

## 2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Auglaize County has had many natural disasters in the past, ranging from a blend of earthquakes, tornadoes, blizzards, floods, and droughts. The purpose of the Hazard Identification and Risk Assessment (HIRA) is to identify the number and frequency of disasters in Auglaize County and the risk to the people, property and structures that those hazards cause. The HIRA allows officials and the public to better prepare for incidents when they occur. The first section of the HIRA is the county profile. It provides information about Auglaize County and its jurisdictions. In the Hazard Identification section, each hazard that poses a threat to Auglaize County will be discussed in detail. The last two sections are made up with Vulnerability and Risk Assessment. These two items will be identified in Auglaize County and how the county must address them to prepare for and mitigate the hazards.

### 2.1 COUNTY PROFILE

Auglaize County is located in northwestern Ohio. The county was founded on February 14, 1848. The name Auglaize is derived from the French word “Eau” meaning water and “Glaize” meaning clay. The county is bordered by Allen County (north), Hardin County (east), Logan County (southeast), Shelby County (south), Darke County (southwest), Mercer County (west) and Van Wert County (northwest). The county is governed by a three-person Board of Commissioners. Ohio Congressional District 4, Ohio House District 84, and Ohio Senate District 12, represents the county at federal, and state levels.

#### 2.1.1 Demographics

The current population, according to the US Census Bureau 2016 estimate has the population for Auglaize County as 45,871. This represents a slight decrease from the 2010 Census figures of 45,949. The population has decreased consistently since 2000.

**Table 2-1: Auglaize County Population Statistics**

Statistic	Figure
Land Area	401.3 Sq. miles
Population (2016 Estimate)	45871
Population Density	114.5
Female Population	23006
Male Population	22865
Population under 18	24.3%

Population over 65	7753
White	97.4%
African American or Black	.5%
Other	4.8%
Number of Households	18231
Average Household Size	2.49
Median Household Income	\$55,914
Households Below Poverty Level	6.1%

Within Auglaize County, there are 19,921 housing units. The home ownership rate is 75.2% and the median value of owner-occupied housing units is \$138,700. There are approximately 726 mobile homes. The median gross rent for all types of rental properties is \$651 per month while the median cost to own a home is \$1,146 per month.

There are many special residential housing facilities present in Auglaize County. As of 2016, the types of facilities and estimated number of residents in each are as follows.

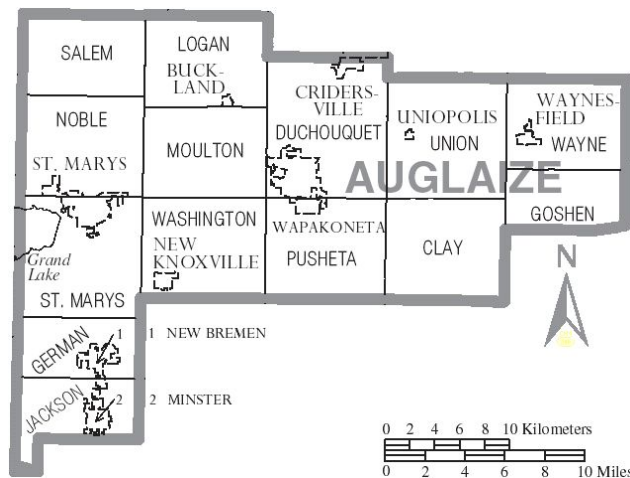
**Table 2-2: Special Housing Facilities**

Facility	Number of Facilities	Approximate Population
County Jail	1	65
Adult Group Homes	9	66
Nursing/Skilled Nursing Facilities	5	1,200

### 2.1.2 Incorporated Jurisdictions

Auglaize County is comprised of two cities, six villages and 14 townships and 11 unincorporated neighborhoods. The City of Wapakoneta is the largest of the two cities and is also the county seat. The other city is the City of St. Marys located on the western edge of the county. The villages include Buckland, Cridersville, Minster, New Bremen, New Knoxville, Waynesfield.

**Map 2-1: Auglaize County Map**



### ***Buckland***

Buckland, the second smallest village in Auglaize County, is located in the northwest quadrant. The Auglaize River borders on its east side and R. J. Corman Railroad Company rail line runs northeast and southwest through Buckland. State Route 197 provides easy access through the village. National Lime and Stone Quarry is in operation on the southern outskirts of the village.

Buckland was originally named Whitefeather and was founded in 1872. The Shawnee Indian Chief Na-Wa-Ba-She-Ka or White Feather resided in the Indian town which was located on both sides of the Auglaize River. A north-south trail paralleled the river and ran through an Indian field, considered old in 1832, which lay across the river from the present Buckland.

Buckland, platted in 1872, was originally called Whitefeather because of the proximity to the Indian town. On May 14, 1891 the name was changed to Buckland, honoring General Buckland of Fremont. He was one of the well-known promoters of the railroad.

**Table 2-3: Buckland Statistics**

Statistics	Figure
<b>Population, 2016 Census</b>	232
<b>White</b>	96.6 %
<b>Black or African American</b>	.04%
<b>Other</b>	.04%
<b>Hispanic</b>	2.1%

<b>Two or more</b>	.9%
<b>American indian</b>	.4%
<b>Number of Households</b>	102
<b>Persons per Household</b>	2.5
<b>Median Income (2016)</b>	\$46,474
<b>Persons below Poverty Income (2016)</b>	14%
<b>Land Area</b>	.26 square miles
<b>Elevation</b>	850

### ***Cridersville***

Cridersville is a village in the northeast quadrant of Auglaize County. Interstate 75 serves as its eastern border. Greater than 15 million people travel I-75. Allen County serves as its northern border. The CSX rail runs through the village.

The Village of Cridersville was platted on April 17, 1856 when Ephraim and Polly Crider and their son Isaac filed a map of a new town to be called Cridersville. There were only 24 lots on this first town map. They were all on Main Street and High Street in the first block west of the railroad. The Dayton and Michigan Railroad was built in 1858. It was the quickest way to travel. The new railroad meant great success for the Crider's new town. Ephraim owned the first grain mill in the area. He bought a steam-powered grist mill on the east edge of Cridersville in 1859. It was the place area farmers brought their grain to be ground into meal flour.

In 1885 oil was discovered in Lima. Within two years Cridersville was in the middle of the largest oil boom in the world. Thousands of workers came to drill hundreds of oil wells around the Cridersville area. The town grew quickly.

On May 2, 1918 a young man was burning trash behind a store on East Main Street. It was a very windy day and the fire blew into a nearby barn. Soon the fire from the burning barn blew onto the roofs of several stores on Main Street. The fire spread from building to building until both sides of the street were ablaze. Within three hours all the stores and homes in the block were gone.

The town rebuilt and has since flourished. Major employers include Otterbein Retirement Community, Cridersville HealthCare Center and Cridersville Elementary School.

Table 2-4: Cridersville Statistics

Statistics	Figure
Population, 2016	883
White	98.3%
Black or African American	.4%
Other	.01%
Hispanic	1.6%
Two or more	1.2%
American indian	.1%
Number of Households	777
Persons per Household	2.36
Median Income (2016)	\$46,430
Persons below Poverty Income (2016)	22.6%
Land Area	.90 square miles
Elevation	883

### ***Minster***

Minster, the second largest village in Auglaize County, is located in the southwest quadrant and is the most southern village. The Miami Erie Canal and R. J. Corman Railroad Company rail line run north and south on the western edge of Minster. State Routes 66 and 119 provide easy access through the village.

Minster was originally founded by Francis J. Stalls in 2832 as Stallstown. The village changed its name to Minster in 1836, honoring the Roman Catholic religion in Munster, Westphalia, the origin of many of its settlers

The Village of Minster is home to many diversified business ventures. Well-known businesses located in Minster include The Nidec Minster Corporation, The Dannon Company and Precision Strip.

The village is known for its annual Oktoberfest celebration. The German festival began in 1975 by the Jaycees (The Minster Journeyman's Club) and the Kiwanis (Minster Service Club) and attracts nearly 80,000 people to the village over the course of the weekend. The festival features polka music, traditional German food like bratwurst and sauerkraut, a beer-tray relay, and the Miss Oktoberfest and Little Miss Oktoberfest pageants, complete with young ladies in traditional German costume. There is also one of the most attended 10Ks in the state on Sunday of the festival.

The Village of Minster also boasts one of the top school districts in the state. Minster Local Schools has earned an "Excellent" rating on the state report card for the past ten years and in recent years has earned the "Excellent with Distinction" designation from the state.

The village is just minutes from Lake Loramie State Park and offers recreation such as a community swimming pool, bowling alley and a number of beautiful parks. The Miami Erie Canal walking path also cuts through Minster, providing ample recreation for residents and visitors.

**Table 2-5: Minster Statistics**

<b>Statistics</b>	<b>Figure</b>
<b>Population, 2010 Census</b>	232
<b>White</b>	96.6 %
<b>Black or African American</b>	.04%
<b>Other</b>	.04%
<b>Hispanic</b>	2.1%
<b>Two or more</b>	.9%
<b>American indian</b>	.4%
<b>Number in Households</b>	1045
<b>Person per household</b>	2.6
<b>Median Income (2016)</b>	\$72,787
<b>Person below Poverty Income (2016)</b>	6.1%
<b>Land Area</b>	1.88 Sq. Miles
<b>Elevation</b>	967

***New Bremen***

New Bremen, the largest village in Auglaize County, is located in the southwest quadrant and is “divided” by the Miami Erie Canal. State Routes 66 and 274 provide easy access to the village. RJ Corman rail line runs north and south through the western edge providing access for the various manufacturing facilities housed in this area. New Bremen is the home headquarters to Crown Equipment Corporation.

New Bremen was founded in 1833 in what would eventually become Auglaize County. The original settlers were Bavarians and Hanoverians from Germany. When they arrived in Ohio in 1832, the settlers formed a group called “The City of Bremen Society.” This plot of farmland was later called New Bremen.

The recent restoration of the towpath for walkers and bicyclers, a replica Lockkeeper’s House and restoring the canal locks have led to a rebirth of the canal as a recreation area. In addition to recreation, The Miami-Erie Canal has such historical significance, it has become an important link to the area’s cultural heritage.

