 Broadway Street	East Liverpool	Historical				X
Hostetter Inn	32901 State Route 172	Lisbon	Historical				X
Ikirt House	200 6th Street	East Liverpool	Historical				X

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
John Street House	631 N. Ellsworth Avenue	Salem	Historical				X
Lisbon Historic District	108 N Market Street	Lisbon	Historical				X
Mary A. Patterson Memorial	224 E 4th Street	East Liverpool	Historical				X
Nicholas Eckis House	45838 High Street	New Waterford	Historical				X
Odd Fellows Temple	120 W 6th Street	East Liverpool	Historical				X
Potters National Bank	216 E 4th Street	East Liverpool	Historical				X
Salem Downtown Historic District	100 N Ellsworth Avenue	Salem	Historical				X
Travelers Hotel	115 E Fourth Street	East Liverpool	Historical				X
YMCA	500 E 4th St	East Liverpool	Historical				X
Carnegie Public Library	219 East Fourth Street	East Liverpool	Library	X			
Columbiana Public Library	322 North Middle Street	Columbiana	Library	X			
East Palestine Memorial Public Library	309 North Market Street	East Palestine	Library	X			
Leetonia Community Public Library	181 Walnut Street	Leetonia	Library	X			
Lepper Library	303 East Lincoln Way	Lisbon	Library	X			
Salem Public Library	821 East State Street	Salem	Library	X			
Wellsville Public Library	115 Ninth Street	Wellsville	Library	X			
Calcutta Post Office	15713 SR 170	East Liverpool	Post Office	X			
Columbiana Post Office	149 South Main Street	Columbiana	Post Office	X			
East Liverpool Post Office	700 Dresden Avenue	East Liverpool	Post Office	X			
East Palestine Post Office	269 North Market Street	East Palestine	Post Office	X			
East Rochester Post Office	24781 US 30	East Rochester	Post Office	X			
Elkton Post Office	42188 SR 154	Elkton	Post Office	X			
Hanoverton Post Office	29959 Market Street	Hanoverton	Post Office	X			
Homeworth Post Office	4434 Middle Street	Homeworth	Post Office	X			
Kensington Post Office	11011 SR 644	Kensington	Post Office	X			
Leetonia Post Office	235 Main Street	Leetonia	Post Office	X			
Lisbon Post Office	7983 Dickey Drive	Lisbon	Post Office	X			

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
Negley Post Office	7560 Commerce Street	Negly	Post Office	X			
New Waterford Post Office	3818 West Main Street	New Waterford	Post Office	X			
Rogers Post Office	7529 Depot Street	Rogers	Post Office	X			
Salem Post Office	275 Penn Avenue	Salem	Post Office	X			
Salineville Post Office	37 West Main Street	Salineville	Post Office	X			
Summitville Post Office	15521 SR 644	Summitville	Post Office	X			
Washingtonville Post Office	195 East Main Street	Washingtonville	Post Office	X			
Wellsville Post Office	1075 Main Street	Wellsville	Post Office	X			
American Standards Brands	605 South Ellsworth Avenue	Salem	Private Sector			X	
Columbiana Foundry Company	501 Lisbon Street	Columbiana	Private Sector			X	
Flex-N-Gate/Ventra Salem	800 Pennsylvania Avenue	Salem	Private Sector			X	
Fresh Mark Inc.	1735 South Lincoln Avenue	Salem	Private Sector			X	
Pioneer Pottery Inc.	761 Dresden Avenue	East Liverpool	Private Sector			X	
Wal-Mart Stores Inc.	16280 Dresden Avenue	East Liverpool	Private Sector			X	
Zarbana Industries	41738 Esterly Drive	Columbiana	Private Sector			X	
Beaver Local Elementary School	46090 Bell School Road	East Liverpool	School		X		
Beaver Local High School	46090 Bell School Road	East Liverpool	School		X		
Beaver Local Middle School	46090 Bell School Road	East Liverpool	School		X		
Columbiana Co. Career and Technical Center	9364 SR 45	Lisbon	School		X		
Columbiana High School	700 Columbiana-Waterford Road	Columbiana	School		X		
Crestview Middle School/High School	44100 Crestview Road	Columbiana	School		X		
David Anderson Jr/Sr High School	260 West Pine Street	Lisbon	School		X		
DAW Middle School	929 Center Street	Wellsville	School		X		
East Elementary School	1417 Etruria Street	East Liverpool	School		X		
East Liverpool Christian School	46682 Florence Street	East Liverpool	School		X		
East Palestine Elementary School	195 West Grant Street	East Palestine	School		X		
East Palestine High School	360 West Grant Street	East Palestine	School		X		

ASSET	ADDRESS	CITY	TYPE				
			General	Built	People	Economy	Natural
East Palestine Middle School	320 West Grant Street	East Palestine	School		X		
Garfield Elementary School	1600 Lincoln Avenue	Wellsville	School		X		
Heartland Christian School K-12	28 Pittsburgh Street	Columbiana	School		X		
Joshua Dixon Elementary School	333 North Middle Street	Columbiana	School		X		
Lacroft Elementary School	2460 Boring Lane	East Liverpool	School		X		
Mckinley Elementary School	441 East Chestnut Street	Lisbon	School		X		
Reilly Elementary School	491 Reilly Avenue	Salem	School		X		
Salem Jr./Sr. High School	1200 East Sixth Street	Salem	School		X		
South Side Middle School	720 Columbiana-Waterford Road	Columbiana	School		X		
Southern Local K-12	38095 SR 39	Salineville	School		X		
St. Aloysius Elementary School	335 West Fifth Street	East Liverpool	School		X		
St. Paul Elementary School	925 East State Street	Salem	School		X		
United K-12	8143 SR 9	Hanoverton	School		X		
Wellsville HS	1 Bengal Boulevard	Wellsville	School		X		
Westgate Middle School	810 West Eighth Street	East Liverpool	School		X		
Columbiana County Port Authority	7860 Lincolne Place	Lisbon	Transportation	X		X	
Buckeye Water District	1925 Clark Avenue	Wellsville	Utility	X			
Columbiana City Water Works/Sewer Dept.	43477 E Metz Road	Columbiana	Utility	X			
East Liverpool Water Works	2220 Michigan Avenue	East Liverpool	Utility	X			
East Palestine Sewer and Water	166 Park Drive	East Palestine	Utility	X			
Leetonia Sewage Plant	300 Main Street	Leetonia	Utility	X			
Leetonia Water Board	300 Main Street	Leetonia	Utility	X			
Lisbon Village Water Department	8077 State Route 164	Lisbon	Utility	X			
New Waterford Water / Waste Water Plant	47250 SR 46	New Waterford	Utility	X			
Salem Sewage Plant	1600 Pennsylvania Avenue	Salem	Utility	X			

ASSET	ADDRESS	CITY	TYPE				
			<i>General</i>	<i>Built</i>	<i>People</i>	<i>Economy</i>	<i>Natural</i>
Salineville Sewer Plant	39 State Street	Salineville	Utility	X			
Washingtonville Water and Sewer	415 Boston Street	Washingtonville	Utility	X			
Wellsville Filtration Plant	17547 SR 45	Wellsville	Utility	X			
Wellsville Sewage Disposal	100 16th Street	Wellsville	Utility	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.

HAZARDOUS MATERIALS INCIDENT RISK SUMMARY			
<i>Category</i>	<i>Points</i>	<i>Description</i>	<i>Notes</i>
Frequency	5	Excessive	Columbiana County experienced 399 incidents between 2010 and 2019 (a ten-year period), for an average of 39.9 incidents per year.
Response	2	One Day	A full day serves as a conservative estimated duration of a hazmat response.
Onset	4	Less than 6 hours	Hazmat incidents typically occur with no warning.
Magnitude	1	Localized (Less than 10% of land area affected)	Hazmat incidents are site-specific, and thus highly localized.
Business	1	Less than 24 hours	Hazmat incidents in Columbiana County rarely disrupt an area for longer than 24 hours.
Human	2	Low (some injuries)	There is a potential for minor injury though no injuries were reported in Columbiana County data.
Property	1	Less than 10% of property affected	Again, as a site-specific hazard, hazmat impacts are highly localized.
TOTAL	16	Medium	

2.0 RISK ASSESSMENT

2.4 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 Columbiana 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
Natural Hazards									
Drought	Low	2	4	1	3	1	1	1	13
Earthquake	Low	2	2	4	1	1	1	1	12
Extreme Temperatures (Heat and Cold)	Low	4	1	1	1	1	2	1	11
Flooding	Medium	5	3	2	5	1	2	1	19
Public Health Emergencies	Medium	4	5	1	1	2	2	1	16
Severe Thunderstorms and Hail	Low	4	3	2	2	2	1	1	15
Severe Wind and Tornado	Medium	4	3	4	2	2	3	2	20
Severe Winter Storms	Medium	4	3	2	4	1	1	4	19
Technological Hazards									
Dam and Levee Failure	Lowest	4	1	1	1	1	1	1	10
Hazardous Materials Incident	Medium	5	2	4	1	1	2	1	16

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 Columbiana 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

At the first plan update meeting, the committee members discussed the previous goals for the plan and decided to reduce the number of goals. With these revisions, the committee intends to make the goals comprehensive, rather than based on a single hazard, and apply them to all jurisdictions, as opposed to one. During the second meeting, the committee members reviewed the new goals and established the final list as follows.

1. Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.
2. Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.
3. Protect vulnerable populations from negative effects of hazards in Columbiana County.
4. Reduce death, injury, illness, and damage to property, infrastructure (e.g., water/sewer systems, bridges, roadways, levees, and high-hazard dams), and the environment resulting from hazardous events or incidents.
5. Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.

3.0 MITIGATION STRATEGY

§ 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.

3.2 Mitigation Actions

This section serves as a mitigation action plan to reduce the losses and other impacts Columbiana 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).

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.

Prioritization

The committee spent most of Meeting 5 prioritizing mitigation projects. To support prioritization, the consultant distributed the prioritization criteria which the committee had agreed upon during Meeting 3. To determine the prioritization methodology, the consultant presented a set of ten criteria and asked committee members to comment on those criteria. Hearing no requested changes, the consultant distributed a worksheet and instructed each attendee to score the ten criteria by order of importance. The consultant collected the worksheets and averaged the responses to derive a prioritization methodology. The committee permitted tie scores. See Appendix 2 for a summary of the weighting calculations.

In the following tables, lower numbers (e.g., “1”) higher priorities. Thus, for Columbiana County, projects 8.2.1, 6.1.2, 7.1.1 received the same score per the methodology above, the highest scores, and they are Priority 1 projects. Since the committee allowed ties and there are

three Priority 1 projects, the next highest priority ranking that appears is Priority 4. Municipalities priorities their own projects separately per the same methodology.

Jurisdictional Mitigation Actions

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

COLUMBIANA COUNTY ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
HAZARD: FLOODING		
4.1.1	<p>Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p> <p>Action Type: Local Plans & Regulations</p> <p>Coordinating Agency: CCEMA</p> <p>Support Agency(ies): Columbiana County Auditor</p> <p>Timeframe: 1 year</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 10</p>	<p>ON-GOING</p> <p>Full parcel data to be completed by end of 2019; need to complete the MOU upon completion.</p>
4.3.1	<p>Integrate site-specific disaster mitigation issues into stormwater planning initiatives, including efforts to eliminate combined sewer overflows (CSOs).</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Municipal utilities departments</p> <p>Support Agency(ies): Columbiana County Engineer's Office</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): CDBG, SWCD Watershed Program, Clean Water Action Section 319(h) Grants, Surface Water Improvement Fund, Alternative Stormwater Infrastructure Loan Program, Water Pollution Control Load Fund, Local funding</p> <p>Priority: 8</p>	<p>ON-GOING</p> <p>Most stormwater management planning occurs at municipal level. The county does hydraulic analyses when replacing culverts in bridges. However, the committee chose to continue support for this project as a flood mitigation measure.</p>

COLUMBIANA COUNTY ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
4.5.1	<p>Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Municipal utilities departments</p> <p>Support Agency(ies): Columbiana County Engineer's Office</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): CDBG, SWCD Watershed Program, Clean Water Action Section 319(h) Grants, Surface Water Improvement Fund, Alternative Stormwater Infrastructure Loan Program, Water Pollution Control Load Fund, Local funding</p> <p>Priority: 8</p>	<p>ON-GOING</p> <p>The committee chose to continue support for this project as a flood mitigation measure.</p>
4.6.1	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Columbiana County SWCD</p> <p>Support Agency(ies): (a) CCEMA, (b) Participating jurisdictional administrators</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 7</p>	<p>NEW</p> <p>The committee added this project as part of the 2019 update.</p>
HAZARD: SEVERE WIND / TORNADO		
7.2.2	<p>Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.</p> <p>Goal Alignment: 3-Protect vulnerable populations from negative effects of hazards in Columbiana County.</p> <p>Action Type: Preparedness & Response Activities</p> <p>Coordinating Agency: CCEMA</p> <p>Support Agency(ies): Participating jurisdictional administrators</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): HMGP, PDM, Local funding</p> <p>Priority: 5</p>	<p>ON-GOING</p> <p>Completed projects include four fixed generators at public locations in West Twp., Salineville, New Waterford & Guilford Lake. The Health Dept. has 2 portable generators. The committee chose to make this project more general and add "critical facilities" to strategy; note that it has been partially completed per bold comments.</p>

COLUMBIANA COUNTY ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
7.2.5	<p>Construction/installation of community and residential safe rooms. Support efforts in all jurisdictions.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator of all local governments Support Agency(ies): N/A Timeframe: 5 years (as funding is available) Potential Funding Source(s): Ohio Facilities Construction Commission, Local funding Priority: 11</p>	<p>NEW</p> <p>The committee added this project as part of the 2019 update per new regulatory requirements.</p>
HAZARD: SEVERE WINTER STORM		
8.2.1	<p>Maintain a list of sites that could be used as emergency shelters or points of distribution (PODs) throughout Columbiana County.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Preparedness & Response Activities Coordinating Agency: CCEMA Support Agency(ies): (a) Columbiana County Health District, (b) American Red Cross Timeframe: On-going Potential Funding Source(s): Local funding Priority: 1</p>	<p>ON-GOING</p> <p>Leave in the plan per the changes. The health district maintains plans for potential POD sites, and both the CCHD and CCEMA maintain shelter lists.</p>
HAZARD: DAM FAILURE		
1.1.5	<p>Share information provided by dam owners with jurisdictions downstream of high-hazard dams.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. Action Type: Local Plans & Regulations Coordinating Agency: CCEMA Support Agency(ies): ODNR Timeframe: On-going Potential Funding Source(s): Local funding Priority: 11</p>	<p>NEW</p> <p>The committee added this project as part of the 2019 update.</p>

COLUMBIANA COUNTY ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1.1.6	<p>Support rehabilitation projects, as and if necessary, at high-hazard dams.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: CCEMA Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): N/A Priority: 13</p>	<p>NEW</p> <p>The committee added this project as part of the 2019 update. There are two primary high-hazard dams in Columbiana County: the Wellsville Reservoir Dam and the Salem Reservoir.</p>
HAZARD: HAZARDOUS MATERIALS INCIDENT		
5.1.1	<p>Conduct a commodity flow study to determine what materials are shipped through the county.</p> <p>Goal Alignment: 1- Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Local Plans & Regulations Coordinating Agency: Columbiana County LEPC Support Agency(ies): CCEMA Timeframe: 5 years (as funding is available) Potential Funding Source(s): PUCO, Local funding Priority: 6</p>	<p>ON-GOING</p> <p>The LEPC regularly applies for funding for hazardous material planning projects. The committee does not have a current commodity flow study.</p>
HAZARD: DROUGHT		
2.1.2	<p>Using a collaborative approach between preparedness partners (e.g., CCEMA, CCHD), periodically push weather and other hazard preparedness information via social media outlets.</p> <p>Goal Alignment: 1- Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Education Programs Coordinating Agency: CCEMA Support Agency(ies): CCHD Timeframe: On-going Potential Funding Source(s): Local funding Priority: 4</p>	<p>ON-GOING</p> <p>The health district pushes this type of information via its social media platforms, as does the CCEMA. There are also links on the CCEMA website with information, but no commenting capability.</p>

COLUMBIANA COUNTY ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
HAZARD: SEVERE THUNDERSTORM / HAIL / LIGHTNING		
6.1.2	<p>Encourage township offices to have a NOAA all-hazard radio to strengthen redundant notification and warning efforts.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. Action Type: Preparedness & Response Activities Coordinating Agency: Township trustees Support Agency(ies): CCEMA Timeframe: 5 years Potential Funding Source(s): Local funding Priority: 1</p>	<p>ON-GOING</p> <p>Completed projects include weather radios at the hospital and also at satellite buildings. The Health Dept. has a weather radio. County buildings are also well covered. Update this as a potential township project.</p>
MISCELLANEOUS HAZARDS		
7.1.1	<p>When received from the NWS, use the countywide mass notification system to push weather alerts to residents for all hazards (and particularly weather-related hazards). Ensure additional notification when watches ascend to warnings.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Education Programs Coordinating Agency: CCEMA Support Agency(ies): (a) Columbiana County LEPC, (b) CCHD, (c) Other emergency response organizations, and (d) Participating jurisdictional administrators Timeframe: On-going Potential Funding Source(s): Local funding (for maintenance of subscription to program) Priority: 1</p>	<p>ON-GOING</p> <p>The county opted to consolidate this strategy with other warning strategies and to include its WENS capability as part of the verbiage.</p>

COLUMBIANA ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1A.1.2	<p>Continue storm sewer improvements throughout the city to help mitigate site-specific flooding when heavy rains occur.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: City Council</p> <p>Support Agency(ies): (a) Columbiana County Commissioners, (b) OMEGA</p> <p>Timeframe: 5 years</p> <p>Potential Funding Source(s): CDBG, Critical infrastructure grant, Local funds</p> <p>Priority: 1</p>	<p>ON-GOING</p> <p>The city received funding for stormwater projects in recent years, but projects remain. The city opted to add this project as part of the 2019 update.</p>
1A.1.3	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Mayor/Administrator</p> <p>Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 2</p>	<p>NEW</p> <p>The city added this project as part of the 2019 update.</p>

EAST LIVERPOOL ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1B.1.1	<p>Promote flood insurance educational materials via social media.</p> <p>Goal Alignment: 3-Protect vulnerable populations from negative effects of hazards in Columbiana County.</p> <p>Action Type: Education Programs</p> <p>Coordinating Agency: City Council</p> <p>Support Agency(ies): N/A</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 1</p>	<p>ON-GOING</p> <p>The city revised the wording of this project (which formerly read, "Consider elevating critical flood-prone structures above the 100-year flood level"). The current version is more consistent with efforts city officials are doing.</p>

EAST LIVERPOOL ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1B.1.3	<p>Establish a stormwater department to maintain the city's storm sewer system.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. Action Type: Local Plans & Regulations Coordinating Agency: City Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Priority: 2</p>	<p>NEW</p> <p>The city added this project as part of the 2019 update. It is currently in the exploratory stage, per the city's fire chief.</p>
1B.1.4	<p>Demolish blighted structures that could contribute to hazard risk.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): CDBG, Local funding Priority: 3</p>	<p>NEW</p> <p>The city added this project as part of the 2019 update. It is currently underway and represents a wider effort at area revitalization.</p>

SALEM ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1C.1.2	<p>Coordinate with rail shippers using the line through the city as well as covered facilities in the city to share information about materials, risks, vulnerabilities, and response capabilities. Utilize this information to maintain a commodity flow study and an updated hazmat response plan for the city.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. Action Type: Emergency Preparedness & Response Activities Coordinating Agency: Salem Fire Department Support Agency(ies): (a) Salem Police Department, (b) City Council, (c) CCEMA, (d) Columbiana County LEPC Timeframe: On-going Potential Funding Source(s): HMEP, PUCO, Local funding Priority: 1</p>	<p>NEW</p> <p>The city added this project as part of the 2019 update.</p>

SALEM ACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1C.1.3	<p>As and if conditions necessitate it, rehabilitate or upgrade the Salem Reservoir.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): ODNR Timeframe: On-going Potential Funding Source(s): HHPD, Local funding Priority: 2</p>	<p>NEW</p> <p>The city added this project as part of the 2019 update.</p>

EAST PALESTINE ACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1D.1.2	<p>Encourage residents to adhere to current floodplain regulations in effect.</p> <p>Goal Alignment: 3-Protect vulnerable populations from negative effects of hazards in Columbiana County. Action Type: Education Programs Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): N/A Priority: 1</p>	<p>ON-GOING</p> <p>This project is not new, and it is underway by default. The village elected to leave it in the plan.</p>
1D.1.1	<p>Encourage the residents of East Palestine to maintain required flood insurance.</p> <p>Goal Alignment: 3-Protect vulnerable populations from negative effects of hazards in Columbiana County. Action Type: Education Programs Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): N/A Priority: 2</p>	<p>ON-GOING</p> <p>This project is not new, and it is underway by default. The village elected to leave it in the plan.</p>

EAST PALESTINE ACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1D.1.3	<p>Establish a more robust stormwater utility for East Palestine.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Priority: 3</p>	<p>ON-GOING</p> <p>A project to reduce stormwater inflow is currently underway. The village is also looking at stormwater retention projects.</p>
1D.1.4	<p>Repair the spillway on the East Palestine lake dam.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) CCEMA, (b) ODNR Timeframe: 5 years Potential Funding Source(s): HHPD, Local funding (for maintenance) Priority: 4</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

HANOVERTON ACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1E.1.1	<p>Upgrade the village's capability to notify its residents by partnering with the county on the mass notification system.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Emergency Preparedness & Response Activities Coordinating Agency: Village Council Support Agency(ies): CCEMA Timeframe: 2 years Potential Funding Source(s): Local funding Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

HANOVERTON ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1E.1.2	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Mayor/Administrator</p> <p>Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

LEETONIA ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1F.1.2	<p>Expand and improve the village's stormwater system.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): OMEGA</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): CDBG, Local funding</p> <p>Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. The current system is undersized and does not cover the entire village.</p>
1F.1.3	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Mayor/Administrator</p> <p>Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

LISBON ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1G.1.1	<p>Increase the use of the countywide mass notification system.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Emergency Preparedness & Response Activities Coordinating Agency: Village Council Support Agency(ies): CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Priority: 1</p>	<p>ON-GOING</p> <p>The village revised the wording of this project (which formerly read, "Increase the coverage and use of NOAA Weather Radios"). The current version recognizes the importance of notification and warning, and it aligns the village's efforts with those of other county agencies.</p>
1G.1.3	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): PDM, HMGP, Local funding Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

NEW WATERFORD ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1H.1.2	<p>Encourage property owners to control and secure debris, yard items, or stored objects in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Priority: 2</p>	<p>ON-GOING</p> <p>The village revised the wording of this project (which formerly read, "Control and secure debris..."). The current version recognizes the role of individual property owners, yet maintains the village's opinion on the importance of the project.</p>

NEW WATERFORD ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1H.1.3	<p>Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p> <p>Action Type: Preparedness & Response Activities</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. Discussions regarding equipment sharing/borrowing are underway.</p>

ROGERS ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1I.1.1	<p>Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.</p> <p>Action Type: Natural Systems Protection</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): Columbiana County SWCD</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 2</p>	<p>ON-GOING</p> <p>The village elected to keep this project in the plan. Though funding is not often available, local officials believe it would be helpful in reducing flooding.</p>
1I.1.2	<p>Improve storm drainage throughout the village.</p> <p>Goal Alignment: 4- Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): N/A</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 3</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. Village officials are currently replacing catch basins, drain boxes, resetting pipe, and clearing drains.</p>

ROGERS ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1I.1.3	<p>Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. Action Type: Preparedness & Response Activities Coordinating Agency: Village Council Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. Discussions regarding equipment sharing/borrowing are underway.</p>

SALINEVILLE ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1J.1.2	<p>Address continued slippage in the village along Route 39.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) Columbiana County Engineer, (b) ODOT Timeframe: On-going Potential Funding Source(s): Local funding Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. It corresponds to a priority concern in the village.</p>
1J.1.3	<p>Maintain and, as necessary, upgrade the Salineville Reservoir Dam (which is physically located in Carroll County).</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) ODNR, (b) Carroll County EMA Timeframe: On-going Potential Funding Source(s): HHPD, Local funding Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

SUMMITVILLE ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1K.1.1	<p>Clean and maintain creeks and streams, clearing log jams, trees, and sediment bars that prevent water from flowing freely.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.</p> <p>Action Type: Natural Systems Protection</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): (a) ODOT, (b) Columbiana County SWCD</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 2</p>	<p>ON-GOING</p> <p>The village elected to keep this project in the plan. Though funding is not often available, local officials believe it would be helpful in reducing flooding. For the 2019 update, the village broadened the scope of the project to include all creeks and streams in the village. Village officials are currently working with the state to clean out a large culvert that plugs with debris from the creek and floods roadways.</p>
1K.1.2	<p>Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p> <p>Action Type: Preparedness & Response Activities</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. Discussions regarding equipment sharing/borrowing are underway.</p>

WASHINGTONVILLE ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1L.1.2	<p>Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.</p> <p>Goal Alignment: 2-Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p> <p>Action Type: Preparedness & Response Activities</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p> <p>Discussions regarding equipment sharing/borrowing are underway.</p>
1L.1.3	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Mayor/Administrator</p> <p>Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

WELLSVILLE ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1M.1.1	<p>As and if conditions necessitate it, rehabilitate or upgrade the Wellsville Reservoir Dam.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): ODNR</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): HHPD, Local funding</p> <p>Priority: 5</p>	<p>ON-GOING</p> <p>The village revised the wording of this project (which formerly read, "Regulate development in the dam's hydraulic shadow..."). The current version recognizes the village's responsibility to maintain the dam and ensure, to the extent possible, downstream safety.</p>

WELLSVILLE ACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
1M.1.2	<p>Continue to collect a small amount from citizens for maintenance of the village's levee (e.g., mowing, cutting trees, etc.).</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Local Plans & Regulations</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): N/A</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 3</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. The village receives a small allotment from its residents annually for maintenance.</p>
1M.1.3	<p>Upgrade pumps associated with the levee structure.</p> <p>Goal Alignment: 4-Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): N/A</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 4</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. The current pumps are from approximately the 1950s. The village receives a small amount of funding from its residents annually; however, this funding contributes to basic maintenance of the structure (not capital projects).</p>
1M.1.4	<p>Coordinate with the county regarding the placement of a river gauge on the Ohio River.</p> <p>Goal Alignment: 1-Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.</p> <p>Action Type: Emergency Preparedness & Response Activities</p> <p>Coordinating Agency: Village Council</p> <p>Support Agency(ies): N/A</p> <p>Timeframe: On-going</p> <p>Potential Funding Source(s): Local funding</p> <p>Priority: 2</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update. It is a collaborative project with the CCEMA that is underway.</p>

WELLSVILLE ACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1M.1.5	<p>Acquisition, demolition, and/or retrofit of floodprone properties.</p> <p>Goal Alignment: 5-Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p> <p>Action Type: Structure & Infrastructure Projects</p> <p>Coordinating Agency: Mayor/Administrator</p> <p>Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD</p> <p>Timeframe: 5 years (as funding is available)</p> <p>Potential Funding Source(s): PDM, HMGP, Local funding</p> <p>Priority: 1</p>	<p>NEW</p> <p>The village added this project as part of the 2019 update.</p>

Appendix 3: Inactive Projects lists those that have been completed, deferred, or deleted.

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 Columbiana County and the municipalities therein will update and maintain this document.

4.1 Monitoring, Evaluating and Updating the Plan

The planning 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 for four to five years results in an ineffective effort whereby the first half of the update consists of educating new members and the latter half is a hurried attempt to account for mitigation measures completed in the intervening period.

To this end, the committee agreed to a maintenance process based on FEMA's five-year update cycle graphic (i.e., "the wheel"). That process is as follows.

- **Year 1:** Support the adoption process with all jurisdictions in Columbiana County. A local emergency planning committee (LEPC) meeting for the first year will review the planning process and consider updates to future processes.
- **Year 2:** Review the high-consequence hazards. An LEPC meeting can serve as a roundtable to discuss appropriate hazard profiles as well as consider if the hazard list in the plan is appropriate. Jurisdictional LEPC members should also report on efforts regarding education on building regulations.
- **Year 3:** Re-engage the public via survey and consider presentations to various groups throughout the county. An LEPC meeting will serve as a venue to reporting the results of this effort. The CCEMA will also begin the process of securing funding for the next plan update.

- **Year 4:** Complete a deep-dive on the project list (i.e., update status). An LEPC will serve as the forum at which the deep-dive occurs. Jurisdictional LEPC members should again update one another on efforts regarding education on building regulations.
- **Year 5:** Upon receiving funding to update the plan, the CCEMA will engage the planning committee in the update process.

Since many partners on the mitigation planning committee also sit on the county's LEPC, one of the quarterly LEPC meetings for the year will serve as the annual mitigation plan review. The CCEMA can include mitigation material for review and preparation in the invitation packet for the meeting serving as the annual discussion. The LEPC compiles minutes of its meetings, and thus the mitigation discussions will be documented. The CCEMA will ensure that any mitigation committee members not on the regular LEPC membership roster receive an invitation to the annual mitigation discussion.

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 planning committee could change, and these discussions offer a prime opportunity to orient new members to what mitigation is, how the plan works, etc. 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.

