

# FAIRFIELD COUNTY

## Hazard Identification & Risk Assessment

For Public Dissemination



**Fairfield County Office of Emergency Management  
and Homeland Security  
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Lancaster, Ohio 43130**

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## Introduction

### Overview

The Hazard Identification and Risk Assessment (HIRA) is used to identify hazards and threats that could occur and how a community may be affected. This report builds off the 2018 Natural Hazard Mitigation Plan (NHMP) and serves to provide the community with that data for awareness, mitigation, and possible funding efforts to reduce the impact a community could face from likely threats. Looking at the vulnerabilities of Fairfield County, the most likely hazards are flooding, high winds, severe winter storms, and severe summer storms.

### Background

Figure 1: Photo credit: (Tuller, 2020)



The first Fairfield County (FC) NHMP was developed and adopted in 2003. The NHMP is updated every five years. This report contains data and information regarding the threats and hazards that could affect Fairfield County. The data has been updated in this report bringing it current.

Threats and hazards can be sudden and devastating. Awareness is the first step to mitigation and reducing the impact before the disaster arrives. The type of event, location, geography, and other factors play a role in the potential damage that can result. Assessing each potential threat or hazard for its impact can guide decision-makers to make changes to reduce damage. There may be funding opportunities in the future for these plans to mitigate, or reduce, the threat or hazard.

### Hazard Identification

Threats and hazards have been identified from historical activity and scientific data. The scientific data is from sources such as the National Oceanic Atmospheric Administration (NOAA), Ohio Department of Natural Resources (ODNR), Federal Emergency Management Agency (FEMA), and more.

Since the 2018 version of the NHMP, pipelines have been added as a potential hazard. The pipelines that run through the county add complexity and additional man-made risk.

Fairfield County is susceptible to numerous natural hazards such as flooding, severe winter weather, tornados, severe summer weather, drought and heat, earthquakes, dam failures, and man-made threats such as chemical, biological, radiological, and nuclear events. Wildfires, landslides, and invasive species have not occurred on a devastating scale in Fairfield County and will not be examined here. These

threats are not impossible and could occur in the future. Based on the history of events, Fairfield County is most susceptible to flooding, winter storms, severe winds, and severe summer storms. The pipelines that run through the county add complexity and additional man-made risk.

### Community Profile

The information below provides more information and background on the makeup and structure of Fairfield County.

### History

Fairfield County was created on December 9, 1800, in the Northwest Territory. The county is in east central Ohio and was named after the area's "fair fields" (Ohio History Central, 2021). Lancaster, then a settlement, was established in 1800 with help from Ebenezer Zane. The location was chosen where Zane's Trace crossed the Hocking River. Most of the settlers were of German descent coming from Pennsylvania so signage in town was printed in English and German (2021). Lancaster, the county seat, was a commercial center with several craftsmen and small businesses.



Figure 2: Appalachian foothills. Photo credit: ACEnet, 2021.

Pickerington is the second largest city in Fairfield County. It was founded in 1815 and originally named Jacksonville after Andrew Jackson. The town changed its name to Pickerington in 1827 in honor of its founder, Abraham Pickering. Pickerington was certified as a city in 1991.

### Location & Geography

Fairfield County is in Central Ohio. Counties bordering Fairfield are Hocking County to the south, Perry to the east, Licking to the north, Franklin to the northwest, and Pickaway to the southwest.

There are two cities in Fairfield County. The City of Lancaster is in the center of the county and the City of Pickerington is in the northwest corner of the county. Portions of Columbus and Reynoldsburg cross over the county lines from Franklin County and Licking County, respectively. The rest of the county is rural. The northern half of the county is mostly flat lending to farmland. The southern half of the county is made of forests and hills and sits on the edge of Ohio's Appalachian Mountain region (green counties in Figure 2).

As seen in Figure 3, the northern portion of the county is till plains. The lower two-thirds of the county is glaciated and unglaciated Allegheny plateau (Hamilton, 2005). The glaciers that covered the county created a unique topography with the northern part of the county being flat and the southern half of the county with hills and valleys. The City of Lancaster is located in a valley that protects it from certain weather elements. Pickerington is in primarily flat ground leaving it more exposed to severe winds and tornados.

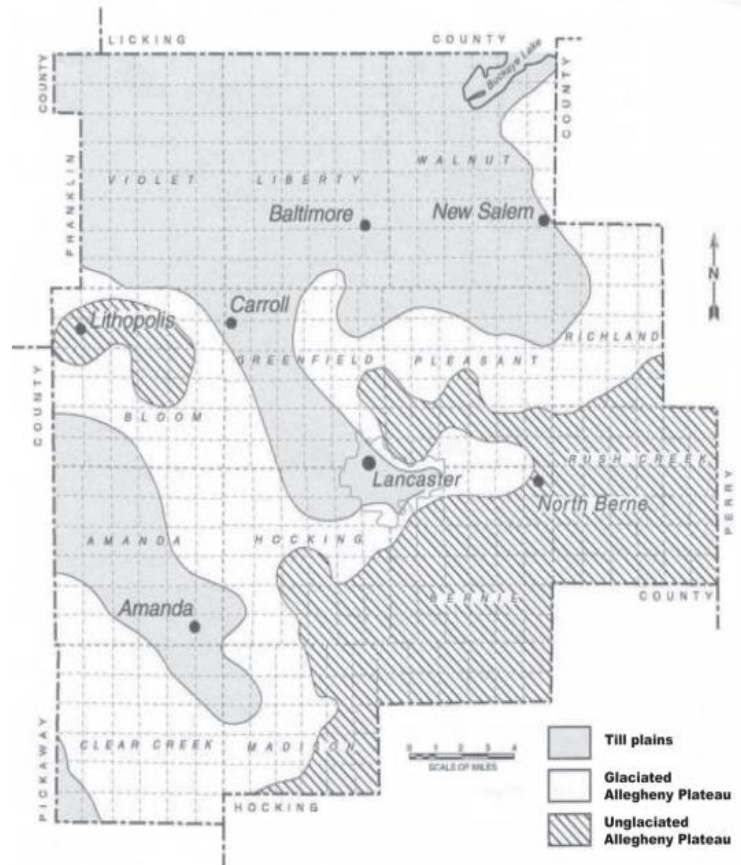
The geography of the county includes primarily shale, siltstone, sandstone, clay, and conglomerate (USGS, n.d.). Most of the mines located in the county are surface industrial mines collecting gravel and sand (Ohio Department of Natural Resources, 2021). There are two historic coal mines that are partially reclaimed in Rushcreek Township (2021). These mines do not pose much threat in the county for sinkholes, so this threat is not explored here.

### *Climate*

Fairfield County is in a temperate zone. In the winter, the average temperature is 29 degrees Fahrenheit (F), and, in the summer, the averages temperature is 73 degrees F (CustomWeather, 2021). The average annual precipitation is 22 inches (2021), of which about 58% usually falls from April through September (Hamilton, 2005). Snowfall averages about 16 inches per year (2005).

The graph in Figure 4 shows the average minimum and maximum temperature with the average precipitation (NCEI, 2021). The data in the graph is from 2010 to 2019 and represented monthly as shown in the x-axis. May through September were the warmer months with the most rainfall in June over 4.5 inches of rain. The next months with the most rainfall were April, July, and October with about 3.5 inches of rain each.

Figure 3: Physiographic subdivisions of Fairfield County. Photo



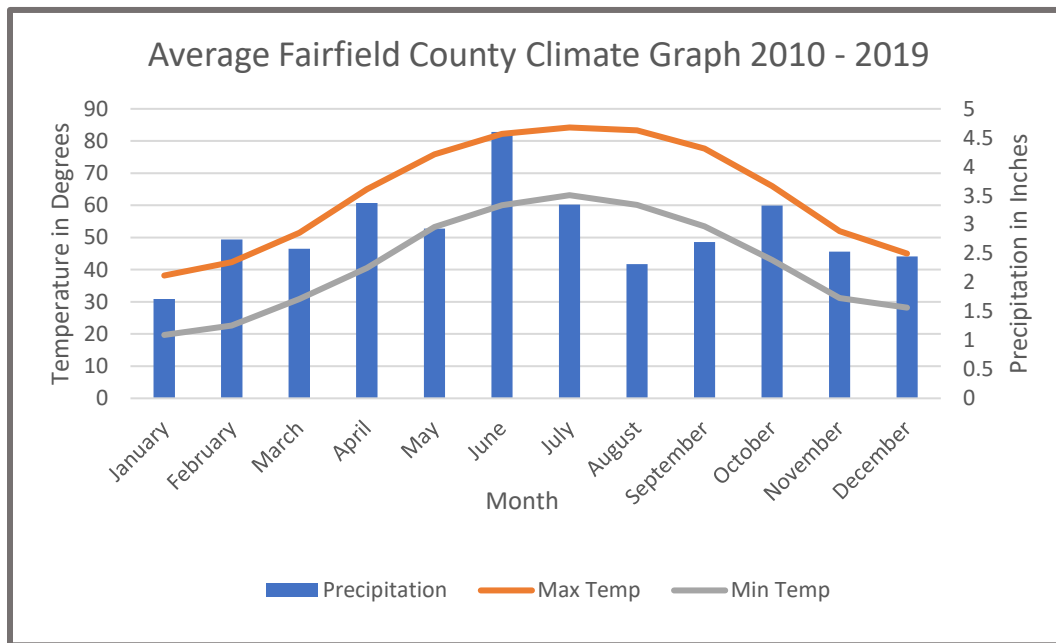


Figure 4: Average precipitation and temperature in Fairfield County

### Demographics

In 2019, the population of Fairfield County was 157,574 (Ohio Department of Development, 2020). The complete 2020 census data was not complete at the time of writing this report. The demographics of the county can be seen below in Table 1.

The county covers 505.7 square miles (population per square mile in 2010 was 289.8 (U.S. Census). Of this, about 62.65% is agricultural land use (mostly in the north), 25.35% is forest (mostly south), and 12% of the land is urban (Ohio Department of Development, 2020). About 82% of the agricultural land is cropland with the top crops being soybeans, corn, hay, and wheat (USDA, 2017).