**Table 2-6: New Bremen Statistics**

<b>Statistics</b>	<b>Figure</b>
<b>Population, 2016</b>	1852
<b>White</b>	97.3%
<b>Black or African American</b>	.1%
<b>Other</b>	.3%
<b>Hispanic</b>	1.2%
<b>Two or More</b>	.9%
<b>American Indian</b>	.1%
<b>Number of Households</b>	1326
<b>Median Income (2016)</b>	\$72,419
<b>Persons below Poverty Income</b>	6.1%
<b>Land Area</b>	2.06 sq. miles
<b>Elevation</b>	941

### ***New Knoxville***

New Knoxville, a village in Auglaize County, is located in the southwest Quadrant. State Route 219 (east/west) and State Route 29 (north/south) provide easy access to New Knoxville. Just outside the village is The Auglaize County Neil Armstrong Airport which is an important part of the community. It is located adjacent to the Village of New Knoxville's industrial park, can accommodate all general aviation aircraft and provide a link for travelers and goods coming into the community from around the world. The airport's 5,650 foot runway is suitable for all kinds of aircraft including corporate jets. The airport is named after Neil Armstrong, the first man on the moon, who grew up in nearby Wapakoneta.

One of several businesses is Hoge Lumber Company (Millworks Division, Hoge Commercial Buildings, New Homes and Remodeling, Historical Products and the Hoge Brush Company) who originated in New Knoxville in 1904. They are an international business offering a range of services including bowling alleys, sports floors, architectural millwork and outbuildings.

In what would later become Auglaize County, James Knox Lytle purchased land in Washington Township. Lytle plotted a village of 102 lots in 1835, calling it Knoxville to honor his mother's family.

New Knoxville is home to a complex of sites on the National Register for Historic Places called "The Heritage Complex Center."

**Table 2-7: New Knoxville Statistics**

<b>Statistic</b>	<b>Figure</b>
<b>Population 2010 Census</b>	<b>879</b>
<b>White</b>	<b>98%</b>
<b>Black or African American</b>	<b>0</b>
<b>Other</b>	<b>.1%</b>
<b>Hispanic</b>	<b>1.3%</b>
<b>Two or more</b>	<b>.3%</b>
<b>American Indian</b>	<b>.3%</b>
<b>Number of Household</b>	<b>355</b>
<b>Persons per Household</b>	<b>2.48</b>



<b>Median Income (2016)</b>	<b>\$61,875</b>
<b>Persons below Poverty Income</b>	<b>2.87%</b>
<b>Land Area</b>	<b>.89 sq. mile</b>
<b>Elevation</b>	<b>902</b>

***Waynesfield***

Waynesfield, a village in Auglaize County, is located in the northeast quadrant. State Routes 196 (north and south) and 67 (east and west) provide easy access through the village. The popular Prairie View Golf Club is located to the east of the village.

Waynesfield was founded on July 1, 1848 and was named after the United States Army General and Statesman from the 18th century, Anthony Wayne.

Waynesfield is located a short drive away from Indian Lake, providing ample opportunity for boating, camping and fishing.

**Table 2-8: Waynesfield Statistics**

<b>Statistics</b>	<b>Figure</b>
<b>Population, 2016</b>	847
<b>White</b>	96.6 %
<b>Black or African American</b>	.6%
<b>Asian</b>	.1%
<b>Hispanic</b>	2.1%
<b>Two or more</b>	.5%
<b>American indian</b>	.1%
<b>Number of Households</b>	300
<b>Persons per Household</b>	2.76
<b>Median Income (2016)</b>	\$53,587
<b>Persons below Poverty Income (2016)</b>	13.8%

<b>Land Area</b>	.74 square miles
<b>Elevation</b>	1063

### ***City of St. Marys***

The City of St. Marys was legally established in 1823, incorporated in 1834 and became a city in 1994. St. Marys Memorial School was opened in 1924 with its first graduating class in 1925.

Before the Miami-Erie Canal was erected, supplies coming into western Ohio came by boat on the St. Marys River. General Harrison ordered Fort Barbee be built at what is now St. Marys at the end of the 18th century. It was reputed to be the most important military post in Ohio.

St. Marys was the county seat of Mercer County from 1824-2840, when the seat was moved to Celina. In 1849 St. Marys became part of the newly formed Auglaize County. In 1837 workers began constructing Grand Lake St. Marys as a reservoir to supply water for the Miami-Erie Canal. Men constructed the lake by using axes and shovels to cut down trees in the great swamp and dig the lake deep enough to be a natural storage place to feed the canal.

After 1915 the lake was no longer needed to feed the canal and the Ohio General Assembly passed an act that the body of water and the adjacent lands owned by the State were to be set apart for the use of the public as parks or pleasure resorts. Later to be known as Grand Lake St. Marys State Park.

St. Marys, one of two cities in Auglaize County, is located in the western half of the county. State Routes 33 (east/west), 116 (north/south), 66 (north/south), 364 (north/south), 703 (east/west) and 29 (east/west) provide easy access.

St. Marys is near the northeast corner of Grand Lake St. Marys, the largest inland lake in Ohio. St. Marys has a regional hospital as well as many thriving manufacturing facilities. R. J. Corman has a rail line running through the city.

**Table 2-9: City of St. Marys Statistics**

<b>Statistics</b>	<b>Figure</b>
<b>Population, 2016</b>	8342
<b>White</b>	93.9%
<b>Black or African American</b>	.6%
<b>Other</b>	.2%
<b>Hispanic</b>	.6%

<b>Two or More</b>	2.1%
<b>American Indian</b>	1.0%
<b>Number of Households</b>	3286
<b>Persons per Household</b>	2.51
<b>Median Income</b>	\$43,212
<b>Persons below Poverty Income</b>	12.9%
<b>Elevation</b>	866

### *City of Wapakoneta*

Wapakoneta traces its roots to the 1780s when the Shawnee established a settlement along the banks of the Auglaize River. They built their council house not far from the river, named by the French for its clay-filled waters. Many great American Indian leaders came to Wapakoneta to counsel including Tecumseh, Little Turtle, Blue Jacket and the Shawnee's elder chief, Black Hoof. Early local historians attributed the name Wapakoneta to a person, possibly a leader of the tribe. The earliest maps of the town spell its name as WAUGHPAUGHKONNETTA which has evolved into Wapakoneta.

Wapakoneta was platted in 1833 is part of Allen County. On February 14, 1848 the Ohio legislature voted to create the new Auglaize County from portions of Allen and Mercer counties and Wapakoneta became the county seat.

With the completion of the Dayton and Michigan Road in 1858, Wapakoneta's success was assured. It became a prosperous shipping point in west central Ohio. By the late 1800s local industry had developed with the national reputation for butter churns, cast iron cookware, furniture and buggies. Wapakoneta's downtown developed to accommodate the growing population.

Wapakoneta gained international attention when native son Neil Armstrong became the first person to set foot on the moon in 1969. A world-class museum dedicated to the history of space exploration open in Wapakoneta in 1972, and continues to draw tens of thousands of visitors annually.

Wapakoneta, one of two cities in Auglaize County, is located mid county. It serves as the County Seat. State Routes 33 (east/west), State Route 67 (north/south), State Route 501(north/south), State Route 198(north/south), and Interstate 75(north/south) provide easy access to Wapakoneta. Located at the intersection of Interstate 75 and US 33, Wapakoneta is positioned at the crossroads of two major American highways. An estimated 21 million people pass through the intersection every year. The Auglaize River flows through Wapakoneta. CSX railroad line runs north/south through the city. Wapakoneta is home to an ever increasing number

of manufacturing facilities as well as a golf course on the northern outskirts and a campground on the eastern outskirts.

**Table 2-10: City of Wapakoneta Statistics**

<b>Statistics</b>	<b>Figure</b>
<b>Population, 2016</b>	<b>9,818</b>
<b>White</b>	<b>96.1%</b>
<b>Black or African American</b>	<b>.4%</b>
<b>Other</b>	<b>.2%</b>
<b>Hispanic</b>	<b>1.6%</b>
<b>Two or more</b>	<b>1.1%</b>
<b>American Indian</b>	<b>.2%</b>
<b>Number of Households</b>	<b>3,975</b>
<b>Persons per Household</b>	<b>2.41</b>
<b>Median Income</b>	<b>\$51,570</b>
<b>Persons below Poverty Income</b>	<b>10.1%</b>
<b>Land Area</b>	<b>5.92</b>
<b>Elevation</b>	<b>895</b>

### 2.1.3 Townships and unincorporated communities

Auglaize County is divided into 14 townships. Each township and its population according to 2010 US Census figures is in Table 2-11

**Table 2-11: Township Population Statistics**

Townships	Population
Clay	817
Duchouquet	2876
German	845
Goshen	529
Jackson	769
Logan	880
Moulton	1654
Noble	1205
Pusheta	1245
St. Marys	3194
Salem	498
Union	1902
Washington	995
Wayne	747

### ***Unincorporated Communities***

Auglaize County has 11 unincorporated communities and neighborhoods that are spread out around various townships. Some were from communities in the past the unincorporated. They include:

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Kossuth       | <input type="checkbox"/> Gutman    |
| <input type="checkbox"/> Lock two      | <input type="checkbox"/> St. Johns |
| <input type="checkbox"/> Moulton       | <input type="checkbox"/> Uniopolis |
| <input type="checkbox"/> New Hampshire | <input type="checkbox"/> Santa Fe  |
| <input type="checkbox"/> Holden        | <input type="checkbox"/> Egypt     |
| <input type="checkbox"/> Geyer         |                                    |

### 2.1.4 Institutions and Special Facilities

Auglaize County has abundant educational and healthcare resources available for the residents. Residents can access these services to improve their quality of life and contribute to the successful development of the county.

#### *Education*

Auglaize County has six public school districts and one parochial school that serve the residents of the county. The graduation rate for each districts is at 95%

**Table 2-12: Auglaize County Schools**

Public School Districts	Parochial Schools
St. Marys City	Holy Rosary School
Wapakoneta City	
Minster Local	
New Knoxville Local	
Waynesfield Goshen Local	
New Bremen Local	

#### *Healthcare*

Joint Township District Memorial Hospital is the only hospital in Auglaize County. This 140 bed facility is located in the City of St. Marys. The hospital offers a wide range of healthcare services, including emergency, intensive care, and diagnostic. Auglaize County has eight license nursing homes and residential care facilities.

### 2.1.6 Infrastructure

Auglaize County infrastructure provides residence, workers and visitors with critical access to the services. This section describes the county's transportation and utility systems.

### Transportation

Auglaize County transportation system provides residents and businesses with access to the region. The transportation system includes state and federal highways, county roads, and local streets. Auglaize County has one interstate highway that runs through a portion of the county.

The County Engineer is responsible for maintaining 350 miles of county roads and 347 bridges. The Ohio Department of Transportation maintains 456 miles of roadways and 128 bridges.