Four existing mechanisms can support mitigation in Columbiana County: (a) floodplain management, (b) stormwater management, (c) transportation planning, and (d) emergency operations 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	Columbiana County Soil & Water Conservation District (SWCD) Municipal Floodplain Administrators	<p>According to FEMA's <i>Community Status Book</i> (current as of 09/24/2019), all jurisdictions in Columbiana County 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 Columbiana County currently participate in the Community Rating System (CRS) program (as of April 2019).</p> <p>GOAL ALIGNMENT</p> <ol style="list-style-type: none"> 2. Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population. 3. Protect vulnerable populations from negative effects of hazards in Columbiana County. 4. Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.
Emergency Operations Planning	CCEMA Municipal Partners Response Agency Partners	<p>The CCEMA 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).</p> <p>GOAL ALIGNMENT</p> <ol style="list-style-type: none"> 1. Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident. 2. Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.

MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Stormwater Management	Municipal Partners Columbiana County SWCD OMEGA (see below)	<p>The actions listed in Section 3.2 discuss stormwater management as a mitigation priority extensively. These actions include the creation of detention/retention ponds, ensuring storm drain systems are appropriately sized and working efficiently, etc. Additionally, several municipalities are looking at efforts to eliminate combined sewer overflows. Most stormwater management planning in Columbiana County occurs at the municipal level. The county supports stormwater efforts when replacing culverts in bridges via hydraulic analysis.</p> <p>Further, the SWCD supports various conservation efforts, some of which could be considered “low-impact development” or “green infrastructure” initiatives to manage rainwater better.</p> <p>GOAL ALIGNMENT</p> <p>2. Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p> <p>4. Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p>
Community & Economic Development	Ohio Mid-Eastern Governments Association (OMEGA)	<p>OMEGA coordinates and supports regional economic and community development planning. Through its business development program, the agency manages a revolving loan fund and the Region 166 Loan Program. Under community development, OMEGA is involved in reclamation at abandoned mine lands as well as supports OPWC green space projects.</p> <p>GOAL ALIGNMENT</p> <p>4. Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p> <p>5. Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.</p>
Public Health Planning	Columbiana County Health District (CCHD)	<p>The CCHD maintains an emergency response plan to guide efforts during public health emergencies. Furthermore, the health department participates 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 Columbiana County.</p> <p>GOAL ALIGNMENT</p> <p>2. Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.</p>

MITIGATION INTEGRATION		
<i>Existing Program</i>	<i>Participating Agencies</i>	<i>Narrative (and Goal Alignment)</i>
Transportation Planning	<p>Community Action Agency of Columbiana County</p> <p>OMEGA</p> <p>Ohio Department of Transportation (ODOT)</p>	<p>The Ohio Mid-Eastern Governments Association supports regional transportation planning for an area that includes Columbiana County. OMEGA maintains short- and long-range transportation plans (made manifest in the four-year regional transportation improvement plan). That document lists several road improvement projects that may increase or maintain access to the county's communities. In some cases, those projects can address slips and other hazard-related issues that typically appear in hazard mitigation plans. Goals 1 (Preserve, Maintain, and Improve Existing Transportation Systems) and 2 (Address Safety Concerns) are most relevant to the mitigation effort. The plan lists two "regionally significant projects," one to improve vertical and horizontal deficiencies on CR 430 and another to undertake horizontal curve correction to mitigate crashes on US 30 at SLM 11.70.</p> <p>The CAA maintains the coordinated public transit-human services transportation plan for Columbiana County. That document satisfied a regulatory driver: the FTA under the FAST Act. The document seeks to identify community resources and to identify and prioritize community transportation needs. Access to transportation may play a role in service to functional and access needs populations, particularly during responses. Access to transportation contributes to community resilience. Thus, the continuity of the transportation network, while most likely a preparedness initiative, does support the spirit of hazard mitigation.</p> <p>GOAL ALIGNMENT</p> <p>3. Protect vulnerable populations from negative effects of hazards in Columbiana County.</p> <p>4. Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous events or incidents.</p>

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 CCEMA. The CCEMA 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.

The CCEMA elected to utilize the county's LEPC as an administrative and participative vehicle throughout the five-year planning cycle. LEPC meetings are advertised and open to the

public; thus, the public can participate in mitigation planning at times when the LEPC discusses this plan. Additionally, in Year 3 of the cycle, the CCEMA will re-engage the public by distributing an online public survey via websites and social media. During that third year, the CCEMA will also offer to deliver presentations to community groups in an effort to garner greater public involvement in future plan updates.

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 involvement.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

PLANNING COMMITTEE MEETING #1

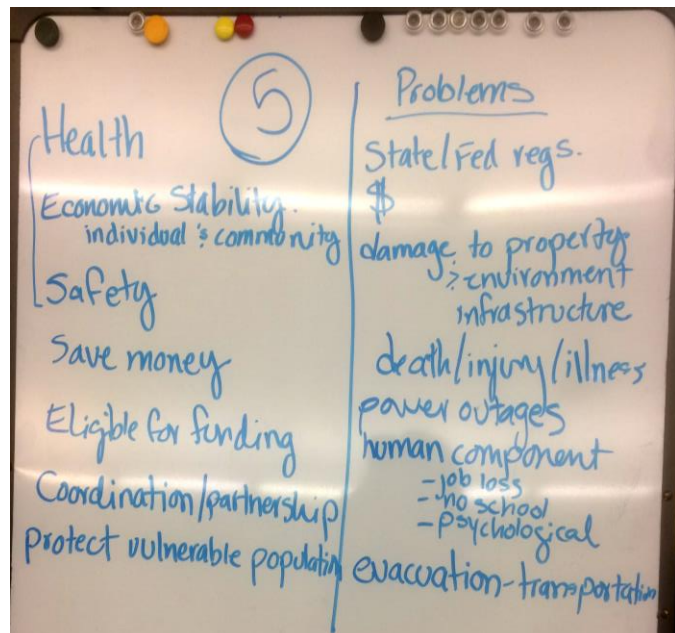
NOTES

Date: Thursday, November 1, 2018
Time: 10:30 a.m.
Duration: 120 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street
Lisbon, OH 44432

The Columbiana County Planning Committee met for the first time on Thursday, November 1, 2018, at the Columbiana County Emergency Management Agency to initiate the update for the hazard mitigation plan. JH Consulting, LLC, the consultant hired to assist with the update, lead the meeting.

The consultant began by presenting the basics of hazard mitigation and of the plan itself. Some attendees were familiar with the concepts, and others are going through the process for the first time. According to FEMA (2016), mitigation is the “effort to reduce the loss of life and property by lessening the impact of disasters.” The mitigation plan will include the description of the planning process and the planning area (Columbiana County and its jurisdictions), a hazard risk assessment, an action plan, and a maintenance outline for the plan.

The main task of this meeting was to review and update the goals and objectives from the previous plan by discussing new ideas and identifying problems in the county. The goals and objectives from the previous plan update focused on each hazard identified in the plan. It also had one goal for each jurisdiction that referenced a hazard. In all, there were 24 goals for the plan. The committee



reviewed each goal and noticed that some mitigation actions could address more than one hazard. Therefore, they decided to rework the goals and have five that could cover a variety of hazards and identified problems.

The committee members identified problem areas that hazard mitigation projects can address and also discussed what the mitigation projects could achieve. The following identifies keywords in the discussion.

<u>Overall goal</u>	<u>Problems to address</u>
These items identify what the committee wants to achieve through mitigation.	These items identify the problems that mitigation strategies or projects can address.
<ul style="list-style-type: none">• The health, safety, and wellness of the population• Economic stability for individuals and the community• Saving money in the long-term• Become eligible for a variety of funding sources• Foster partnerships and encourage coordination• Protect the vulnerable populations	<ul style="list-style-type: none">• Availability of funds to do mitigation projects• Damages caused to property, the environment, and infrastructure• Death, injury, and illness• Power outages• Loss of livelihood: no jobs, no school• Psychological impacts• Evacuation and transportation

The committee reviewed the previous update's mitigation projects individually and then as a group. They reported that many of the projects identified in the previous plan had been completed, partially completed, or in the process of being implemented. The status of each project will be described in the plan, and there will be an opportunity to introduce new projects to the plan.

The involvement of the public in the process of updating this plan is essential for the buy-in and understanding of the public; also, FEMA requires public involvement. Traditionally, public meetings were the method most utilized to garner input from the public. However, the committee recognizes that holding public meetings is not the best way to get people involved in the process. For this reason, they have decided to implement the following strategies to reach the public.

- Put out an online public survey that can be shared on the committee members' organizations' websites and social media pages.

- Utilize focus groups that are already part of existing community committees or groups
- Modify the survey to fit the needs of vulnerable populations and make it available in strategic locations that could reach a variety of people.

The next two meetings have been set.

- Wednesday, February 13, 2019, via conference call at 10:00 AM (originally set for 2/12, but there was a scheduling conflict). Call and login information:

<https://global.gotomeeting.com/join/835300333>

United States: +1 (224) 501-3318

Access Code: 835-300-333

- Tuesday, March 12, 2019, in-person at the Columbiana County Emergency Management Agency at 10:30 AM.

In the meantime, if you have any questions, comments, or suggestions, please feel free to email or call Amy Heimberger Lopez with JH Consulting, LLC at the following: aheimberger@jhpreparedness.com or 304-473-1009.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019 UPDATE

Columbiana County Emergency Management Agency
November 1, 2018 ~ 10:30 AM
215 South Market Street, Lisbon, OH 44432



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

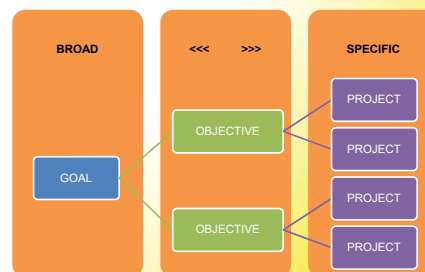
- Tasks and activities
- Contact with jurisdictions and consultant
- Review and approval of drafts



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



GOALS AND OBJECTIVES



GOALS

- GOAL 1: Reduce the potential for significant damages as a result of dam failures in Columbiana County
- GOAL 2: Protect Columbiana County's agricultural assets from the negative effects of drought
- GOAL 3: Reduce the potential effects of earthquakes in Columbiana County
- GOAL 4: Reduce the negative effects of flooding in Columbiana County
- GOAL 5: Take measures to lessen the probability and severity of hazardous materials incidents in Columbiana County
- GOAL 6: Reduce damages from severe thunderstorms, hail, and lightning in Columbiana County
- GOAL 7: Reduce damage from severe wind and tornadoes in Columbiana County
- GOAL 8: Reduce the effects of severe winter storms in Columbiana County
- GOAL 9: Protect Columbiana County's population from heat waves
- GOAL 10: Reduce or eliminate the negative effects of various other hazards in Columbiana County



GOALS

- GOAL 1A: Reduce the negative effects of flooding in Columbiana
- GOAL 1B: Reduce the potential for property damage as a result of flooding in East Liverpool
- GOAL 1C: Reduce property damage as a result of flash flooding in portions of Salem
- GOAL 1D: Reduce the negative effect of flooding in East Palestine
- GOAL 2D: Provide a plan of action for an incident at the East Palestine Reservoir
- GOAL 1E: Reduce the potential for injuries and property damage as a result of severe winter storms
- GOAL 1F: Reduce the potential for the occurrence of a hazmat incident in Leetonia
- GOAL 1G: Provide advanced flood warnings to businesses and residents of Lisbon
- GOAL 1H: Reduce the potential for property damage as a result of flooding in New Waterford
- GOAL 1I: Reduce the potential for flooding in the Village of Rogers
- GOAL 1J: Reduce the potential for the occurrence of a hazmat incident in Salineville
- GOAL 1K: Reduce the potential for flooding in the Village of Summitville
- GOAL 1L: Reduce the potential for damage as a result of an earthquake in Washingtonville
- GOAL 1M: Reduce the potential for significant flood damage as a result of a failure to the Wellsville Reservoir Dam



PROJECT REVIEW

- Review 2013 action items
- Give update of status of each action item



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!



INITIAL MITIGATION PLANNING COMMITTEE MEETING

11/1/2018

	NAME	PHONE	EMAIL
1	Tad Herold <i>TAD</i>	<i>330-424-9078</i>	therold@columbianacodev.org
2	Al DeAngelis <i>AD</i>	330-831-4139	adeangelis@buckeyewater.com
3	Todd Brown	330-831-9903	
4	Penny Traina	330-386-9051	ptraina@ccpa-ohioriver.com
5	Deanna Danner <i>DD</i>	330-424-8209	Deanna.danner@salemregional.com
6	Raymond Wayne <i>R; W</i>	330-385-7337 <i>386.2194</i>	rwayne@heritage-thermal.com
7	John Hannah		
8	Deb Hill <i>DeH</i>	<i>330 870 4345</i>	deb.hill@caaofcc.org
9	Paula Cope <i>PC</i>	<i>330-424-0272</i>	pcope@columbiana-health.org
10	Pete Conkle	<i>330-277-2974</i>	pete.conkle@oh.nacdn.net
11	Bill Jones <i>BJ</i>	330-385-1117	elfdchief@comcast.net
12	Peggy Clark	330-424-9725	peggy.clark@ccoema.org
13	Brian Rutledge <i>BR</i>	330-424-9725	brian.rutledge@ccoema.org
14	<i>TROY GRAFT</i>	<i>330 424-1459</i>	<i>tgraft@cceng.org</i>
15	<i>Amy H Lopez</i>	<i>304-473-1009</i>	<i>aheimberger@jhcpreparedness.com</i>
16	<i>Barbara J Miller</i>	<i>304.671.8165</i>	<i>bmiller@jhcpreparedness.com</i>
17	<i>Wes Vins</i>	<i>330-424-0272</i>	<i>wvins@columbiana-health.org</i>
18			
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COLUMBIANA COUNTY HAZARD MITIGATION PLAN
PLANNING COMMITTEE MEETING #2
NOTES

Date: Wednesday, February 13, 2019
Time: 10:00 a.m.
Duration: 25 minutes
Location: Online
Present: Deanna Danner
Paula Cope
Peggy Clark
Penny Traina
Raymond Wayne
Tad Herold
Troy Graft
Barb Miller
Amy Heimberger Lopez

On Wednesday, February 13, 2019, the Columbiana County Hazard Mitigation Plan committee met to discuss surveys, public involvement, goals, hazards, and the schedule for the next meeting. This was the second meeting in the process of updating the 2019 plan and was held online via web conference.

The first item on the agenda was the surveys, jurisdictional and public. The jurisdictional survey asks the representatives of the county, cities, and villages for information about their existing rules, regulations, ordinances, etc. It also asks about the community's participation in the NFIP (national flood insurance program). Only the representatives of the county, cities, and villages are requested to complete this survey; the link is the following: www.surveymonkey.com/r/CCHMP-Capabilities .

One way to get public feedback is to distribute an online public survey. The consultant has put together a brief survey that asks about the hazards in Columbiana County, how prepared the public feels they are, and how they would support mitigation actions in the future. This is a public survey that we hope reaches the majority of people in the county; feel free to copy and paste the following paragraph on your website and social media pages, or place an

advertisement in the local paper. If you need paper copies to put in a library or distribute at a meeting, you may request it.

Columbiana County is in the process of updating their hazard mitigation plan. We would like to know what you think about the hazards the county faces and how you would support reducing the negative impacts of those hazards. Please take our online survey here: www.surveymonkey.com/r/CCHMP-Public

During the first meeting, the committee discussed the problems that hazards cause to the county and the overall goals that could potentially reduce the negative effects or impacts from them. The committee reviewed the five goals and approved them. All cities, villages, the county, and townships will utilize mitigation actions, strategies, or projects to work together and get closer to achieving the goals.

GOAL 1: Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident

GOAL 2: Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population

GOAL 3: Protect vulnerable populations from negatives effects of hazards in Columbiana County

GOAL 4: Reduce death, injury, illness, damage to property, infrastructure, and the environment resulting from hazardous events or incidents

GOAL 5: Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.

Currently, there are nine hazards listed in the plan: dam failure (includes levees), drought, earthquake, flooding, hazardous materials incidents (include transportation-based incidents, pipelines, the nuclear power plant, and chemical facilities), severe thunderstorms and hail, severe wind and tornado, severe winter storm, and extreme heat. The committee elected to not eliminate any hazards, but rather expand the list. The extreme heat profile will now be under the heading of 'extreme temperatures' so it can include cold and a new hazard was added under the 'public health emergency' heading. The modifications bring the total hazards profiled in this plan to ten.

The next meeting will be on Tuesday, March 12, 2019 at 10:30 a.m. at the Columbiana County Emergency Management Agency.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN PLANNING COMMITTEE MEETING #2

AGENDA

Date: Wednesday, February 13, 2019

Time: 10:00 a.m.

Estimated Duration: 45-60 minutes

Location: Online

<https://global.gotomeeting.com/join/835300333>

Call in: 1 (224) 501-3318

Access Code: 835-300-333

1. Welcome and roll call
2. Surveys
3. Goals and objectives
4. Hazards
5. Schedule for next meeting
6. Adjournment

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019 UPDATE

Conference Call
February 13, 2019 ~ 10:00 AM



WELCOME AND ROLL CALL



SURVEYS

Capabilities survey – for jurisdictions only
<https://www.surveymonkey.com/r/CCHMP-Capabilities>

Public survey – to be shared on social media
Available after the meeting once all hazards have been determined by the committee.



GOALS REVIEW

- GOAL 1:** Ensure the *health and safety* of first responders and the general population in Columbiana County before, during, and after an emergency event or incident
- GOAL 2:** Promote *coordination and partnership* of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population
- GOAL 3:** *Protect vulnerable populations* from negatives effects of hazards in Columbiana County
- GOAL 4:** *Reduce death, injury, illness, damage to property, infrastructure, and the environment* resulting from hazardous events or incidents
- GOAL 5:** Ensure the *continued livelihoods of individuals* and the community in Columbiana County prior to hazard events or incidents.



HAZARDS

1. Dam Failure
2. Drought
3. Earthquake
4. Flooding
5. Hazardous Materials
6. Thunderstorm and Hail
7. Wind and Tornado
8. Severe Winter Storm
9. Extreme Heat
10. Others....

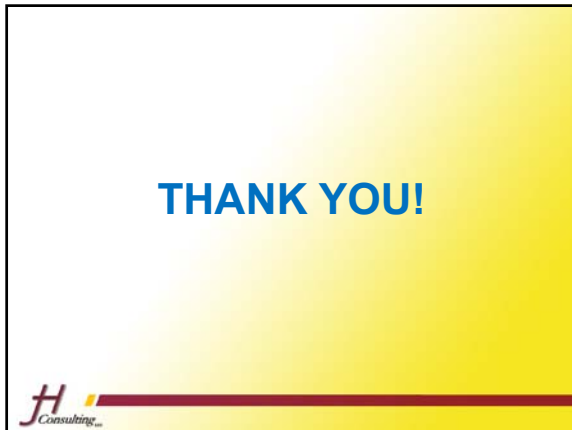


SCHEDULE FOR NEXT MEETING

Third committee meeting (in-person)

Tuesday, March 12, 2019 @ 10:30 a.m.





COLUMBIANA COUNTY HAZARD MITIGATION PLAN
PLANNING COMMITTEE MEETING #3
NOTES

Date: Tuesday, March 12, 2019
Time: 10:30 a.m.
Duration: 90 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street
Lisbon, OH 44432
Present: Sign-in sheet attached.

On Tuesday, March 12, 2019, the Columbiana County Hazard Mitigation Plan committee met to discuss public involvement, mitigation projects, a project prioritization methodology, and a schedule for the next meeting. This was the third meeting in the process of updating the 2019 plan.

The first item on the agenda was the public outreach survey. As of March 11, approximately 30 individuals had taken the online public survey. The consultant reviewed the results with the committee. Of particular note, community perceptions of hazard risk were largely consistent with what the consultant and its research team expected. The full summary of the results as of March 11 follows these notes. The committee discussed options for additional public outreach, and it elected to coordinate outreach with other county planning efforts to the extent possible. Representatives from the EMA noted two upcoming events: a schools preparedness workshop on March 21st and a Sky Warn training on March 28th. The consultant agreed to provide information for distribution at the Sky Warn training (see attached).

The committee then revisited an item from the first planning meeting: mitigation projects. The consultant distributed a “projects worksheet” to those in attendance, which enabled listing additional projects for inclusion in the updated mitigation plan. Committee members noted the following projects on the worksheets.

- Projects Completed (but not included in previous plan)
 - Implementation of WENS
 - Electronic access to Mahoning River gauge for Knox Township warning
 - Updated emergency operations/management plans

- On-going public education projects (coordinated by EMA)
- East Liverpool promoted flood insurance educational materials through social media
- East Liverpool has provided flood notifications via Nixle
- Columbiana County Health Department Plumbing Inspectors Plan for backflow prevention
- New Projects
 - Possible river gauge project with East Liverpool and Wellsville
 - East Palestine is in the process of putting together and working to reduce storm water inflow and retention
 - East Liverpool is establishing a storm water utility department to maintain the storm water system
 - Mass fatality plan, morgue trailer (Columbiana County Health Department)

At the request of Peggy Clark, EMA Director, the committee reviewed the county-level projects from the previous version of the plan individually. This discussion resulted in a status update for each of the projects listed under the county in the previous version of the plan.

Next, attendees completed an activity designed to generate a process by which to prioritize mitigation projects included in the 2019 update. The consultant presented a set of ten criteria and asked committee members to comment on those criteria. Hearing no requested changes, the consultant distributed a worksheet and instructed each attendee to score the ten criteria by order of importance. The consultant collected the worksheets and averaged the responses to derive a prioritization methodology. The following table illustrates how the planning team can prioritize the final 2019 project list.

		Member 1	Member 2	Member 3	Member 4	Member 5	Member 6	Member 7		SUM	AVG. SCORE	RANKING	POINTS AWARDED
3													
4	The project addresses more than one hazard at once.	9	4	9	3	1	5	2		33	4.71	4	7
5	The project aims to protect the most vulnerable populations.	4	2	3	5	8	8	1		31	4.43	3	8
6	The project attempts to reduce the negative impacts of frequent hazards.	1	1	1	2	4	2	5		16	2.29	1	10
7	The project attempts to reduce the negative impacts of severe hazards.	2	3	2	1	9	1	4		22	3.14	2	9
8	The project is easy to implement (e.g., most of the population agrees with the project, and it doesn't have negative political ramifications).	3	5	6	7	5	3	10		39	5.57	5	6
9	The project protects the environment.	8	6	10	9	6	9	6		54	7.71	10	1
10	The project is easily paid for with local funds or attainable grants.	5	9	5	4	2	7	8		40	5.71	6	5
11	The project is already scheduled to start or is in process.	10	10	4	6	3	10	9		52	7.43	8	3
12	The project directly aligns with one or more of the goals set by the committee.	6	8	8	8	7	4	3		44	6.29	7	4
13	The project promotes partnerships within the county.	7	7	7	10	10	6	7		54	7.71	9	2
14													

Projects will receive points for each of these categories, and the column at the far right denotes the maximum number of points a project can receive per category. The highest scoring projects will assume higher priority in the final version of the 2019 update.

The meeting concluded with a brief discussion of municipal participation. The consultant asked committee members to encourage representatives of their jurisdictions (if applicable) to complete the online capabilities survey. The consultant also notified participants that his firm will begin contacting jurisdictions individually.

The next meeting will be on Tuesday, April 23, 2019 at 10:30 a.m. via web conference. The dial-in information is as follows.

Columbiana County HMP Meeting #4

Tue, Apr 23, 2019 10:30 AM - 11:30 AM EDT

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

<https://global.gotomeeting.com/join/145058741>

You can also dial in using your phone.

United States: [+1 \(872\) 240-3412](tel:+18722403412)

Access Code: 145-058-741

EMA- Mitigation Planning Team Meeting

Date: 3/12/2019

Place/Room: EMA/EOC[illegible]

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019

Mitigation is any action you or your community takes to reduce the negative impacts of hazards such as weather, hazardous materials, and floods.

1. Do you live or work in Columbiana County? ☐ Yes ☐ No

2. What is the name of your city/village/town?

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? know

☐ Yes ☐ No ☐ I don't know

6. If you have homeowner's or renter's insurance, does it include flood insurance?

☐ Yes ☐ No ☐ I don't know ☐ I don't have insurance

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

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019

Mitigation is any action you or your community takes to reduce the negative impacts of hazards such as weather, hazardous materials, and floods.

1. Do you live or work in Columbiana County? ☐ Yes ☐ No

2. What is the name of your city/village/town?

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? know

☐ Yes ☐ No ☐ I don't know

6. If you have homeowner's or renter's insurance, does it include flood insurance?

☐ Yes ☐ No ☐ I don't know ☐ I don't have insurance

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 Failure
Drought
Earthquake
Flood
Hazardous Materials (includes Radiological)
Severe Thunderstorm / Hail
Severe Wind / Tornado
Severe Winter Storm
Temperature Extreme (Heat and Cold)
Public Health Emergencies

THANK YOU!

HAZARDS LIST

Dam Failure
Drought
Earthquake
Flood
Hazardous Materials (includes Radiological)
Severe Thunderstorm / Hail
Severe Wind / Tornado
Severe Winter Storm
Temperature Extreme (Heat and Cold)
Public Health Emergencies

THANK YOU!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
PLANNING COMMITTEE MEETING #4
NOTES

Date: Tuesday, April 23, 2019
Time: 10:30 a.m.
Duration: 35 minutes
Location: Online
Present: Bill Jones
Brian Rutledge
Deanna Danner
Paula Cope
Peggy Clark
Penny Traina
Tad Herold
Troy Graft
Wes Vins
Barb Miller
Jeff Harvey

On Tuesday, April 23, 2019, the Columbiana County Hazard Mitigation Plan committee met to discuss the asset inventory and plan maintenance process. The committee also reviewed public involvement to date. This meeting was the fourth in the process of updating the 2019 plan and was held online via web conference.

Following a roll call to confirm attendance, Jeff Harvey reviewed the results of a public outreach efforts. The online Survey Monkey survey had generated 55 responses. Of the responses, 30.91% of respondents were very concerned about hazardous materials and 20% were very concerned about wind/tornado. Respondents were not at all concerned about dam failure (78.18%) or earthquake (65.45%). Interestingly, 31 respondents reported feeling that wind/tornado has gotten worse (i.e., more intense) in recent years. Also, 20.93% of respondents reported not knowing if their homeowners or renters policy included flood insurance. Finally, Jeff presented the sample mitigation projects that received the most support (all with 28 affirmative votes): upgrade water and sewer systems, install generators in critical facilities, and educational

campaigns. The committee agreed to solicit survey responses one more time and to close the Survey Monkey collector on Friday, May 10, 2019.

Peggy Clark provided an update on the mini-survey collected at a recent Sky Warn training. The EMA received 67 responses. Peggy reported that most people indicated they did not know what a hazard mitigation plan was, so she took some time to review the plan and process. Jeff agreed to summarize the results and submit them with the meeting minutes (see attached).

Next, Jeff referenced the asset inventory spreadsheet submitted with the meeting invitation. He spent some time explaining how the previous planning committee generated the list, which included definitions of “asset types.” He also explained how the purpose of the asset inventory has evolved as the mitigation plan has evolved. Assets will now appear in hazard profiles and provide a site-specific consideration of vulnerability to the hazards in the mitigation plan. Jeff asked committee members to review and submit updates to either his office or the EMA.

Finally, committee members discussed the plan maintenance process. Jeff explained that the interim periods between plan adoption need to be more active. The committee agreed that the county’s local emergency planning committee (LEPC) can serve as a proxy body for the updates. Many of the members of the mitigation planning committee already serve on the LEPC, and the LEPC is a standing organization. Therefore, mitigation updates may have more success since they won’t represent another meeting (in already crowded schedules) for the majority of planning committee members. Peggy agreed to include those not already on the LEPC on the invitation list for the LEPC meeting at which the group will discuss the mitigation plan.

Jeff suggested that the county consider identifying specific items to review in each of the interim years. The committee agreed with that methodology. The following items will comprise the interim agendas.

- **Year 1:** Support the adoption process with all jurisdictions in Columbiana County. The LEPC meeting for the first year will review the planning process and consider updates to future processes.
- **Year 2:** Review the high-consequence hazards. The LEPC meeting can serve as a roundtable to discuss appropriate hazard profiles as well as consider if the hazard list in the plan is appropriate.
- **Year 3:** Re-engage the public via survey and consider presentations to various groups throughout the county. The LEPC meeting will serve as a venue to reporting the results of this effort.
- **Year 4:** Complete a deep-dive on the project list (i.e., update status). The LEPC will serve

as the forum at which the deep-dive occurs.

The next meeting will be in-person on Tuesday, June 11, 2019, at 10:30 a.m. at the Columbiana County Emergency Management Agency.

**COLUMBIANA COUNTY
HAZARD MITIGATION PLAN
COMMITTEE MEETING #5**

MINUTES

Date: Tuesday, June 11, 2019
Time: 10:30 a.m.
Duration: 60 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street
Lisbon, OH 44432

The committee members met for the fifth time on Tuesday, June 11 at the Columbiana County Emergency Management Agency to continue the update process of the hazard mitigation plan. The meeting consisted of three primary agenda items: reviewing the final public survey results, reviewing the plan maintenance process, and prioritizing mitigation projects. A sign-in sheet follows this narrative.