Age and Sex	Percentage
Persons under 18 years	24.3%
Persons 65 years and older	15.1%
Race & Hispanic Origin	Percentage
White	87.9%
Black or African American	7.1%
Hispanic or Latino	2.1%
Two or More Races	2.8%
Asian	1.5%
American Indian and Alaska Native	0.3%
Native Hawaiian or Other Pacific Islander	0.0%

Table 1: Demographics of Fairfield County, 2020 County Profile

The county consists of:

- Cities – 6 (including sections of Canal Winchester, Columbus, and Reynoldsburg)
- Villages – 14
- Townships – 13

- Census dedicated areas – 2
- Unincorporated communities - 22

### *Economics*

The median household income is \$66,175 (Ohio Department of Development, 2020). Roughly 25.9% of the population is under 200% of the Federal Poverty Level (FPL) (2020). The average rent in 2020 was \$866 per month and the average house payment was \$1,428 monthly. There are several Industries that provide employment in Fairfield County with the largest including manufacturing, government, and service which includes medical occupations (2020).

### *Hazard Profiles*

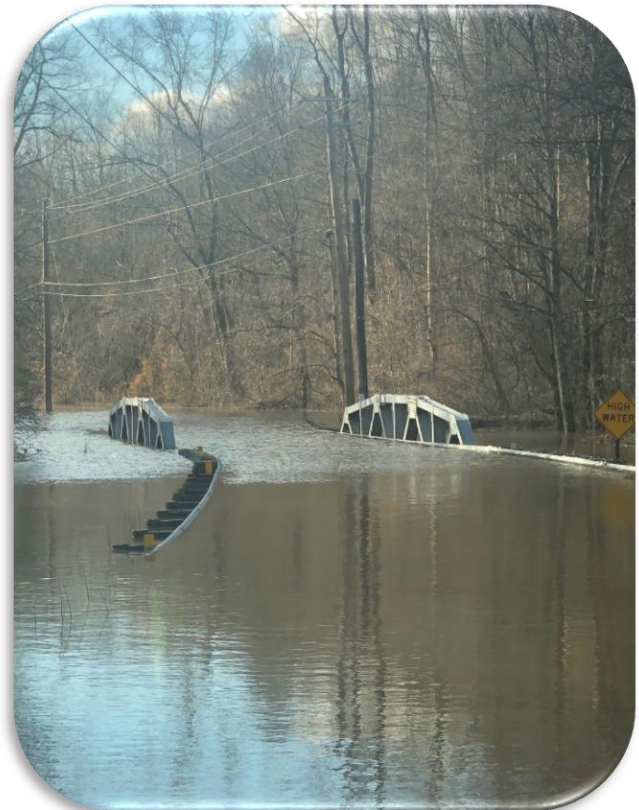
The hazards below include natural and man-made potentials for disaster. Understanding the risk for potentially devastating events is necessary to prevent and mitigate threats and reduce impact to life and property. The data below indicates the type and number of events and effect on the community. Some events may have occurred on the same day in different areas, so each event is not a different date. Succinct event tables can be found in Appendix B.

### *Natural Disasters*

#### *Flooding*

Flooding is defined as the submerging of normally dry land with a large amount of water. Flash flooding is a large amount of water in a short period of time. The storm drains cannot handle this water volume in such a short time which can lead to flooding. Riverine flooding is water that overflows the banks of a body of water (stream, creek, river) and floods surrounding areas.

The geographic makeup of the county indicates four major drainage basins: Lower Scioto, Hocking, Upper Scioto, and Licking (see Figure 6). The Hocking River originates in west central Fairfield County and continues southeast into Hocking County. Two major tributaries, Rush Creek and Clear Creek, both join the river in the extreme southern part of the county. Most of the flooding associated with the Hocking River occurs in Hocking County and not in Fairfield County. Walnut Creek originates just outside of Fairfield County and runs west and south



*Figure 5: Mt Zion Road 2/8/2019, riverine flooding.*



through the northern part of the county to the Scioto River. Walnut Creek causes occasional flooding in Baltimore.



Figure 6: Watershed map for Fairfield County, Ohio.

Significant efforts to reduce flooding have been made over the course of time such as dam improvements, watershed developments, and education on flooding prevention. Even with the improvements, there are still areas of the county that are subject to flooding including the villages of Amanda, Bremen, Millersport, Sugar Grove, Buckeye Lake, and Stoutsville.

The National Flood Insurance Program (NFIP) was established by the National Flood Insurance Act of 1968 and then strengthened by the Flood Disaster Protection Act of 1973. Participation in the NFIP ensures residents in flood prone areas will have access to affordable flood insurance. In addition, the communities that participate adopt floodplain regulations

that meet FEMA's minimum criteria. The cities and townships that participate in the NFIP are shown below in Table 2 (FEMA, 2021).

NFIP Participation		Init FHBM Identified	Init FIRM Identified	Current Effective Map Date	Reg Emergency Date	Participates Yes/No
CID	Community					
390159	Baltimore	06/21/1974	12/19/1991	01/06/2012	12/17/1991	Yes
390160	Bremen	06/21/1974	09/02/1982	04/17/2020	09/02/1982	Yes
390882	Buckeye Lake	--	08/15/1984	03/16/2015	08/15/1984	Yes
390169	Canal Winchester	02/01/1974	06/04/1980	06/17/2008	06/04/1980	Yes
390170	Columbus	08/09/1974	07/05/1983	06/16/2011	07/05/1983	Yes
390158	Fairfield County	02/10/1978	04/17/1989	04/17/2020	04/17/1989	Yes
390161	Lancaster	05/17/1974	05/01/1980	07/19/2018	05/01/1980	Yes
390689	Millersport	01/31/1975	02/01/1991	01/06/2012	02/01/1991	Yes
390162	Pickerington	06/28/1974	08/05/1991	07/19/2018	08/05/1991	Yes
390177	Reynoldsburg	11/23/1973	09/01/1978	03/16/2015	09/01/1978	Yes
390163	Sugar Grove	08/30/1974	09/02/1982	01/06/2012	09/02/1982	Yes
390690	Thurston	01/31/1975	11/23/1984	01/06/2012	11/23/1984	Yes
Does NOT Participate in NFIP						
390817	Carroll	09/22/1978	01/06/2012	01/06/2012	09/22/1979	No

--	Amanda	N/A	N/A	N/A	N/A	No
--	Lithopolis	N/A	N/A	N/A	N/A	No
--	Pleasantville	N/A	N/A	N/A	N/A	No
--	Rushville	N/A	N/A	N/A	N/A	No
--	Stoutsville	N/A	N/A	N/A	N/A	No
--	Rushville	N/A	N/A	N/A	N/A	No

*Table 2: NFIP Community Participation List from FEMA 2021*

The Flood Insurance Rate Map (FIRM) is issued by FEMA. This map shows where the NFIP regulations apply based on flooding areas. On the local level, the Regional Planning Commission maintains the FIRM. Private insurance agents and mortgage lenders use the map to determine if flood insurance is needed and the rates that will be applied.

Chances of flooding increases in the late winter and early spring when snow is melting, and heavy spring rain arrives. Flooding can also be caused by debris in river bends, narrow water channels, and water detention basins that are too small. The National Centers for Environmental Information (NCEI) shows that from 1995 to present, Fairfield County had 65 events and 51 days of flooding or flash flooding (NCEI, 2021). Those 51 days resulted in \$1,226,000 in property damage and \$3,000 in crop damage (2021). In 1999, one of the events resulted in two individuals dying and one person injured (2021).

#### *Severe Summer Storms*

For this document, severe summer storms include thunderstorm wind, heavy rain, lightening, and hail. (High winds may also accompany severe summer storms. These have been examined separately.) Severe thunderstorm warnings produce winds 58 miles per hour (mph) or greater and/or have hail one inch in diameter or greater (US Department of Commerce, 2021). The summer storm elements were used to identify the number of events and corresponding damages in the county from NCEI's database of severe natural events. Since January 1, 1995, to August 2, 2021, there were 355 severe summer storm events in 178 days (NCEI, 2021). Personal property damage was estimated at \$1,208,000 and crop damage at \$23,000 (2021).

*Figure 7: Severe thunderstorm on 6/26/2010*



### *Winter Weather*

Winter weather hazards include blizzards, cold/wind chill, extreme cold/wind chill, frost/freeze, ice storm, winter storm. In the same timeframe of 1995 to mid-2021, there were 98 events in 97 days in Fairfield County (NCEI, 2021). These storms resulted in \$520,000 of property damage and \$540,000 in crop damages (2021). There were zero lives lost or injuries related to these events.

*Figure 8: Snow and Ice Storm 12/29/2004.*



### *Tornados*

Tornados and funnel clouds can be rare, but they do happen in Fairfield County. Since 1995, 11 events took place on 8 different days (NCEI, 2021). The last reported event, according to NOAA, took place on 6/23/2015 (NCEI, 2021). No additional events have been reported since the NHMP in 2018. Tornados pose a risk for Fairfield County residents, but due to the geography of the county, the risk is low. The risk for tornados is greater in the northern, flatter part of the county.

*Figure 9: Tornado damage from storm on 2/28/2011.*



Since 1960, there have been zero deaths associated with tornados and funnel clouds in the county. There have been 16 injuries since 1960 with the last injury taking place in June 1990 (NCEI, 2021).

### *High Winds*

High winds are defined as winds with sustained speed of 40 mph or greater for an hour or more or wind gusts 58 mph or greater for any length of time (US Department of Commerce, 2021). Since 1995, there were 11 events in 11 different days (NCEI, 2021). These events resulted in one death, one injury, and over \$16.5 million in damages cumulatively (2021).

A derecho is a windstorm that causes hurricane-force straight-line winds. The derecho that happened in Ohio in 2012 had winds clocked at over 90mph (King, 2021). This storm killed 22 people and five million people were left without power (2021). In Fairfield County, there were no reported injuries or deaths. 30,000 residents were without power after the initial storm.

#### *Extreme Heat*

Extreme or excessive heat is when the temperature is 105°F or higher (US Department of Commerce, 2021). Since 1995, there were seven events on seven different days (2021). Excessive heat did not result in death or injury and did not cause any personal or crop damage (2021). Excessive or extreme heat can be dangerous, especially for children and the elderly who can overheat and end up in heat exhaustion or heat stroke rapidly. Those who do not have anywhere to stay during the day such as the homeless can be in danger when they do not have anywhere to shelter during the heat of the day.