**Table 2-13 : Auglaize County Highways**

Interstate	U.S. Highways	State Highways	
I-75	33	29	198
		65	219
		66	274
		67	363
		116	364
		119	366
		196	385
		197	501

### Utilities

The majority of the homes in Auglaize County are heated with natural gas or electricity. These services are provided by a variety of companies. The Public Utilities Commission of Ohio regulates private companies that provide public utilities services. these companies, along with municipal electric utilities are identified in the table 2-14 below

**Table 2-14 : Auglaize County Utility Service Providers**

Electric Service	Natural Gas Service
<i>Dayton Power and Light</i>	<i>Dominion East</i>
<i>Midwest Electric</i>	<i>Vectren Energy Delivery of Ohio</i>
<i>AMP Ohio</i>	
<i>American Electric Power</i>	

The remaining residence in the county uses other sources for heating that include:

❖ <i>Bottled, tank, or LP gas</i>	18.6%
❖ <i>Coal or wood</i>	0.2%
❖ <i>Fuel oil, kerosene</i>	1.7%
❖ <i>Solar energy</i>	0.2%
❖ <i>No fuel used</i>	0.7%

### 2.1.7 Topography and Climate

Auglaize County terrain is relatively flat with the highest point at 1105 ft above sea level. It lies in the eastern part of the county, which ranks it 56th in terms of highest elevations when compared to a total of 88 counties in Ohio. The lowest point in the county is 800.5 ft. above sea level and is located in the north western part of the county in Salem Township.

#### *Climate*

Auglaize County has a moderate climate with warm temperatures in the summer and cold in the winter. The average annual temperature is 50 degrees with the average winter temperature being 25 degrees summer averages 73° average precipitation per year is 34 inches. Snowfall amounts average 36 inches based on a 30-year record from 1964 to 1993 the average precipitation is 2.8 inches per month with February being the driest and July being the wettest.

#### *Soil Types*

Auglaize County is one of the more important agricultural counties in Ohio. Cash grain farming dominated by corn and soybean and livestock farming dominated by milk and beef production are the major Farm Enterprises. Poor natural drainage is the major soil limitations in the flatter areas. Erosion is the major hazard and sloping and moderate steep areas. Most of the soils can be highly productive if the more nearly level areas are adequately drained, if erosion is controlled in the sloping and moderate steep areas, and if all farm areas are otherwise well-managed.

Although Auglaize County is dominantly rural, non-farm development particularly residential development, is constantly taking place. This development is not on the scale that prevails in and near large metropolitan areas, but is affected by many of the small soil limitations and hazards.

Auglaize County is part of the Indiana-Ohio Till Plains, in the Central Lowland physiographic province. The highest elevation is about 1266 feet above sea level between Boundary Road and Wrestle Creek Road, in section 27 of Union Township. The lowest elevation is 800 feet above sea level where the St. Mary's River leaves the county. In much of the western two-thirds of the



county, the soils are nearly level and gently sloping. Major changes and relief are evident along streams and on the Fort Wayne, Wabash, and the St John's moraines.

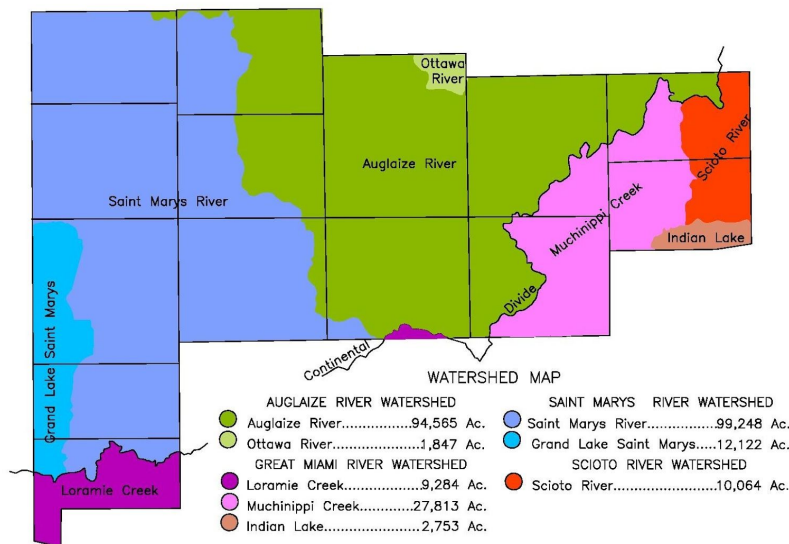
In the eastern third of the county, which is dominated by the St. Johns and Mississinewa moraines, stronger relief is evident. Most of the soils are gently sloping. The two major exceptions are a large lacustrine area and a large outwash basin. The lacustrine area is south of the St Johns moraine and north of State Route 385. It extends from 2 miles northwest of New Hampshire in an easterly direction to the Auglaize-Hardin County Line. The outwash basin is in the northeastern part of Clay Township, just south of the St Johns and Beehive moraines. It extends westerly into a small lacustrine basin between the St. Johns and Mississinewa moraines at the headwaters of Pusheta Creek. Blount and Pewamo soils are dominant in the nearly level and gently sloping areas, and Blount, Glynwood, and Morley soils are dominant in the gently sloping areas. Montgomery and Milford soils are dominant in the lacustrine areas in the Millgrove and Digby soils in the outwash areas.

### **2.1.8 Waterways and Watershed**

Auglaize County is part of a Continental Watershed the Ohio Erie canal cuts through the county generally along the central extension of the Mississinewa and the St John's moraines. North and west of the divide most of the water in the central part of the county is drained into the Lake Erie by the Auglaize River, the western part by the St. Mary's River. South of the Ohio Erie divide the water is drained towards the Ohio River by several small tributaries. On a small acreage in the southwestern part of the county water flows in the Lake Loramie which is part of the Great Miami River system. Most of the Southeastern part of the county is drained by Willow and Muchinippi Creeks which flow eastward into the Miami River on a small acreage near the eastern boundary of the county water drains in the Scioto River system through small drainage ditches.

Grand lake near the western boundary of the county, is an artificially created body of water about 14500 acres in size, 1/3 of which is in Auglaize County and provides water for the Ohio Erie Canal system. The lake formed in a long narrow swath that was dammed at each end and drained from both ends. The West into the Beaver Creek and East into the St. Mary's River. Map 2-2 shows the water sheds.

## 2018 Auglaize County Natural Hazard Mitigation



The table below list each creek, minus the ditches or tiles and what rivers they drain into.

### Auglaize County Waterways

Creek Names	River Destination
Ankerman Creek	St.Marys
Blackhawk Run Creek	Upper Great Miami
Blackhoof Creek	Auglaize
Carter Creek	St.Marys
Center Branch	St.Marys
Clear Creek	St.Marys
Dry Run Creek	Auglaize
Eagle Creek	Auglaize
East Branch Creek	St.Marys

## 2018 Auglaize County Natural Hazard Mitigation

East Fork Chickasaw Creek	Upper Wabash
Four Mile Creek	St.Marys
Huffman Creek	Auglaize
Hussey Creek	St.Marys
Kopp Creek	St.Marys
Little Muchinnippi Creek	Upper Great Miami
Little Wrestle Creek	Auglaize
Muchinippi Creek	Upper Great Miami
Muddy Creek	St.Marys
Owl Creek	Auglaize
Prairie Creek	St.Marys
Pusheta Creek	Auglaize
Quaker Run Creek	Auglaize
Sims Run Creek	Auglaize
Six Mile Creek	St.Marys
Spring Run Creek	St.Marys
Two Mile Creek	Auglaize
Virginia Creek	Auglaize
Wallace Fork Creek	Upper Scioto
Willow Creek	Upper Great Miami
Wolf Creek	Upper Great Miami
Wrestle Creek	Auglaize

### 2.1.9 Land Use

The majority of Auglaize County land cover is agricultural; nearly 88% or 226,757 acres of the total land cover is agricultural. There are two agricultural regions in the county. The Western

Dairy, and the Corn Belt Hog Region (corn primarily fed to hogs). In 2012 Census, Auglaize County ranked 31 in corn production, 24th in soybean, and 12th in wheat.

Areas around the western side of the county that border Grand Lake St. Marys have been targeted for residential growth. This area is served by public water and county sewage system.

The other 12% of the county is developed by residential or in wetlands and State Park land. Auglaize County promotes recreation since we have Grand Lake St. Marys State Park that is used during the summer for camping boating and fishing. Fishing continues in the winter months, along with snowmobiling.

**Auglaize County Land Use**

Use	Percentage
Cultivated Crops	75.68%
Developed, Lower Intensity	8.83%
Forest	6.70%
Open Water	1.28%
Shrub /Grassland	1.64%
Wetlands	.23%
Developed, Higher Intensity	1.13%
Pasture / Hay	4.50%
Barren Land (Strip mines. Gravel pits etc.)	.01%

### 2.1.10 Regulation

Auglaize County Board of Commissioners established the Auglaize County Regional Planning Commission with the purpose of addressing development in land use, planning issues larger than a single jurisdiction or municipality. The commission includes representation from each of the county's 14 townships, the two cities, County Engineer, and from several non-voting members.

The commission meets monthly to address issues such as zoning, floodplain regulations, subdivision regulations, development issues, and other land use topics. Under the Auglaize County engineer, who serves as the County's floodplain administrator, floodplain regulations are currently in effect.

Each of the 14 Township have separate zoning regulations in place. Each zoned township employs a part-time zoning inspector to administer their local zoning requirements. A complete list of the zoning regulations status of each Township is provided below.

Township Zoning Status

Townships	Status
Clay	Zoned
Duchouquet	Zoned
German	Zoned
Goshen	Zoned
Jackson	Zoned
Logan	Zoned
Moulton	Zoned
Noble	Zoned
Pusheta	Zoned
St. Marys	Zoned
Salem	Zoned
Union	Zoned
Washington	Zoned
Wayne	Zoned

All Incorporated jurisdictions have zoning regulations in place. Each jurisdiction has a local zoning inspector, although the smaller villages sometimes struggle to maintain this position.

### *Jurisdictional Capabilities*

Auglaize County EMA discussed with the Auglaize County Tax Map Office, who is the Secretary Treasurer for the Regional Planning Committee, County & Municipal Engineers along with the Township and County Commissioners on their jurisdictional capabilities and answered questions about the following the plan, codes and ordinances from the perspectives of their jurisdictions

*Regional Planning Committee- Comprehensive Plans:* Comprehensive plans promote the sound land use and 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 process on zoning matters, subdivision and land development, land uses, public facilities and housing needs over time.