The consultant presented the committee with an overview of the final public survey results. This included the hazards the public were concerned about and were not concerned about, hazards the public believed to be increasing and decreasing in intensity, and mitigation projects the public would support. There were 69 completed surveys. Respondents were very concerned with hazardous materials (31.88%), wind and tornadoes (18.48%), and flooding (16.18%). Respondents were not at all concerned with dam failure (78.26%), earthquake (62.32%), and drought (50.75%). Respondents felt that there has been an increase in the intensity of wind and tornadoes (58.46%), extreme temperature (52.31%), and thunderstorms and hail (52.31%). They felt that there has been a decrease in the intensity of drought (28.81%) and “other” (18.64%). Hazards mentioned in the “other” responses include human caused events such as public health emergencies, crime, etc.

The consultant distributed the draft narrative describing the plan maintenance and integration process the committee agreed to during the previous teleconference. The committee identified ways to implement the plan through existing programs

(including floodplain managers and twice annual meetings of an EMA/ODOT/Engineering Dept. work group). The committee also identified multiple venues for soliciting public involvement in plan maintenance, including the Local Emergency Planning Committee, social media outreach, and township trustee meetings.

The committee spent the most time prioritizing mitigation projects. To support prioritization, the consultant distributed the prioritization criteria which the committee had agreed upon at the previous meetings. Committee members assigned prioritization scores to each project. The activity resulted in the following list:

Project	Total Score	Resultant Priority
Develop GIS capabilities within the Emergency Management Agency through a MOU with the county.	35	5
Integrate site-specific disaster mitigation issues into storm water planning initiatives, including efforts to eliminate combined sewer overflows (CSOs).	37	4
Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.	37	4
When received from NWS, use the countywide notification system to push weather alerts to residents for all hazards (and particularly weather-related hazards). Ensure additional notification when watches ascend to warnings.	54	1
Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.	44	2
Maintain a list of sites that could be used as emergency shelters or points of distribution (PODs) throughout Columbiana County.	54	1
Conduct a commodity flow study to determine what hazardous materials are shipped through the county.	42	3
Using a collaborative approach between preparedness partners (e.g., EMA, health department), periodically push weather and other hazard information via social media accounts.	54	1
Encourage township offices to have a NOAA all-hazard radio to strengthen redundant notification and warning efforts.	54	1
Purchase, elevate, or relocate structures currently located in flood plains.	30	6

This meeting likely served as the last face-to-face meeting in the 2019 planning process. If issues present themselves during the draft review, partners may consider scheduling another teleconference or meeting. The remaining tasks include draft review, which will occur via email sharing from the EMA, and providing summary sheets of relevant hazards for both schools and licensed care facilities.

EMA- Mitigation Plan Update Mtg #5

Date: 6/11/19

Place/Room: EMA/EOC[illegible]

**COLUMBIANA COUNTY
HAZARD MITIGATION PLAN
COMMITTEE MEETING #6**

MINUTES

Date: Tuesday, October 15, 2019
Time: 10:30 a.m.
Duration: 60 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street
Lisbon, OH 44432

The Columbiana 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 municipalities to participate in the planning process. A sign-in sheet appears as an attachment.

EMA Director Peggy Clark provided attendees with an overview of the hazard mitigation planning process and formally offered municipalities the opportunity to continue as a partner to the county's plan. All in attendance agreed to do so. The majority of the rest of the meeting served as an open floor for attendees to share hazard concerns from the perspectives of their jurisdictions. Attendees also shared ideas about projects that could reduce risks in their jurisdictions.

To conclude the meeting, Columbiana 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 Director Clark for those that would like to complete the survey online (via Survey Monkey). Director Clark forwarded that link via email on Monday, October 21st.

The consultant also asked attendees if a shared folder on a platform such as

Google Drive or 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 decided to utilize Google Drive and forwarded a link along with a copy of these minutes.

EMA- Mitigation Planning Meeting

Date: 10/15/2019 10:30AM

Place/Room: EMA/EOC

Name:	Email:	Agency City or Township
JEFF HARVEY	jharvey@jhepreparedness.com	JH CONSULTING, LLC
BILL HESTON		SALEM TWP.
ANDY SWEENEY	asweeney66@yahoo.com	ELKRUN TWP.
SALLY KEATING		Village Salineville
James Wilson		Village Salineville
Ken Schreffler	Carole.Schreffler@netzero.com	Center Twp.
Keith H. Burke	kburbke2727@sbcglobal.net	Liverpool
CHRIS BOSWORTH	LIVERPOOLTWP8@gmail.com	Liverpool
GREGG CARVER	gcarver12@yahoo.com	Knox
Jarrod Grimm	villageadmin@wellsillwvohio.us	Village of Wellsill
WAYNE CHAMBERLAIN	Wachemb@hotmail.com	Madison Twp
Kenny Biacco	retsqtdepken@yahoo.com	Yellow-Creek Twp.
Debra Wells	e/kruntownship@att.net	Elkrun
Kathy McCarthy	mccarthy.kathy@sbcglobal.net	Elmty Township
Lance Willard	lwillard@columbianwvohio.gov	City of Columbiana
John C. Bueh	mayor@cityofsalineville.org	SALEM
Mark McTrusty	m.mctrusty@eastpalatine-ohio.gov	East Palestine
Jim Brown	jlbrown@eastpalatine-ohio.gov	East Palestine
Scott Mason	chief.salemfd@cityofsalineville.org	Salem Fire

EMA-

Date: _____ Place/Room: EMA/EOC

Place/Room: EMA/EOC[illegible]

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

Jeffery Harvey

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Monday, October 21, 2019 10:26 AM
To: r.stovall@eastliverpool.com; hmycno1523@outlook.com; 'mayor@leetonia.org'; rgallo@neo.rr.com; shanepatrone@yahoo.com; rogersmunicipal@comcast.net; bmoore644@hotmail.com; dld04@aol.com
Cc: Jeffery Harvey
Subject: Mitigation Plan Meeting

Good Morning All-

If you are receiving this email, there was not a representative from your city or village at the Mitigation Plan meeting last week. Please see the attached link to complete a survey about your jurisdiction, hazards and capabilities. This will insure that you are represented in the County Mitigation Plan, which is updated every 5 years. The last version of the plan was adopted by almost every jurisdiction is the County. This will insure your ability to receive Federal disaster or mitigation funding.

You may also receive phone calls from the consultant that is assisting with the plan update, JH Consulting.

Please click the link and answer the survey questions.

<https://www.surveymonkey.com/r/CCHMP-Capabilities>

Thanks,

Peggy Clark

Peggy Clark, Director
Columbiana County Emergency Management Agency
215 S. Market Street
Lisbon, Ohio 44432
330-424-9725, Office
330-424-9267, Fax

Sign up for Columbiana County
Wireless Emergency Alerts (WENS)
https://entry.inspironlogistics.com/columbiana_oh/wens.cfm

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Jeffery Harvey

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Monday, October 21, 2019 10:00 AM
To: mhall4700@yahoo.com; paullease906@gmail.com; Tomsanor@gmail.com; michaelr.lutz@gmail.com; randyl.brown59@gmail.com; catm1925@gmail.com; jason@raylewisco.com; john.zehentbauer@gmail.com; jarmeni@sbcglobal.net; jhall@stclairtp.com; jsabatini@stclairtp.com; rswickard@stclairtp.com; washtwp2004@gmail.com; ndailey920@yahoo.com; jimmay1015@yahoo.com; kevinj2076@yahoo.com
Cc: Jeffery Harvey
Subject: County Mitigation Plan Meeting

Good Morning All-

If you are receiving this email, there was not a representative from your township at the Mitigation Plan meeting last week. Please see the attached link to complete a survey about your jurisdiction, hazards and capabilities. This will insure that you are represented in the County Mitigation Plan, which is updated every 5 years. The last version of the plan was adopted by almost every jurisdiction is the County. This will insure your ability to receive Federal disaster or mitigation funding.

You may also receive phone calls from the consultant that is assisting with the plan update, JH Consulting.

Please click the link and answer the survey questions.

<https://www.surveymonkey.com/r/CCHMP-Capabilities>

Thanks,

Peggy Clark

Peggy Clark, Director
Columbiana County Emergency Management Agency
215 S. Market Street
Lisbon, Ohio 44432
330-424-9725, Office
330-424-9267, Fax

Sign up for Columbiana County
Wireless Emergency Alerts (WENS)
https://entry.inspironlogistics.com/columbiana_oh/wens.cfm

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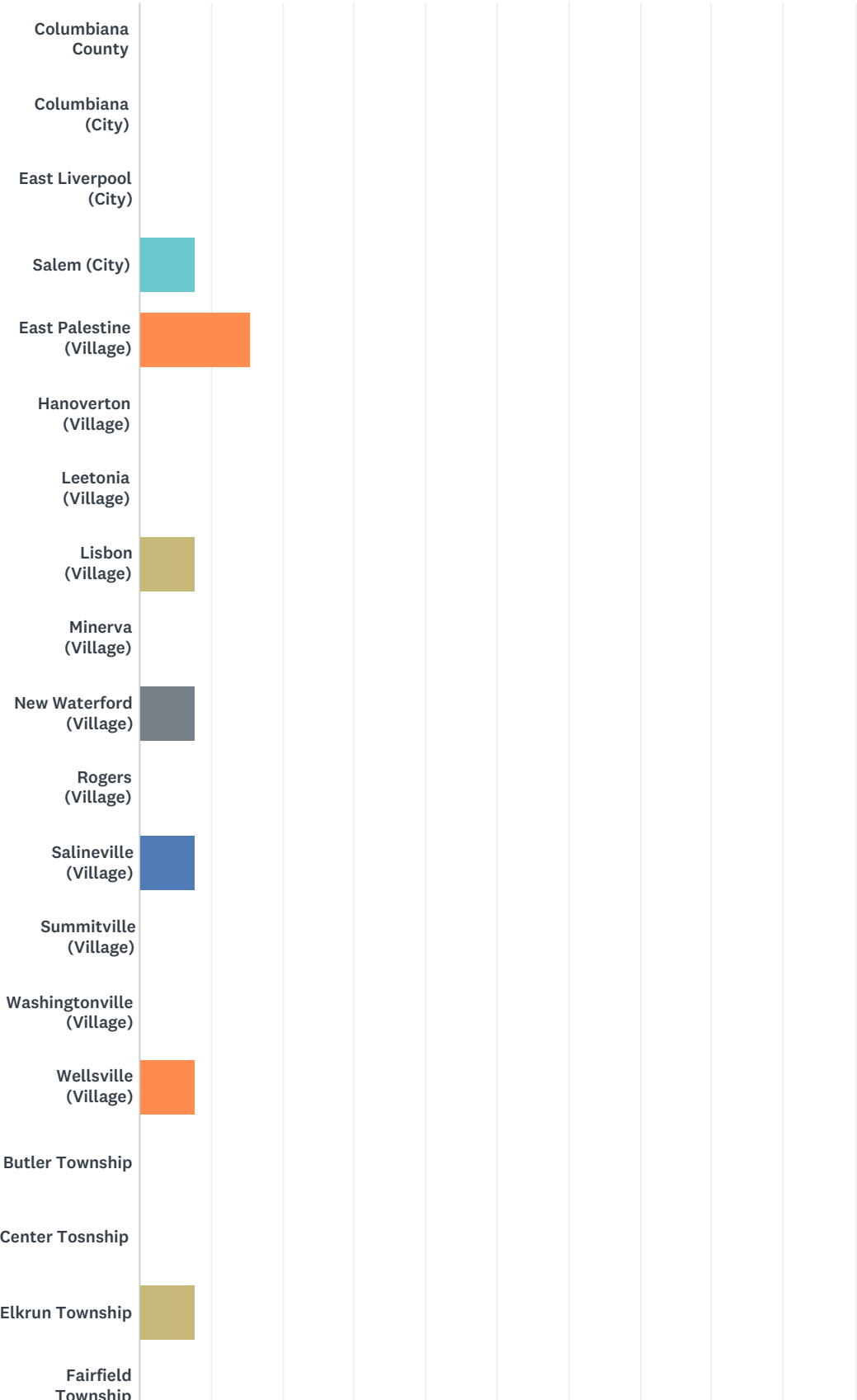
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Rogers-Concern	Thunderstorms that lead to flooding in the village
Rogers-Lessen damage	They are in the process of improving their storm water drainage. They are replacing catch basins, drain boxes, resetting pipe and clearing drains. This is a village funded project.
Summitville-Concern	Flooding that comes from creeks and streams
Summitville-Lessen damage	Large culvert that plugs with debris from creek. Water backs up and floods village roads. They are working with State representatives for assistance as this is a state roadway.
Leetonia-Concern	Flooding from storm water and creeks and streams
Leetonia- Lessen damage	Expanding and improving storm water system in the village. Currently undersized and does not cover the entire village.

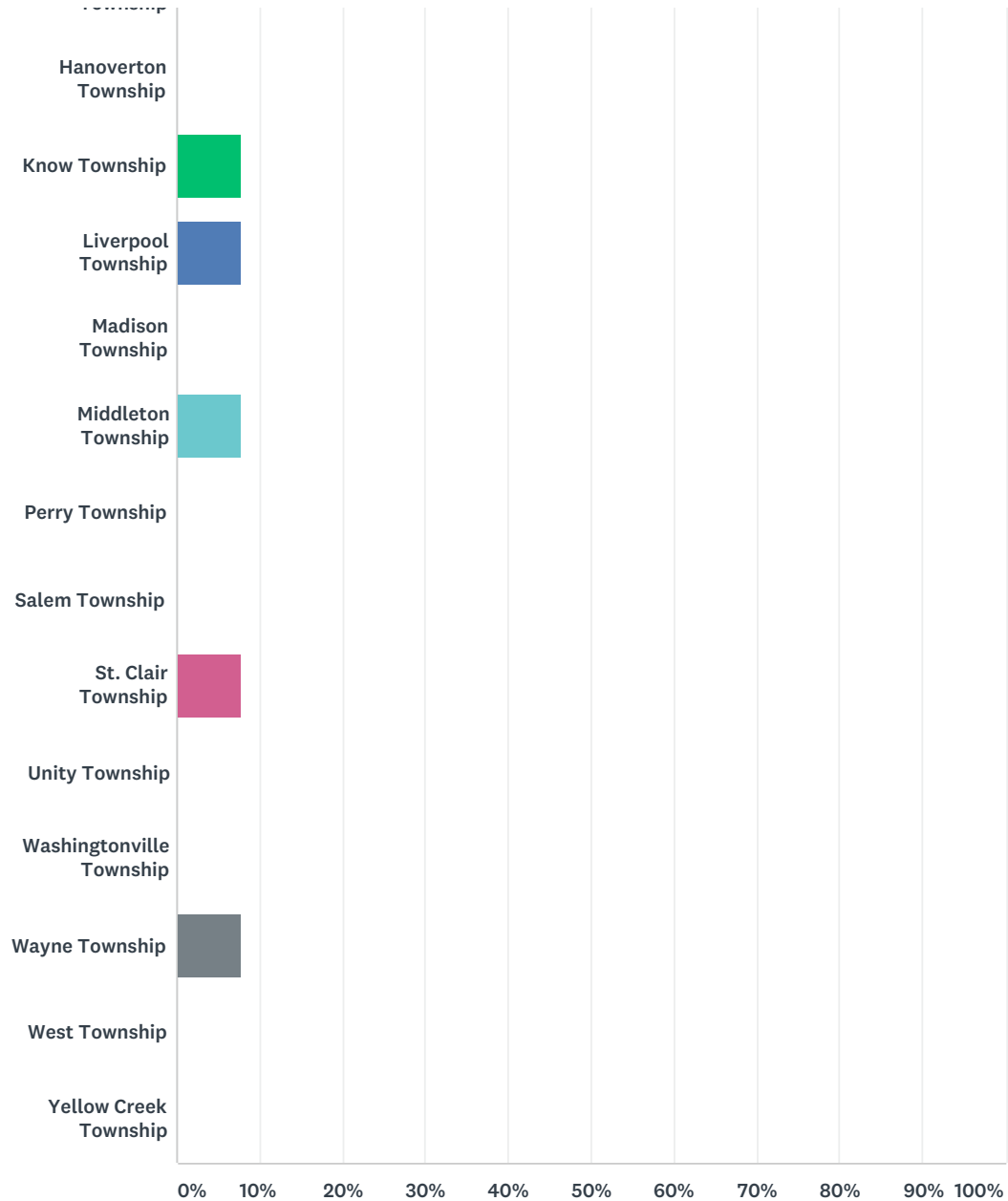
Table outlining final contact to villages by CCEMA Director – 12/10 through 12/17/2019.

Q1 What is the name of your jurisdiction?

Answered: 13 Skipped: 0



Columbiana County HMP Capability Assessment Survey



ANSWER CHOICES	RESPONSES	
Columbiana County	0.00%	0
Columbiana (City)	0.00%	0
East Liverpool (City)	0.00%	0
Salem (City)	7.69%	1
East Palestine (Village)	15.38%	2
Hanoverton (Village)	0.00%	0
Leetonia (Village)	0.00%	0
Lisbon (Village)	7.69%	1
Minerva (Village)	0.00%	0

Columbiana County HMP Capability Assessment Survey

New Waterford (Village)	7.69%	1
Rogers (Village)	0.00%	0
Salineville (Village)	7.69%	1
Summitville (Village)	0.00%	0
Washingtonville (Village)	0.00%	0
Wellsville (Village)	7.69%	1
Butler Township	0.00%	0
Center Tosnship	0.00%	0
Elkrun Township	7.69%	1
Fairfield Township	0.00%	0
Hanoverton Township	0.00%	0
Know Township	7.69%	1
Liverpool Township	7.69%	1
Madison Township	0.00%	0
Middleton Township	7.69%	1
Perry Township	0.00%	0
Salem Township	0.00%	0
St. Clair Township	7.69%	1
Unity Township	0.00%	0
Washingtonville Township	0.00%	0
Wayne Township	7.69%	1
West Township	0.00%	0
Yellow Creek Township	0.00%	0
TOTAL		13

Q2 Please provide your name and email address/phone number so that we may contact you with any questions about this survey.

Answered: 13 Skipped: 0

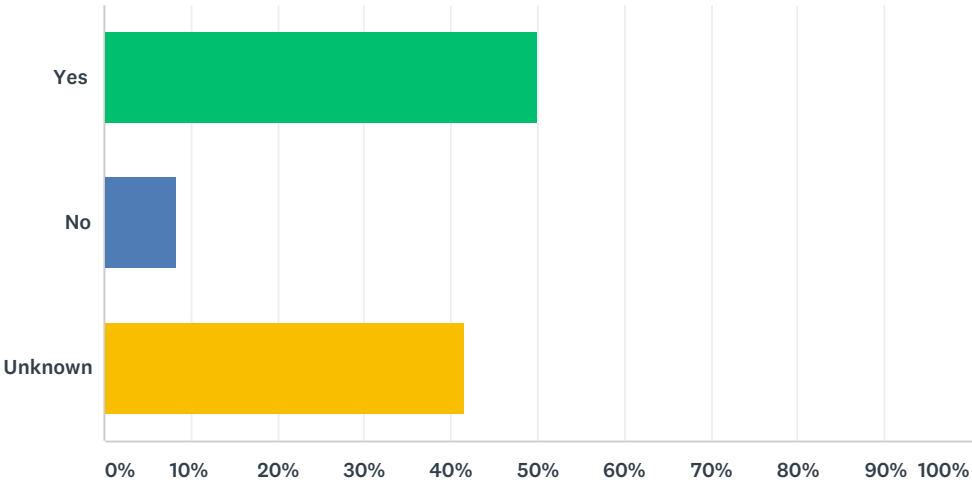
ANSWER CHOICES	RESPONSES	
Name	100.00%	13
Company	0.00%	0
Address	0.00%	0
Address 2	0.00%	0
City/Town	0.00%	0
State/Province	0.00%	0
ZIP/Postal Code	0.00%	0
Country	0.00%	0
Email Address	100.00%	13
Phone Number	100.00%	13

Q3 If you represent a department within that jurisdiction's government structure, what is the name of your department?

Answered: 10 Skipped: 3

Q4 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 including the location, type and extent of future development by establishing the basis for decision-making and review processes on zoning matters, subdivision and land development, land uses, public facilities and housing needs over time. Does your jurisdiction have or participate in a comprehensive plan?

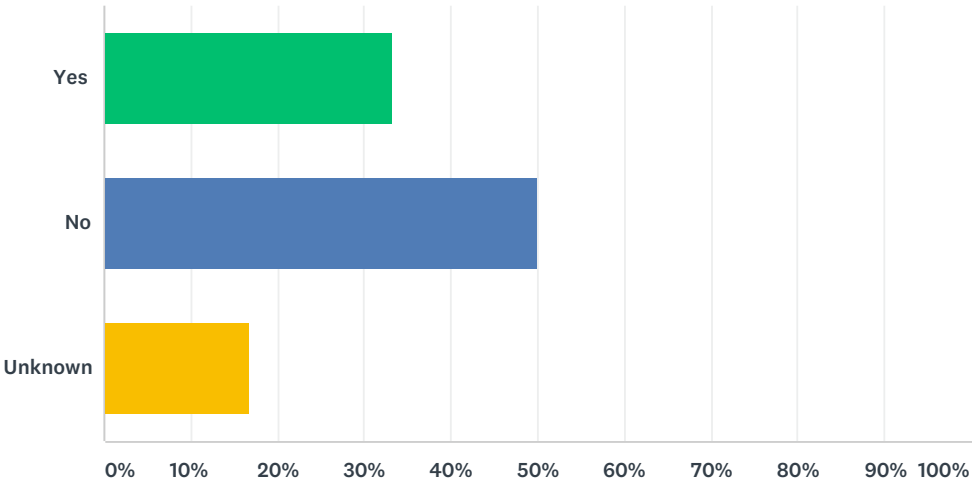
Answered: 12 Skipped: 1



ANSWER CHOICES		RESPONSES	
Yes		50.00%	6
No		8.33%	1
Unknown		41.67%	5
TOTAL			12

Q5 Building codes regulate construction standards for new construction and substantially renovated buildings. Does your jurisdiction have a building code in place?

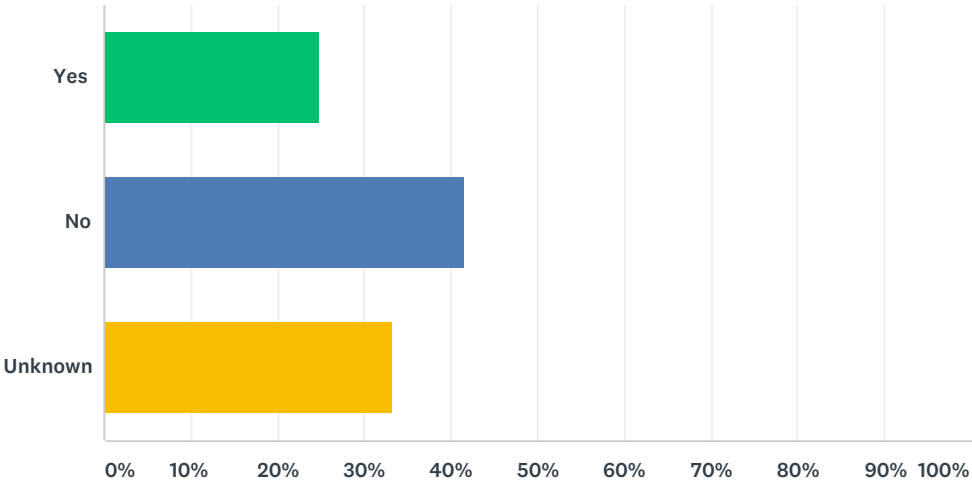
Answered: 12 Skipped: 1



ANSWER CHOICES		RESPONSES	
Yes		33.33%	4
No		50.00%	6
Unknown		16.67%	2
TOTAL			12

Q6 Subdivision and land development ordinances (SALDOs) are intended to 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 land will be divided, the placement and size of roads and the location of infrastructure can reduce exposure of development to hazard events. Does your jurisdiction have a subdivision and/or land use ordinance?

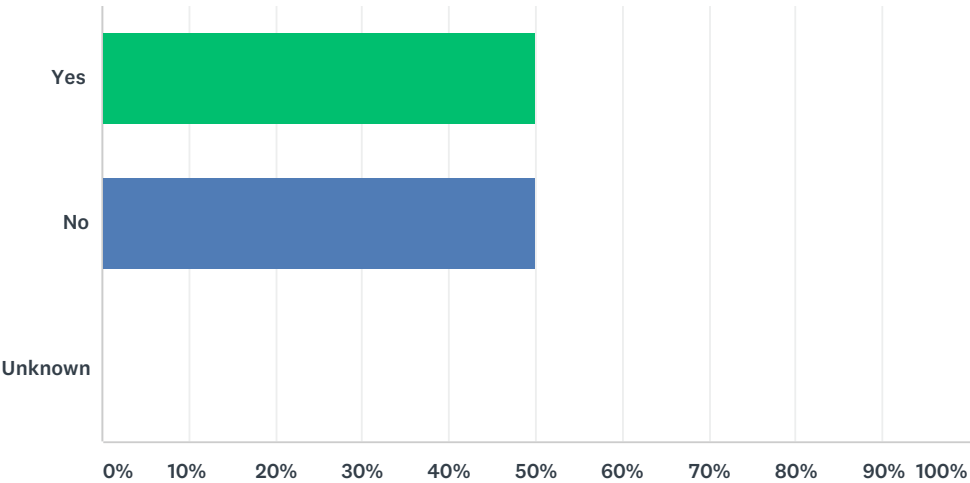
Answered: 12 Skipped: 1



ANSWER CHOICES		RESPONSES	
Yes		25.00%	3
No		41.67%	5
Unknown		33.33%	4
TOTAL			12

Q7 Zoning ordinances allow for local communities to regulate the use of land in order to protect the interests and safety of the general public. Zoning ordinances can be designed to address unique conditions or concerns in a given community. Does your jurisdiction have a zoning ordinance?

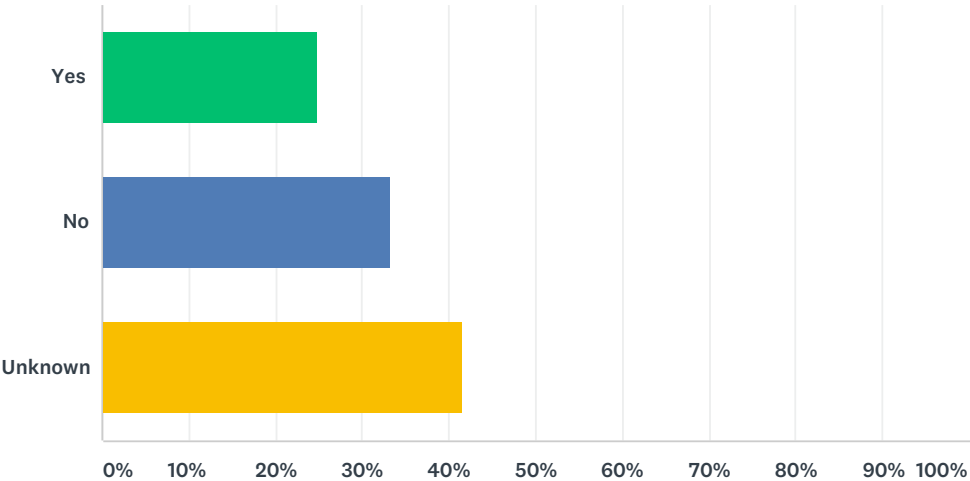
Answered: 12 Skipped: 1



ANSWER CHOICES		RESPONSES	
Yes		50.00%	6
No		50.00%	6
Unknown		0.00%	0
TOTAL			12

Q8 Does your municipality maintain accessible copies of an effective Flood Insurance Rate Map (FIRM)/Digital FIRM (DFIRM)?

Answered: 12 Skipped: 1



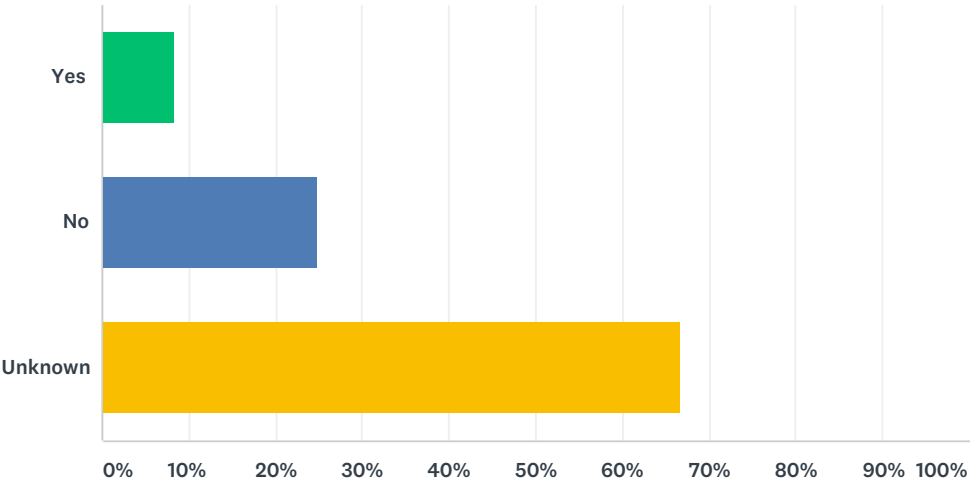
ANSWER CHOICES		RESPONSES	
Yes		25.00%	3
No		33.33%	4
Unknown		41.67%	5
TOTAL			12

Q9 How do you make DFIRM/FIRM information available (e.g., docs placed in libraries, on our website, etc.)?