#### *Biological Hazard*

##### *Pandemic Influenza*

The Centers for Disease Control and Prevention (CDC) has been focusing on pandemic influenza and readiness for many years. There have been pandemics of influenza in the past. The 1918 Spanish Flu (H1N1) and swine flu H1N1pdm09 of 2009 are two notable examples.

Since H1N1pdm09 first appeared in 2009, this virus has circulated seasonally in the United States, causing significant illness, hospitalizations, and death (CDC, 2019). This was a strain that combined viruses from pigs, birds, and humans and caused disease in humans (Mayo Foundation for Medical Education & Research, 2021). H1N1pdm09 does not make the news as much anymore because it is seen every year and the strain is part of the annual influenza vaccine reducing the risk of severe illness. Influenza is only reportable if it is associated with a hospitalization or results in a pediatric death. In the 2018-2019 influenza season, 79 cases were associated with hospitalizations (Ohio Department of Health, 2019). In the 2019-2020 influenza season, there were 93 influenza-associated hospitalizations in Fairfield County (Ohio Department of Health, 2020).

*Figure 10: High Wind event in Rushville on 6/21/2004.*



### *Other Pandemics/Epidemics*

COVID-19 in 2020 was the biggest example for pandemics in many residents' lifetime. Over the years, various diseases have surfaced and turned into outbreaks or epidemics such as polio, Zika, malaria, and the resurgence of measles. With Fairfield County being in the temperate zone, many of the diseases that affect the tropics do not appear here unless someone has traveled to an area where these diseases are endemic. The risk is low, but COVID-19 proved that the risk is always present.



Figure 11: Botulism outbreak, 4/21/2015.

The botulism outbreak of 2015 was not an epidemic or pandemic but reminds people that illnesses can happen suddenly and with little notice.

### *Man-Made Hazards*

As opposed to naturally occurring threats, there are also man-made threats. Fairfield County is a relatively safe county with little threat of man-made hazards; however, it is always possible.

### *Biological Agents*

Biological agents include bacteria, viruses, fungi, or other microorganisms and the toxins that are associated with them. These agents can cause mild to serious medical conditions including death. Examples of biological agents are anthrax, botulism, plague, smallpox, tularemia, and hemorrhagic fevers (Ebola, Marburg, and Lassa) (CDC, 2018).

The release of biological agents could be a localized event, but the entire county is equally at-risk. The relative risk of biological agents affecting in Fairfield County is low but has happened in the past. A Fairfield County resident was arrested in 1995 for having three vials of freeze-dried *Yersinia pestis* (bubonic plague) in his possession without a laboratory license. In 2015, a foodborne botulism outbreak affected a church potluck. In both scenarios, biological agents were not intentionally released to cause harm, but they did appear close to home.

### *Radiological/Nuclear Emergencies*

Radiological incidents can occur by accident or deliberate release of radiation. There are multiple types of radiation incidents including: nuclear weapons, dirty bombs, radiological exposure devices, accidents at nuclear power plants, accidents transporting radiation, and occupational accidents in healthcare

facilities (World Health Organization, 2021). The impact of radiation is severe illness, burns, death, and contaminated food and water sources (2021). Physical impacts are not the only result, but psychological trauma and mental health will be a need in the community as with many of these man-made hazardous events.

### *Violent Acts/Intentional*

Violent acts may not always be terrorist attacks, but terrorist attacks are most often violent in nature. Terrorism is the unlawful use of violence and intimidation, especially against residents, for political agenda or aim. Terrorist acts are horrifying for residents to experience and can be costly in lives and property damage. The method and location used are large factors in the potential damage created. Again, as with biological hazards, the risk is low but always present.

### *Cyber-Attacks*

Cyber-attacks are attempts by hackers to damage or destroy a computer system or network. These results can be numerous and include leaking personal information, damaged reputation, lawsuits, paying an expensive ransom fee, loss of functionality, and damage to critical infrastructure. Cyber-attacks are not short-lived or resolved within a day. In 2020, the average time to identify a breach was 228 days and then the time to contain the breach was an additional 80 days (Sobers, 2021). This does not include the time it took to repair what was hacked or restore function.

### *Technological*

#### *Pipelines*

New to the document are the numerous pipelines that have appeared across the county, especially in the past few years. Most of the pipelines run natural gas from larger collection sites through the county and then on to their destination. Pipelines are at risk for rupture or cracking. The substance and volume transported through the pipeline determines the response required in an event. The location of the leak determines how many are affected.

Due to the sensitive nature of the pipelines, the exact locations are withheld in this document for safety. The pipelines run across the county, so Fairfield County, as a whole, is at risk for pipeline events.

#### *Tier II Facilities/HAZMAT*

Tier II facilities are those required to report hazardous chemicals kept on premises above a certain limit under the Emergency Planning and Community Right-to-Know Act (EPCRA) and Ohio Revised Code (ORC) 3750. These facilities are required to report contents annually to the Local Emergency Planning Committee (LEPC). If hazardous chemicals leak or spill (intentionally or unintentionally) the agency is

required to report the spill to the LEPC in that jurisdiction as well as the Environmental Protection Agency (EPA).

Most HAZMAT incidents are minor spills or tanker trucks that have accidents and leak whatever substance they are hauling or the fuel in the truck. From 2015 to 2020, there were 84 HAZMAT incidents in the county. The concern from these incidents are chemicals leaching into groundwater as well as bodies of water.



Figure 12: Hazmat spill from accident, 11/9/2016.

#### *Intentional or Unintentional*

Some events can be intentional or caused by a natural event. Examples include fires, dam failures, and groundwater contamination.

#### Fires

Fires are devastating. The scale and location of the fire are variables in how much devastation is caused. Life, health, and property are directly impacted by fire and smoke damage. The chance of fires and smoke damage is certain in the future and the entire county is at risk. The cause of the fire can be a natural occurrence (lightening), deliberate (arson), or accidental (electric shorting out).



Figure 13: Windmill Dam failure, 7/13/2015.

#### Dam Failures

Dam failures are defined as sudden, rapid, and uncontrolled release of impounded water. Fairfield County has 50 dams. Of these, 14 are Class I. According to ORC 1501:21-13-01, Class I dam failures will likely result in probable loss of human life or structural collapse of at least one residence or one

commercial business. Dam failures could be the result of malicious intent or the heavy rain and melting snow in early spring that is too much for the infrastructure to handle.

The largest body of water and dam that would affect residents and businesses on a large scale is the Buckeye Lake Dam.

### Groundwater Contamination

Some groundwater contamination is naturally occurring; however, most is the result of human activity. Groundwater contamination happens when products get into the groundwater and cause it to be unsafe for human use. There are many potential sources of contamination include storage tanks for gasoline, oil, and other chemicals, failing septic systems, abandoned or uncontrolled hazardous waste sites, landfills, road salts, air pollution, nitrates, pharmaceutical, and personal hygiene products (National Groundwater Association, 2021). When these substances seep into the ground, they can contaminate water in between soil particles and fractured rock. This water moves through soil formations and can end up in drinking water, crops, and bodies of water.

Another way that these substances can get into the ground is through dumping into bodies of water. Hazardous spills or leaching into streams, creeks, and rivers contaminate water supplies.

There are water sources all over Fairfield County, whether natural or man-made infrastructure. Water is essential for life. The number of those impacted and the severity of the impact varies depending on the contaminant and water source affected.

### Hazard Risk Ranking

Knowledge of the types of hazards that may impact an area is essential for analyzing and assessing risks. Hazards require different levels of risk assessment depending on the extent of the impact they can have on the community. A hazard that is unlikely to happen will not require the same level of assessment as one that happens frequently or causes severe damage. The vulnerability of critical infrastructure is an important factor in hazard assessment. This infrastructure must be protected so that residents can continue living with access to vital resources. Below are some of the critical infrastructure resources in Fairfield County by aggregate numbers.

Fairfield County – Critical Infrastructure			
Type of Infrastructure	Number	Type of Infrastructure	Number
Hospitals	4	Red Cross Shelters	1
Fire Stations	21	Police Stations	9
Dialysis Centers	2	Nursing Homes	8
Assisted Living Facilities	9	Independent Senior Living	13



<b>School Districts</b>	13	<b>School Buildings</b>	51
<b>Public Libraries</b>	6	<b>Correctional Facilities</b>	3
<b>Water Treatment Plants</b>	13	<b>Wastewater Treatment</b>	9
<b>Class I Dams</b>	14	<b>Electrical Substations</b>	1

Table 3: Critical Infrastructure in Fairfield County

## Probability of Risk

### Natural Events

When looking at the data from NCEI on natural disasters (Appendix B), summer storms had the greatest probability of taking place in the next year. NCEI split out some weather categories separate, but when looking at summer storms, these can include the thunderstorm wind, heavy rain, lightening, and hail as categorized, but it may also include high winds, tornados, and/or flooding. Looking at summer storms in total, the percentage probability in the next year jumps to 4.55%. Severe summer storms without high winds, tornados, and flooding are at 3.66% likelihood in the next year.

Flooding caused the greatest number of personal injury and loss of life as well as the most in property damage. Crop damage was most significantly impacted by winter weather events. The likely probability of these natural events occurring in the next year is shown in the table below.

<b>Event</b>	<b>Probability</b>
Severe Summer Storms	3.66%
Winter Storms	1%
Flooding	0.67%
Tornado/Funnel Cloud	0.11%
High Winds	0.11%
Drought/Extreme Heat	0.07%
Summer Storms – with flooding, tornado, and high winds	4.55%

Table 4: Probability of natural event happening in the next year based on NCEI data.

The high winds category includes the windstorm from the remnants of Hurricane Ike on September 14, 2008. That windstorm caused \$16,500,000 in damages in Fairfield County (NCEI, 2021). A gust to 65 mph was recorded in Baltimore and strong winds of 40-50 mph were sustained for several hours (2021). Trees were blown down on top of powerlines, crops were damaged, and there was recorded structural damage. One death was reported from a falling tree limb.

As described earlier, the derecho from June 29, 2012, was classified by NCEI as “Thunderstorm Wind” that came with excessive heat. The derecho swept across Ohio producing widespread straight-line winds

with damage to trees and structures. Power outages lasted several days in some places. Large, isolated hail was also reported with the stronger parts of the system. The winds in Fairfield County were measured at 65 knots or 74.8 mph (NCEI, 2021).