*Miami Building Codes Official - Building Codes:* Auglaize County does not have any building codes for residential property however all jurisdiction signed agreements to have the Miami County Building Officials oversee the commercial only building codes to regulate construction standards for new construction and substantially renovated buildings. Standards were adopted that required resistant or resilient building design practices to address hazard impacts common to a given community.

*County, City and Village Engineer-Subdivision and Land Development Ordinances:* Subdivisions and land development ordinances regulate the development of housing, commercial, industrial or other uses, including associated public infrastructure, as communities subdivide the land 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.

*Township Zoning, City and Village Officials- Zoning Ordinances:* Zoning ordinances allow for local communities to regulate the use of land to protect the interest 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 and require land development to consider specific hazard vulnerabilities.

*County Engineer, City and Village Administrators- National Flood Insurance Program (NFIP) Participation and Floodplain Management Ordinances:* Through the administration of floodplain ordinances, municipalities can ensure that all construction or substantial improvements to existing structures located in the floodplain are flood proof, dry-proof, or built above-anticipated flood elevations. Floodplain ordinances may also prohibit development in certain areas altogether. The National Flood Insurance Program (NFIP) establishes minimum ordinance requirements which must be met for that community to participate in the program. However, a community is permitted and encouraged to adopt standards which exceed NFIP requirements. The Villages of Cridersville, Minster, New Bremen, and Waynesfield are jurisdictions that are not in a floodplain.

**All Jurisdictions-Fiscal Capability:** The decision and capability to implement mitigation related activities are often strongly dependent on the presence of local financial resources. Checking with the jurisdictions, they try to take advantage of state and federal mitigation grant funding opportunities that require local match contributions. Some of the Federal programs that may provide financial support for mitigation activities, but are not limited to:

- Community Development Block Grant
- Capital Budget Funds for Mitigation Projects
- Disaster Housing Program
- Emergency Management Performance Grants
- Emergency Watershed Protection Program
- Flood Mitigation Assistance Program
- Hazard Mitigation Grant Program
- Non-Insured Crop Disaster Assistance Program
- Pre-Disaster Mitigation Program
- Public Works Budget for Mitigation Projects
- Repetitive Flood Claims Program
- Severe Repetitive Loss Program
- Weatherization Assistance Program

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

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

When asked, most of our communities indicated that they did not currently have funds included in capital budgets they could dedicate to hazard mitigation. The city of St. Marys, though has placed money towards their mitigation project.

JURISDICTION CAPABILITIES						
Jurisdiction	Comprehensive Plan	Building Code Residential	Building Code Commercial	Subdivision of Land Use Ordinance	Zoning Ordinance	Participation in NFIP
<i>Cities and Villages</i>						

# 2018 Auglaize County Natural Hazard Mitigation

<b>City of St. Marys</b>	Yes	No	Yes	Yes	Yes	Yes
<b>City of Wapakoneta</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Village of Buckland</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Village of Cridersville</b>	Yes	No	Yes	Yes	Yes	N/A
<b>Village of Minster</b>	Yes	No	Yes	Yes	Yes	N/A
<b>Village of New Bremen</b>	Yes	No	Yes	Yes	Yes	N/A
<b>Village of New Knoxville</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Village of Waynesfield</b>	No	No	Yes	Yes	Yes	N/A
<b><i>Townships</i></b>						
<b>Salem</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Noble</b>	Yes	No	Yes	Yes	Yes	Yes
<b>St. Marys</b>	Yes	No	Yes	Yes	Yes	Yes
<b>German</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Jackson</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Logan</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Moulton</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Washington</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Duchouquet</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Pusheta</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Union</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Clay</b>	Yes	No	Yes	Yes	Yes	Yes



## 2018 Auglaize County Natural Hazard Mitigation

<b>Wayne</b>	Yes	No	Yes	Yes	Yes	Yes
<b>Goshen</b>	Yes	No	Yes	Yes	Yes	Yes

### 2.1.11 Economy and Development

Auglaize County economy is dependent upon production agriculture, agribusiness sales and service, industry, manufacturing, and government departments along with tourism as a result of the Grand Lake St. Marys Reservoir.

Auglaize County has a strong economy that has benefited from the healthy combination of agriculture manufacturing and industries. Local Economic Development organizations have worked diligently to bring in new business growth in our county. In 2016 the county reported 975 active businesses, with total employment numbers at 20,464. **Table 2-16** shows listing of the top employers in Auglaize County.

**Auglaize County Major Manufactures**

<b>Employer</b>	<b>Sector</b>
Crown Equipment	Manufacturing
Grand Lake Health System	Service
Nidec-Minster Machine	Manufacturing
Setex, Inc.	Manufacturing
AAP-St.Marys Corporation	Manufacturing
The Dannon Company	Manufacturing
American Trim,LLC	Manufacturing
Koneta Rubber	Manufacturing
General Aluminum Manufacturing	Manufacturing
ConiTech	Manufacturing
Ametek Westchester Plastics	Manufacturing

## 2.2 HAZARD IDENTIFICATION

Auglaize County has experienced many natural disasters, like other counties in Ohio these disasters range from tornadoes, floods, droughts and blizzards. The purpose of this section is to identify each of these hazards and occurrences

In developing this assessment, Auglaize County Hazard Mitigation Planning Team analyzed the hazards and risk present in the county. The natural hazards that have been identified as relevant to Auglaize County are.

- ☐ Dam failure
- ☐ Droughts
- ☐ Earthquake
- ☐ Floods
- ☐ Severe Thunderstorms
- ☐ Tornado
- ☐ Wind
- ☐ Winter Storms

During this assessment some natural hazards that excluded in the planning as these posed little or no threat. The list that posed little or no threat is:

- Coastal Erosion, Auglaize County has no coastline
- Sinkholes, no sinkholes have been reported.
- Landslides, not been identified as a concern
- Tsunami, Impossible as not near an ocean
- Volcano, no volcanoes in the area.

Wildfires happen on a very small scale and have only had one case in which the fire was contained to 77 acres. This fire was standing corn crop fueled by high winds.

Auglaize County does not have a significant history of having federal disasters or declarations resulting in assistance however it has received both federal and state assistance on a couple of occasions. The most recent federal disaster assistance Auglaize County had received was August 10, 2012 . A comprehensive list of those incidents that resulted in an emergency declaration is provided.

### Federal Disaster Declaration History

DR/EM Number	Incident Date	Incident Type
DR-167-OH	March 24,1964	Heavy Rain and Flooding
DR-3055-EM	January 26,1978	Severe Blizzard
DR-951-OH	August 14,1992	Flood, Severe Storm, Tornado
DR-1444-OH	November 18, 2002	Severe Storm, Tornado
DR-1484-OH	July 15, 2003	Severe Storms, Flooding
DR-1580-OH	February 15,2005	Severe Winter Storm, Ice
EM-3250-OH	September 13,2005	Hurricane Katrina, Emergency Shelter Operation
DR-90-OH	January 23,1959	Flooding,Severe Storms
DR-4077-OH	August 10, 2012	Severe Storm,Wind
DR-1478-OH	July, 15, 2003	Flooding, Severe Storms

Historical information was obtained from National Climatic Data Center (NCDC) along with information files from local officials. This section defines each hazard of Auglaize County's history with each.

#### 2.2.1 Dam Failure

The Auglaize County East bankment on Grand Lake St Mary's is an Earthen Dam that was created to make the grand Reservoir. A dam is considered hydrological a significant if it has a height of at least 25 feet from the natural stream bed and a storage capacity of at least 15 acre-feet or an impound in capacity of at least 50 acre-feet and is 6 feet or more above the natural stream bed dams are constructed for flood control purposes or two or four storage water for irrigation water supply or in this case it was originally built for water for the Miami Erie Canal system. The East Bank Reservoir dam was built by earth, rock and a combination of other materials.

Dam failure is an uncontrolled release of water held back by the dam in a lake or reservoir. The majority of the dams have a small enough storage volume that a breach or failure will have limited impact on the surrounding community. But the failure of a large Dam can cause a substantial flooding downstream and lead to significant loss of life and property.

There are many causes of dam failure including:

- Substandard Construction
- Geological instability
- Spillway design error
- Poor maintenance
- Animals and tree roots

Determining the hazard potential for damage throughout their Dam Safety Program. ODNR classifies dams based on this scale.

#### Dam Classification

Classification	Description
Class I	Probability loss of life, serious hazards to health, structural damage to high-value property homes, Industries, major public utilities
Class II	Flood water damage to homes, businesses, industrial structures no loss of life envisioned damage to State and interstate highways, railroads, and only access to residential areas
Class III	Damage to low-value non-residential structures, low roads, agricultural crops, and livestock
In a Class IV	Losses restricted mainly to the dam

#### List of Dams and Classification in Auglaize County.

Dam	Jurisdiction	Classification
Grand Lake East Embankment	ODNR	Class I
St. Marys Sludge Lagoons	City of St. Marys	Class II
40 Acre pond Low Head	ODNR	Class III

The East embankment, an Earthen Dam is located on the east side of Grand Lake St. Marys. downstream from this location is the city of Saint Mary's. While the East embankment Dam is located in St Mary's Township, it is owned by ODNR. the East embankment is 2307 feet in length 20 feet high and has a storage volume of 26532 acre-feet. Water flows out of the embankment to the east where it meets the Miami Erie canal that then flows north and south while it flows to the north the city of Saint Mary's lies in that general vicinity and has a population of 8000+ residents. There are multiple "Other Classification" dams or embankments

within the county that are shown on the map, however there are many more that ODNR has not marked on the map.

The land area immediately adjacent to the dam is in St Marys Township; most of this land is not significantly vulnerable because it's natural habitat and does not have residential or commercial development or is on a lower scale. Immediate structural damage will be limited to those local residents but significant damage and high impact of loss of life and an economic impact would be the flooding of the city of Saint Mary's, which contains the only Hospital in Auglaize County. **Map 2-2** shows potential in a dadian zones for the city of Saint Mary's based on the flooding from the dam failure of the Easton bankment.

**Map2-2: Auglaize County Dam Locations**



### *Local Dam Failure History*

According to records from the Stanford University's National Performance of Dams Program (NPDP) there are no records reporting an incident, breach, or failure in Auglaize County. A probability of a dam incident is less than 1%.

### *Dam Failure Probability*

Dam failure probabilities for Auglaize County were calculated based on the number of events over 68 years. There is less than a 1% chance of an occurrence within Auglaize County any given year.