Answered: 3 Skipped: 10

Q10 Has your municipality adopted the most current DFIRM/FIRM and flood insurance study (FIS)?

Answered: 12 Skipped: 1



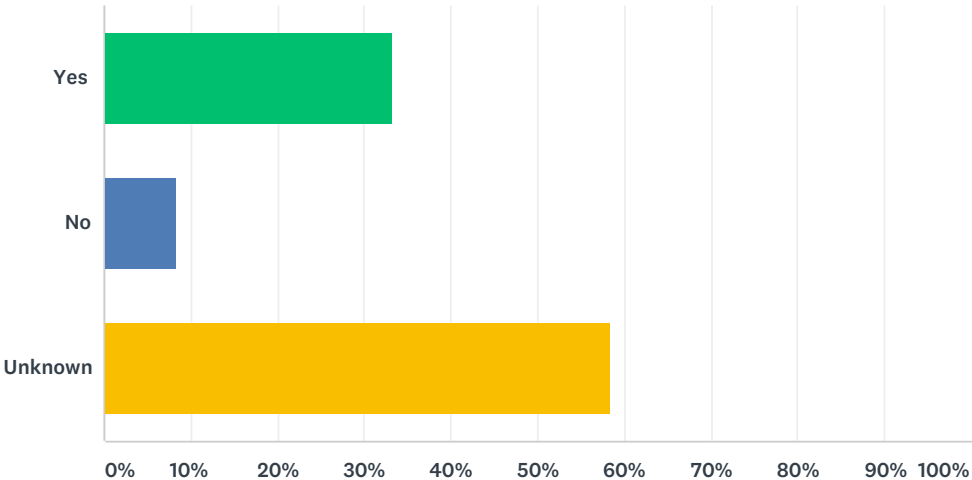
ANSWER CHOICES		RESPONSES	
Yes		8.33%	1
No		25.00%	3
Unknown		66.67%	8
TOTAL			12

Q11 If approved, state the date of adoption.

Answered: 1 Skipped: 12

Q12 Does your municipality support requests for map updates?

Answered: 12 Skipped: 1



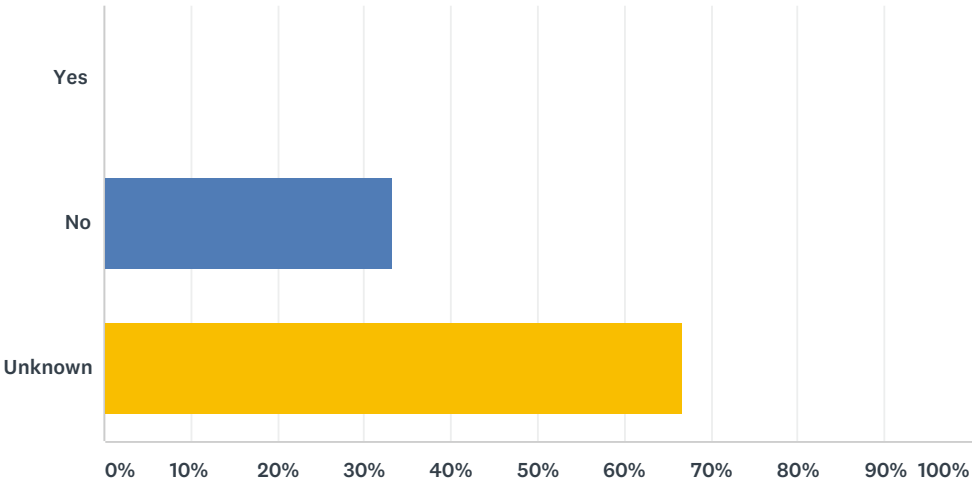
ANSWER CHOICES	RESPONSES	
Yes	33.33%	4
No	8.33%	1
Unknown	58.33%	7
TOTAL		12

Q13 How does your department support requests for map updates?

Answered: 3 Skipped: 10

Q14 Does your municipality share with FEMA any new technical or scientific data that could result in map revisions within 6 months of creation or identification of new data?

Answered: 12 Skipped: 1



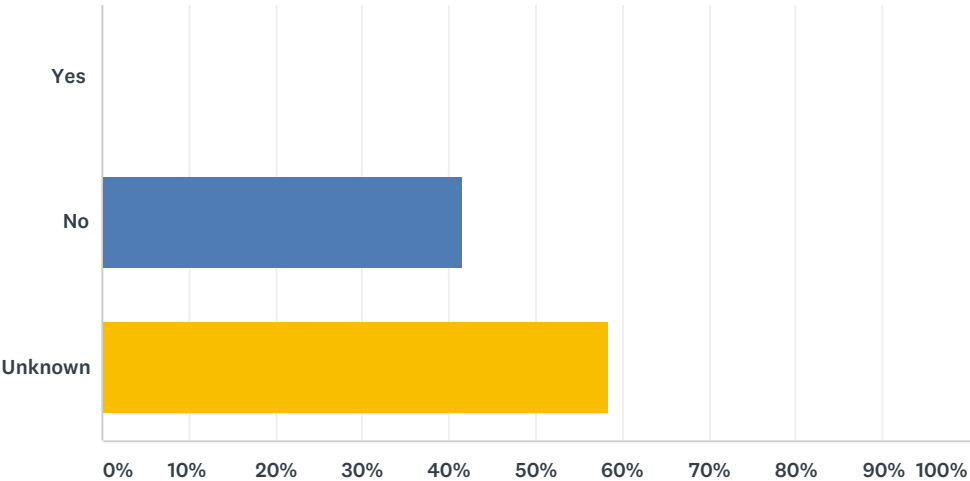
ANSWER CHOICES		RESPONSES	
Yes		0.00%	0
No		33.33%	4
Unknown		66.67%	8
TOTAL			12

Q15 How do you share this information with FEMA?

Answered: 0 Skipped: 13

Q16 Does your municipality provide technical assistance with local floodplain determinations?

Answered: 12 Skipped: 1



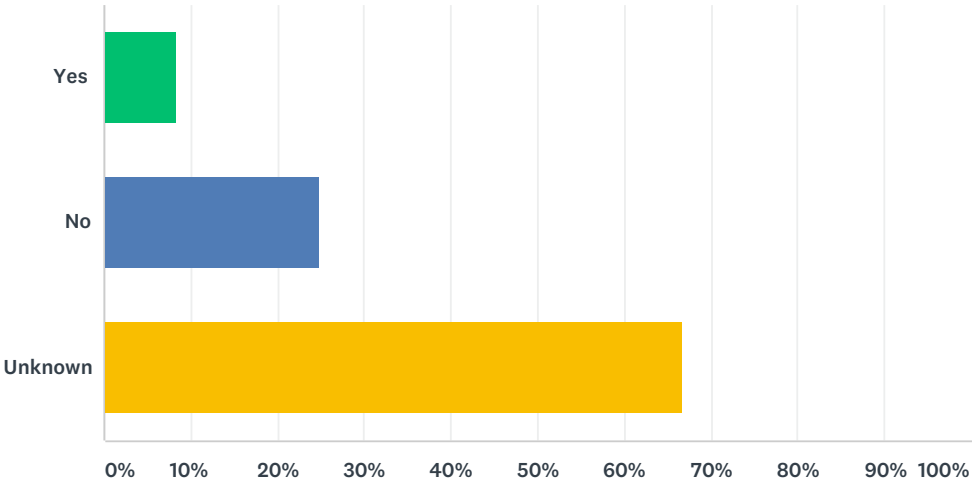
ANSWER CHOICES		RESPONSES	
Yes		0.00%	0
No		41.67%	5
Unknown		58.33%	7
TOTAL			12

Q17 What type(s) of technical assistance do you provide?

Answered: 0 Skipped: 13

Q18 Does your municipality maintain a record of approved Letters of Map Change?

Answered: 12 Skipped: 1



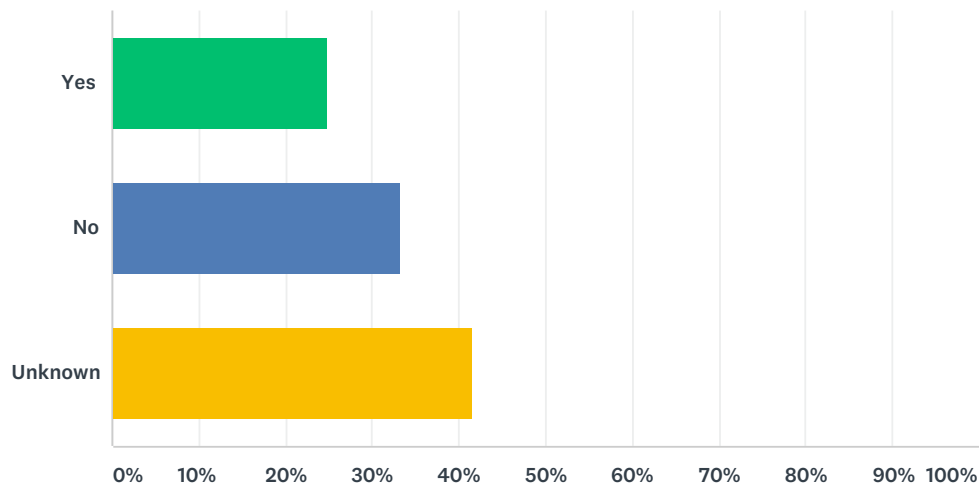
ANSWER CHOICES		RESPONSES	
Yes		8.33%	1
No		25.00%	3
Unknown		66.67%	8
TOTAL			12

Q19 Which office is responsible for maintaining records of Letters of Map Change?

Answered: 1 Skipped: 12

Q20 Has your municipality adopted a compliant floodplain management ordinance that, at a minimum: regulates development in special flood hazard areas (SFHAs); utilizes any base flood elevation (BFE) and floodway data (and/or requires BFE data for subdivision proposals and other development proposals larger than 50 lots or 5 acres); identify measures to keep all new and substantially-improved construction reasonably safe from flooding or above the BFE; and documents and maintains records of elevation data for new or substantially-improved structures?

Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	25.00%	3
No	33.33%	4
Unknown	41.67%	5
TOTAL		12

Q21 What office is responsible for issuing permits for all proposed development in SFHAs?

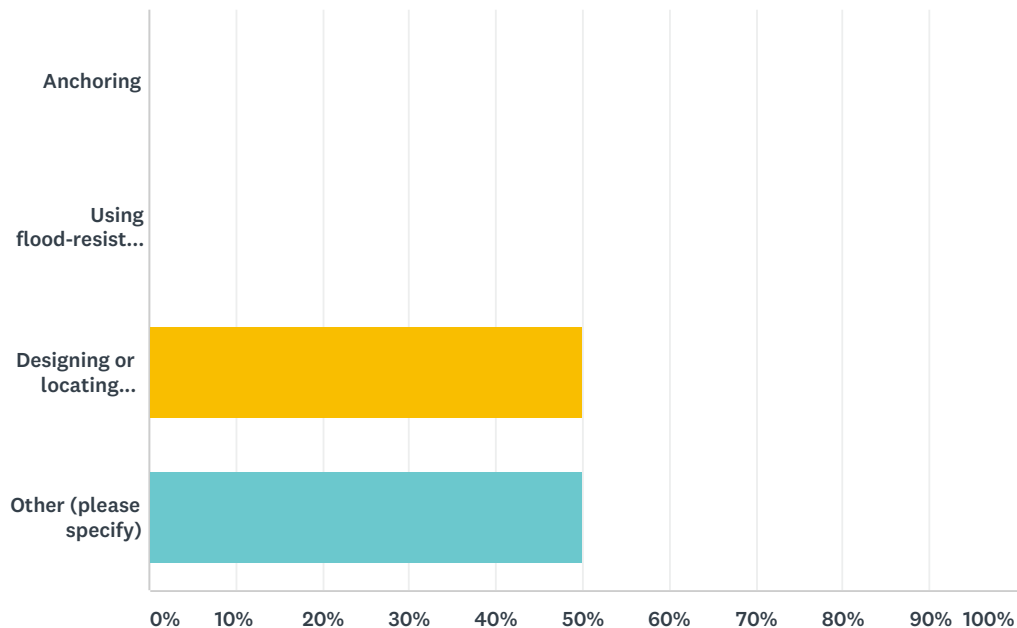
Answered: 3 Skipped: 10

Q22 What office is responsible for obtaining, reviewing, and utilizing (or requiring) BFE and floodway data for regulated developments?

Answered: 3 Skipped: 10

Q23 What measures does your municipality encourage to keep new and substantially-improved construction reasonably safe from flooding to or above the BFE?

Answered: 2 Skipped: 11



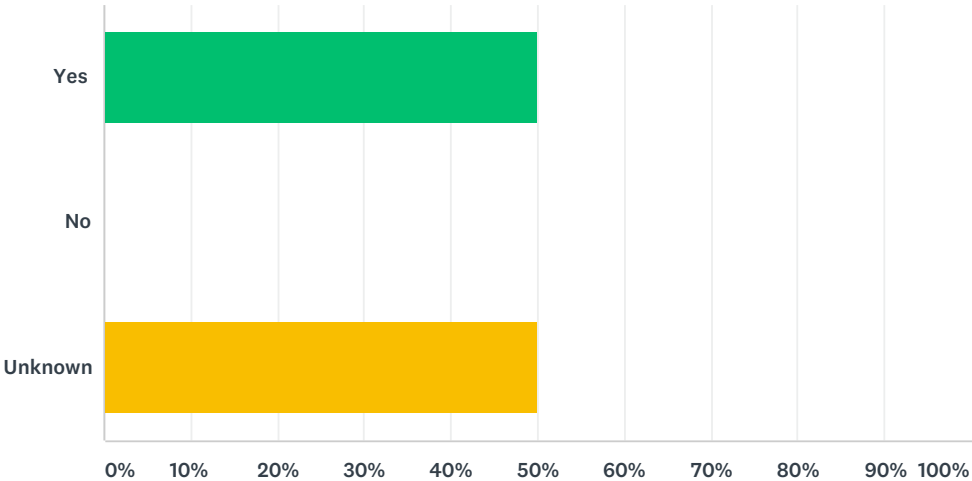
ANSWER CHOICES	RESPONSES	
Anchoring	0.00%	0
Using flood-resistant materials	0.00%	0
Designing or locating utilities and service facilities to prevent water damage	50.00%	1
Other (please specify)	50.00%	1
Total Respondents: 2		

Q24 What office is responsible for identifying and recommending these measures?

Answered: 2 Skipped: 11

Q25 Does your municipality enforce its floodplain ordinance by monitoring compliance and taking remedial action to correct violations?

Answered: 2 Skipped: 11



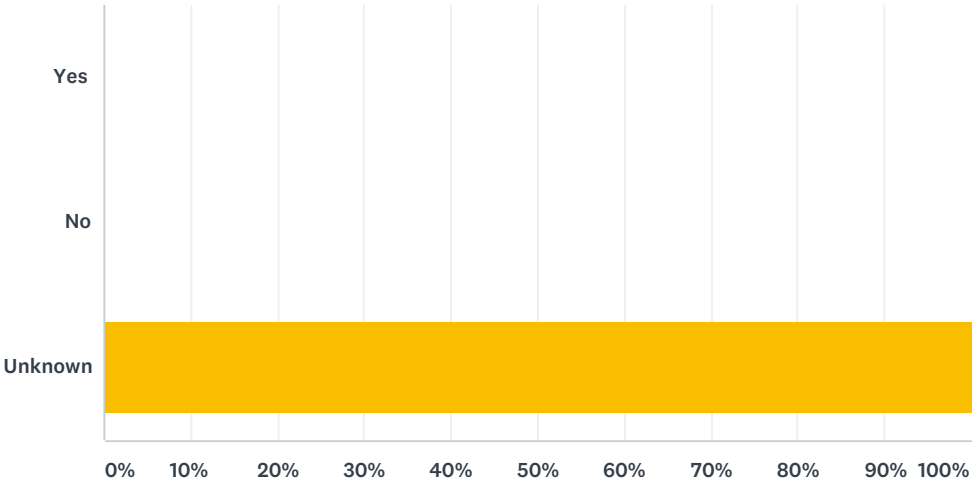
ANSWER CHOICES	RESPONSES	
Yes	50.00%	1
No	0.00%	0
Unknown	50.00%	1
TOTAL		2

Q26 How do you monitor for compliance? What types of remedial actions are taken?

Answered: 1 Skipped: 12

Q27 Has your municipality considered adopting activities that extend beyond minimum requirements? Examples include: Participation in the Community Rating System (CRS); Prohibition of production or storage of chemicals in the SFHA; Prohibition of certain types of structures, such as hospitals, nursing homes, and jails in the SFHA; Prohibition of certain types of residential housing (e.g., manufactured housing) in the SFHA; and Floodplain ordinances that prohibit any new residential or non-residential structures in the SFHA.

Answered: 3 Skipped: 10



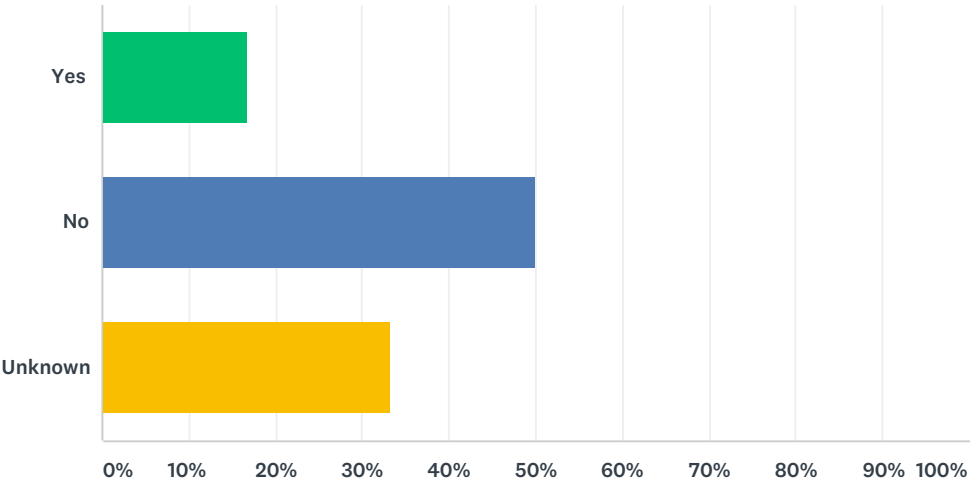
ANSWER CHOICES		RESPONSES	
Yes		0.00%	0
No		0.00%	0
Unknown		100.00%	3
TOTAL			3

Q28 What activities have you considered or implemented?

Answered: 0 Skipped: 13

Q29 Does your municipality educate community members about the availability of flood insurance?

Answered: 12 Skipped: 1



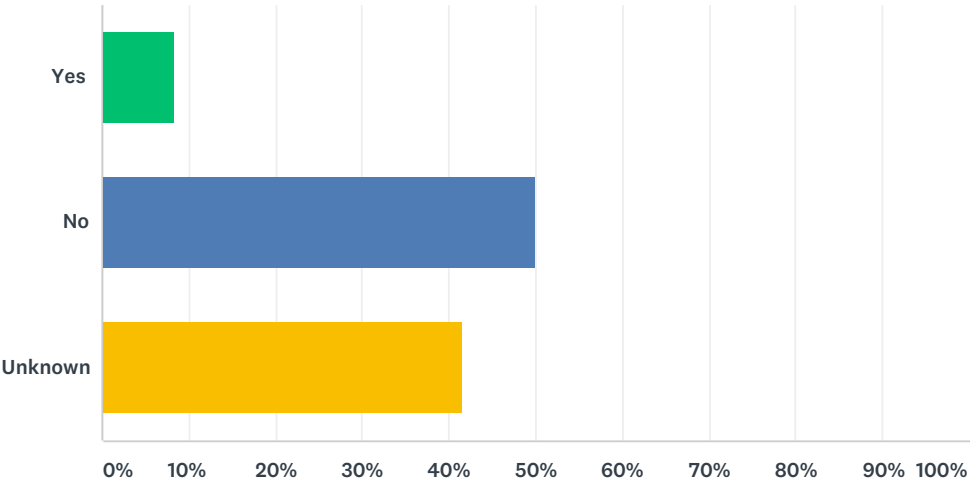
ANSWER CHOICES		RESPONSES	
Yes		16.67%	2
No		50.00%	6
Unknown		33.33%	4
TOTAL			12

Q30 How do you educate community members about flood insurance?

Answered: 2 Skipped: 11

Q31 Does your municipality inform community property owners about changes to the DFIRM/FIRM that would impact their insurance rates?

Answered: 12 Skipped: 1



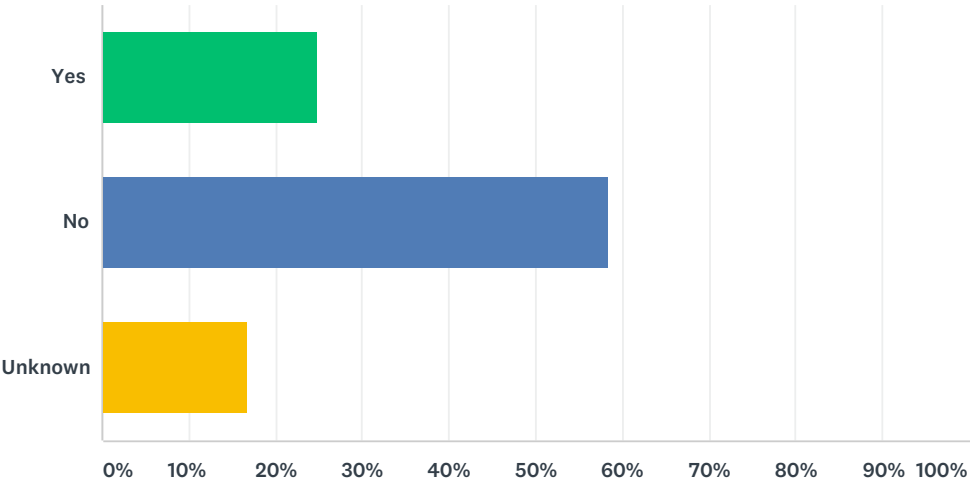
ANSWER CHOICES		RESPONSES	
Yes		8.33%	1
No		50.00%	6
Unknown		41.67%	5
TOTAL			12

Q32 How do you inform property owners?

Answered: 1 Skipped: 12

Q33 Does your municipality provide general assistance to community members regarding insurance issues?

Answered: 12 Skipped: 1



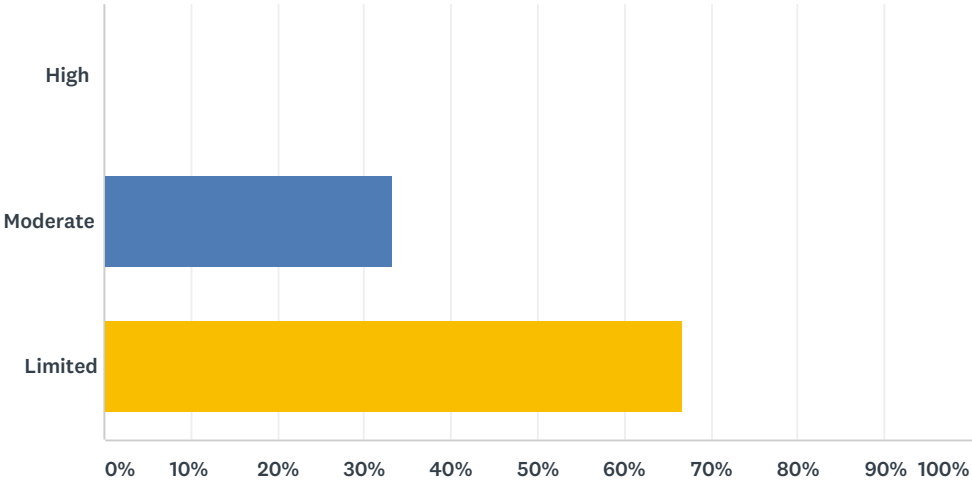
ANSWER CHOICES		RESPONSES	
Yes		25.00%	3
No		58.33%	7
Unknown		16.67%	2
TOTAL			12

Q34 What type of assistance do you provide?

Answered: 3 Skipped: 10

Q35 As with all community and economic development and emergency preparedness planning efforts, there may be a number of barriers to full implementation. With respect to these planning and regulatory capabilities, barriers may include a lack of personnel to enforce existing regulations, a reluctance on the part of the public to participate in planning, etc. You can likely think of several others for your jurisdiction. Given the combination of these barriers with the presence of the plans and regulatory elements that have been surveyed thus far, how would you label your jurisdiction's ability to fully meet the planning and regulatory capability?

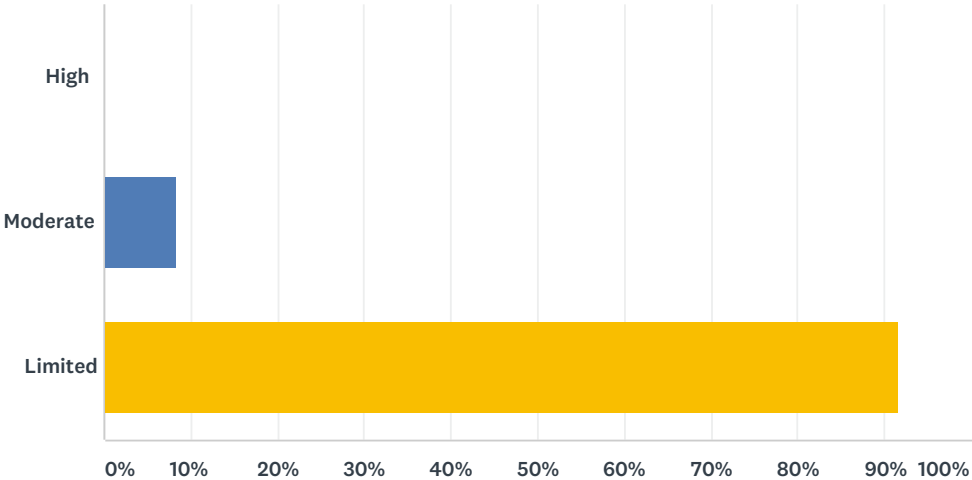
Answered: 3 Skipped: 10



ANSWER CHOICES	RESPONSES	
High	0.00%	0
Moderate	33.33%	1
Limited	66.67%	2
TOTAL		3

Q36 Administrative capability is described by an 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 in order to effectively execute mitigation activities. Common examples of skill sets and technical personnel needed for hazard mitigation include the following. Planners with knowledge of land development/management practices Engineers or professionals trained in construction practices related to buildings and/or infrastructure (e.g., building inspectors) Planners or engineers with an understanding of natural and/or human-caused hazards Emergency managers Floodplain managers Land surveyors Scientists familiar with hazards in the community Staff with education or expertise to assess community vulnerability to hazards Personnel skilled in geographic information systems (GIS) Given these examples and your knowledge of your jurisdiction paid staff and contacting capabilities, how would you rate your jurisdiction's ability with respect to the administrative and technical capability?

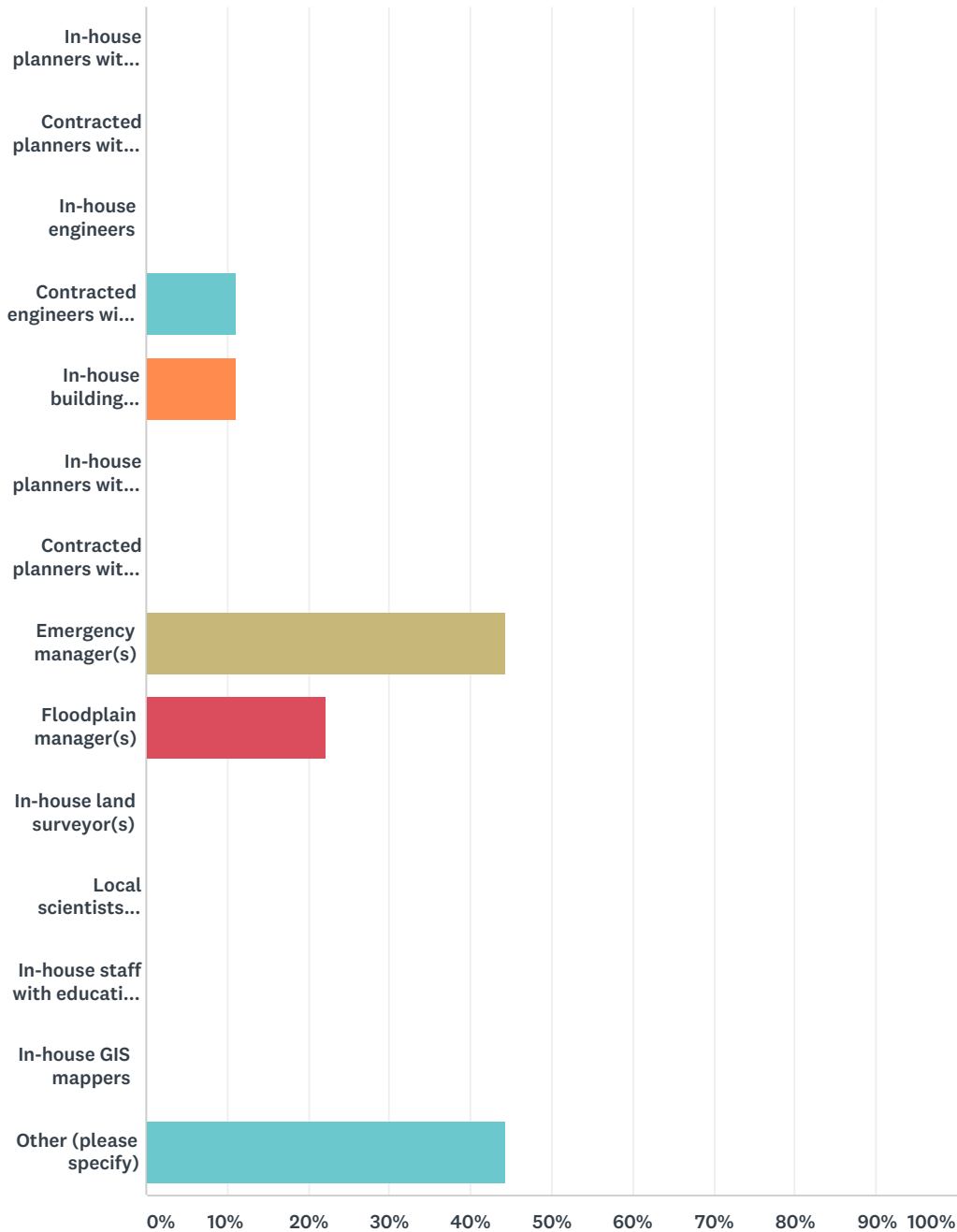
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
High	0.00%	0
Moderate	8.33%	1
Limited	91.67%	11
TOTAL		12

Q37 To which types of specialized staff do you have access?