It should be noted that there may be multiple events in different locations on a single day as shown in the tables in Appendix B. The probability calculation was made based on the number of events, not the number of event days. While the percentages may seem small, this is calculated over the course of a year. These weather events have seasons that they typically occur in. The probability of an event in its particular season would be higher. There are outlier events that have taken place outside the normal season for that type of weather which cannot rule out the probability of an event on any given day of the year.

Probabilities for events that rarely or never happen are not included here as the probability would be miniscule but not zero.

### *Man-Made Events*

Fairfield County is a safe area to work, live, and play. Man-made disasters are very few and when they do occur, these events do not cause massive damage or affect large groups of people. The likelihood of such events is not zero but is small in probability. Cyber attacks are increasing in numbers and while Fairfield County specifically may not be targeted, this area may be severely impacted by such events.

## *Vulnerability of Risk*

### *Natural Events*

As previously stated, some areas of the county are more at risk for events than others due to topography. The table below shows that primary areas of risk for different natural events. Those that say "Fairfield County" refer to the county as a whole.

The data below comes from reports to the National Weather Service and other entities. Data is only as good as what is reported. As a word of caution, there may be events that occurred are not captured. The information below is derived from the NCEI data from 1995 to 2021 and the number of occurrences for each area and each event type.

Location	Flooding	Summer Storms	Winter Storms	Tornados / Funnel Clouds	Strong/High Wind	Extreme Heat
Fairfield County	21	15	103	-	11	7
Amanda Twp	4	16	-	-	-	-
Berne Twp	-	14	-	-	-	-
Bloom Twp	1	3	-	-	-	-
Clearcreek Twp	3	14	-	2	-	-
Greenfield Twp	1	11	-	-	-	-
Hocking Twp	-	2	-	-	-	-

Lancaster City	9	68	-	4	-	-
Liberty Twp	2	37	-	1	-	-
Madison Twp	1	5	-	-	-	-
Pleasant Twp	1	6	-	-	-	-
Richland Twp	1	10	-	1	-	-
Rush Creek Twp	3	16	-	2	-	-
Violet Twp	11	37	-	-	-	-
Walnut Twp	7	20	-	1	-	-

*Table 5: Type of event and incidence per township from 1995 – August 2021.*

Appendix C shows a map of historical events in Fairfield County related to the townships and City of Lancaster. The map is a visual representation of the data in the table above. The size of the incident marker is relative to the number of events.

### *Man-Made Events*

Biological hazards can be considered natural or man-made depending on the nature of the disease and the transmission, or spread, to other individuals. Disease knows no geographical boundaries, particularly with people being so mobile and sociable. COVID-19 was an important lesson in the movement of individuals and the vast spread of disease in a short amount of time.

Other man-made events, such as violent acts, HAZMAT spills, pipeline accidents, etc., are of equal risk to Fairfield County residents. All residents are at risk for man-made events and not one area is more susceptible than another. This type of event should be of concern to all county elected officials (CEO) and leadership.

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[Appendices List](#)

Appendix A – Abbreviations List

Appendix B – Storm Events Database

Appendix C – Historical Incidents Map

Appendix D – Hazard Significant Events Log

*Appendix A - Abbreviations List*

<b>Acronym</b>	<b>Definition</b>	<b>Acronym</b>	<b>Definition</b>
<b>CDC</b>	Centers for Disease Control	<b>mph</b>	Miles Per Hour
<b>CDO</b>	Climate Data Online	<b>NCEI</b>	National Centers for Environmental Information
<b>CEO</b>	Community Elected Officials	<b>NFIP</b>	National Flood Insurance Program
<b>EPA</b>	Environmental Protection Agency	<b>NHMP</b>	Natural Hazard Mitigation Plan
<b>EPCRA</b>	Emergency Planning and Community Right-to-Know Act	<b>NOAA</b>	National Oceanic Atmospheric Administration
<b>F</b>	Fahrenheit	<b>ODD</b>	Ohio Department of Development
<b>FC</b>	Fairfield County	<b>ODH</b>	Ohio Department of Health
<b>FEMA</b>	Federal Emergency Management Agency	<b>ODNR</b>	Ohio Department of Natural Resources
<b>FHBM</b>	Flood Hazard Boundary Map	<b>OH</b>	Ohio
<b>FIRM</b>	Flood Insurance Rate Map	<b>ORC</b>	Ohio Revised Code
<b>FPL</b>	Federal Poverty Level	<b>THIRA</b>	Threat and Hazard Identification Risk Assessment
<b>H1N1</b>	Strain of Influenza Virus	<b>US</b>	United States
<b>HAZMAT</b>	Hazardous Material	<b>USDA</b>	United States Department of Agriculture
<b>HIRA</b>	Hazard Identification Risk Assessment	<b>USGS</b>	United States Geological Survey
<b>LEPC</b>	Local Emergency Planning Committee	<b>WHO</b>	World Health Organization

*Appendix B – Storm Events Database*

Below are the tables and data used from NCEI.

**Flash Flood & Flood** (1/1/1995 to 8/2/2021)

<b>Number of Events</b>	65
<b>Number of Days with Events</b>	51
<b>Number of Deaths in Timeframe</b>	2
<b>Number of Injuries in Timeframe</b>	1
<b>Total in Property Damage in Timeframe</b>	\$1,226,000
<b>Total in Crop Damage in Timeframe</b>	\$3,000

**Winter Weather, Blizzard, Cold/Wind Chill, Extreme Cold/Wind Chill, Frost/Freeze, Ice Storm, Winter Storm**

(1/1/1995 to 8/2/2021)

<b>Number of Events</b>	98
<b>Number of Days with Events</b>	97
<b>Number of Deaths in Timeframe</b>	0
<b>Number of Injuries in Timeframe</b>	0
<b>Total in Property Damage in Timeframe</b>	\$520,000
<b>Total in Crop Damage in Timeframe</b>	\$540,000

**Tornado & Funnel Clouds** (1/1/1995 to 8/2/2021)

<b>Number of Events</b>	11
<b>Number of Days with Events</b>	8
<b>Number of Deaths in Timeframe</b>	0
<b>Number of Injuries in Timeframe</b>	0
<b>Total in Property Damage in Timeframe</b>	\$463,000
<b>Total in Crop Damage in Timeframe</b>	\$8,000



**Severe Summer Weather (Thunderstorm Wind, Heavy Rain, Lightening, Hail)\*** (1/1/1995 to 8/2/2021)

<b>Number of Events</b>	355
<b>Number of Days with Events</b>	178
<b>Number of Deaths in Timeframe</b>	0
<b>Number of Injuries in Timeframe</b>	1
<b>Total in Property Damage in Timeframe</b>	\$1,208,000
<b>Total in Crop Damage in Timeframe</b>	\$23,000

\*Of note, NCEI's "Strong Wind" category did not have any events listed for the period listed.

**High Winds** (1/1/1995 to 8/2/2021)

<b>Number of Events</b>	11
<b>Number of Days with Events</b>	11
<b>Number of Deaths in Timeframe</b>	1
<b>Number of Injuries in Timeframe</b>	1
<b>Total in Property Damage in Timeframe</b>	\$16,562,000
<b>Total in Crop Damage in Timeframe</b>	\$0

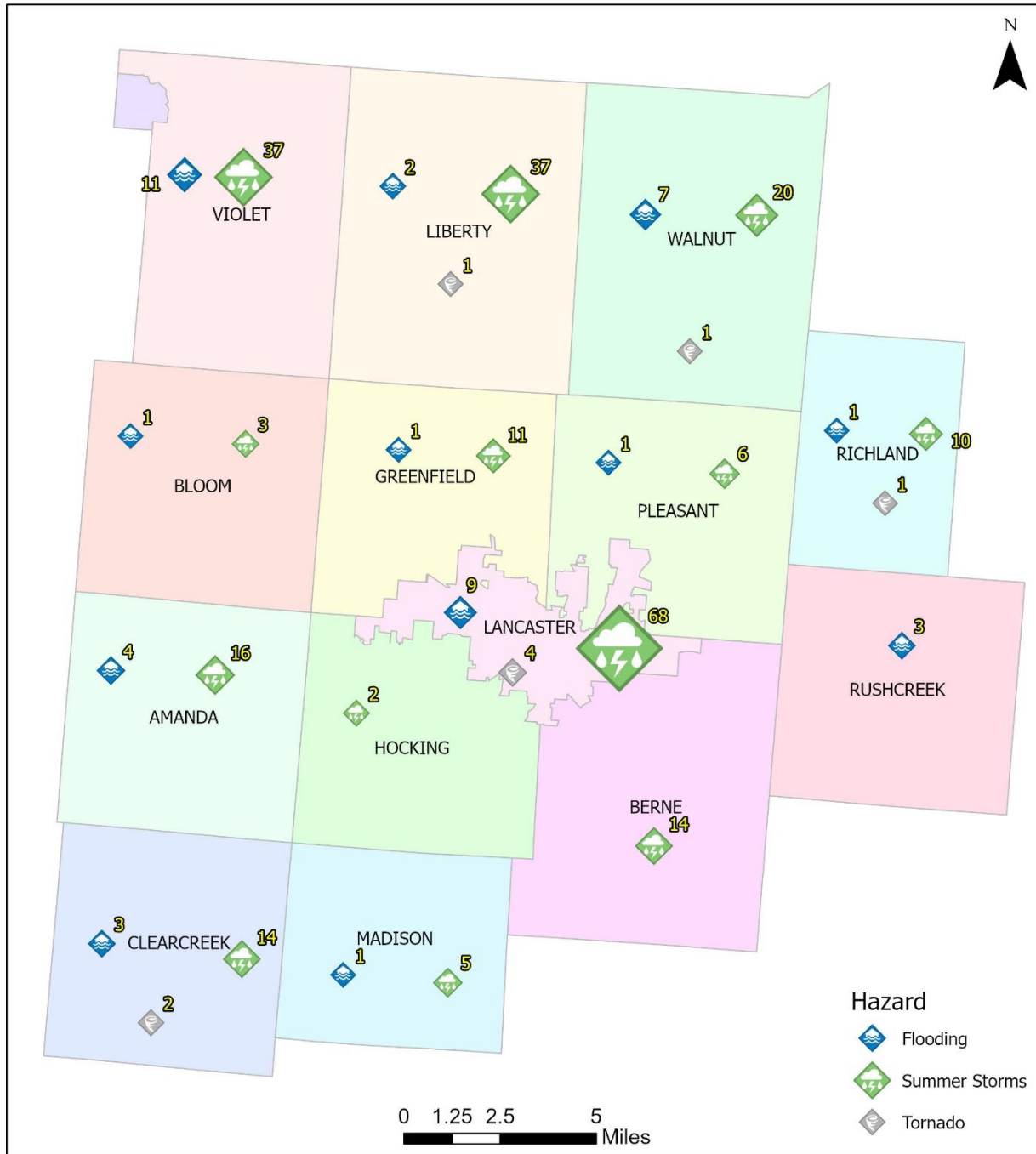
**Drought & Extreme/Excessive Heat** (1/1/1995 to 8/2/2021)

<b>Number of Events</b>	7
<b>Number of Days with Events</b>	7
<b>Number of Deaths in Timeframe</b>	0
<b>Number of Injuries in Timeframe</b>	0
<b>Total in Property Damage in Timeframe</b>	\$0
<b>Total in Crop Damage in Timeframe</b>	\$0

Data on earthquakes, dam failures, and man-made incidents not available on NCEI.