### **2.2.4 Drought and Extreme Heat**

Drought is a normal, recurrent feature of climate that originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.

Seasonal droughts, though usually short in duration in this part of the county, may have serious consequences and can affect Auglaize County in various ways. The recent drought in 1999 impacted the agricultural economic stability with reduced crop yields. The lack of rainfall, coupled with extreme heat, increases the potential for fires. A drought can leave water tables and drinking wells considerably lower. There have been two reported droughts in Auglaize County according to the National Climatic Data Center website. Both occurring in the summer of 1999. In some areas crop losses were at 50%. The following table show the breakdown

**Drought/ Extreme Heat**

Hazard	Total Incidents	Deaths	Injuries	Property Damage	Crop Damage
Drought	2	0	0	\$0.0	\$0.0
Extreme Heat	0	0	0	0	0

**Common Types of Drought**

Type	Description
Meteorological	Based on the degree of dryness rainfall deficient and Links of dry periods
Hydrological	Based on impact of rainfall deficient on water supply such a stream's flow, Reservoir and lake levels in water table decline
Agricultural	Based on impact to agriculture by rainfall deficient, soil water deficient, reduce groundwater, Reservoir levels needed for irrigation
Socioeconomic	Based on the impact of the drought conditions run supplies in demand of some economic Goods

Drought severity is measured using the Palmer Drought Severity Index (PDSI). The PDSI measures dryness based on recent precipitation and temperature statistics. Drought classifications are identified in the following table.

**PDSI Classification**

Measurement	Description
-4 or less	Extreme Drought
-4 to -3	Severe Drought
-3 to -2	Moderate Drought
-2 to -1	Mild Drought
-1 to -0.5	Incipient Dry Spell
-0.5 to 0.5	Near Normal
0.5 to 1	Incipient Wet Spell
1 to 2	Slightly Wet
2 to 3	Moderately Wet
3 to 4	Very Wet
4 or more	Extremely Wet

#### *Local Drought/ Extreme Heat Index*

While droughts are rare the NCDC shows that Auglaize County has had two incidents of a drought or extreme heat. The data show that the two events that affected Auglaize County happen in 1999 and was during the months of July and August.

#### *Drought / Extreme Heat Probability*

Drought / Extreme Heat probabilities for AUGlaize County were calculated based on the number of events over 68 years. There is a .03% chance of an occurrence within Auglaize County any given year.

## Average Temperature and Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Avg. High</b>	37°	42	51	64	73	81	84	83	78	67	54	43
<b>Avg. Low</b>	19°	20	27	36	46	56	60	58	51	38	29	21
<b>Avg. Precip.</b>	3.07"	2.32"	3.31"	3.66"	4.69"	3.98"	4.41"	3.82"	3.54"	2.91"	3.15"	3.66"

## 2.2.2 Earthquake

An earthquake occurs when two blocks of Earth, call plates, move past one another beneath earth's surface. The location where the plates meet is called a fault the shifting of the plates causes movement along the fault line. This movement can often be felt in area surrounding the earthquake's epicenter and can cause damage ranging from insignificant to devastating. Damage caused by an earthquake can include rattling foundations, falling debris, and in the most severe cases, toppling build buildings, bridges, and culverts. The severity of earthquake movement is measured using the Modified Mercalli Intensity Scale as defined below.

## Modified Mercalli Intensity Scale

Intensity	Shaking	Description / Damage
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt by persons in doors, especially on the upper floors of buildings. Many people do not recognize it as an earthquake. Standing Motorcars mayrock slightly vibration similar to the passing of a truck. Durations estimated
III	Weak	Felt indoors by many, Outdoors by few during the day. At night, some awakened. Dishes, Windows, Doors Disturbed, walls make cracking sounds. Sensations like heavy truck striking buildings. Standing Motorcars Rock notice play
IV	Light	Felt by nearly everyone, many awakened. Some dishes, Windows broken. Unstable objects overturned. Pendulum clocks may stop.



## 2018 Auglaize County Natural Hazard Mitigation

V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	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 wall. Heavy furniture overturned.
IX	Violent	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.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

According to the Ohio Seismic Risk in Ohio is difficult to evaluate because earthquakes are infrequent. The recurrence intervals is generally very long, sometimes spanning hundreds or thousands of years. Another factor in earthquake risk is the nature of the geological materials upon which a structure is built. According to the Ohio Department of Natural Resources, ground motion from somatic waves tends to be magnified by unconsolidated sediments such as thick deposits of clay or sand or gravel.

Ohio has experienced more than 120 earthquakes in 1776. Only 14 of these events have cause damage, there is greater risk of earthquakes in Ohio than most people realize. West Central and Northeast Ohio are the areas of Ohio with the highest earthquake risk.

The strongest earthquake ever recorded in Ohio occurred in the Shelby County in 1937 and was estimated to have a magnitude of 5.5 on the Richter Scale. This incident caused some damage in Anna and surrounding West Central Ohio communities. The same area in Ohio previously reported earthquake activities in 1875 and 1884. other known earthquakes that cause damage with a 1926 around the Anna area also the 1930 and 1931 and then few years prior to that 1937

incident unlimited property damage. Impacts were only felt locally, no Statewide damage was reported.

### ***Local Earthquake History***

Auglaize County has had three earthquakes recorded. The strongest of these incidents was classified as a VI on the Modified Mercalli Index, indicating only felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. This happened on July 12, 1986 with the City of St. Marys being the epicenter. In the Table below is the list and location of the Earthquakes. Earthquakes are a countywide hazard and can affect all areas and jurisdictions.

### ***Earthquake Probability***

Earthquake probabilities for Auglaize County were calculated based on the number of events over 88 years. There is a .03% chance of an occurrence within Auglaize County any give year.

**Auglaize County Earthquake History**

Date	Location	Magnitude	Modified Mercalli
6/26/1930	Clay Township	3.2	IV
6/27/1930	Clay Township	3.1	IV
7/12/1986	City of St. Marys	4.5	VI

### ***2.2.6 Floods***

A flood is defined by the NWS as an overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer term event than flash flooding: it may last days or weeks.

A flash flood is defined a by the NWS as a flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours. Flash floods are usually characterized by ragin torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by debris or ice jam.

*Local Flood History*

Historically, flooding has been a moderate to severe risk for Auglaize County. Data from the NCDC indicates the county has been impacted by 44 flood events and 22 flash flood events since 1950 to 2018. Causing more than \$446,000 in property damage and \$890,000 in crop damage. Flash Flooding was not far behind, causing an estimated \$398,000 in property damage.

The worst flood in Auglaize County history was the 1913 flood, however Auglaize County experienced 12 flooding event between May 9 and September 1, 2003, five of these were flash flood events causing an estimated \$720,000 in damages.

*Flood and Flash Flood Probability*

Flooding probabilities for Auglaize County were calculated based on the number of events over 68 years. There is a .65% chance of an occurrence within Auglaize County any given year. Flash flood probabilities for the county are .32% chance of an occurrence within Auglaize County any given year.

**Auglaize County Flood History**

<b>Hazard</b>	<b>Total Incidents</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Property Damage</b>	<b>Crop Damage</b>
Flood	44	0	0	\$446,000	\$890,000
Flash Flood	22	0	0	398,000	\$0000

**2.2.7 Severe Thunderstorms**

The Storm Prediction Center defines a Severe Thunderstorm as a thunderstorm that can produce hail that is at least 1 inch in diameter or larger, and wind or wind gust of 58 mph or greater, and/or a tornado. Lightning is recognised as being deadly, however it is not used to determine a severe thunderstorm.

*Local Severe Thunderstorm History*

Auglaize County, as well as the surrounding area, is susceptible to severe weather events annually based on reports from the National Climatic Data Center. Included in the list is severe thunderstorms. According to the National Weather Service, 90% of all Presidential / Federal declared disasters are related to Severe Thunderstorms. Thunderstorms are a countywide hazard and can affect all areas and jurisdictions.

From 1950 to 2004 Auglaize County has experienced 167 reported thunderstorms and high wind events, and 83 reported hail storms according to NCDC website. Area wide, these storms caused

2 injuries, and approximately \$1.43 million in property and \$166,000 dollars in crop damage. The Table breaks down the hazards and totals. Lighting was included in this only to show that it had caused \$150,000 dollars in property loss.

#### *Severe Thunderstorm Probability*

Severe Thunderstorms probabilities for Auglaize County were calculated based on the number of events over 68 years. There is a 2.5% chance of an occurrence within Auglaize County any given year. Hail probabilities for Auglaize County are 1.2% chance of occurrence within Auglaize County any given year.

**Auglaize County Severe Thunderstorm History**

<b>Hazard</b>	<b>Total Incidents</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Property Damage</b>	<b>Crop Damage</b>
<b>Severe Thunderstorms</b>	167	0	1	\$1.258M	\$111K
<b>Hail</b>	83	0	0	\$25K	\$55K
<b>Lightning</b>	2	0	0	\$150K	\$0.00

### **2.2.8 Tornadoes**

A tornado is an intense, rotating column of air that protrudes from a cumulonimbus cloud in the shape of a funnel or rope whose circulation is present on the ground. If the column of air does not touch the ground, it is called a funnel cloud. In the United States the circulation of this column of air is in a counterclockwise direction. The average width according to FEMA is 300 to 500 yards wide and the path may extend up to fifty miles, with the wind speed within the funnel estimated between 100 to 500 mph. In Auglaize County, Tornadoes are a countywide hazard and can affect all areas and jurisdictions.