Answered: 9 Skipped: 4



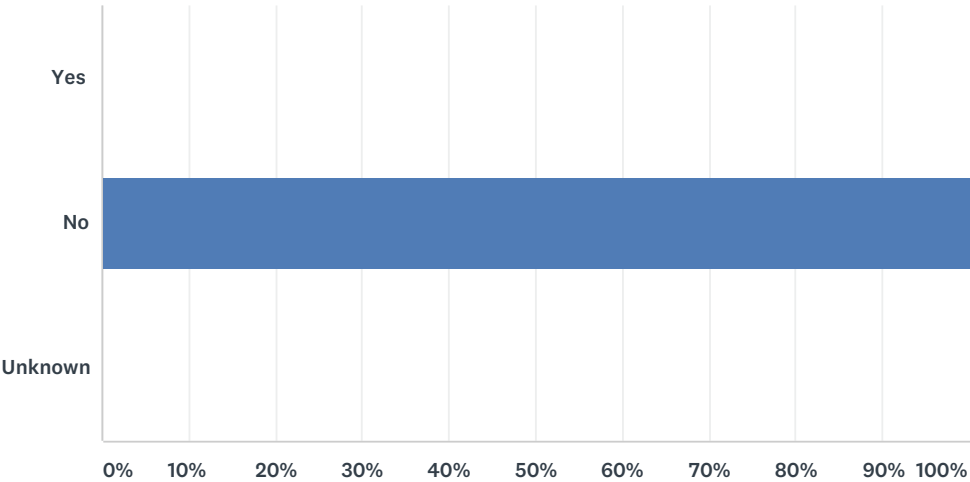
ANSWER CHOICES	RESPONSES	
In-house planners with knowledge of land development/management practices	0.00%	0
Contracted planners with knowledge of LOCAL land development/management practices	0.00%	0
In-house engineers	0.00%	0
Contracted engineers with intimate LOCAL knowledge	11.11%	1
In-house building inspectors	11.11%	1

Columbiana County HMP Capability Assessment Survey

In-house planners with an understanding of natural and/or human-caused hazards	0.00%	0
Contracted planners with an understanding of LOCAL natural and/or human-caused hazards	0.00%	0
Emergency manager(s)	44.44%	4
Floodplain manager(s)	22.22%	2
In-house land surveyor(s)	0.00%	0
Local scientists familiar with hazards in your community (e.g., staff at a local/nearby university)	0.00%	0
In-house staff with education or expertise to assess vulnerability to hazards	0.00%	0
In-house GIS mappers	0.00%	0
Other (please specify)	44.44%	4
Total Respondents: 9		

Q38 Does your jurisdiction have a paid grants specialist on its payroll?

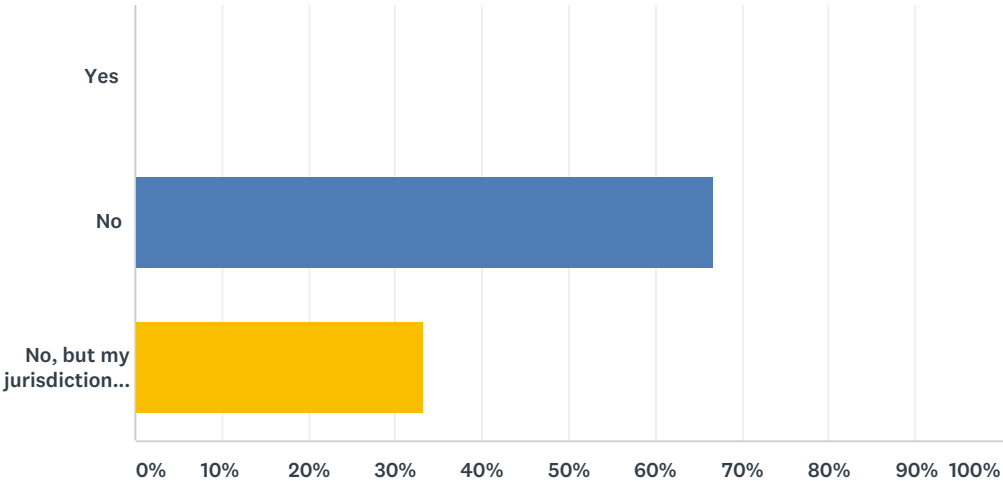
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	100.00%	12
Unknown	0.00%	0
TOTAL		12

Q39 Does your jurisdiction have available funds in its CAPITAL BUDGET that could be used for mitigation projects?

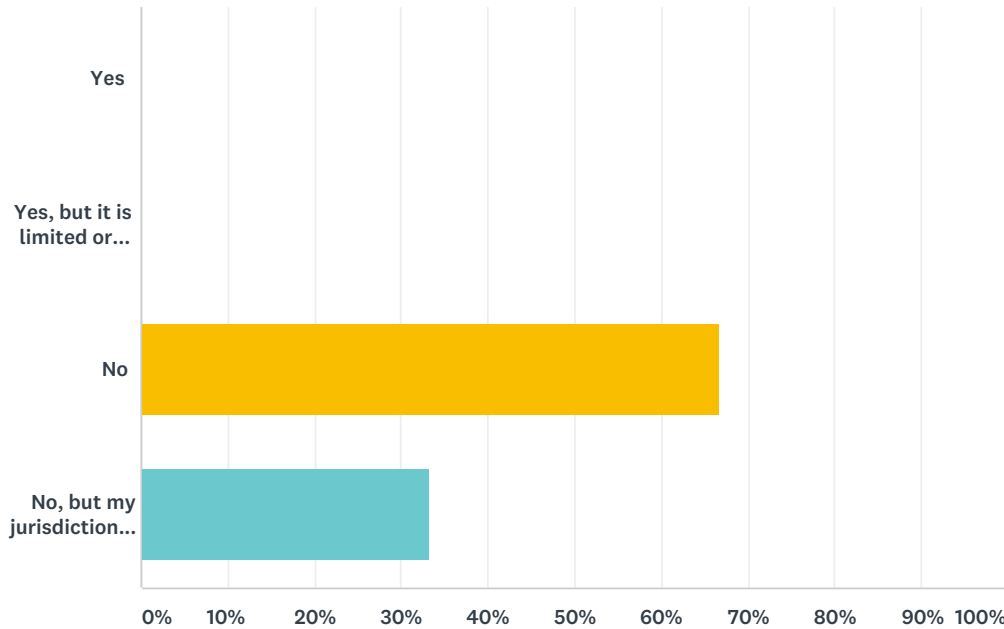
Answered: 12 Skipped: 1



ANSWER CHOICES		RESPONSES	
Yes		0.00%	0
No		66.67%	8
No, but my jurisdiction would be willing to consider it in future budgets		33.33%	4
TOTAL			12

Q40 Does your jurisdiction have available funds in its PUBLIC WORKS BUDGET that could be used for mitigation projects?

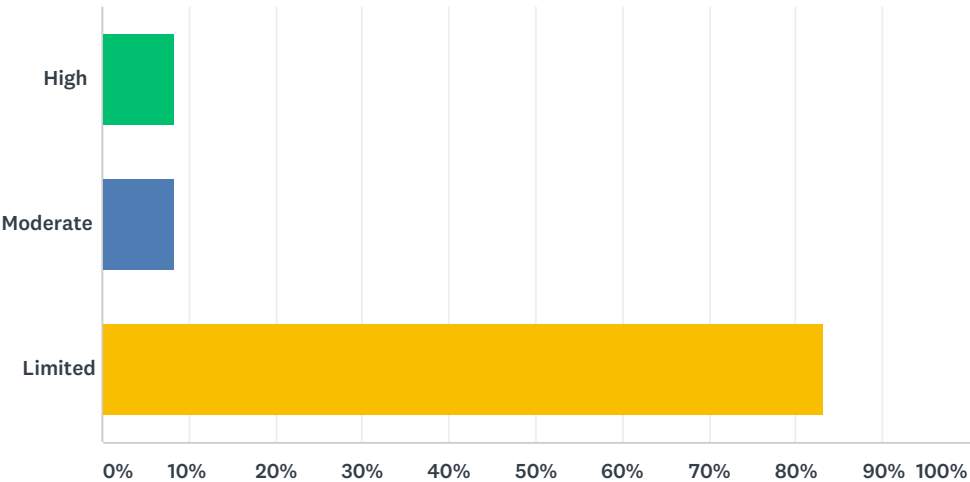
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
Yes, but it is limited or would be comprised of in-kind services	0.00%	0
No	66.67%	8
No, but my jurisdiction would be willing to consider it in future budgets	33.33%	4
TOTAL		12

Q41 In addition to existing, in-house fiscal resources such as available capital or public works funds, mitigation projects can be supported through partnerships with other jurisdictions, the procurement of grants, etc. Given these options as well as the availability of capital and public works funds (as evidenced by your responses above), how would you rate your jurisdiction's fiscal capabilities to support hazard mitigation?

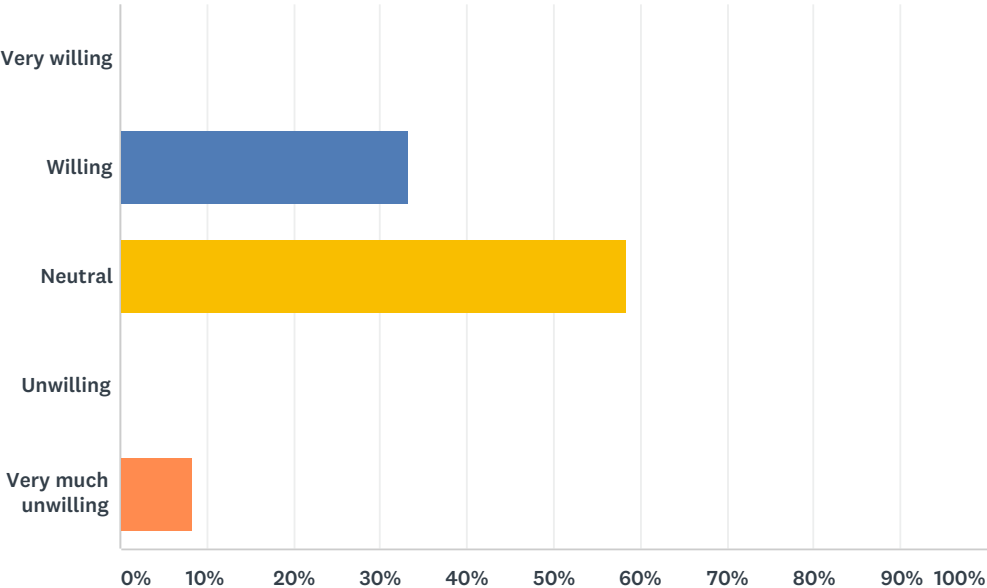
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
High	8.33%	1
Moderate	8.33%	1
Limited	83.33%	10
TOTAL		12

Q42 The following is an example of a hazard mitigation strategy.XYZ community guides development away from known hazard areas.Based on your knowledge of your community, it would be _____ to implement such a strategy.

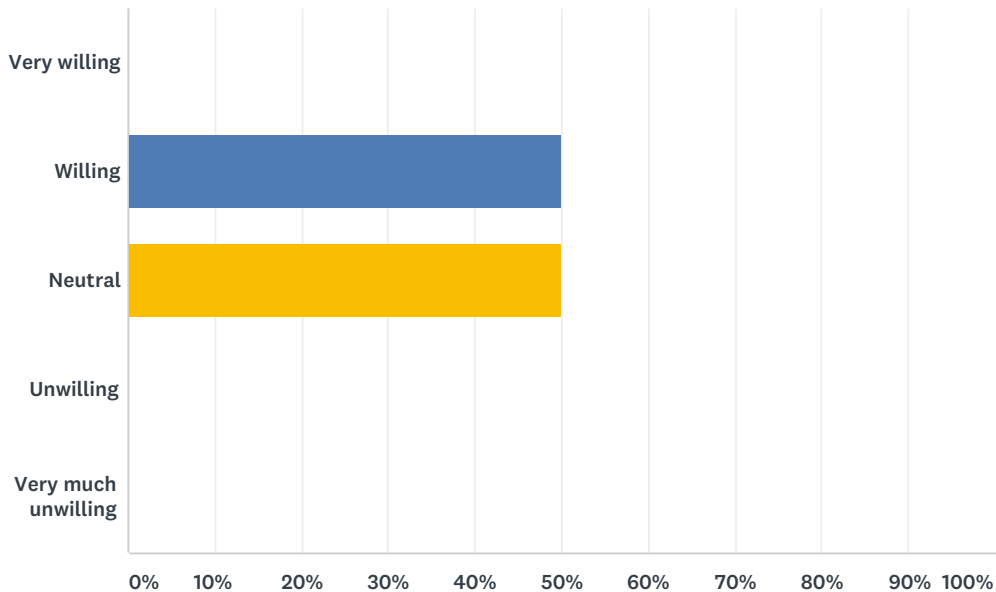
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Very willing	0.00%	0
Willing	33.33%	4
Neutral	58.33%	7
Unwilling	0.00%	0
Very much unwilling	8.33%	1
TOTAL		12

Q43 The following is an example of a hazard mitigation strategy.XYZ community restricts public investments or capital improvements within hazard areas.Based on your knowledge of your community, it would be _____ to implement such a strategy.

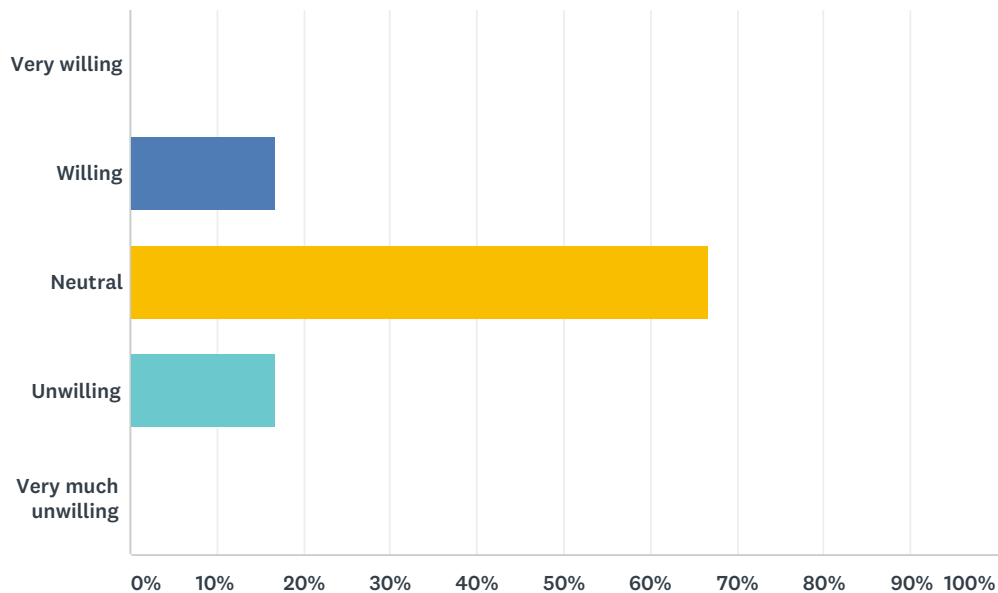
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Very willing	0.00%	0
Willing	50.00%	6
Neutral	50.00%	6
Unwilling	0.00%	0
Very much unwilling	0.00%	0
TOTAL		12

Q44 The following is an example of a hazard mitigation strategy.XYZ community enforces local development standards (e.g., building codes, floodplain management ordinances, etc.) that go beyond minimum state or federal requirements.Based on your knowledge of your community, it would be _____ to implement such a strategy.

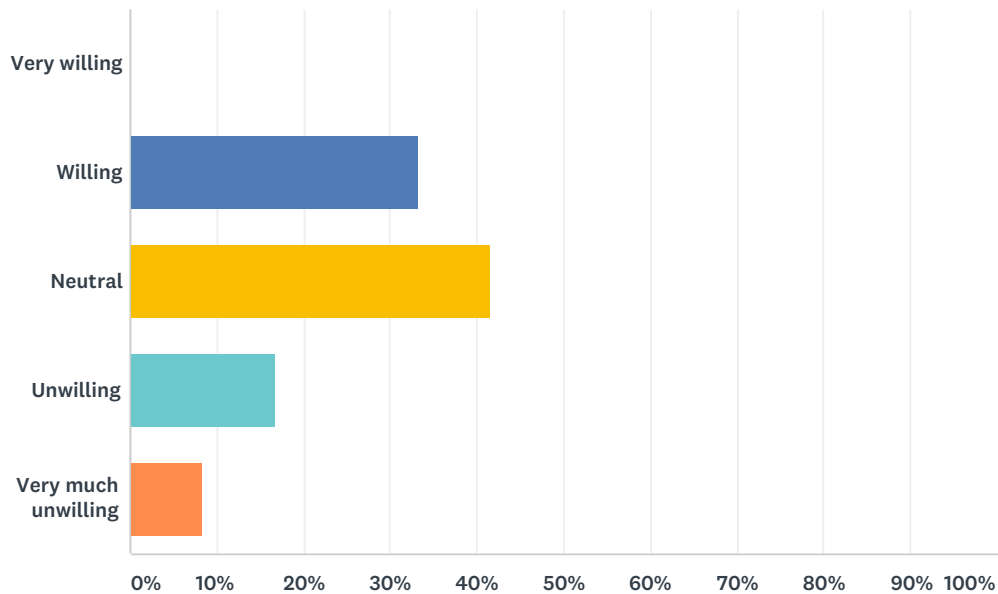
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Very willing	0.00%	0
Willing	16.67%	2
Neutral	66.67%	8
Unwilling	16.67%	2
Very much unwilling	0.00%	0
TOTAL		12

Q45 The following is an example of a hazard mitigation strategy.XYZ communities 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.).Based on your knowledge of your community, it would be _____ to implement such a strategy.

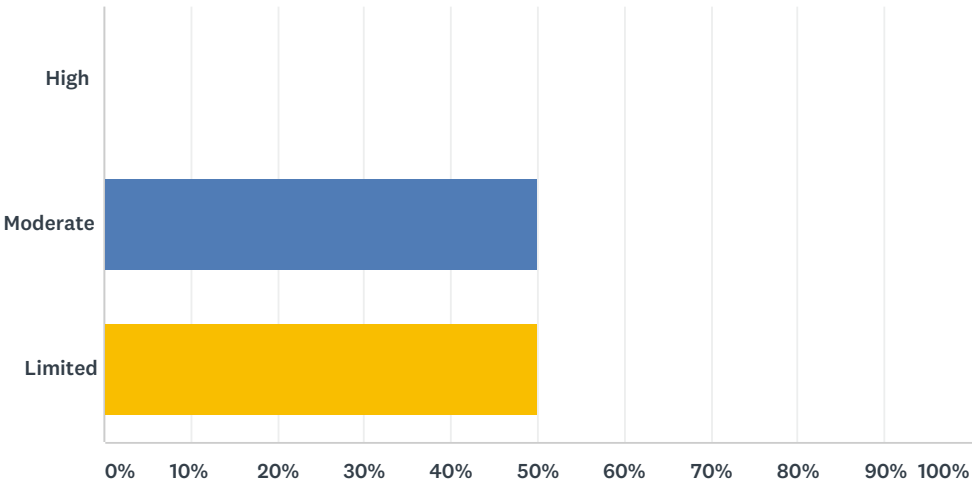
Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
Very willing	0.00%	0
Willing	33.33%	4
Neutral	41.67%	5
Unwilling	16.67%	2
Very much unwilling	8.33%	1
TOTAL		12

Q46 The political capability can be one of the most difficult to evaluate due to the strong feelings it can elicit. After thinking about your responses to the preceding four questions, how would you rank your jurisdiction's political capabilities?NOTE: A "High" capability refers to a situation where there is significant political will to implement hazard mitigation policies and priorities.

Answered: 12 Skipped: 1



ANSWER CHOICES	RESPONSES	
High	0.00%	0
Moderate	50.00%	6
Limited	50.00%	6
TOTAL		12

Q47 Thank you for taking the time to complete this survey. Please use this space to make any comments relative to capabilities that were not included in the preceding survey. You may also leave any general thoughts you may have about the implementation of hazard mitigation throughout the county, cities, and villages in Columbiana County.

Answered: 2 Skipped: 11

Jeffery Harvey

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Tuesday, December 10, 2019 10:12 AM
To: O'Hara, Dennis; Tim Warstler; Tom Cottis (tcottis@carrollcountyohio.us); 'parkjeff19@yahoo.com'; Eric Brewer; Jeremy Ober
Cc: Jeffery Harvey; Brian Rutledge
Subject: County Mitigation Plan
Importance: High

Good Morning-

Columbiana County is in the process of updating its hazard mitigation plan per Ohio Emergency Management Agency and FEMA requirements.

Before we complete our update, we are reaching out to our neighboring emergency management agencies to request your input for our plan.

We are requesting two forms of input. First, do you think there are hazards that originate in our county that would affect your jurisdiction? Conversely, do you feel there are hazards that originate in your county that may impact ours? Our planning committee has chosen the following hazards for this update: drought, earthquake, extreme temperatures, flooding, public health emergency, severe thunderstorm and hail, severe wind and tornado, severe winter storms, dam and levee failure, and hazardous material incidents.

Second, we would like to let you know that a draft of our updated plan is available at the Columbiana County EMA office, and we invite you to request a copy for review (or stop by our office to review it) at any time.

If you have any questions about this request, the hazards, or the plan itself, please feel free to contact me at peggy.clark@ccoema.org at any time.

We look forward to hearing back from you soon.

Thanks,

Peggy Clark

Peggy Clark, Director
Columbiana County Emergency Management Agency
215 S. Market Street
Lisbon, Ohio 44432
330-424-9725, Office
330-424-9267, Fax

Sign up for Columbiana County
Wireless Emergency Alerts (WENS)
https://entry.inspironlogistics.com/columbiana_oh/wens.cfm

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APPENDIX 2: PROJECT PRIORITIZATION

This appendix contains a spreadsheet used to calculate project prioritization scores.

		The project attempts to reduce the negative impacts of frequent hazards.	The project attempts to reduce the negative impacts of severe hazards.	The project aims to protect the most vulnerable populations.	The project addresses more than one hazard at once.	The project is easy to implement.	The project is easily paid for with local funds or attainable grants.	The project directly aligns with one or more of the goals set by the committee.	The project is already scheduled to start or is in process.	The project promotes partnerships within the county.	The project protects the environment.		
Project		10	9	8	7	6	5	4	3	2	1	Total	StDev
COLUMBIANA (COUNTY)													
4.1.1	Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.				7	6	5	4	3	2		27	1.707825
4.3.1	Integrate site specific disaster mitigation issues into storm water planning initiatives, including efforts to eliminate combined sewer overflows (CSOs).	10	9					4	3	2	1	29	3.435921
4.5.1	Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.	10	9					4	3	2	1	29	3.435921
4.6.1	Purchase, elevate, or relocate structures currently located in floodplains.	10	9				5	4		2		30	3.03315
7.2.2	Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.	10	9	8	7		5	4		2		45	2.664965
7.2.5	Include safe rooms as part of all new public facility construction or major renovation projects (e.g., schools and other government buildings).		9	8				4				21	2.160247
8.2.1	Maintain a list of sites that could be used as emergency shelters or points of distribution (PODs) throughout Columbiana County.	10	9	8	7	6	5	4	3	2		54	2.581989
1.1.5	Share information provided by dam owners with jurisdictions downstream of high-hazard dams.					6	5	4	3	2	1	21	1.707825
1.1.6	Support rehabilitation projects, as and if necessary, at high-hazard dams.							4	3	2		9	0.816497
5.1.1	Conduct a commodity flow study to determine what materials are shipped through the county.	10	9			6	5	4				34	2.315167
2.1.2	Using a collaborative approach between preparedness partners (e.g., CCEMA, CCGHD), periodically push weather and other hazard preparedness information via social media outlets.	10	9	8	7	6		4	3	2		49	2.712817

		The project attempts to reduce the negative impacts of frequent hazards.	The project attempts to reduce the negative impacts of severe hazards.	The project aims to protect the most vulnerable populations.	The project addresses more than one hazard at once.	The project is easy to implement.	The project is easily paid for with local funds or attainable grants.	The project directly aligns with one or more of the goals set by the committee.	The project is already scheduled to start or is in process.	The project promotes partnerships within the county.	The project protects the environment.		
Project		10	9	8	7	6	5	4	3	2	1	Total	StDev
6.1.2	Encourage township offices to have a NOAA all-hazard radio to strengthen redundant notification and warning efforts.	10	9	8	7	6	5	4	3	2		54	2.581989
7.1.1	When received from the NWS, use the countywide mass notification system to push weather alerts to residents for all hazards (and particularly weather-related hazards). Ensure additional notification when watches ascend to warnings.	10	9	8	7	6	5	4	3	2		54	2.581989
COLUMBIANA (CITY)													
N/A													
EAST LIVERPOOL													
1B.1.1	Promote flood insurance educational materials via social media.	10	9	8		6	5	4	3			45	2.441144
1B.1.3	Establish a storm water department to maintain the city's storm sewer system.	10	9					4	3	2	1	29	3.435921
1B.1.4	Demolish blighted structures that could contribute to hazard risk.				7		5	4	3		1	20	2
SALEM													
1C.1.2	Coordinate with rail shippers using the line through the city as well as covered facilities in the city to share information about materials, risks, vulnerabilities, and response capabilities. Utilize this information to maintain a commodity flow study and an updated hazmat response plan for the city.	10	9			6	5	4		2		36	2.768875
1C.1.3	As and if conditions necessitate it, rehabilitate or upgrade the Salem Reservoir.							4		2	1	7	1.247219
EAST PALESTINE													
1D.1.2	Encourage residents to adhere to current floodplain regulations in effect.	10	9	8		6	5	4	3			45	2.441144

[illegible]

		The project attempts to reduce the negative impacts of frequent hazards.	The project attempts to reduce the negative impacts of severe hazards.	The project aims to protect the most vulnerable populations.	The project addresses more than one hazard at once.	The project is easy to implement.	The project is easily paid for with local funds or attainable grants.	The project directly aligns with one or more of the goals set by the committee.	The project is already scheduled to start or is in process.	The project promotes partnerships within the county.	The project protects the environment.		
Project		10	9	8	7	6	5	4	3	2	1	Total	StDev
SALINEVILLE													
1J.1.2	Address continued slippage in the village along Route 9.							4			1	5	1.5
1J.1.3	Maintain and, as necessary, upgrade the Salineville Reservoir Dam (which is physically located in Carroll County).							4		2	1	7	1.247219
SUMMITVILLE													
1K.1.1	Clean and maintain creeks and streams, clearing log jams, trees, and sediment bars that prevent water from flowing freely.	10	9			6		4		2	1	32	3.349959
1K.1.2	Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.	10	9	8	7	6	5	4	3	2		54	2.581989
WASHINGTONVILLE													
N/A													
WELLSVILLE													
1M.1.1	As and if conditions necessitate it, rehabilitate or upgrade the Wellsville Reservoir Dam.							4		2	1	7	1.247219
1M.1.2	Continue to collect a small amount from citizens for maintenance of the village's levee (e.g., mowing, cutting trees, etc.).			8		6	2	4	3		1	24	2.380476
1M.1.3	Upgrade pumps associated with the levee structure.			8				4		2	1	15	2.680951
1M.1.4	Coordinate with the county regarding the placement of a river gauge on the Ohio River.	10	9			6		4	3	2	1	35	3.207135

COLUMBIANA COUNTY HMP HAZARD FREQUENCY CALCULATIONS

Hazard	Occurrence	Years	Est. per Annum
Drought	4	20	0.2
Earthquake	0	50	0
Extreme Temperatures	11	11	1
Flooding	70	22	3.181818
Public Health Emergency	--	--	2.62
Severe Thunderstorm & Hail	422	51	8.27451
Severe Wind & Tornado	29	64	0.453125
Severe Winter Storm	29	20	1.45
Dam & Levee Failure	7	20	0.35
Hazmat Incident	399	10	39.9

COLUMBIANA COUNTY HMP HAZARD SEVERITY CALCULATIONS

Hazard	Response	Onset	Magnitude	Business	Human	Property	Total	St.Dev. (Tie
Drought	4	1	3	1	1	1	11	1.213352
Earthquake	2	4	1	1	1	1	10	1.105542
Extreme Temperatures	1	1	1	1	2	1	7	0.372678
Flooding	3	2	5	1	2	1	14	1.374369
Public Health Emergency	5	1	1	2	2	1	12	1.414214
Severe Thunderstorm & Hail	3	2	2	1	1	1	10	0.745356
Severe Wind & Tornado	3	4	1	2	3	1	14	1.105542
Severe Winter Storm	3	2	4	1	1	4	15	1.258306
Dam & Levee Failure	1	1	1	1	1	1	6	0
Hazmat Incident	2	4	1	1	2	1	11	1.067187

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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 Columbiana County.