Appendix C – Historical Incidents Map

# Fairfield County Historical Incidents



## Appendix D – Hazard Significant Events Log

Compilation of event types and jurisdiction of each event. Countywide refers to Fairfield County in its entirety. Data comes from historical records and NCEI CDO.

### Floods

Date	Event	Jurisdiction
6/13/1990	Flood	Fairfield
7/12/1990	Flood	Violet
5/8/1996	Flash Flood	Walnut
6/2/1997	Flash Flood	Countywide
6/18/1997	Flash Flood	Violet
7/27/1997	Flash Flood	Countywide
8/17/1997	Flash Flood	Countywide
1/21/1999	Flash Flood	Pleasant
1/3/2000	Flash Flood	Countywide
5/23/2000	Flash Flood	Lancaster
9/23/2000	Flash Flood	Countywide
12/16/2000	Flash Flood	Countywide
5/16/2001	Flash Flood	Amanda
5/17/2001	Flash Flood	Lancaster
5/18/2001	Flash Flood	Violet
7/9/2002	Flash Flood	Clearcreek
3/18/2003	Flood	Walnut
6/8/2003	Flood	Countywide
8/4/2003	Flood	Countywide
8/10/2003	Flood	Countywide
1/4/2004	Flood	Countywide
2/4/2004	Flood	Madison
2/5/2004	Flood	Rushcreek
2/5/2004	Flood	Clearcreek
2/5/2004	Flood	Walnut
2/5/2004	Flood	Bloom
2/5/2004	Flood	Greenfield
2/5/2004	Flood	Liberty
5/19/2004	Flood	Countywide
6/11/2004	Flood	Walnut
6/11/2004	Flood	Greenfield
6/11/2004	Flood	Richland
6/11/2004	Flood	Amanda
6/17/2004	Flood	Countywide
7/22/2004	Flood	Clearcreek

7/31/2004	Flood	Greenfield
7/31/2004	Flood	Liberty
9/8/2004	Flood	Countywide
10/19/2004	Flood	Walnut
10/20/2004	Flood	Richland
1/5/2005	Flood	Countywide
1/6/2005	Flood	Countywide
1/11/2005	Flood	Liberty
1/11/2005	Flood	Madison
1/11/2005	Flood	Greenfield
1/11/2005	Flood	Rushcreek
1/11/2005	Flood	Walnut
1/11/2005	Flood	Clearcreek
1/11/2005	Flood	Bloom
1/11/2005	Flood	Berne
3/4/2005	Flood	Clearcreek
6/8/2005	Flood	Countywide
6/10/2005	Flood	Walnut
1/5/2006	Flood	Walnut
1/6/2006	Flood	Walnut
5/17/2006	Flood	Amanda
7/13/2006	Flood	Liberty
7/13/2006	Flood	Walnut
7/13/2006	Flood	Greenfield
7/13/2006	Flood	Walnut
7/13/2006	Flood	Bloom
9/12/2006	Flood	Bloom
9/12/2006	Flood	Violet
10/17/2006	Flood	Walnut
10/17/2006	Flood	Greenfield
10/17/2006	Flood	Clearcreek
10/17/2006	Flood	Bloom
1/13/2007	Flood	Greenfield
1/15/2007	Flood	Greenfield
2/23/2007	Flood	Bloom
3/1/2007	Flood	Walnut
3/14/2007	Flood	Lancaster
3/15/2007	Flood	Countywide
12/13/2007	Flood	Clearcreek
2/5/2008	Flood	Clearcreek
3/4/2008	Flood	Countywide

3/19/2008	Flood	Liberty
3/19/2008	Flood	Madison
3/19/2008	Flood	Greenfield
3/19/2008	Flood	Rushcreek
3/19/2008	Flood	Clearcreek
3/19/2008	Flood	Bloom
3/19/2008	Flood	Greenfield
3/19/2008	Flood	Berne
6/4/2008	Flood	Walnut
6/4/2008	Flood	Madison
6/4/2008	Flood	Clearcreek
6/4/2008	Flood	Liberty
6/4/2008	Flood	Greenfield
6/26/2008	Flood	Liberty
6/26/2008	Flood	Walnut
6/26/2008	Flood	Greenfield
6/26/2008	Flood	Rushcreek
6/26/2008	Flood	Clearcreek
6/26/2008	Flood	Walnut
6/26/2008	Flood	Violet
1/5/2009	Flood	Liberty
6/19/2009	Flood	Rushcreek
6/19/2009	Flood	Greenfield
6/19/2009	Flood	Pleasant
6/19/2009	Flood	Violet
8/20/2009	Flood	Amanda
9/22/2009	Flood	Liberty
9/22/2009	Flood	Violet
9/22/2009	Flood	Pleasant
9/22/2009	Flood	Berne
3/12/2010	Flood	Clearcreek
7/18/2011	Flash Flood	Greenfield
3/15/2012	Flood	Richland
5/7/2012	Flash Flood	Rushcreek
7/9/2013	Flood	Lancaster
7/12/2015	Flash Flood	Clearcreek
7/12/2015	Flood	Lancaster
7/10/2017	Flash Flood	Lancaster
7/10/2017	Flash Flood	Amanda
7/13/2017	Flash Flood	Liberty
7/13/2017	Flash Flood	Violet

7/22/2017	Flood	Lancaster
4/3/2018	Flood	Rushcreek
4/15/2018	Flood	Violet
5/27/2018	Flood	Madison
2/6/2019	Flood	Rushcreek
2/6/2019	Flood	Lancaster
2/7/2019	Flood	Bloom
2/8/2019	Flood	Hocking
5/28/2019	Flood	Clearcreek
7/6/2019	Flood	Violet
7/7/2019	Flood	Walnut
7/7/2019	Flood	Liberty
7/7/2019	Flood	Walnut
3/20/2020	Flash Flood	Violet
3/21/2020	Flood	Walnut

*Severe Summer Storms*

Date	Event	Jurisdiction
6/10/1995	Thunderstorm Wind	Countywide
6/20/1995	Hail	Rushcreek
7/13/1995	Thunderstorm Wind	Countywide
7/23/1995	Thunderstorm Wind	Lancaster
7/26/1995	Thunderstorm Wind	Violet
4/29/1996	Thunderstorm Wind	Bloom
6/14/1996	Hail	Bloom
7/24/1996	Thunderstorm Wind	Lancaster
7/24/1996	Thunderstorm Wind	Pleasant
1/5/1997	Thunderstorm Wind	Amanda
7/2/1997	Thunderstorm Wind	Lancaster
7/26/1997	Thunderstorm Wind	Violet
7/26/1997	Thunderstorm Wind	Walnut
7/26/1997	Thunderstorm Wind	Countywide
7/27/1997	Thunderstorm Wind	Violet
8/21/1997	Hail	Violet
5/31/1998	Hail	Violet
6/16/1998	Thunderstorm Wind	Walnut
6/26/1998	Hail	Lancaster
6/26/1998	Thunderstorm Wind	Bloom
7/19/1998	Thunderstorm Wind	Liberty
8/25/1998	Thunderstorm Wind	Madison
11/10/1998	Thunderstorm Wind	Countywide

5/6/1999	Thunderstorm Wind	Lancaster
7/18/1999	Thunderstorm Wind	Amanda
7/30/1999	Thunderstorm Wind	Lancaster
7/31/1999	Thunderstorm Wind	Liberty
10/13/1999	Thunderstorm Wind	Countywide
4/20/2000	Thunderstorm Wind	Countywide
7/28/2000	Hail	Berne
8/9/2000	Thunderstorm Wind	Countywide
8/9/2000	Thunderstorm Wind	Countywide
9/2/2000	Thunderstorm Wind	Liberty
9/20/2000	Thunderstorm Wind	Countywide
11/9/2000	Thunderstorm Wind	Amanda
4/9/2001	Hail	Lancaster
5/17/2001	Thunderstorm Wind	Lancaster
7/1/2001	Thunderstorm Wind	Walnut
7/17/2001	Thunderstorm Wind	Liberty
7/29/2001	Hail	Amanda
10/24/2001	Thunderstorm Wind	Liberty
3/9/2002	Thunderstorm Wind	Lancaster
4/28/2002	Hail	Lancaster
5/1/2002	Hail	Violet
5/1/2002	Thunderstorm Wind	Liberty
5/2/2002	Thunderstorm Wind	Violet
5/2/2002	Thunderstorm Wind	Pleasant
5/31/2002	Thunderstorm Wind	Clearcreek
6/4/2002	Hail	Lancaster
6/4/2002	Thunderstorm Wind	Lancaster
7/4/2002	Hail	Lancaster
7/19/2002	Thunderstorm Wind	Lancaster
7/29/2002	Hail	Walnut
9/18/2002	Thunderstorm Wind	Amanda
11/10/2002	Thunderstorm Wind	Walnut
4/5/2003	Thunderstorm Wind	Walnut
5/9/2003	Hail	Lancaster
5/9/2003	Hail	Madison
5/20/2003	Thunderstorm Wind	Walnut
6/8/2003	Thunderstorm Wind	Berne
7/7/2003	Thunderstorm Wind	Walnut
7/7/2003	Thunderstorm Wind	Rushcreek
7/8/2003	Thunderstorm Wind	Lancaster
7/8/2003	Thunderstorm Wind	Countywide