#### *Local Tornado History*

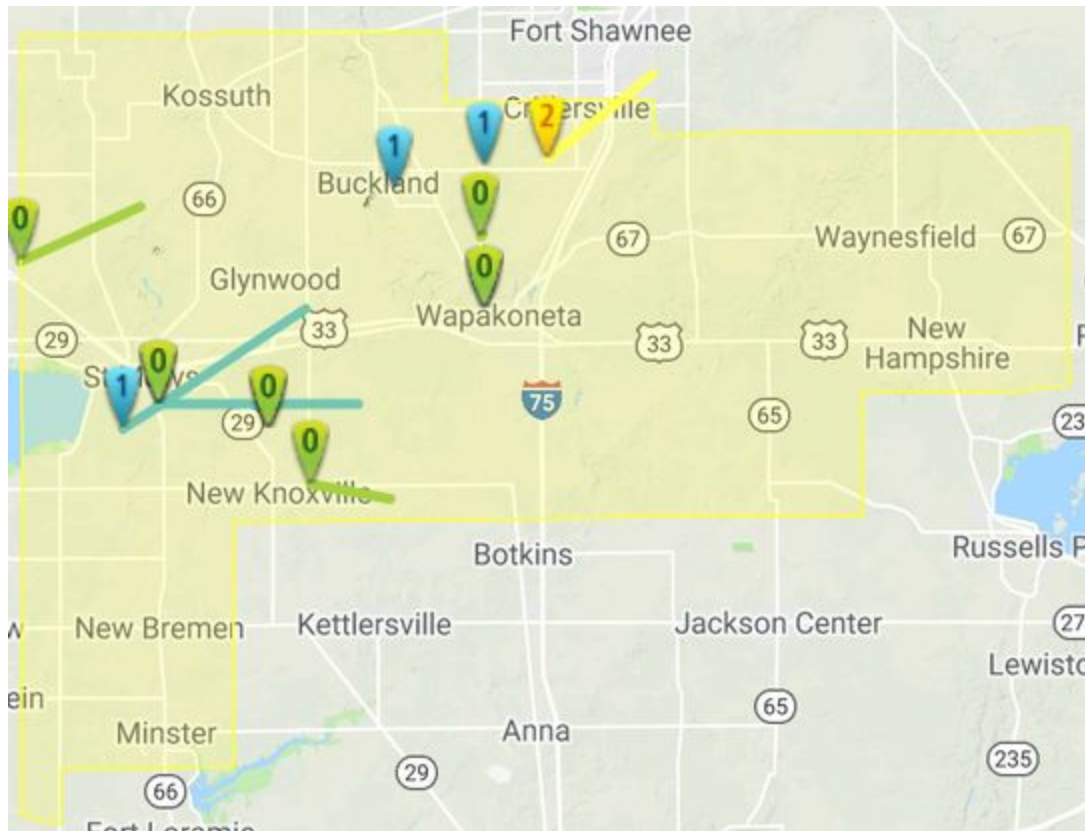
There have been thirteen reported tornado events in Auglaize County between January 1, 1950 and June 12, 2013 according to the National Climatic Data Center's website. All thirteen tornadoes occurring in Auglaize County were rated F-0 to EF2 on both the Fujita Scale and the Enhanced Fujita Tornado Scale. Property damage occurring in Auglaize County since 1950 is approximately \$4.055 million and \$5,000 in crop damage. There have been no deaths and 5 injuries associated with these tornadoes. Although the number of tornadoes reported in the county is low, the probability of a future event is likely since severe thunderstorms can spawn a

tornado at any time. On March 28, 1920, the only killer tornado to hit Auglaize County impacted the town of Moulton. Three people lost their lives and numerous others were injured, this was contributed to inadequate advanced warning systems. Currently Auglaize County has 18 tornado sirens throughout the county and has been a certified Storm Ready county since 2005. Table 2- list the EF scales and Wind Speed. Table 2- shows the breakdown of tornadoes by jurisdiction

### *Tornado Probability*

Tornado probabilities for Auglaize County were calculated based on the number events over 68 years. There is a .2% chance of an occurrence within Auglaize County any given year.

**Map2-3 Tornado History for Auglaize County**



## 2018 Auglaize County Natural Hazard Mitigation

### Auglaize County Tornado History

Hazard	Total Incidents	Deaths	Injuries	Property Damage	Crop Damage
Tornado	13	0	5	\$4.055M	\$5.00K

**Table 2-23 : Enhanced Fujita Scale**

EF scale	Wind Speed	Typical Damage
0	65 to 85 MPH	Light damage. Peel surface off some roofs some damage to gutters or siding branches broken off trees shallow-rooted trees pushed over
1	86 to 110 MPH	Moderate damage roof severely stripped mobile homes overturned or badly damaged loss of exterior doors windows and other glass broken
2	111 to 135 MPH	Considerable damage roofs torn off well-constructed houses, foundations and frames homes shifted, mobile homes completely destroyed, large trees snapped or uprooted light objects missiles generated and cars lifted off the ground
3	136 to 165 MPH	Severe damage entire stories of well-constructed homes destroyed severe damage two large building such as shopping malls trains overturn trees debarked heavy cars lifted off the ground and thrown structures with weak foundations blown away some distance
4	166 to 200 MPH	Devastating damaged cars thrown and small missiles generated
5	Greater than 200 MPH	Incredible damage will occur
No rating		Inconceivable damage of an EF5 occurs the extent and type of damage may not be conceived. A number of missiles such as ice boxes, water heaters, storage tanks.

### 2.2.9 Windstorm

A windstorm is a weather event with very strong winds but little or no precipitation. Wind speed in this type of event can reach speeds of at least 34 mph. Damage can be caused by gusts, which are short bursts of winds, or long periods of sustained winds.

#### *Local Windstorm History*

Auglaize County has experienced 2 wind storms, one of these was the remnants of Hurricane Ike as it moved across Ohio in September of 2008. The other was the Derecho that produced winds 50 to 90 mph as it crossed the state.

In Auglaize County, NCDC has recorded only 11 events since 1950, resulting in \$5,539,000 in property damages. Windstorms are a countywide hazard and can affect all areas and jurisdictions.

#### *Windstorm Probability*

Windstorm probabilities for Auglaize County were calculated based on the number of events over 68 years. There is a .2% chance of an occurrence within Auglaize County any given year.

**Windstorm Impact Auglaize County Since 1950**

Hazard	Total Incidents	Deaths	Injuries	Property Damage	Crop Damage
Windstorm	11	0	0	\$5,539,000	\$0.00

### 2.2.10 Winter storms

A winter storm is a weather event that includes several winter weather hazards, such as extreme cold temperatures, wind, snowfall, ice or freezing rain. These storms can develop between early October to April. In Auglaize County, Winter Storms are a countywide hazard and can affect all areas and jurisdictions.

#### *Local Winter Storm History*

Auglaize County experiences multiple winter weather events every year. Since 1950 according to the National Climatic Data Center they have listed 36 winter storm events that have caused that has caused \$550,000 dollars in property damage.

When it comes to Winter Storms, the most significant historical winter weather event is the Blizzard of 1978. Auglaize County, and other counties in northern Ohio was impacted by this

storm. A two pressure weather system had combined over Ohio resulting in record snowfall and winds up to 70 mph. The high winds caused blowing and drifting snow that caused many travelers to be stranded and roads and business closed and residence working for several days to dig themselves out to assist their neighbors. The table below shows the Winter Storm events that have impacted the county other than the Great Blizzard and the Ice Storm of 2005 that caused 2 deaths in Auglaize County.

#### *Winter Storms, Ice Storms & Blizzard Probability*

Winter storms probabilities for AUGlaize County were calculated based on the number of events over 68 years. There is a .42% chance of an occurrence within Auglaize County any given year. Ice Storm probabilities for the county are .07% chance of an occurrence within Auglaize County any given year. Blizzard probabilities for the county are .03% chance of an occurrence within Auglaize County any given year.

**Winter Storm Impacts for Auglaize County**

<b>Hazard</b>	<b>Total Incidents</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Property Damage</b>	<b>Crop Damage</b>
Winter Storms	29	0	0	\$550K	\$0.00-
Ice Storms	5	0	0	\$0.00K	\$0.00K
Blizzards	2	0	0	\$0.00K	\$0.00K

## **2.3 VULNERABILITY ANALYSIS**

Auglaize County is vulnerable to the effects of wind, water and extreme temperature fluctuations. Local communities and infrastructures experience some level of damage from these events every year. While storms do not typically cause widespread devastation, they do cause significant short-term disruptions of daily life and cause enough damage to properties to be measurable. This section will describe the type and extent of damage Auglaize County typically experiences.

### **2.3.1 Floodplain Mapping and the National Flood Insurance Program**

Auglaize County began their floodplain modernization with ODNR in 2010. This process began with the Auglaize County Engineer, who is the County's Floodplain Manager. He has completed the study on the Auglaize River. That information has been submitted to FEMA for approval. The Saint Mary's River floodplain is still in the works and waiting on approval by FEMA. For now, the county continues to utilize the maps adopted in the 1980's. These are printed maps and the county has scanned them in to make them digitized for the public. All jurisdictions



participated in the National Flood Insurance Program with the exception of the Villages of Cridersville, Minster, New Bremen, Waynesfield. These jurisdictions are not in the floodplain. The following table provided by the National Flood Insurance Program provide the status for communities in Auglaize County from the FEMA Community Status Book report for Ohio.

**National Flood Insurance Program Participation**

Community	Init FHBM Identified	Init FIRM Identified	Curr EFF Map Date	Reg-Emer Date
Auglaize County	5/12/1978	9/6/1989	9/6/1989	9/6/1989
St. Marys City Of	5/7/1974	9/6/1989	9/6/1989	9/6/1989
Wapakoneta City Of	2/15/1974	9/6/1989	9/6/1989	9/6/1989
New Knoxville Village Of	10/6/1978	9/6/1989	9/6/1989	10/3/1994
Buckland Village Of	2/2/1979	9/6/1989	9/6/1989	2/2/1980

**Map of Auglaize County Floodplain**



**2.3.2 REPETITIVE AND SEVERE REPETITIVE LOSS STRUCTURES**

Several residential properties in Auglaize County are identified as repetitive loss properties that have experienced multiple flood losses. The table below list the community, number of properties and number of loss claims.

**Repetitive Loss Properties**

Community	Properties	Losses	Building Payments	Contents Payments	Total Payments
Wapakoneta City of	3	9	\$158,778.71	0	\$158,778.71
St. Marys City of	1	2	\$16,043.21	0	\$16,043.21
Auglaize County	1	2	48,087.22	692.64	48,779.86

**Severe Repetitive Loss Properties**

Community	Properties	Losses	Building Payments	Contents Payments	Total Payments
Wapakoneta City of	1	5	\$52,432.22	\$8,893.34	\$61,325.56

Auglaize County does acknowledge that additional repetitive loss structures may exist, especially as floodplain maps are updated and new structures are found inside the floodplain.

**2.3.3 Jurisdictional Vulnerability**

Auglaize County has many common factors County-wide, but each municipality considered its own vulnerabilities based upon the characteristics of the jurisdiction. The resulting hazard assessment identified the same primary risks for all villages and cities in the county: flood, windstorm, and tornado. Most villages are commuter communities, while some have a bit of industrial and commercial development with the two cities in the county having more industries. Most areas are vulnerable to runoff from storms, and therefore have flash flooding concerns. The following section describes how each community ranked the hazard- 1,2 or 3. The chance of occurrence at 25% or less being a 1, 26-65% being a 2 and 66-100% being a 3.