COLUMBIANA COUNTY INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
HAZARD 1: FLOODING		
4.3.2	Participate in the Community Rating System (CRS) on a countywide basis to reduce flood insurance rates.	6 & 10, CRS Status update came from Soil & Water; Summitville does not participate in CRS.
4.1.3	Educate local officials on sources of information that can be used to monitor flooding, storm, and other weather information (i.e., IFLOWS, USGS gage data, etc.).	w/ EMA EMA currently has access to a river gauge in Mahoning County that affects Knox Twp. Can make it available to local officials.
4.4.1	Continue to offer funds and technical assistance to homeowners who need sump pumps or check valves installed near flood hazard areas and other areas experiencing flash flooding.	Chip – Yes/Health
4.3.3	Confirm status of repetitive loss structures and develop community-specific plan to flood-proof, relocate, or buyout to eliminate future risks.	On-going Every three years, the EMA evaluates bought-out properties to make sure they are still green space.
HAZARD 2: SEVERE WIND / TORNADO		
7.2.4	Perform an annual update of shelters and re-location facilities for at-risk residents.	EMA works with appropriate organizations to review and update MOUs for shelters annually.
7.1.2	Add additional tornado siren warning system capacity (need for 20 sirens). Update siren system to be used for warnings for all hazards.	Electronic notification system WENS Electronic notification installed The EMA also integrated IPAWS capabilities into the overall warning system.

COLUMBIANA COUNTY INACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
7.2.1	Coordinate with the State Building Inspector to annually assess county building codes to determine possible enhancements for reducing tornado risks that supplement Ohio Building Code requirements for commercial and apartments with four (4) or more dwellings.	Yes There is no Building Inspector! No building code The state building inspector does all commercial buildings and those with four or more units. Update "County" to "State." Add an inspector question to the capability survey because some municipalities do have inspection capabilities.
HAZARD 3: SEVERE WINTER STORM		
8.1.1	Coordinate with local private contractors and volunteers to develop mutual aid agreements for emergency snow removal.	✓ The county has MOUs for salt and de-icer with municipalities and townships.
8.2.2	Seek funding to purchase a generator for Columbiana County Career and Technical Center to support primary sheltering operations and health medical operations.	Good choice Completed Done
HAZARD 4: DAM FAILURE		
1.1.3	Coordinate with the ODNR, Dam Safety Engineering Program, to conduct regular safety inspections of existing dams in Columbiana County.	ODNR Inspectors
1.1.1	Coordinate with the Ohio Department of Natural Resources, Division of Soil & Water – Dam Safety Section, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Columbiana 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.	ODNR does this as part of its regular duties. When ODNR conducts inspections in Columbiana County, it notifies the EMA.
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.	Required If the dam is a Class 1 structure, the owner also does an inundation study.
1.1.5	Work with Class I dam owners to develop Emergency Action Plans, to include a detailed assessment of the vulnerability of structures and critical facilities near the hydrological shadow of the dams.	ODNR This has been more of a focus for ODNR in the past few years, and ODNR has a review and approval process. ODNR shares EAPs with the EMA.
1.1.4	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).	EMA? Completed – WENS.

COLUMBIANA COUNTY INACTIVE MITIGATION PROJECTS		
Project Number	Mitigation Project	Status
HAZARD 5: HAZARDOUS MATERIALS INCIDENT		
5.3.3	Provide awareness of, training on, and implementation of radiological emergency procedures to include both primary and secondary Emergency Planning Zones as appropriate in case of an incident at the Beaver Valley Nuclear Power Plant.	Annually occurs – one-year hospital drills & opposite year EMA response drills – FEMA graded Yearly project
5.3.1	Develop and exercise site emergency plans and community response plans as required under SARA Title III for fixed and transportation-related hazmat incidents.	The LEPC conducts a transportation-based exercise annually.
5.3.2	Train, equip, and prepare covered facilities and local hazardous material emergency response teams.	CERT team verified in Columbiana County On-going; & updated training equipment There are hazmat teams that serve Columbiana County that address this item (i.e., <u>not</u> CERT teams). Significantly, there is cross-state collaboration with northern Hancock County (WV) responders.
5.2.1	Consider installing Dynamic Message Boards on major roadways that displays information concerning transportation-related hazmat incidents to motorists.	ODOT has installed boards.
HAZARD 6: DROUGHT		
2.1.1	Develop an informational brochure to distribute to local farmers and residents (i.e., provide information at county fairs or on a web site). Update and continue use of educational displays that illustrate natural hazards that the county is susceptible to at special events.	The EMA has general information that is made available to the public. Additionally, the health department pushes this type of information via its social media platforms.
2.2.1	Seek funding to purchase backup generators to ensure adequate water supply capacities.	Yes
2.2.2	Encourage various water distribution systems to install system interconnects so as to assist each other with water supply during times of drought.	The health department has a plumbing inspector that does much of this work.
HAZARD 7: SEVERE THUNDERSTORM / HAIL / LIGHTNING		
6.1.1	Coordinate with the National Weather Service (NWS) to warn residents of impending severe thunderstorm conditions. Educate county and local governmental officials on the need to update information regarding non-site-specific natural hazards.	NECO Region 5 (13 county area) sends NWS emails to health departments – post on Facebook page
6.1.3	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.	EMA does this already
6.2.3	Ensure that surge protection, such as surge protectors and grounding (GFCI outlets), has been installed on all critical electronic equipment owned by county government.	The committee opted to delete this project since it is a standard practice in construction/upgrades.

COLUMBIANA COUNTY INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
6.2.2	Encourage residents and businesses to install window shutters, laminated glass in window panes, and hail-resistant roof shingles to minimize damage to public and private structures.	Include in outreach materials.
6.2.1	Consider burying utility lines during new construction or trimming and maintaining trees to prevent limb breakage to safeguard nearby utility lines.	Refer to the building inspector conversation from above.
HAZARD 10: MISCELLANEOUS HAZARDS		
10.3.1	Develop additional training and update resource materials for completing damage estimates pursuant to Federal Disaster Declarations.	CERT team trained in damage assessment
10.4.1	Coordinate with those communities in the county that lack zoning to determine if zoning or other approaches may be useful to reducing natural hazards risks unique to them.	The committee elected to delete this project because zoning is a difficult conversation at the county level. Further, several municipalities have zoning that can support mitigation. The committee also left the building inspection/codes strategies in the plan.

CITY OF COLUMBIANA INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1A.1.1	Participate in the Community Rating System (CRS).	DEFERRED The city opted to defer this project until a later date. Its current priority focus is addressing flooding via storm sewer improvements.
N/A	Construct a new fire station in the southern portion of the city to support operations in all areas of town if a train stalls on the tracks splitting the city.	COMPLETED The city used levy funds to construct a new station in 2017.

CITY OF EAST LIVERPOOL INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1B.1.2	Consider conducting acquisition and relocation projects in East Liverpool.	DEFERRED The city prefers to educate residents on the benefits of flood insurance, and it currently has no plans to undertake acquisition or relocation projects. The project is

		valid, so the city listed it as "deferred" to take advantage of future opportunities to make it active should funding be available.
N/A	Upgrade flood and other hazard notification capabilities via Nixle.	COMPLETED Per the city's fire chief, East Liverpool recently launched the Nixle system in the city.

CITY OF SALEM INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1.C.1.1	Coordinate with property owners to decrease the amount of impermeable ground coverage in upland drainage areas to allow more water to be absorbed into the ground.	DEFERRED City officials deferred this project because the city did not suffer significant impacts in the recent Presidentially-declared flooding disasters. Deferring this project enables the city to focus on a more acute risk (i.e., hazardous material incidents via rail).

VILLAGE OF HANOVERTON INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1E.1.1	Consider constructing snow fences or planting rows of trees to serve as living snow fences to limit blowing and drifting snow over critical roadways.	DELETED The village deleted this project as part of the 2019 update. Village officials elected to replace it with a project that would have more applicable to a wider range of hazards.

VILLAGE OF LEETONIA INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1F.1.1	Improve the design, routing, and traffic control at problem roadway areas.	DELETED The village deleted this project as part of the 2019 update. Village officials replaced it with a project that addresses more acute risk concerns (i.e., flooding).

VILLAGE OF LISBON INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1G.1.2	Monitor water levels with stream gauges and/or trained monitors.	DELETED The village deleted this project during the 2019 update. The project has proven unfeasible due to cost constraints.

VILLAGE OF NEW WATERFORD INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1H.1.1	Consider elevating critical flood-prone structures above the 100-year flood level, and/or conducting acquisition/relocation projects where and as needed.	DEFERRED The village deferred this project due to lack of regular available funding. Deferring the project allows village officials to focus on projects that address more acute risk concerns.

VILLAGE OF SALINEVILLE INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1J.1.1	Coordinate with the railroad company to periodically inspect and improve designs at problem railway/roadway intersections.	DELETED The village deleted this project to focus on higher-priority hazards.

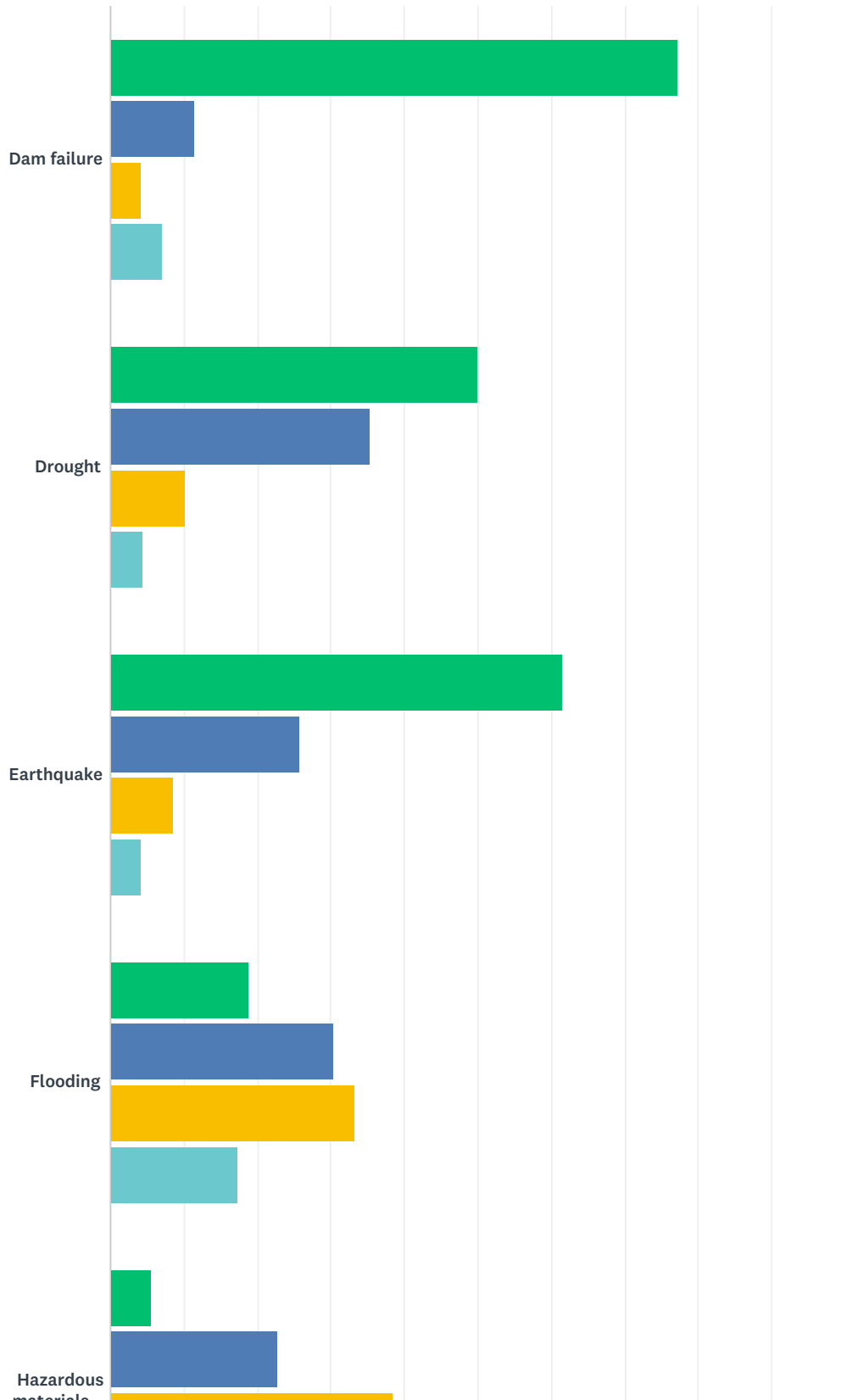
VILLAGE OF WASHINGTONVILLE INACTIVE MITIGATION PROJECTS		
<i>Project Number</i>	<i>Mitigation Project</i>	<i>Status</i>
1L.1.1	Encourage businesses and residents to utilize safe interior designs and furniture arrangements (i.e., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders).	DELETED The village deleted this project to focus on hazards more commonly thought to impact the village's residents.

APPENDIX 4: PUBLIC SURVEY, RAW DATA

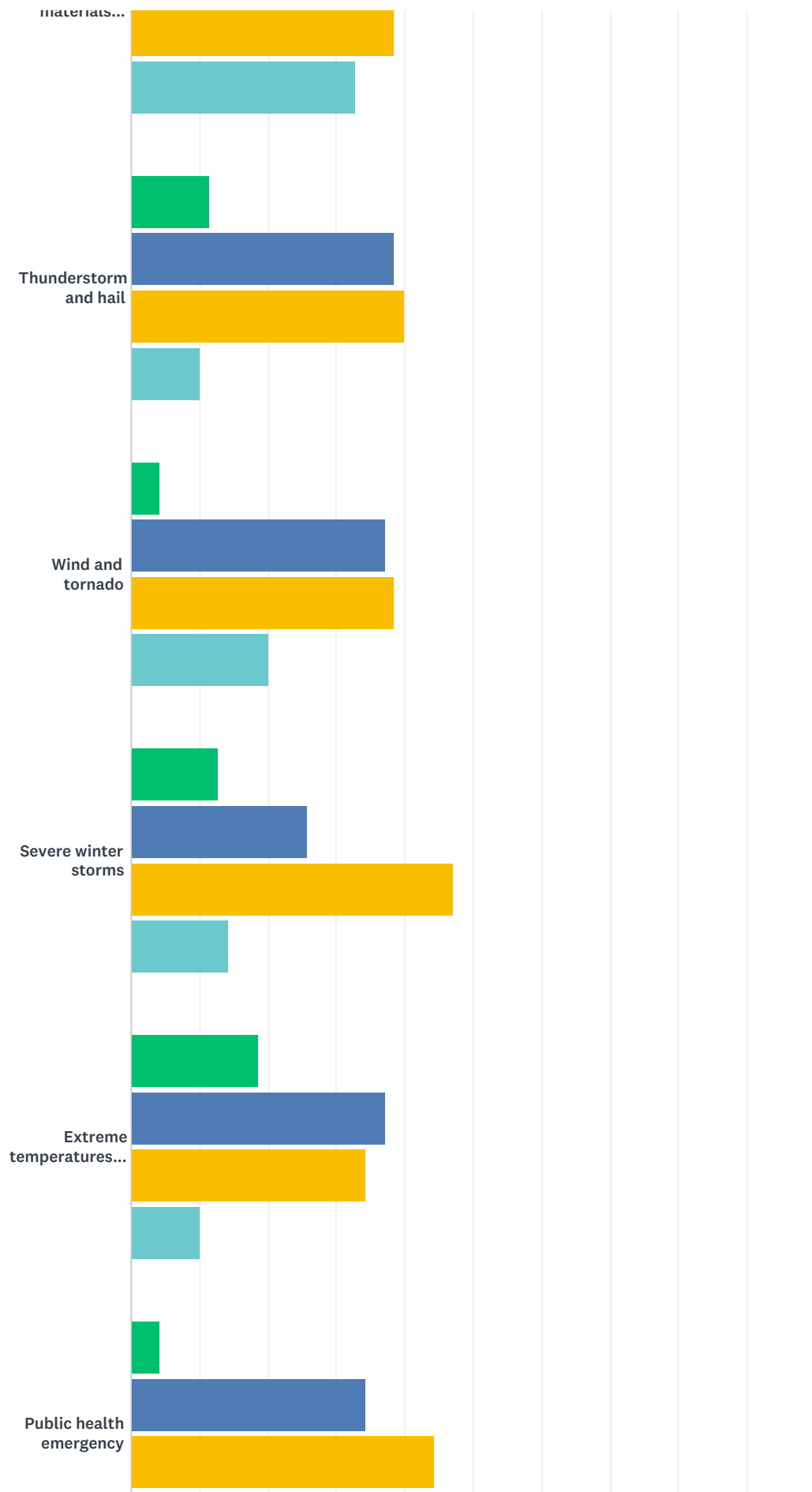
The appendix contains a summary of the raw data from the online survey distributed as part of this project. It also contains a blank copy of the mini-survey distributed at the Sky Warn training and a summary of the mini-survey results.

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

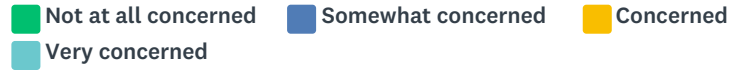
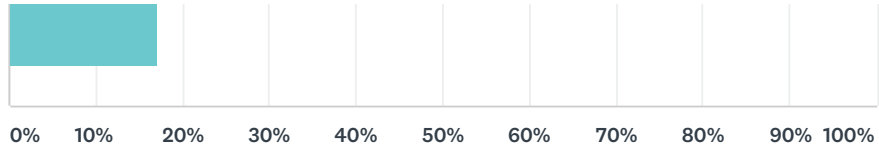
Answered: 70 Skipped: 0



Columbiana County Hazard Mitigation Survey



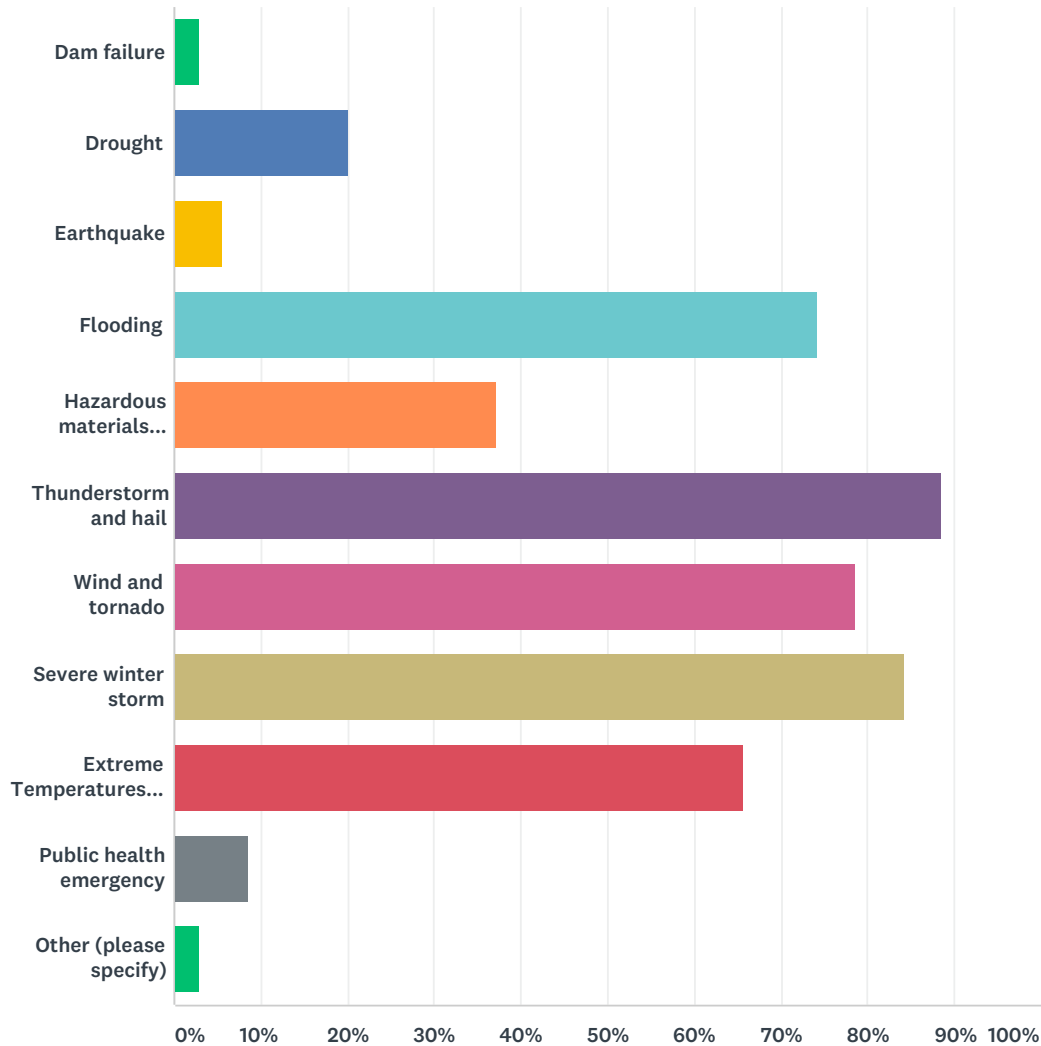
Columbiana County Hazard Mitigation Survey



	NOT AT ALL CONCERNED	SOMEWHAT CONCERNED	CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Dam failure	77.14% 54	11.43% 8	4.29% 3	7.14% 5	70	1.41
Drought	50.00% 34	35.29% 24	10.29% 7	4.41% 3	68	1.69
Earthquake	61.43% 43	25.71% 18	8.57% 6	4.29% 3	70	1.56
Flooding	18.84% 13	30.43% 21	33.33% 23	17.39% 12	69	2.49
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	5.71% 4	22.86% 16	38.57% 27	32.86% 23	70	2.99
Thunderstorm and hail	11.43% 8	38.57% 27	40.00% 28	10.00% 7	70	2.49
Wind and tornado	4.29% 3	37.14% 26	38.57% 27	20.00% 14	70	2.74
Severe winter storms	12.86% 9	25.71% 18	47.14% 33	14.29% 10	70	2.63
Extreme temperatures (hot & cold)	18.57% 13	37.14% 26	34.29% 24	10.00% 7	70	2.36
Public health emergency	4.29% 3	34.29% 24	44.29% 31	17.14% 12	70	2.74

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

Answered: 70 Skipped: 0



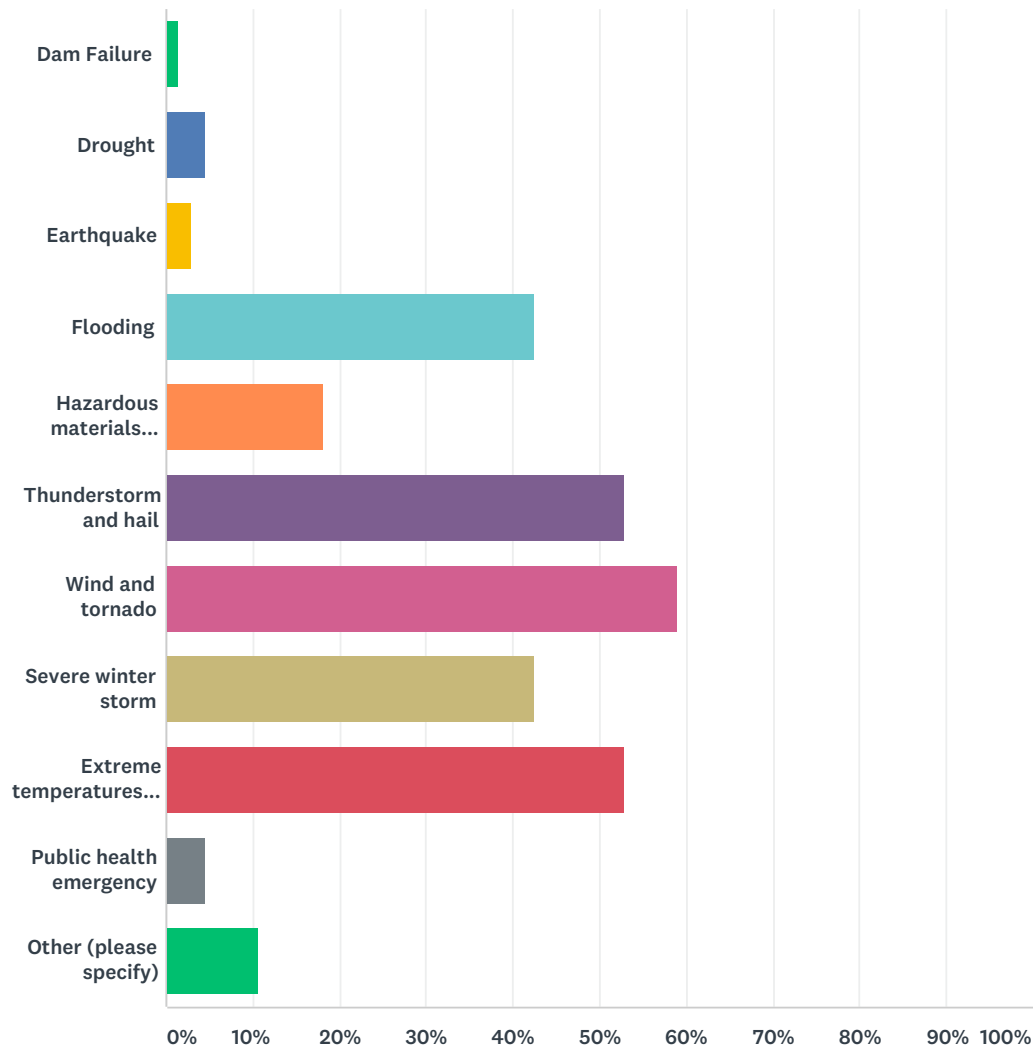
ANSWER CHOICES	RESPONSES	
Dam failure	2.86%	2
Drought	20.00%	14
Earthquake	5.71%	4
Flooding	74.29%	52
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	37.14%	26
Thunderstorm and hail	88.57%	62
Wind and tornado	78.57%	55
Severe winter storm	84.29%	59
Extreme Temperatures (hot & cold)	65.71%	46

Columbiana County Hazard Mitigation Survey

Public health emergency	8.57%	6
Other (please specify)	2.86%	2
Total Respondents: 70		

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

Answered: 66 Skipped: 4



ANSWER CHOICES	RESPONSES	
Dam Failure	1.52%	1
Drought	4.55%	3
Earthquake	3.03%	2
Flooding	42.42%	28
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	18.18%	12
Thunderstorm and hail	53.03%	35
Wind and tornado	59.09%	39
Severe winter storm	42.42%	28
Extreme temperatures (hot & cold)	53.03%	35