7/22/2003	Thunderstorm Wind	Violet
8/7/2003	Thunderstorm Wind	Violet
8/27/2003	Thunderstorm Wind	Lancaster
5/13/2005	Hail	Violet
5/13/2005	Thunderstorm Wind	Bloom
6/10/2005	Thunderstorm Wind	Liberty
6/30/2005	Thunderstorm Wind	Liberty
11/9/2005	Thunderstorm Wind	Amanda
4/2/2006	Thunderstorm Wind	Lancaster
4/7/2006	Hail	Violet
4/7/2006	Hail	Lancaster
5/17/2006	Hail	Lancaster
5/17/2006	Hail	Violet
6/22/2006	Thunderstorm Wind	Violet
7/3/2006	Hail	Liberty
7/3/2006	Thunderstorm Wind	Richland
7/30/2006	Thunderstorm Wind	Violet
8/3/2006	Thunderstorm Wind	Lancaster
10/4/2006	Thunderstorm Wind	Liberty
4/11/2007	Hail	Lancaster
4/11/2007	Thunderstorm Wind	Amanda
4/11/2007	Thunderstorm Wind	Rushcreek
5/15/2007	Thunderstorm Wind	Lancaster
6/4/2007	Thunderstorm Wind	Lancaster
6/8/2007	Thunderstorm Wind	Rushcreek
6/13/2007	Hail	Lancaster
6/13/2007	Hail	Berne
6/13/2007	Thunderstorm Wind	Richland
6/13/2007	Thunderstorm Wind	Amanda
6/19/2007	Thunderstorm Wind	Lancaster
7/13/2007	Thunderstorm Wind	Clearcreek
7/19/2007	Thunderstorm Wind	Lancaster
7/26/2007	Hail	Clearcreek
8/9/2007	Thunderstorm Wind	Violet
8/9/2007	Thunderstorm Wind	Berne
8/16/2007	Thunderstorm Wind	Lancaster
9/8/2007	Thunderstorm Wind	Walnut
11/5/2007	Hail	Violet
11/5/2007	Hail	Lancaster
1/9/2008	Thunderstorm Wind	Violet
4/11/2008	Thunderstorm Wind	Violet



5/2/2008	Thunderstorm Wind	Violet
6/16/2008	Hail	Liberty
6/16/2008	Hail	Liberty
6/21/2008	Thunderstorm Wind	Pleasant
6/21/2008	Thunderstorm Wind	Greenfield
6/23/2008	Hail	Richland
6/26/2008	Thunderstorm Wind	Lancaster
7/8/2008	Thunderstorm Wind	Rushcreek
7/12/2008	Hail	Bloom
7/22/2008	Hail	Liberty
7/22/2008	Thunderstorm Wind	Lancaster
2/11/2009	Thunderstorm Wind	Greenfield
2/11/2009	Thunderstorm Wind	Lancaster
6/1/2009	Hail	Violet
6/2/2009	Hail	Bloom
6/2/2009	Hail	Lancaster
6/2/2009	Thunderstorm Wind	Clearcreek
6/19/2009	Hail	Lancaster
6/19/2009	Hail	Lancaster
8/28/2009	Thunderstorm Wind	Liberty
4/16/2010	Thunderstorm Wind	Lancaster
4/25/2010	Hail	Violet
4/25/2010	Hail	Liberty
6/27/2010	Thunderstorm	Countywide
7/18/2010	Hail	Liberty
7/18/2010	Thunderstorm Wind	Pleasant
8/4/2010	Hail	Liberty
8/4/2010	Thunderstorm Wind	Lancaster
8/4/2010	Thunderstorm Wind	Rushcreek
8/4/2010	Thunderstorm Wind	Lancaster
8/11/2010	Thunderstorm Wind	Pleasant
10/26/2010	Thunderstorm Wind	Violet
2/28/2011	Thunderstorm Wind	Liberty
2/28/2011	Thunderstorm Wind	Walnut
3/23/2011	Thunderstorm Wind	Greenfield
4/19/2011	Hail	Liberty
4/19/2011	Heavy Rain	Liberty
4/20/2011	Thunderstorm Wind	Liberty
4/20/2011	Thunderstorm Wind	Bloom
4/20/2011	Thunderstorm Wind	Greenfield
5/23/2011	Thunderstorm Wind	Lancaster

5/23/2011	Thunderstorm Wind	Lancaster
6/4/2011	Hail	Violet
6/4/2011	Hail	Bloom
6/4/2011	Hail	Liberty
6/4/2011	Thunderstorm Wind	Clearcreek
6/7/2011	Hail	Walnut
6/7/2011	Hail	Lancaster
6/17/2011	Hail	Lancaster
6/17/2011	Hail	Lancaster
6/17/2011	Hail	Lancaster
6/21/2011	Thunderstorm Wind	Liberty
6/27/2011	Thunderstorm Wind	Lancaster
7/11/2011	Hail	Walnut
7/11/2011	Hail	Lancaster
7/18/2011	Hail	Liberty
7/18/2011	Thunderstorm Wind	Lancaster
7/20/2011	Thunderstorm Wind	Bloom
8/7/2011	Thunderstorm Wind	Pleasant
8/7/2011	Thunderstorm Wind	Berne
8/24/2011	Thunderstorm Wind	Lancaster
11/14/2011	Thunderstorm Wind	Walnut
11/14/2011	Thunderstorm Wind	Amanda
11/14/2011	Thunderstorm Wind	Berne
3/18/2012	Hail	Clearcreek
3/18/2012	Hail	Amanda
3/18/2012	Hail	Madison
3/18/2012	Hail	Violet
3/18/2012	Hail	Lancaster
3/18/2012	Hail	Lancaster
4/26/2012	Hail	Clearcreek
4/26/2012	Hail	Clearcreek
5/7/2012	Heavy Rain	Lancaster
5/7/2012	Heavy Rain	Rushcreek
6/29/2012	Thunderstorm Wind	Liberty
6/29/2012	Thunderstorm Wind	Greenfield
6/29/2012	Thunderstorm Wind	Lancaster
6/29/2012	Thunderstorm Wind	Lancaster
6/29/2012	Thunderstorm Wind	Lancaster
6/29/2012	Thunderstorm Wind	Lancaster
6/29/2012	Thunderstorm Wind	Lancaster
6/29/2012	Thunderstorm Wind	Amanda

6/29/2012	Thunderstorm Wind	Berne
6/29/2012	Thunderstorm Wind	Berne
6/29/2012	Thunderstorm Wind	Rushcreek
7/1/2012	Thunderstorm Wind	Amanda
7/26/2012	Thunderstorm Wind	Liberty
7/26/2012	Thunderstorm Wind	Liberty
4/16/2013	Hail	Walnut
4/16/2013	Hail	Lancaster
6/13/2013	Thunderstorm Wind	Liberty
6/13/2013	Thunderstorm Wind	Walnut
7/8/2013	Heavy Rain	Liberty
7/10/2013	Thunderstorm Wind	Violet
7/10/2013	Thunderstorm Wind	Violet
7/10/2013	Thunderstorm Wind	Liberty
7/10/2013	Thunderstorm Wind	Walnut
7/10/2013	Thunderstorm Wind	Violet
7/10/2013	Thunderstorm Wind	Amanda
10/31/2013	Thunderstorm Wind	Violet
11/17/2013	Thunderstorm Wind	Bloom
5/14/2014	Hail	Bloom
5/14/2014	Hail	Clearcreek
7/13/2014	Hail	Pleasant
12/24/2014	Thunderstorm Wind	Violet
4/9/2015	Hail	Lancaster
5/11/2015	Thunderstorm Wind	Clearcreek
5/11/2015	Thunderstorm Wind	Berne
6/20/2015	Heavy Rain	Violet
7/14/2015	Thunderstorm Wind	Berne
4/2/2016	Hail	Lancaster
4/2/2016	Hail	Lancaster
6/6/2016	Thunderstorm Wind	Clearcreek
6/6/2016	Thunderstorm Wind	Clearcreek
6/6/2016	Thunderstorm Wind	Madison
6/26/2016	Thunderstorm Wind	Hocking
1/10/2017	Thunderstorm Wind	Richland
3/1/2017	Thunderstorm Wind	Richland
5/19/2017	Thunderstorm Wind	Rushcreek
6/18/2017	Thunderstorm Wind	Richland
7/7/2017	Hail	Berne
7/7/2017	Thunderstorm Wind	Walnut
7/10/2017	Hail	Lancaster

7/10/2017	Thunderstorm Wind	Rushcreek
7/22/2017	Lightning	Lancaster
1/22/2018	Thunderstorm Wind	Greenfield
4/3/2018	Hail	Liberty
4/3/2018	Thunderstorm Wind	Lancaster
5/14/2018	Hail	Berne
5/14/2018	Thunderstorm Wind	Liberty
5/14/2018	Thunderstorm Wind	Walnut
6/16/2018	Thunderstorm Wind	Liberty
6/16/2018	Thunderstorm Wind	Violet
6/16/2018	Thunderstorm Wind	Walnut
6/16/2018	Thunderstorm Wind	Lancaster
6/16/2018	Thunderstorm Wind	Richland
6/16/2018	Thunderstorm Wind	Richland
6/16/2018	Thunderstorm Wind	Rushcreek
6/16/2018	Thunderstorm Wind	Rushcreek
7/1/2018	Thunderstorm Wind	Richland
8/10/2018	Thunderstorm Wind	Liberty
8/10/2018	Thunderstorm Wind	Liberty
8/10/2018	Thunderstorm Wind	Amanda
3/14/2019	Hail	Violet
3/14/2019	Thunderstorm Wind	Lancaster
6/24/2019	Thunderstorm Wind	Berne
6/24/2019	Thunderstorm Wind	Richland
7/2/2019	Thunderstorm Wind	Violet
7/2/2019	Thunderstorm Wind	Lancaster
8/8/2019	Thunderstorm Wind	Rushcreek
3/28/2020	Hail	Liberty
4/8/2020	Thunderstorm Wind	Amanda
6/4/2020	Hail	Lancaster
6/4/2020	Hail	Amanda
6/4/2020	Thunderstorm Wind	Hocking
6/4/2020	Thunderstorm Wind	Rushcreek
6/10/2020	Thunderstorm Wind	Clearcreek
6/10/2020	Thunderstorm Wind	Lancaster
8/25/2020	Thunderstorm Wind	Violet
8/25/2020	Thunderstorm Wind	Berne
8/26/2020	Thunderstorm Wind	Violet
10/23/2020	Hail	Violet
10/23/2020	Hail	Violet
11/15/2020	Thunderstorm Wind	Greenfield