During the process of updating the county's hazard mitigation plan the Auglaize County-wide Emergency Management Board assessed all disaster types for possibilities and probabilities as well as magnitude and severity. They developed a countywide prioritization for planning purposes based on each jurisdiction. Countywide mitigation strategies were based upon

vulnerabilities of the entire County as well as those associated with unincorporated areas like townships and rural neighborhoods. The following section describes how each community ranked the hazard- 0 being N/A, 1 being 1 to 25%, 2 being 26%-65% and 3 being 66%-100% chance that a natural hazard could impact their business or community. Then on the Preparedness side the percentages were reversed to rank to see how the committee felt they were prepared both internal and external (Mutual Aid) response with 0 being N/A, 1=66%-100%, 2=26% to 65% and 3=1 to 25%. The committee will complete another HVA before the annual review to see how the county has improved.

### Summary of Auglaize County Hazard Vulnerability Assessment

Hazard	Probability	Human Impact	Property Impact	Business Impact	Preparedness	Internal Response	External Response	Risk
	Likelihood this will occur	Possibility of death or injury	Physical loss and damages	Interruption of Services	Preplanning	Time, effectiveness, resources	Community/ Mutual Aid	
Score	0=N/A 1=Low 2=Moderate 3=High	0=N/A 1=Low 2=Moderate 3=High	0=N/A 1=Low 2=Moderate 3=High	0=N/A 1=Low 2=Moderate 3=High	0=N/A 1= High 2 = Moderate 3 +Low	0=N/A 1= High 2 = Moderate 3 +Low	0=N/A 1= High 2 = Moderate 3 +Low	
Tornado	2	3	3	3	1	2	2	52%
Severe Thunderstorms	3	1	1	1	1	1	1	33%
Blizzard	2	1	1	2	2	2	2	37%
Ice Storms	2	1	1	3	1	1	2	33%
Earthquake	1	1	2	1	1	1	1	13%
Temperature Extremes	2	1	1	2	1	1	1	26%
Drought	2	0	0	0	1	1	1	11%
Floods	2	2	3	3	2	2	2	52%
Dam Failure	1	2	3	3	2	2	3	28%

#### St. Marys

The City of St. Marys is one of the two retail and services centers for the county. There are many stores, shops, and restaurants as well as small service-based businesses that provide needed goods and assistance for the residents of Auglaize County. St. Marys has several industries that employ not only locals but several people from the County's villages as well. They are concerned about street flooding, access to retail and service centers, and the ability to receive travelers as well as allowing the residents to move about the town. The county's only hospital is

located in St. Marys, and residents depend upon the doctors and staff there to provide necessary health and wellness care.

St. Marys has areas of designated flood plains along the St. Marys River that runs through the city. The Miami Erie Canal also runs through the city and Grand Lake St. Marys is just to the southwest of the city limits. Ongoing flooding problems on the southern edge of St. Marys has led officials to start a mitigation project to address these problems. Flooding is the primary hazard concern. Winds outrank tornado as a hazard because of frequency and because St. Marys is home to two mobile home trailer parks.

City of St Marys Hazard Rank

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake
8	Dam Failure

### *Wapakoneta*

The City of Wapakoneta is one of the two retail and services centers for the county. There are many stores, shops, and restaurants as well as small service-based businesses that provide needed goods and assistance for the residents of Auglaize County. The county government is based in this city and it fills the role as county seat. The county fairgrounds are located in Wapakoneta. Wapakoneta has several industries that employ not only locals but several people from the County's villages as well. They are concerned about street flooding, access to retail and service centers, and the ability to receive travelers as well as allowing the residents to move about the town.

Wapakoneta has areas of designated flood plains along the Auglaize River as well as Quaker Run, a tributary of the Auglaize River within the city. Wind/tornado is the second and third hazard concerns for the city. The fairgrounds is home to a six day long fair as well as being

utilized for several other ventures throughout the year. Wapakoneta also has three mobile trailer parks.

**City of Wapakoneta**

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake
8	Dam Failure

*Buckland*

This village sits in the northwestern quadrant of Auglaize County. At just over two hundred residents, this village is home to just a few businesses as well as a volunteer fire department and a church. The Auglaize River borders the eastern edge of the village.

Flooding is the village's top concern, followed by winds. Buckland only sits at 850' and is in the 100 year flood plain. The rural openness surrounding the village allows for winds to come through.

**Village of Buckland**

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake

### *Cridersville*

Cridersville is a village of just under nine hundred in the northeast quadrant of Auglaize County. Like several other villages, Cridersville does not have an identified floodplain or proximity to major waterways. However, they are still prone to minor flooding, making flooding the village's third hazard concern. Wind and tornadoes are ranked as Cridersville's first and second concerns. Farmland and open land to the south, north and primarily west leave little to block or break up wind or weaken tornadoes. Cridersville does have two mobile trailer home parks that enhances the concern for wind/tornadoes. Cridersville is heavily tasked with keeping open roadways to The Otterbein Retirement Community as well as to Interstate 75 which runs along the eastern edge of the village.

**Village of Cridersville**

Rank	Hazard
1	Windstorm
2	Tornado
3	Flood
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake

### *Minster*

This village sits in the southwest quadrant of Auglaize County. Of most concern is flash flooding of streets and roads that prevent access to the village's homes, businesses and industries, as well as prevents egress to St. Marys and Wapak and other areas where services and retail are available. Although Minster does not have any identified floodplain areas, flooding was identified as the village's number one hazard concern. Lake Loramie is just outside the southeastern village limits and the Miami Erie Canal runs through the village. Flash flooding can occur during heavy precipitation events, causing streets and intersections to flood. The damage this causes to the village's infrastructure is a drain on the jurisdiction's limited finances. Wind events, both straight-line and tornado, are also of significant concern due to the rural openness surrounding the village.

## Village of Minster

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake

*New Bremen*

This small village is located to the north of New Bremen and south of the City of St. Marys in the southwest quadrant of Auglaize County amid farmland. It is home to just under two thousand residents and several businesses and industries. New Bremen is not located within a designated floodplain area but identified flooding as their primary concern because of their flash flood concerns. The Miami Erie Canal flows through the village. Basement and roadway flooding has affected the village in the past. Straight-line winds and tornadoes were identified as the second and third priority hazards because the county frequently experiences wind events. These can cause power outages and minor property damage throughout the village.

## Village of New Bremen

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake



*New Knoxville*

New Knoxville is a residential community in the southwest quadrant of the county. This residential community has just under nine hundred residents. New Knoxville has industries, businesses and a small airport. They are concerned the most about flooding and wind/wind damage. Their streets can flood and prevent travel within the village. Keeping the airport's runway clear and open is a top priority which can be hampered by flash flooding, ice, blowing snow and strong winds.

A portion of New Knoxville is within a designated flood plain. There is a building which houses the village's American Legion chapter within this plain. Center Branch Creek splits to the northeast of the village and both branches flow through the village.

**Village of New Knoxville**

<b>Rank</b>	<b>Hazard</b>
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake

*Waynesfield*

Waynesfield is a small commuter community located in the northeast quadrant of Auglaize County. The village does not have an identified floodplain or proximity to major waterways. However, they are still prone to minor flooding making flooding the village's primary hazard concern. The village is located amid farms and open land, prone to damage from wind and elements, and vulnerable to isolation from resources. As it is a commuters community, it is vital that roadways are kept open.



Village of Waynesfield

Rank	Hazard
1	Flood
2	Windstorm
3	Tornado
4	Severe Thunderstorm
5	Severe Winter Storm
6	Drought
7	Earthquake

## 2.4 Risk Analysis

In order to estimate disaster losses, a damage profile that considers the potential impact and loss from each hazard is developed. In this section, loss estimates from floods, earthquakes, winter storms, tornadoes, thunderstorms, windstorms, and drought are discussed. While the losses from these incidents are often more of a temporary and inconvenient nature, significant disruption to business, some property damage, and loss of life is possible under extreme or unusual circumstances. This information was used to determine Auglaize County's risk for each specific hazard.

### 2.4.1 Dam/Levee Failure Damage Profile

There are two dams in Auglaize County. One, the largest, is located southwest of the City of St. Marys and is owned and operated by the State of Ohio Division of State Parks. It is inspected and maintained according to an operational plan, and has no history of overflow or weakness. The inundation area includes, as a worst-case scenario, a section of homes on the southwest side of the city. Other properties include a state owned fish hatchery and property as well as farm ground and farm residences. Much of the area immediately around the reservoir is a natural habitat and park or recreational area with picnic tables, walking paths, and bike trails. Due to the size of this reservoir, it is classified as a Class I dam. There is no emergency plan for this facility; it was discussed several times that a plan should be developed by the State of Ohio, owner of this facility, to no avail.

The other classified dam, a class 2 low head dam, is located in the City of Wapakoneta under the Hamilton Street Bridge. This dam is maintained and repaired by the City of Wapakoneta. There is no history of failure or weakness and there is no emergency plan developed for this facility. The responsible fire department for this area in case of emergency is The City of Wapakoneta Fire Department which maintains a swift water rescue team.

The other dams in Auglaize County are listed by the Ohio Department of Natural Resources as “other” which means they are unclassified, small in size or capacity, and owned by private entities.

#### **2.4.2 Drought/Extreme Heat Damage Profile**

Auglaize County can experience slight drought and occasionally experiences periods of decreased precipitation during the agriculture-growing season. According to NCDC, the county suffered drought in 1999. According to USGS, the county suffered drought through three other dates besides the 1999 date. The climate is moderate and does not turn arid at any time. There is no history of an extended drought that would cause casualties or property damage more significant than a reduction in crop yields for a single growing season nor is there any history of extensive crop losses in excess of a single crop year. Precipitation patterns as well as municipal use can contribute to a series of years with higher or lower average yields due to slight dryness and late planting or harvest because of excessive rainfall.

For the purpose of loss estimates, only the major cash grain crops were considered because those crops constitute the majority of production in Auglaize County. Production livestock can be sold regardless of drought.

#### ***Earthquake Damage Profile***

Earthquakes are geologically possible but very uncommon in Auglaize County. The county has experienced three earthquakes that have all been very minor and have caused no known damage. As such, there is little data to support committing extensive resources to earthquake-proofing buildings and other structures.

Because of the low risk and high cost of implementing mitigation strategies related to earthquake risk, the planning team did not identify any such actions.