Columbiana County Hazard Mitigation Survey

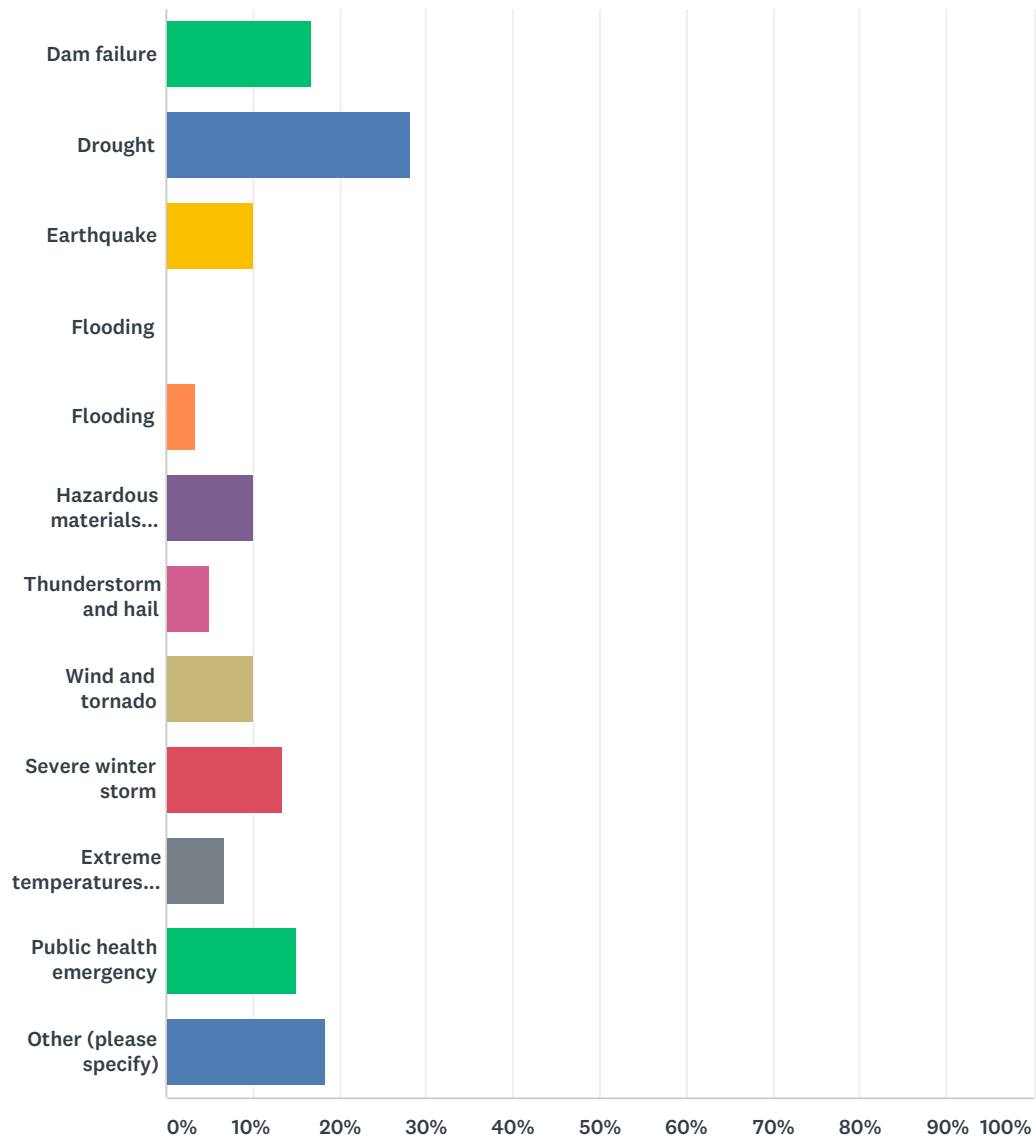
Public health emergency	4.55%	3
Other (please specify)	10.61%	7
Total Respondents: 66		

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

Answered: 21 Skipped: 49

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

Answered: 60 Skipped: 10



ANSWER CHOICES	RESPONSES	
Dam failure	16.67%	10
Drought	28.33%	17
Earthquake	10.00%	6
Flooding	0.00%	0
Flooding	3.33%	2
Hazardous materials (transportation-based, pipelines, nuclear power plant, chemical facilities)	10.00%	6
Thunderstorm and hail	5.00%	3

Columbiana County Hazard Mitigation Survey

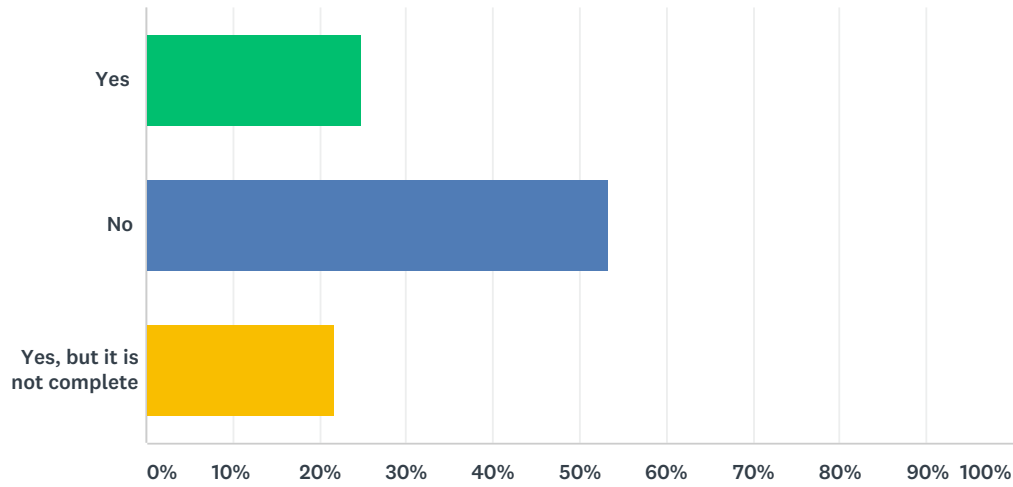
Wind and tornado	10.00%	6
Severe winter storm	13.33%	8
Extreme temperatures (hot & cold)	6.67%	4
Public health emergency	15.00%	9
Other (please specify)	18.33%	11
Total Respondents: 60		

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

Answered: 16 Skipped: 54

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

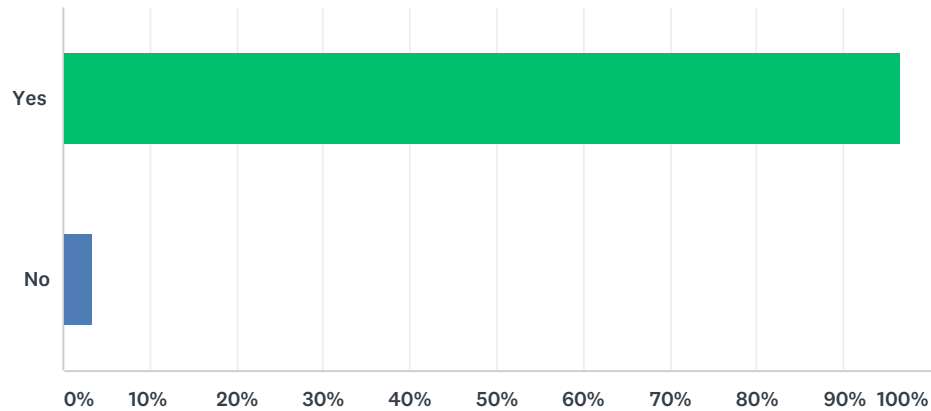
Answered: 60 Skipped: 10



ANSWER CHOICES	RESPONSES	
Yes	25.00%	15
No	53.33%	32
Yes, but it is not complete	21.67%	13
TOTAL		60

Q8 Do you have homeowner or renter's insurance?

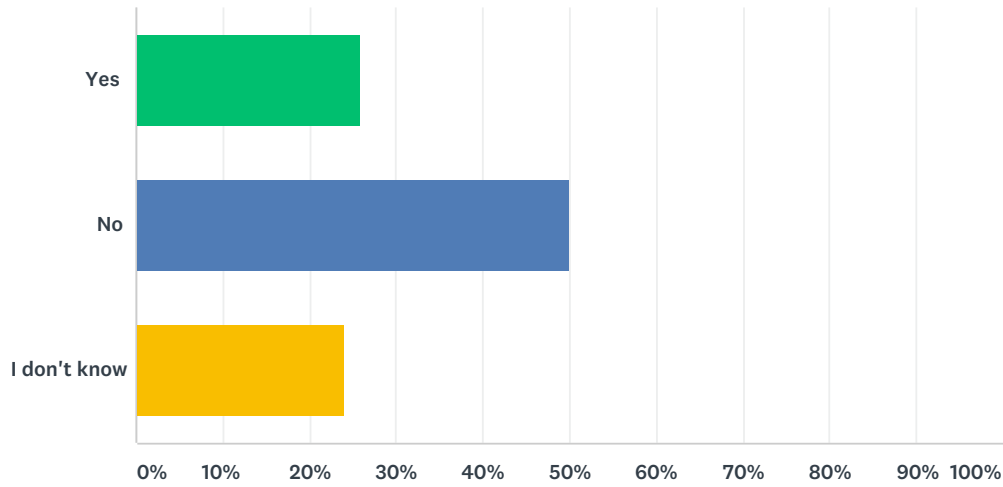
Answered: 60 Skipped: 10



ANSWER CHOICES		RESPONSES	
Yes		96.67%	58
No		3.33%	2
TOTAL			60

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

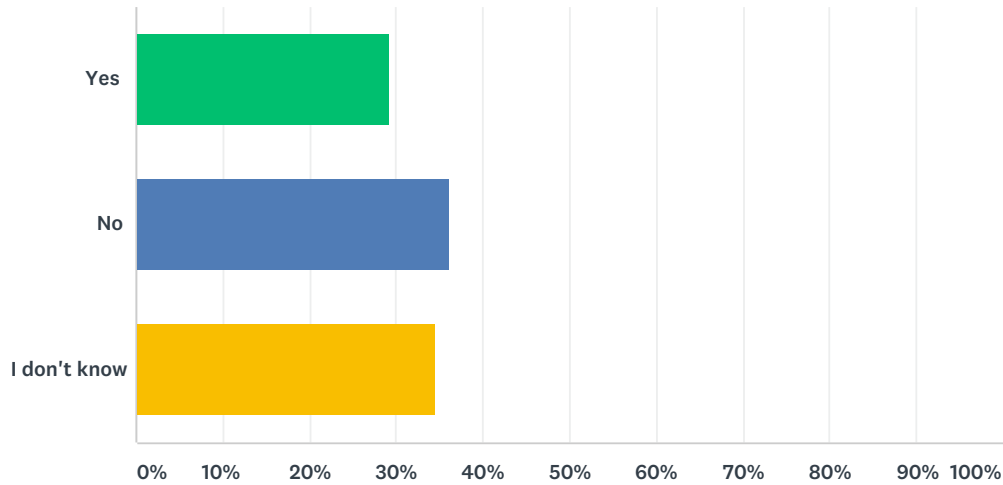
Answered: 58 Skipped: 12



ANSWER CHOICES	RESPONSES	
Yes	25.86%	15
No	50.00%	29
I don't know	24.14%	14
TOTAL		58

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

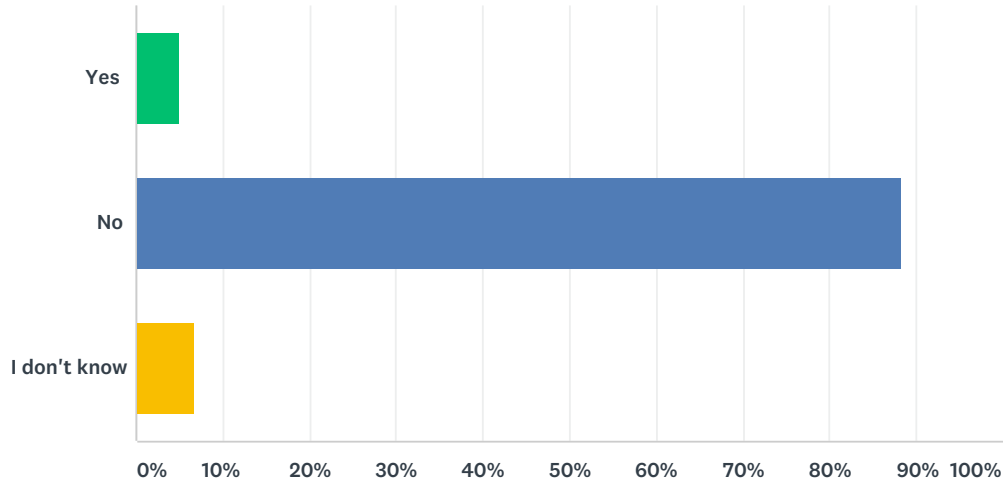
Answered: 58 Skipped: 12



ANSWER CHOICES	RESPONSES	
Yes	29.31%	17
No	36.21%	21
I don't know	34.48%	20
TOTAL		58

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

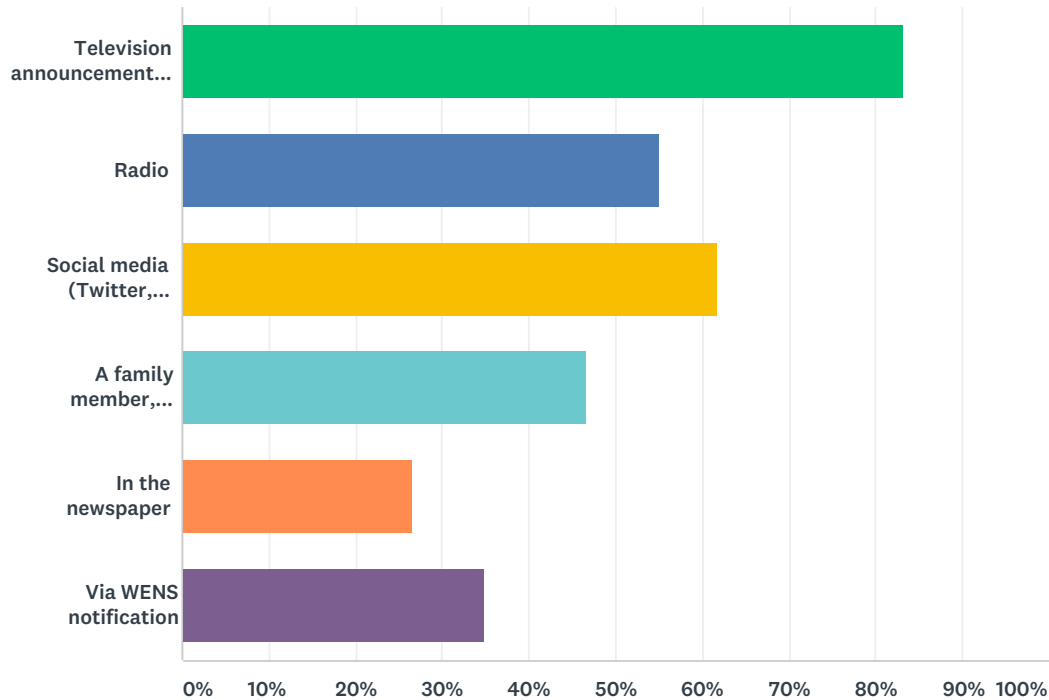
Answered: 60 Skipped: 10



ANSWER CHOICES	RESPONSES	
Yes	5.00%	3
No	88.33%	53
I don't know	6.67%	4
TOTAL		60

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

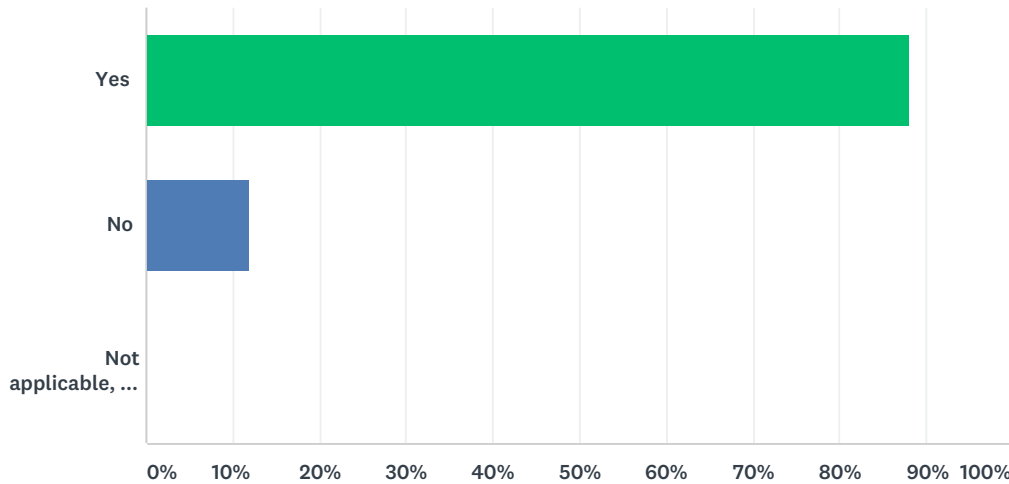
Answered: 60 Skipped: 10



ANSWER CHOICES	RESPONSES	
Television announcements or the news	83.33%	50
Radio	55.00%	33
Social media (Twitter, Facebook, etc.)	61.67%	37
A family member, neighbor, friend, or acquaintance	46.67%	28
In the newspaper	26.67%	16
Via WENS notification	35.00%	21
Total Respondents: 60		

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

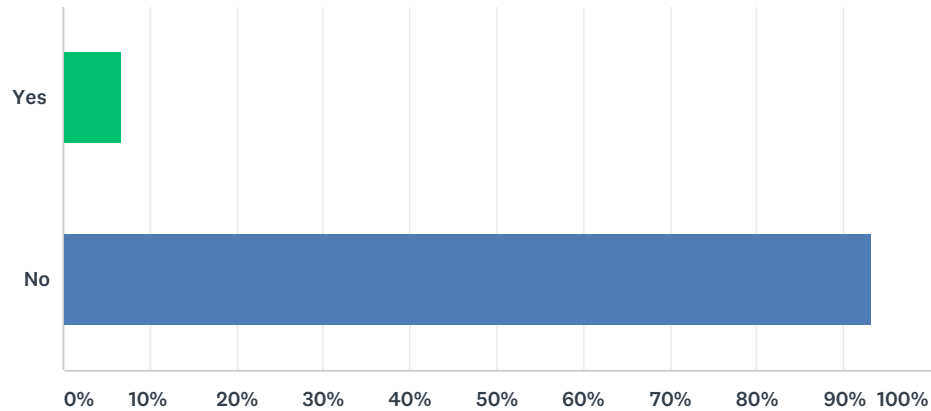
Answered: 59 Skipped: 11



ANSWER CHOICES	RESPONSES	
Yes	88.14%	52
No	11.86%	7
Not applicable, I do not receive notifications	0.00%	0
TOTAL		59

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

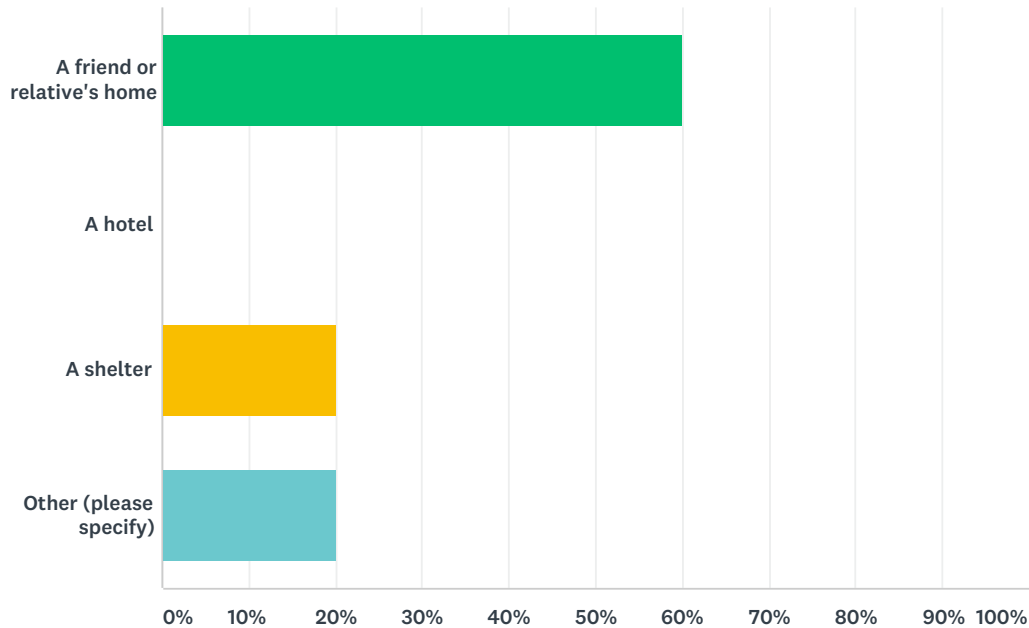
Answered: 59 Skipped: 11



ANSWER CHOICES	RESPONSES	
Yes	6.78%	4
No	93.22%	55
TOTAL		59

Q15 To where did you evacuate?

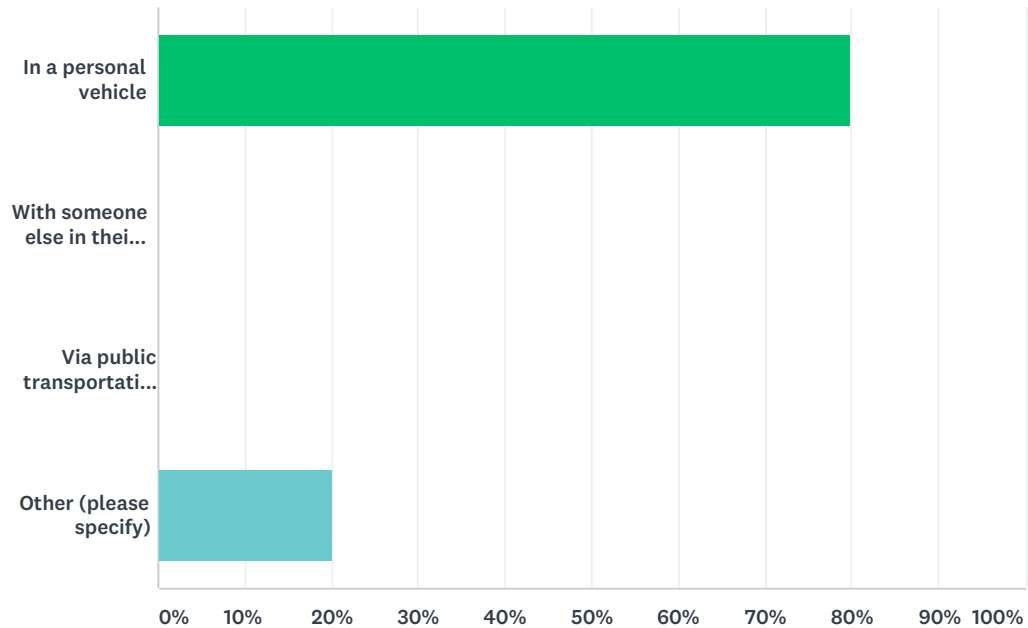
Answered: 5 Skipped: 65



ANSWER CHOICES	RESPONSES	
A friend or relative's home	60.00%	3
A hotel	0.00%	0
A shelter	20.00%	1
Other (please specify)	20.00%	1
TOTAL		5

Q16 How did you evacuate?

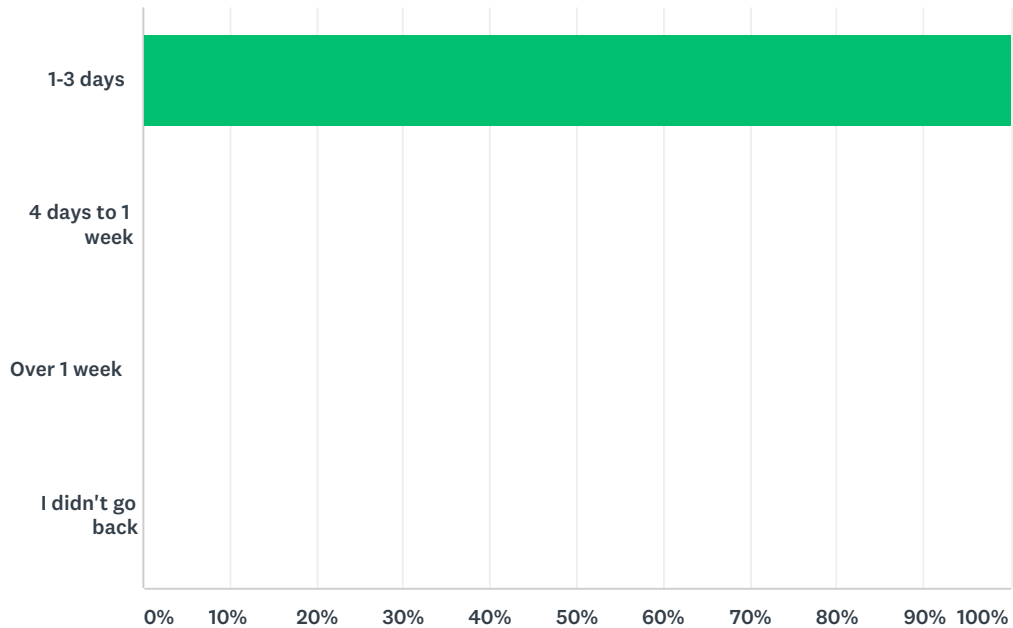
Answered: 5 Skipped: 65



ANSWER CHOICES	RESPONSES	
In a personal vehicle	80.00%	4
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)	20.00%	1
TOTAL		5

Q17 How long were you away from home?

Answered: 5 Skipped: 65



ANSWER CHOICES	RESPONSES	
1-3 days	100.00%	5
4 days to 1 week	0.00%	0
Over 1 week	0.00%	0
I didn't go back	0.00%	0
TOTAL		5

Q18 Please indicate the reason you did not evacuate

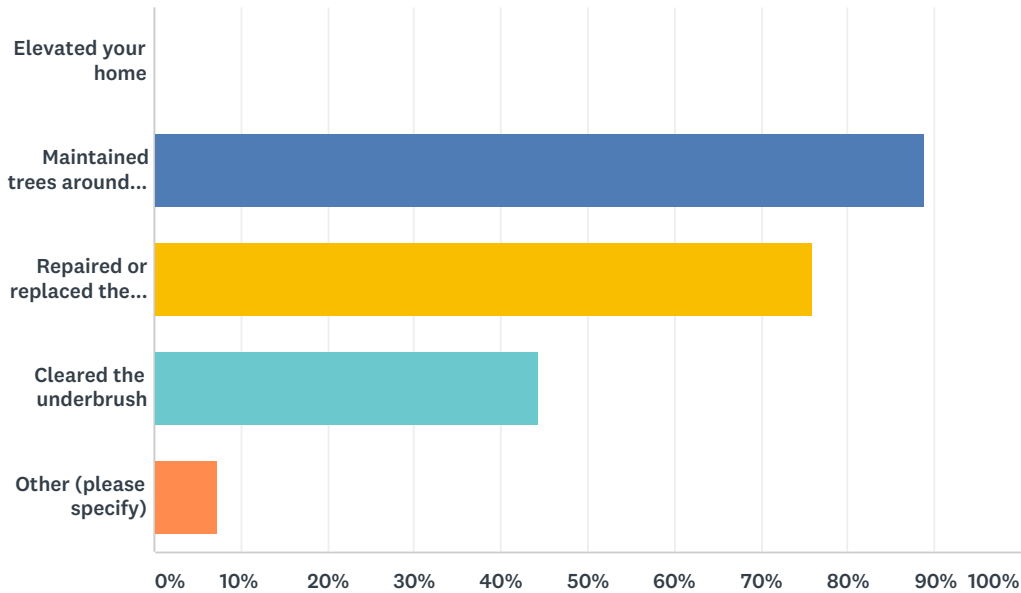
Answered: 0 Skipped: 70

 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)

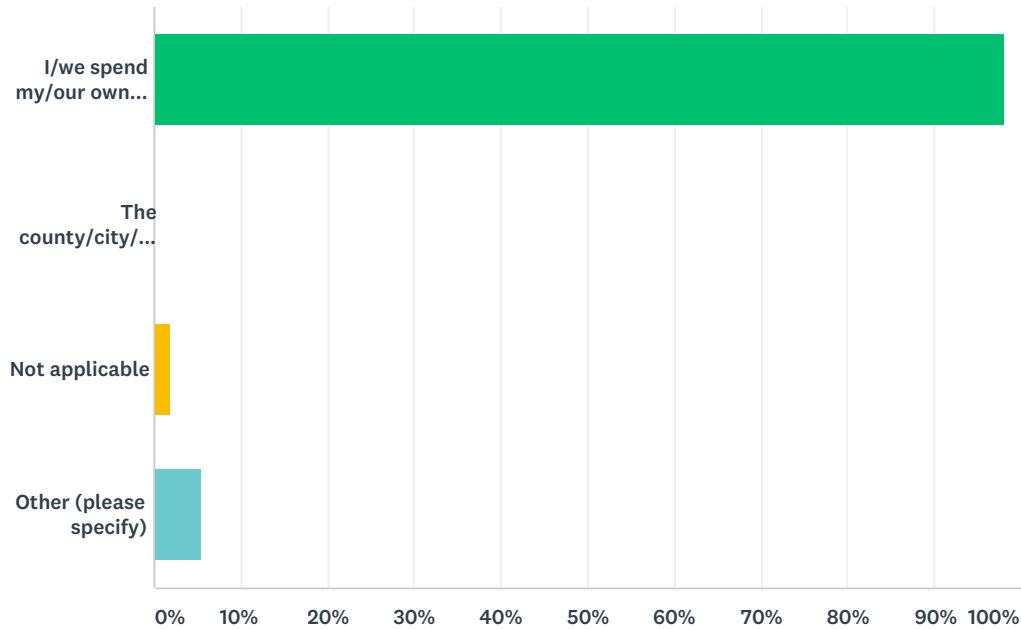
Answered: 54 Skipped: 16



ANSWER CHOICES	RESPONSES	
Elevated your home	0.00%	0
Maintained trees around the house or removed problematic trees	88.89%	48
Repaired or replaced the roof	75.93%	41
Cleared the underbrush	44.44%	24
Other (please specify)	7.41%	4
Total Respondents: 54		