*Winter Weather*

Date	Event	Jurisdiction
1/6/1996	Winter Storm	Countywide
1/11/1996	Heavy Snow	Countywide
2/1/1996	Cold/Wind Chill	Countywide
3/6/1996	Ice Storm	Countywide
3/19/1996	Winter Storm	Countywide
1/24/1997	Ice Storm	Countywide
1/1/1999	Winter Storm	Countywide
1/7/1999	Winter Storm	Countywide
1/13/1999	Winter Storm	Countywide
3/9/1999	Heavy Snow	Countywide
1/19/2000	Heavy Snow	Countywide
12/13/2000	Ice Storm	Countywide
2/15/2003	Winter Storm	Countywide
1/25/2004	Winter Storm	Countywide
12/23/2004	Winter Storm	Countywide
1/21/2005	Winter Storm	Countywide
1/22/2005	Winter Storm	Countywide
2/13/2007	Ice Storm	Countywide
4/6/2007	Frost/Freeze	Countywide
12/5/2007	Heavy Snow	Countywide
12/7/2007	Winter Weather	Countywide
1/1/2008	Winter Weather	Countywide
2/20/2008	Heavy Snow	Countywide
2/21/2008	Winter Storm	Countywide
3/7/2008	Winter Storm	Countywide
1/14/2009	Heavy Snow	Countywide
1/27/2009	Heavy Snow	Countywide
12/19/2009	Winter Weather	Countywide
1/7/2010	Winter Weather	Countywide
2/5/2010	Heavy Snow	Countywide
2/9/2010	Heavy Snow	Countywide
2/15/2010	Heavy Snow	Countywide
2/26/2010	Winter Weather	Countywide
3/25/2010	Winter Weather	Countywide
12/16/2010	Winter Storm	Countywide
1/20/2011	Heavy Snow	Countywide
2/1/2011	Ice Storm	Countywide
1/13/2012	Winter Weather	Countywide
1/20/2012	Winter Storm	Countywide

2/8/2012	Winter Weather	Countywide
12/28/2012	Winter Storm	Countywide
1/25/2013	Winter Weather	Countywide
1/31/2013	Winter Weather	Countywide
3/5/2013	Winter Storm	Countywide
3/24/2013	Winter Storm	Countywide
11/26/2013	Winter Weather	Countywide
12/6/2013	Winter Storm	Countywide
12/10/2013	Winter Weather	Countywide
1/2/2014	Winter Storm	Countywide
1/17/2014	Winter Weather	Countywide
1/18/2014	Winter Weather	Countywide
1/20/2014	Winter Weather	Countywide
2/4/2014	Winter Storm	Countywide
2/14/2014	Winter Storm	Countywide
3/2/2014	Winter Weather	Countywide
11/16/2014	Winter Storm	Countywide
11/22/2014	Winter Weather	Countywide
1/5/2015	Winter Storm	Countywide
1/25/2015	Winter Weather	Countywide
2/4/2015	Winter Weather	Countywide
2/14/2015	Winter Weather	Countywide
2/15/2015	Winter Weather	Countywide
2/20/2015	Winter Weather	Countywide
2/21/2015	Winter Storm	Countywide
3/1/2015	Winter Weather	Countywide
3/4/2015	Winter Weather	Countywide
3/23/2015	Winter Weather	Countywide
1/10/2016	Winter Weather	Countywide
1/12/2016	Winter Weather	Countywide
1/22/2016	Winter Weather	Countywide
2/8/2016	Winter Storm	Countywide
2/14/2016	Winter Weather	Countywide
2/15/2016	Winter Weather	Countywide
2/24/2016	Winter Weather	Countywide
3/3/2016	Winter Weather	Countywide
12/13/2016	Winter Weather	Countywide
12/16/2016	Winter Weather	Countywide
1/5/2017	Winter Weather	Countywide
2/8/2017	Winter Weather	Countywide
3/13/2017	Winter Weather	Countywide

12/29/2017	Winter Weather	Countywide
1/8/2018	Winter Weather	Countywide
1/12/2018	Winter Storm	Countywide
1/15/2018	Winter Weather	Countywide
2/6/2018	Winter Storm	Countywide
3/20/2018	Winter Weather	Countywide
4/1/2018	Winter Weather	Countywide
1/12/2019	Winter Storm	Countywide
1/19/2019	Winter Storm	Countywide
1/30/2019	Extreme Cold/Wind Chill	Countywide
2/1/2019	Winter Weather	Countywide
2/10/2019	Winter Weather	Countywide
2/20/2019	Winter Weather	Countywide
11/11/2019	Winter Weather	Countywide
12/15/2019	Winter Weather	Countywide
2/6/2020	Winter Weather	Countywide
2/8/2020	Winter Weather	Countywide
2/27/2020	Winter Weather	Countywide
11/30/2020	Winter Weather	Countywide
12/1/2020	Winter Weather	Countywide
12/16/2020	Winter Weather	Countywide
12/24/2020	Winter Storm	Countywide
1/1/2021	Winter Weather	Countywide
1/17/2021	Winter Weather	Countywide
1/17/2021	Winter Weather	Countywide
1/30/2021	Winter Weather	Countywide
2/8/2021	Winter Storm	Countywide
2/10/2021	Winter Weather	Countywide
4/20/2021	Winter Weather	Countywide

### *Tornados*

Date	Event	Jurisdiction	Situation
5/23/2000	Tornado	Rushcreek	F0
9/23/2000	Tornado	Lancaster	F0
9/23/2000	Tornado	Rushcreek	F1
6/2/2009	Tornado	Clearcreek	EF0
9/16/2010	Tornado	Richland	EF0
9/16/2010	Tornado	Clearcreek	EF1
2/28/2011	Tornado	Walnut	EF1
4/20/2011	Tornado	Liberty	EF1
12/24/2014	Tornado	Lancaster	EF0

6/23/2015	Funnel Cloud	Lancaster	Funnel Cloud
6/23/2015	Tornado	Lancaster	EF0

*High Wind*

Date	Event	Jurisdiction	Situation
12/11/2000	High Wind	Countywide	
12/14/2001	High Wind	Countywide	
3/9/2002	High Wind	Countywide	
6/14/2004	High Wind	Richland	65-75 mph
12/1/2006	High Wind	Countywide	
9/14/2008	High Wind	Countywide	40-50 mph
2/11/2009	High Wind	Countywide	59 mph
12/9/2009	High Wind	Countywide	
9/16/2010	High Wind	Clearcreek	
11/24/2014	High Wind	Countywide	60 mph
4/3/2016	High Wind	Countywide	
3/1/2017	High Wind	Countywide	
5/19/2017	High Wind	Rushcreek	
12/30/2019	High Wind	Countywide	
3/25/2021	High Wind	Countywide	51 mph

*Drought/Excessive Heat*

Date	Event	Jurisdiction	Situation
7/1/1999	Drought	Countywide	
8/1/1999	Drought	Countywide	
7/19/2019	Excessive Heat	Countywide	105+
7/20/2019	Excessive Heat	Countywide	105+

*Biological/Infectious*

Date	Event	Jurisdiction	Situation
4/30/2009	Pandemic	Countywide	H1N1pdm09
4/21/2015	Outbreak	Countywide	Botulism
3/9/2021	Pandemic	Countywide	COVID-19

*HAZMAT Incidents*

Date	Event	Jurisdiction	Situation
10/16/1991	HAZMAT	Amanda	Tractor Trailer loaded w/ drums of hazardous waste on fire
8/19/1992	HAZMAT	Pleasant	Natural Gas Line Rupture and Fire



5/11/1993	HAZMAT	Hocking	Farm Accident-Mobile Sprayer Rollover, Fertilizer Spill
6/30/1993	HAZMAT	Lancaster	Oil 'B' dumped into drain
10/14/1993	HAZMAT	Lancaster	Ammonia Leak on Refrigeration Pump
12/24/1993	HAZMAT	Madison	Gasoline Spill, Overturned Tanker
3/23/1994	HAZMAT	Walnut	Heating Oil Spill into sump pump
5/4/1994	HAZMAT	Walnut	Diesel Fuel
11/13/1994	HAZMAT	Pleasant	Abandoned Drum, Contents Unknown
3/10/1995	HAZMAT	Berne	Pipeline Release, Natural Gas
4/3/1995	HAZMAT	Bloom	Oil Spill
5/12/1995	HAZMAT	Lancaster	Bacteria, Bubonic Plague
6/24/1995	HAZMAT	Violet	Diesel Spill
8/19/1995	HAZMAT	Hocking	Car Accident
10/23/1995	HAZMAT	Amanda	Car Accident, Gasoline in Ditch
1/31/1996	HAZMAT	Lancaster	Fuel Oil Spill
2/24/1996	HAZMAT	Clearcreek	Fuel Oil Leak - Broken Valve on Heating Oil Tank
3/15/1996	HAZMAT	Lancaster	Oil Spill
3/27/1996	HAZMAT	Lancaster	Truck / Rail Accident
5/9/1996	HAZMAT	Walnut	Flooding
5/12/1996	HAZMAT	Clearcreek	Trash Truck Overturned, Diesel Fuel and Hydraulic Fluid
5/22/1996	HAZMAT	Bloom	Truck Spill, Herbicides
6/30/1996	HAZMAT	Walnut	Well Explosion and Fire
7/23/1996	HAZMAT	Bloom	Diesel Fuel Spill
8/28/1996	HAZMAT	Amanda	Ammonia Tank Leak - Bad Valve
10/15/1996	HAZMAT	Bloom	Trash Truck Fire
11/22/1996	HAZMAT	Clearcreek	Truck Flip, Diesel Fuel
12/19/1996	HAZMAT	Liberty	Diesel Fuel Tank Leak
5/8/1997	HAZMAT	Richland	Car Accident, Fuel Spill
7/2/1997	HAZMAT	Amanda	Semi Tank Rollover with Propane
7/16/1997	HAZMAT	Berne	Fire / Explosion on dredge
11/7/1997	HAZMAT	Violet	Mercury Spill
11/29/1997	HAZMAT	Bloom	Acid Poured into Car
12/15/1997	HAZMAT	Lancaster	Dump Site, Biohazard
1/23/1998	HAZMAT	Pleasant/Walnut	Tanker Rollover, Milk Spill
2/19/1998	HAZMAT	Hocking	Tanker Rollover, Liquefied Petroleum Gas
3/27/1998	HAZMAT	Greenfield	Semi-truck / School Bus Collision, Fuel Spill
5/5/1998	HAZMAT	Clearcreek	Sulfuric Acid Spill
6/30/1998	HAZMAT	Violet	Truck Flip, Diesel Fuel and Hydraulic Fluid
12/8/1998	HAZMAT	Lancaster	Fuel Spill into Hocking River
12/21/1998	HAZMAT	Greenfield	Water Based Lubricant Release into River Tributary
1/19/1999	HAZMAT	Berne	Fuel Oil Leak