#### ***Flood Damage Profile***

Auglaize County is vulnerable to minor to moderate flood damage, particularly from flash flooding. The areas most likely to sustain flood damage are those adjacent or in close proximity to waterways, including some low-lying roadways and areas close to storm sewers that may be undersized or inadequate to handle runoff from heavy precipitation events.

In Auglaize County, damaging flooding is generally preceded by several days of heavy precipitation, and perhaps exacerbated by sudden melting of snow and ice or over-saturation of

the soils prior to the start of rainfall. Most residential damage is limited to flooded basements and access issues in general.

Flood damage in Auglaize County can include damage and destruction of physical buildings, infrastructure, crops, and livestock. With so much livestock in the county, pastured animals could easily be trapped away from food and shelter, causing a serious threat to their well-being. Residential structural damages could include damage to single- and multi-family homes. Commercial and industrial structural damages could include buildings used for manufacturing, product handling, transportation, warehousing, retail, business, and industrial, and the capital equipment associated with those uses. Agricultural structures would include barns for livestock, equipment storage, and commodity storage, as well as the contents of those buildings, which constitute business assets such as production animals, equipment, and machinery. The force of water could damage grain bins, transfer legs, and elevator systems very easily. Government, nonprofit, and educational institutions include critical structures like fire stations, police stations, hospitals, offices, schools, and special facilities like garages and maintenance buildings, and the capital contents of those structures.

Actual structural damage could include flooding in residential basements and ground floors, compromise of the foundations and utility systems, and destruction of the contents of those structures. People are at risk from flood water because household and industrial chemicals substances can contaminate floodwater and result in hazardous chemical exposure for rescuers, responders, and victims. Livestock could be significantly threatened by contaminated flood water and have no way to escape or the ability to protect themselves. This damage would result in large amounts of debris to manage, including finish, structural, and foundation materials and animal carcasses and waste.

Many roads can flood for short periods of time in Auglaize County, potentially closing businesses and institutions and crippling commerce for short periods of time. This period of business shutdown generally is confined to the floodplain and flash flooding areas and lasts for only a day or two once the rain stops.

Within the county's villages and cities, some areas exist where storm sewers are of insufficient size and capacity to handle rapid and heavy downfall. Depending on exactly where precipitation is heaviest, if the ground is frozen, saturated, or dry, and how full waterways are at the time of the event, significant flooding can occur on roads, streets, bridges, and neighborhoods.

Significant inconvenience can result when businesses close, access is cut off, and drainage systems are overwhelmed. In some cases, there are aboveground tanks of hazardous chemicals or liquid manure pits that can become inundated potentially cause these substances to be dispersed in raging floodwaters. Stored farm chemicals are at risk of being absorbed into the floodwaters, distributed over flooded areas, or damaged and depositing hazardous runoff in floodwater. In some areas, livestock in pastures may be at risk, depending on which waterways flood, and can become stranded or being injured before the flood water recedes. Agricultural land that is heavily

tilled drains quickly, facilitating rapid and significant amounts of runoff in ditches, streams, and rivers. This contributes to downstream flooding as the waterways attempt to drain the county. Countywide flooding in Auglaize County would occur only under the most severe of circumstances. As the county has limited floodplain area, the rainfall would have to come in copious amounts to flood the entire county. That being said, a multiple-day heavy rain event of more than 10 inches is suspected to be capable of widespread flooding, especially if it comes early in the spring and is combined with snowmelt and ice melting.

It is unlikely that loss of life would be attributable primarily due to flooding. If fatalities did occur, it would likely be the result of two or more combined threats, including lightning, tornado, or driving into standing water. Power would likely be affected, but outages would probably be short-lived and temporary due to the infrastructure improvements since 2012.

### ***Severe Thunderstorm Damage Profile***

Thunderstorms are relatively frequent but not generally severe in Auglaize County. During summers when heat builds up in the afternoon, a muggy and hot day can easily end with thunderstorms that include hail, lightning and heavy rain, and/or wind. Microbursts often add strong straight- line winds that destroy standing crops ready for harvest. These storms can develop quickly, provide little advance warning to residents, and cause significant destruction and disruption.

Thunderstorms that include hail are generally spotty and inconsistent. The fluctuating temperatures in the atmosphere necessary for hail to form do not occur frequently in northwest Ohio. When hail falls, damage most frequently occurs to vehicles, roofs, and siding on buildings. Rarely is there loss of life or significant bodily injury. Thunderstorm winds can damage standing crops and are most damaging when wheat, soybeans, and corn are ready for harvest. Wheat is harvested in July, but soybeans and corn are not harvested until early/mid fall. Corn is frequently at the pollination stage in July; at any point after stalks mature, hail and wind can shred and tear the leaves, flatten the stalks, and destroy the ears that are in the formative stages. This situation drops crop production to drastically low levels, causing an extreme loss to farmers for that year's crop.

Thunderstorms are a frequent but low risk hazard in Auglaize County. The combination of hail, lightning, precipitation, and wind caused by thunderstorms can inflict damage in any area of the county. Thunderstorms are somewhat common but are typically minor and cause more inconvenience than actual damage. Lightning that directly strikes structures or objects is possible but infrequent. Moderate to severe damage from hail, lightning, and thunderstorm wind, including loss of life and property, is possible but statistics indicate the frequency is extremely low.

When severe thunderstorms are accompanied by tornadoes, damage from the tornadoes is likely to be more significant than that caused by the thunderstorm. Straight-line winds, the result of

downbursts and microbursts, can be as destructive as tornado and cause damages similar to those described in the tornado EF scale.

### ***Tornado Damage Profile***

Auglaize County is universally vulnerable to tornado damage. Tornadoes do not occur frequently in the county. They are most common in the spring although they can develop throughout the summer and fall. Historically, the magnitude of tornadoes in Auglaize County is between EF-0 and EF-2.

Auglaize County does have more than one thousand mobile homes throughout the county. These structures are more vulnerable to wind damage because they are less secured to the ground than buildings with foundations, have no basement or sub-terrain level, and are lighter weight and made of less wind resistant material than traditionally constructed homes.

The majority of residential structures in the county are constructed from wood, concrete, brick, and stone. Many homes are older and were constructed using limestone and other masonry materials; these homes are built on traditional foundations with basements or crawl spaces. Some newer homes are concrete slab construction without basements or crawl spaces. These homes are most prone to superficial damage, roof damage, and falling trees during tornadoes and severe windstorms.

Commercial buildings are constructed of concrete, brick, concrete block, stone, and wood. These structures are generally built on concrete slabs with structural support trusses and pitched roof construction to facilitate snow and ice melt and runoff. Flat roof buildings, such as shopping centers and big-box type retail stores, are susceptible to heavy snow in blizzard conditions; there is no identifiable history of roof collapse incidents due to snow or ice. Property damage from tornadoes in Auglaize County most frequently includes damaged roofs, gutters, downspouts, trees, and, occasionally, an entire building. Mobile homes are damaged or destroyed in the most serious incidents. Outbuildings, barns, and storage buildings can be damaged because these structures are less resistant to wind damage and are frequently built on concrete slabs or dirt foundations.

### ***Wind Storm Damage Profile***

Wind incidents are somewhat frequent across Ohio, including Auglaize County. The county has experienced several high wind events in recent years. While not as damaging in Auglaize County as they have been in others, these events typically damage trees, which lead to obstructed roadways and downed power lines. Crop damage and destruction is also a concern. When high winds damage young and maturing crops, yields can be significantly reduced, which negatively impacts the county's economy.

### ***Winter Storm Damage***

Winter storm damages can potentially affect homes, businesses, and properties across Auglaize County. No singular area is more or less vulnerable to snowfall or winter weather conditions than another. Despite inconsistent elevations, drifting and blowing snow can create low visibility conditions on roadways across the county. Livestock operations in the county are particularly vulnerable to blizzards, ice, snow, and other winter weather hazards. Even in adverse weather conditions, the animals must be fed, cows must be milked, manure must be removed from barns, and operations must continue. This requires daily ingress and egress to these farms, bringing in food and supplies, and hauling out raw product and waste. Winter storms threaten and restrict access to these properties, making winter weather a serious concern for this portion of Auglaize County's economy.

Power outages can occur anywhere in the county during blizzards or snow storms that include significant ice, wind, or heavy amounts of snow. Residential electric lines are mostly above ground and vulnerable to wind and ice. Major supply lines are above ground as they enter Auglaize County from the generation plants; therefore, power to the substations is vulnerable to wind and heavy snow and ice even if the residential lines are not. Power outages are probable, frequent, and can be widespread. Farms with livestock operations are much more vulnerable to significant loss; the feeding systems, milking and collection systems, and other critical operations are all based upon an electrical supply to run mechanized equipment.

The loss estimates for winter storms are relatively low. There is no identifiable history of property loss due to snow pack, ice, or other winter storm-related causes. Reasonably anticipated losses from winter storms would include content loss such as food and perishables due to power interruptions. Losses in anything but an unusual, unpredictable incident would not include structures or infrastructure.

### ***Countywide Risk Analysis***

Based on the available hazard and vulnerability information, Auglaize County has risk for damage from a variety of disasters. To determine the county's overall level of risk, each hazard was evaluated and scored based on common criteria. The criteria included from the Hazard Vulnerability Assessment that was compiled from members on their opinion on natural hazards the county could be impacted with at any time along with what it would do to their community or businesses.

Probability- Likelihood the natural hazard would occur

0=N/A

1=1% to 25% Low

2=26% to 65% Moderate

3=66% to 100% High

Human Impact - Probability of Death or Injury

0=N/A

1=1% to 25% Low

2=26% to 65% Moderate

3=66% to 100% High

Property Impact- Physical loss or damages to property in the community

0=N/A

1=1% to 25% Low

2=26% to 65% Moderate

3=66% to 100% High

Business Impact - Potential impact an event is likely to have on the community or businesses.

0=N/A

1=1% to 25% Low

2=26% to 65% Moderate

3=66% to 100% High

Preparedness- Potentially how the community felt as being prepared for the hazard.

0=N/A

1=66% to 100% High

2=26% to 65% Moderate

3=1% to 25% Low

Internal Response - How a community or business is prepared to handle the response on their own with resources, effectiveness, or on a timely response less than 72 hours.

0=N/A

1=66% to 100% High

2=26% to 65% Moderate

3=1% to 25% Low

External Response - How a community can sustain itself for 72 hours while waiting on mutual aid from other local agencies, State and Federal assistance is also plays into this.

0=N/A

1=66% to 100% High

2=26% to 65% Moderate

3=1% to 25% Low