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

Answered: 55 Skipped: 15

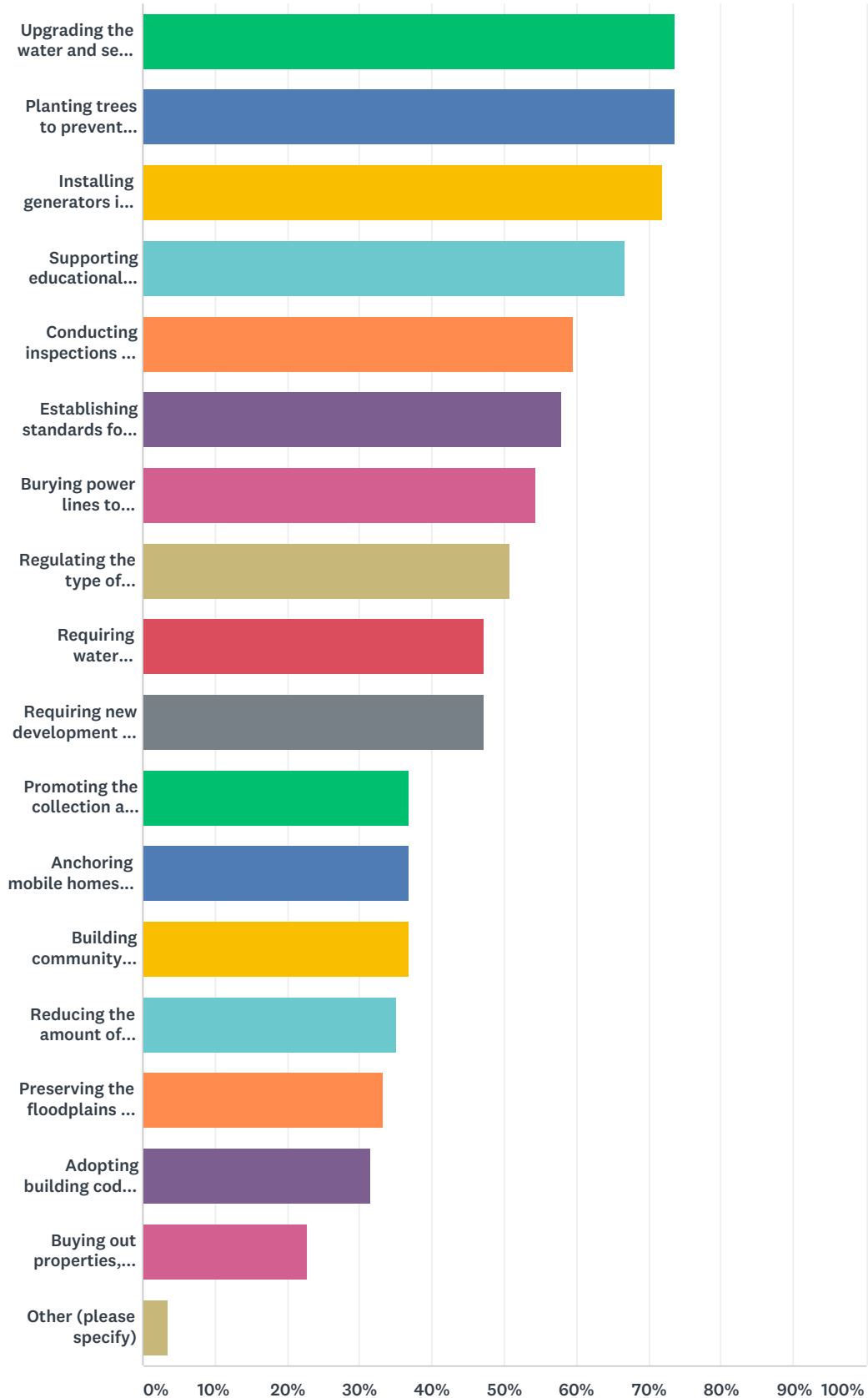


ANSWER CHOICES	RESPONSES	
I/we spend my/our own money	98.18%	54
The county/city/village paid for it	0.00%	0
Not applicable	1.82%	1
Other (please specify)	5.45%	3
Total Respondents: 55		

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

Answered: 57 Skipped: 13

Columbiana County Hazard Mitigation Survey



ANSWER CHOICES

Upgrading the water and sewer systems

RESPONSES

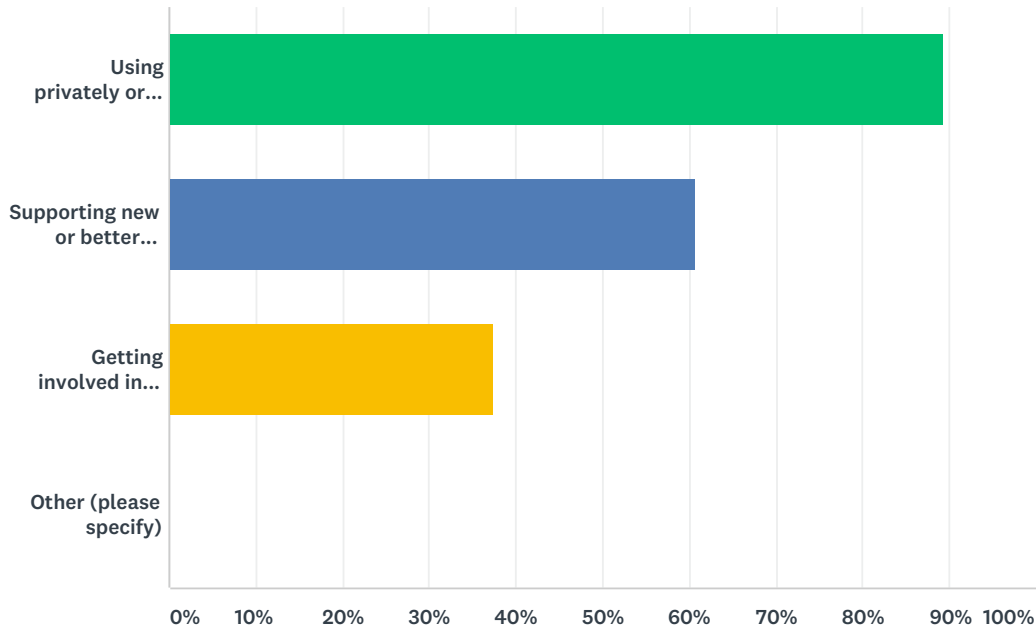
73.68% 42

Columbiana County Hazard Mitigation Survey

Planting trees to prevent erosion and promote cooler micro-climates	73.68%	42
Installing generators in critical facilities such as hospitals, police stations, fire stations, etc.	71.93%	41
Supporting educational campaigns aimed at preparing the population for a variety of hazards	66.67%	38
Conducting inspections of new construction and enforcing existing building codes	59.65%	34
Establishing standards for all utilities regarding tree pruning around lines	57.89%	33
Burying power lines to provide uninterrupted power during severe weather	54.39%	31
Regulating the type of development that is permitted in areas that are dangerous due to hazards	50.88%	29
Requiring water conservation during drought conditions	47.37%	27
Requiring new development to construct on-site retention basins for excessive stormwater runoff and as a firefighting water source	47.37%	27
Promoting the collection and reuse of rainwater such as in rain gardens and green roofs	36.84%	21
Anchoring mobile homes and roof-mounted and ground equipment	36.84%	21
Building community shelters for tornadoes and severe weather events	36.84%	21
Reducing the amount of surface pavement to reduce flooding and the heat island effect	35.09%	20
Preserving the floodplains as open space	33.33%	19
Adopting building codes that go above and beyond the basic requirements of construction	31.58%	18
Buying out properties, relocating homes, or elevating structures that are prone to repetitive flooding	22.81%	13
Other (please specify)	3.51%	2
Total Respondents: 57		

Q22 Please indicate how you would support mitigation projects such as the ones listed previously (check all that apply)

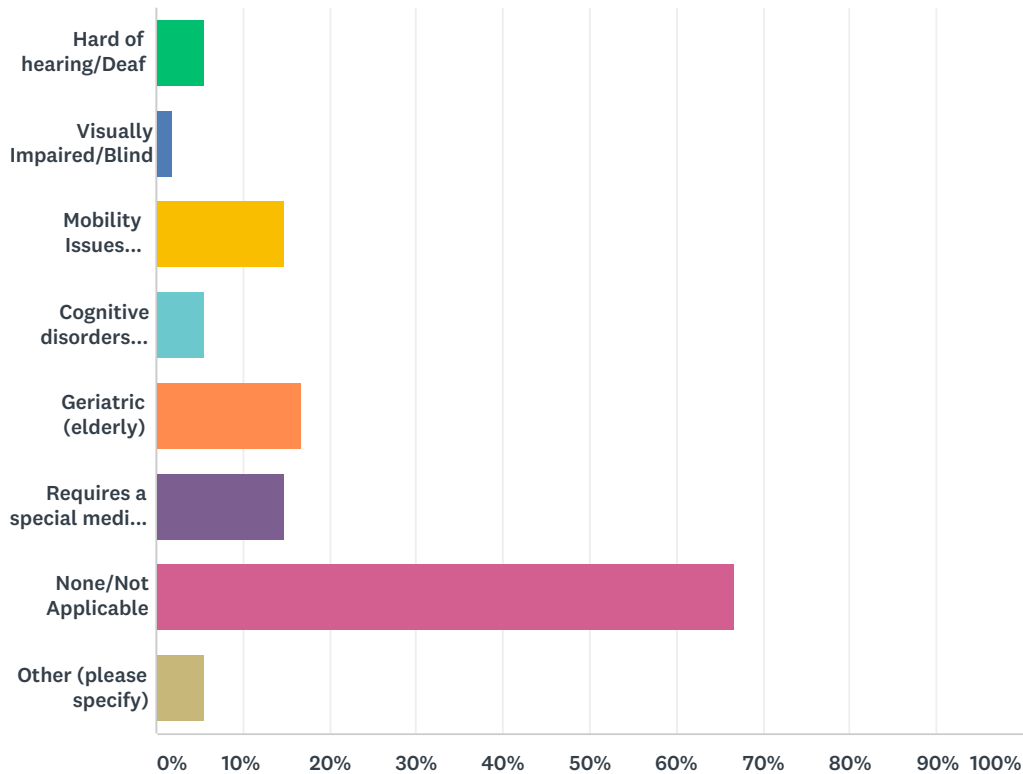
Answered: 56 Skipped: 14



ANSWER CHOICES	RESPONSES	
Using privately or publicly-funded grants	89.29%	50
Supporting new or better regulations	60.71%	34
Getting involved in education	37.50%	21
Other (please specify)	0.00%	0
Total Respondents: 56		

Q23 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)

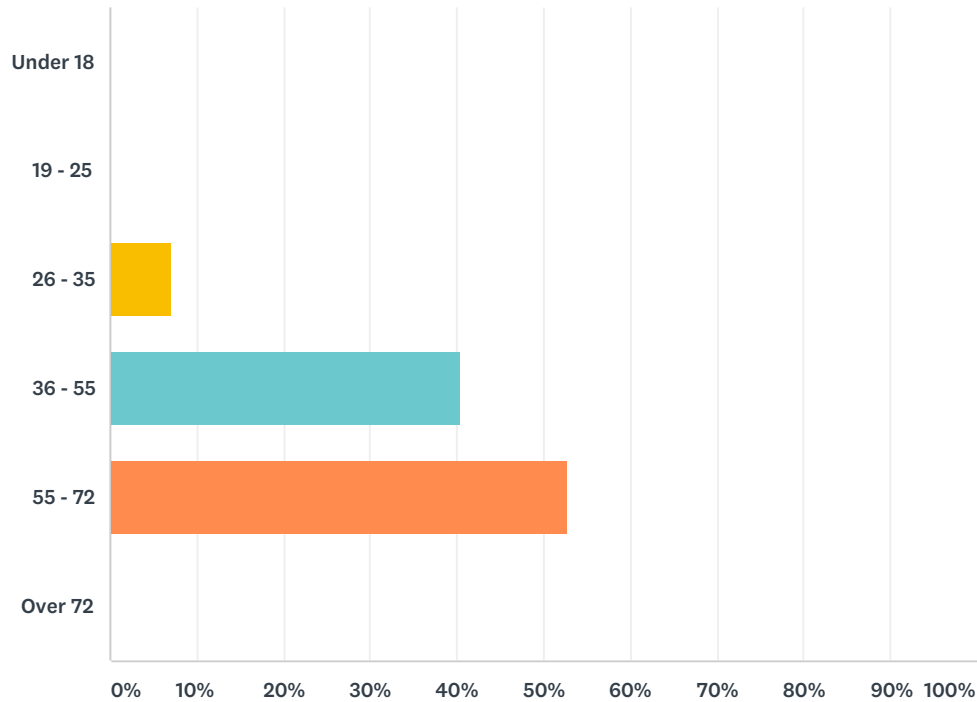
Answered: 54 Skipped: 16



ANSWER CHOICES	RESPONSES	
Hard of hearing/Deaf	5.56%	3
Visually Impaired/Blind	1.85%	1
Mobility Issues (non-ambulatory, confined to a wheelchair, requires the use of a can or walker)	14.81%	8
Cognitive disorders (includes autism, depression, etc.)	5.56%	3
Geriatric (elderly)	16.67%	9
Requires a special medical device (such as a Ventilator, CPAP machine, or drugs that require refrigeration [I.E. insulin])	14.81%	8
None/Not Applicable	66.67%	36
Other (please specify)	5.56%	3
Total Respondents: 54		

Q24 Please provide your age

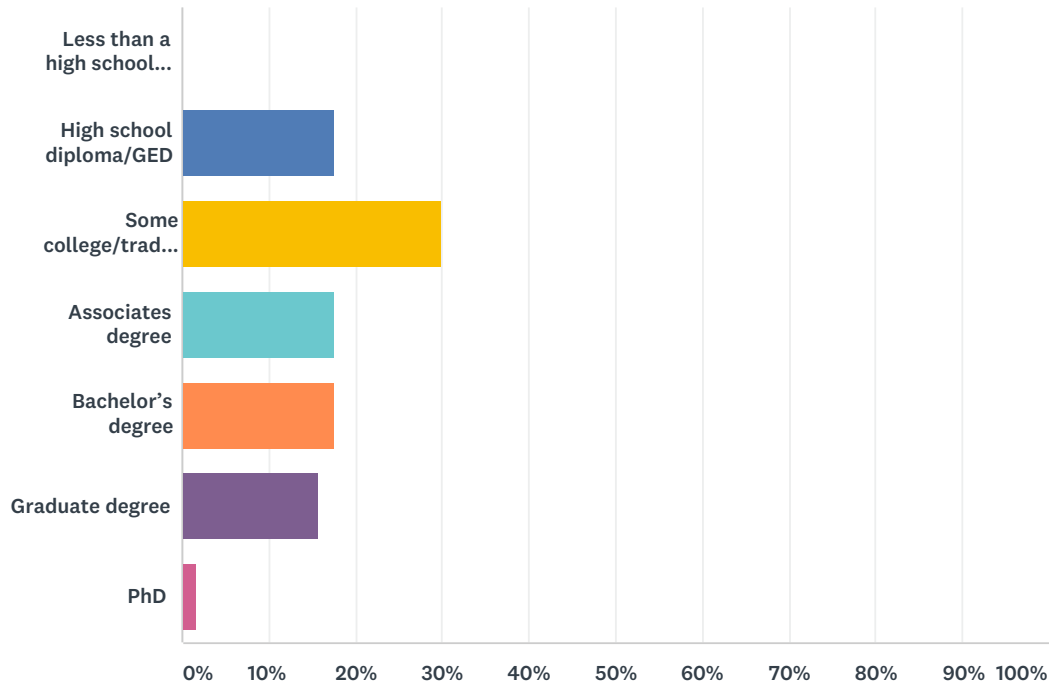
Answered: 57 Skipped: 13



ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
19 - 25	0.00%	0
26 - 35	7.02%	4
36 - 55	40.35%	23
55 - 72	52.63%	30
Over 72	0.00%	0
TOTAL		57

Q25 Please indicate your level of education

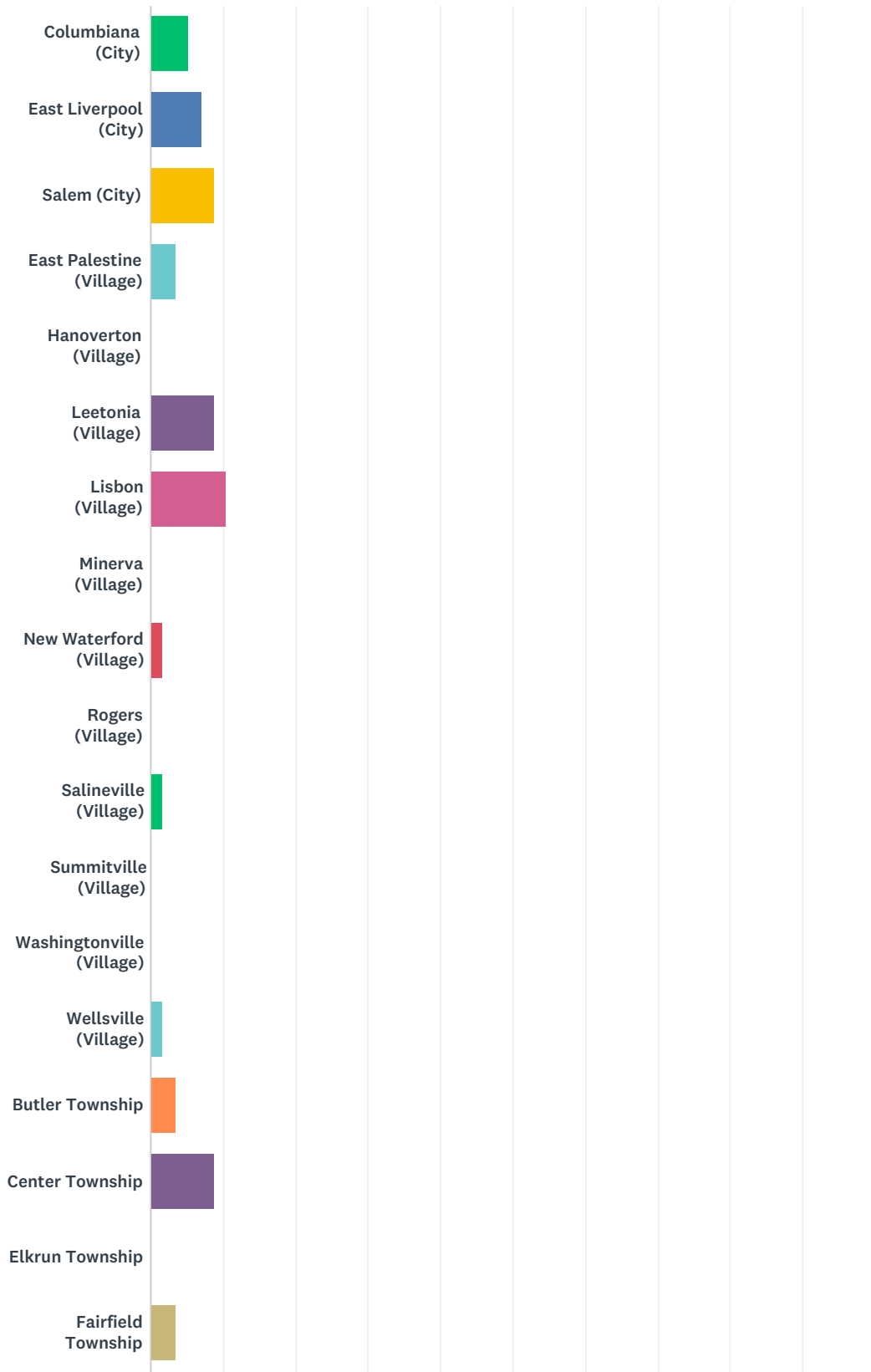
Answered: 57 Skipped: 13



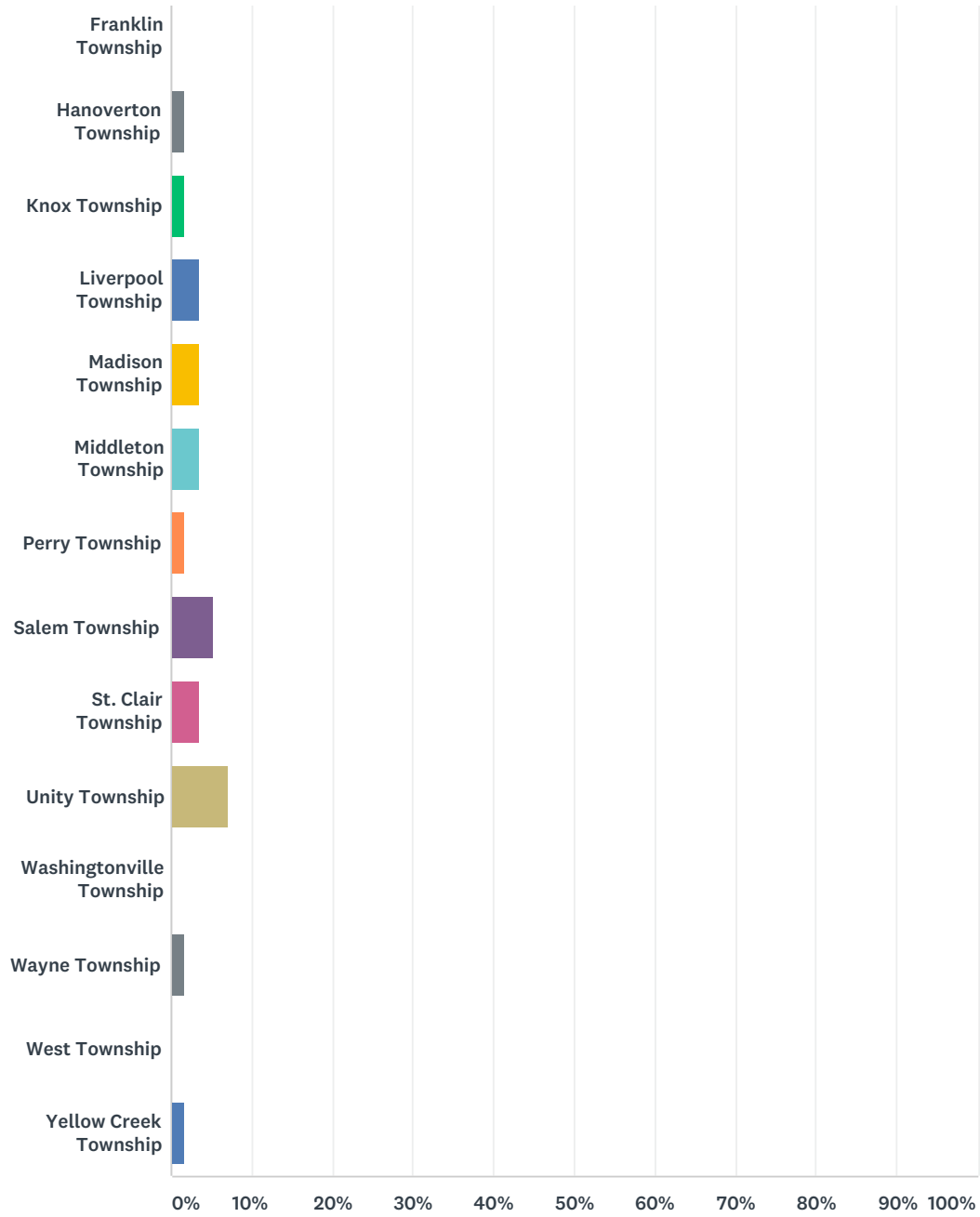
ANSWER CHOICES	RESPONSES	
Less than a high school diploma	0.00%	0
High school diploma/GED	17.54%	10
Some college/trade school	29.82%	17
Associates degree	17.54%	10
Bachelor's degree	17.54%	10
Graduate degree	15.79%	9
PhD	1.75%	1
TOTAL		57

Q26 In which community do you live (or work, if you do not live in Columbiana County)?

Answered: 57 Skipped: 13



Columbiana County Hazard Mitigation Survey



ANSWER CHOICES	RESPONSES	
Columbiana (City)	5.26%	3
East Liverpool (City)	7.02%	4
Salem (City)	8.77%	5
East Palestine (Village)	3.51%	2
Hanoverton (Village)	0.00%	0
Leetonia (Village)	8.77%	5
Lisbon (Village)	10.53%	6
Minerva (Village)	0.00%	0

Columbiana County Hazard Mitigation Survey

New Waterford (Village)	1.75%	1
Rogers (Village)	0.00%	0
Salineville (Village)	1.75%	1
Summitville (Village)	0.00%	0
Washingtonville (Village)	0.00%	0
Wellsville (Village)	1.75%	1
Butler Township	3.51%	2
Center Township	8.77%	5
Elkrun Township	0.00%	0
Fairfield Township	3.51%	2
Franklin Township	0.00%	0
Hanoverton Township	1.75%	1
Knox Township	1.75%	1
Liverpool Township	3.51%	2
Madison Township	3.51%	2
Middleton Township	3.51%	2
Perry Township	1.75%	1
Salem Township	5.26%	3
St. Clair Township	3.51%	2
Unity Township	7.02%	4
Washingtonville Township	0.00%	0
Wayne Township	1.75%	1
West Township	0.00%	0
Yellow Creek Township	1.75%	1
TOTAL		57

Q27 Please write any comments here.

Answered: 0 Skipped: 70

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019

Mitigation is any action you or your community takes to reduce the negative impacts of hazards such as weather, hazardous materials, and floods.

1. Do you live or work in Columbiana County? ☐ Yes ☐ No

2. What is the name of your city/village/town?

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? know

☐ Yes ☐ No ☐ I don't know

6. If you have homeowner's or renter's insurance, does it include flood insurance?

☐ Yes ☐ No ☐ I don't know ☐ I don't have insurance

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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☐ Yes ☐ No ☐ I don't know ☐ I don't have insurance

7. What mitigation efforts would you support in your community?
Check all that apply.

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- ☐ Supporting educational campaigns aimed at preparing the population for a variety of hazards

HAZARDS LIST

Dam Failure
Drought
Earthquake
Flood
Hazardous Materials (includes Radiological)
Severe Thunderstorm / Hail
Severe Wind / Tornado
Severe Winter Storm
Temperature Extreme (Heat and Cold)
Public Health Emergencies

THANK YOU!

HAZARDS LIST

Dam Failure
Drought
Earthquake
Flood
Hazardous Materials (includes Radiological)
Severe Thunderstorm / Hail
Severe Wind / Tornado
Severe Winter Storm
Temperature Extreme (Heat and Cold)
Public Health Emergencies

THANK YOU!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2019 MINI-SURVEY

Total Surveys: 67

		Quantity	% of Respondents	START 14
	Option			
1	Do you live or work in Columbiana County?	YES	65	97.01%
		NO	2	2.99%
2	What is the name of your city/village/town?	CENTER TWP	1	1.49%
		COLUMBIANA	3	4.48%
		DAMASCUS	1	1.49%
		EAST LIVERPOOL	4	5.97%
		EAST PALESTINE	2	2.99%
		GLENMOOR	3	4.48%
		HANOVERTON	2	2.99%
		HOMEWORTH	3	4.48%
		KNOX TWP (BELOIT)	3	4.48%
		LEETONIA	7	10.45%
		LISBON	5	7.46%
		MIDDLETON TWP	1	1.49%
		NEGLEY	1	1.49%
		NEW ALEXANDER	1	1.49%
		NEW WATERFORD	3	4.48%
		NORTH GEORGETOWN	2	2.99%
		SALEM	19	28.36%
		SUMMITVILLE	1	1.49%
		WELLSVILLE	3	4.48%
		WINONA	1	1.49%
3	What hazard represents the biggest risk?	FIRE	2	2.99%
		FLOODING	14	20.90%
		HAZMAT	18	26.87%
		PUBLIC HEALTH	1	1.49%
		RADIOLOGICAL	1	1.49%
		RAILROAD	4	5.97%

		SEVERE THUNDERSTORM	8	11.94%
		SEVERE WEATHER	14	20.90%
		TORNADO	18	26.87%
		WIND	10	14.93%
		WINTER STORM	3	4.48%
		DID NOT ANSWER	8	11.94%
4	Do you have a 72-hour emergency kit in your home?			
		YES	35	52.24%
		NO	30	44.78%
		I DON'T KNOW	2	2.99%
5	Do you live in a special flood hazard zone?			
		YES	2	2.99%
		NO	59	88.06%
		I DON'T KNOW	6	8.96%
6	If you have homeowner's or renter's insurance, does it include flood insurance?			
		YES	13	19.40%
		NO	35	52.24%
		I DON'T KNOW	15	22.39%
		I DON'T HAVE INSURANCE	4	5.97%
7	What mitigation efforts would you support in your community?			
	13	19.40%	Buying out properties or relocating or elevating houses that are prone to repetitive flooding	
	39	58.21%	Upgrading the water and sewer systems	
	47	70.15%	Installing generators in critical facilities such as police and fire stations, hospitals, etc.	
	22	32.84%	Promoting the collection and reuse of rainwater such as in rain gardens and green roofs	
	31	46.27%	Building shelters for tornadoes and severe weather events	
	51	76.12%	Supporting educational campaigns aimed at preparing the population for a variety of hazards	

APPENDIX 5: CITATIONS

This appendix assures proper attribution to the many data sources used throughout the hazard mitigation plan.

Centers for Disease Control and Prevention. (2012). Lesson 1: Introduction to epidemiology, Section 11: Epidemic disease occurrence. *Principles of Epidemiology in Public Health Practice, Third Edition, An Introduction to Applied Epidemiology and Biostatistics*. Online. Retrieved from <https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section11.html>

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