3/16/1999	HAZMAT	Rushcreek	Chlorine, Hypochlorite Solution, and Potassium Permanganate
4/22/1999	HAZMAT	Liberty	Hypochlorite Solution Release
8/16/1999	HAZMAT	Violet	Tanker Leak, Waste Oil
12/9/1999	HAZMAT	Lancaster	Diesel Fuel Spill
12/10/1999	HAZMAT	Bloom	Motor Oil Release
1/6/2000	HAZMAT	Liberty	Diesel Spill
1/11/2000	HAZMAT	Clearcreek	Tanker Flip, Propane, No Leaks
2/18/2000	HAZMAT	Berne	Truck Flip, Fuel Oil and Eggs
3/3/2000	HAZMAT	Violet	Truck Accident, Sulfuric Acid leak
3/22/2000	HAZMAT	Violet	Semi-Truck Fire, Chemicals
4/13/2000	HAZMAT	Bloom	Hydraulic Oil
5/4/2000	HAZMAT	Bloom	Hydraulic Oil
5/9/2000	HAZMAT	Clearcreek	Overweight Semi Dump Truck, Hazardous Waste
6/8/2000	HAZMAT	Walnut	Fertilizer Leak
6/19/2000	HAZMAT	Berne	Compressor Fluid
7/28/2000	HAZMAT	Lancaster	Gasoline / Diesel
9/29/2000	HAZMAT	Greenfield	Gasoline / Diesel Fuel
10/15/2000	HAZMAT	Clearcreek	Grenade Detonator Found in House
1/22/2001	HAZMAT	Liberty	Diesel Fuel and Hydraulic Fluid
2/7/2001	HAZMAT	Lancaster	Diesel Spill
3/6/2001	HAZMAT	Lancaster	Mercury Spill at School
4/12/2001	HAZMAT	Greenfield	Oil Spill
5/4/2001	HAZMAT	Lancaster	Diesel Spill
5/16/2001	HAZMAT	Violet	Homemade Bomb
9/20/2001	HAZMAT	Liberty	Fuel Oil Spill
1/31/2002	HAZMAT	Amanda	Diesel Spill
3/8/2002	HAZMAT	Berne	Crude Oil Leak
4/9/2002	HAZMAT	Pleasant	Semi-truck Leaking Sludge containing Lead
6/1/2002	HAZMAT	Liberty	Atrazine Spill
6/6/2002	HAZMAT	Liberty	Force 3G Syngenta; Tefluthrin Insecticide Spill
8/2/2002	HAZMAT	Clearcreek	Accident, Load of Trash- Fuel and Hydraulics Spilled
1/18/2003	HAZMAT	Lancaster	Sodium Hypochlorite and Muriatic Acid
1/19/2003	HAZMAT	Lancaster	Diesel Spill
3/6/2003	HAZMAT	Greenfield	Propane Tanker Flipped onto Berm
5/10/2003	HAZMAT	Bloom	Vandalism report. Construction site chemical spill.
6/30/2003	HAZMAT	Liberty	Auto Accident, Diesel
7/19/2003	HAZMAT	Richland	Drug Lab Cleanup
10/8/2003	HAZMAT	Pleasant	Tanker Roll-Over
10/26/2003	HAZMAT	Richland	Above Ground Fuel Tank Rupture, Gasoline
2/2/2004	HAZMAT	Bloom	Home Fuel Oil Tank Leak, Heating Oil
3/18/2004	HAZMAT	Amanda	Well Drilling Incident, Crude Oil

5/19/2004	HAZMAT	Berne	Chlorine Leak
7/15/2004	HAZMAT	Walnut	Auto Accident- Diesel Fuel
8/18/2004	HAZMAT	Walnut	Diesel
2/15/2005	HAZMAT	Walnut	Meth Lab Spill
9/9/2005	HAZMAT	Liberty	Semi-Truck Vs. Train, Diesel
7/28/2007	HAZMAT	Greenfield	Diesel Spill- Auto Accident
8/15/2007	HAZMAT	Greenfield	Diesel
10/5/2007	HAZMAT	Richland	Mercury Spill
2/1/2008	HAZMAT	Amanda	Diesel
2/25/2008	HAZMAT	Amanda	Diesel Spill- Auto Accident
4/23/2008	HAZMAT	Amanda	Liquid Nitrogen Fertilizer Leak
7/15/2008	HAZMAT	Amanda	Chemical Leak
11/12/2009	HAZMAT	Madison	Fuel Leak from Auto Accident
12/2/2009	HAZMAT	Walnut	Bomb Threat, Nothing Found
1/9/2010	HAZMAT	Walnut	Structure Fire with Hazmat
1/15/2010	HAZMAT	Rushcreek	Possible Meth Lab
1/20/2010	HAZMAT	Berne	Methanol Leak
5/14/2010	HAZMAT	Walnut	Meth Lab
6/29/2010	HAZMAT	Hocking	Ammonia and Bleach
6/17/2011	HAZMAT	Walnut	Transformer Spill, Mineral Oil
6/22/2011	HAZMAT	Madison	Hydraulic Fluid
7/29/2011	HAZMAT	Berne	Engine Oil Leak
5/7/2012	HAZMAT	Liberty	Ammonia Spill
5/30/2012	HAZMAT	Bloom	Hydraulic Oil, Gasoline
6/29/2012	HAZMAT	Berne	Transformer Oil, Mineral Oil
7/26/2012	HAZMAT	Greenfield	Freight
10/1/2012	HAZMAT	Walnut	Hydraulic Oil Spill
10/8/2012	HAZMAT	Violet	Transformer Mineral oil-Car Accident
10/16/2012	HAZMAT	Pleasant	Meth Lab
12/3/2012	HAZMAT	Lancaster	Traffic Accident- Diesel Spill
7/30/2013	HAZMAT	Lancaster	Diesel fuel Spill
8/13/2013	HAZMAT	Lancaster	Transformer Spill, Mineral Oil
4/16/2014	HAZMAT	Violet	Transformer Spill, Mineral oil
7/30/2014	HAZMAT	Walnut	Structure Fire, Hazardous Material on scene
10/5/2014	HAZMAT	Lancaster	Transformer Spill, Dielectric Mineral Oil
2/19/2015	HAZMAT	Walnut	Transformer Leak, Mineral Oil, non-PCB
6/26/2015	HAZMAT	Berne	Diesel Spill - Semi Accident
7/7/2015	HAZMAT	Lancaster	Fuel Spill, Gasoline
10/29/2015	HAZMAT	Pleasant	Fuel Spill, Diesel
2/29/2016	HAZMAT	Hocking	Diesel Fuel
3/24/2016	HAZMAT	Walnut	Hydraulic Fluid

4/5/2016	HAZMAT	Violet	False Alarm Spill
7/19/2016	HAZMAT	Pleasant	Pipeline Release, Natural Gas
11/9/2016	HAZMAT	Clearcreek	Motor Oil
12/6/2016	HAZMAT	Hocking	Heating Oil
5/17/2017	HAZMAT	Violet	Oil Transformer, non-PCB
5/22/2017	HAZMAT	Lancaster	Asphalt / Bitumen
5/31/2017	HAZMAT	Violet	Sewage, Human
6/8/2017	HAZMAT	Pleasant	Motor Oil, Lube Oil
6/16/2017	HAZMAT	Violet	Oil Hydraulic Fluids
6/21/2017	HAZMAT	Walnut	Herbicides
7/2/2017	HAZMAT	Clearcreek	Motor Oil, Lube Oil
7/10/2017	HAZMAT	Pleasant	Diesel Fuel
7/18/2017	HAZMAT	Violet	Orphan Drums
8/10/2017	HAZMAT	Rushcreek	Bentonite- Drilling Mud Spill
8/30/2017	HAZMAT	Rushcreek	Asphalt / Bitumen
9/4/2017	HAZMAT	Violet	Air Fire, Tires
9/24/2017	HAZMAT	Lancaster	Mercury / Quicksilver
11/16/2017	HAZMAT	Clearcreek	Diesel Fuel
12/31/2017	HAZMAT	Liberty	Contaminated Water
1/3/2018	HAZMAT	Berne	Nothing Found
1/3/2018	HAZMAT	Liberty	Other
4/3/2018	HAZMAT	Lancaster	Oil Hydraulic Fluids
4/8/2018	HAZMAT	Liberty	Asbestos from construction debris
4/21/2018	HAZMAT	Rushcreek	Air Fire, Facility
4/21/2018	HAZMAT	Rushcreek	Asbestos
5/3/2018	HAZMAT	Violet	Bentonite, Drilling Mud
5/3/2018	HAZMAT	Richland	Heating Oil
5/5/2018	HAZMAT	Violet	Bentonite, Drilling Mud
5/9/2018	HAZMAT	Richland	Diesel Fuel
5/9/2018	HAZMAT	Richland	Sewage, Human
5/19/2018	HAZMAT	Pleasant	Bentonite, Drilling Mud
6/14/2018	HAZMAT	Liberty	Nothing Found
6/14/2018	HAZMAT	Liberty	Organic Sheen
6/20/2018	HAZMAT	Walnut	Sewage, Human
6/24/2018	HAZMAT	Greenfield	Wastewater
7/27/2018	HAZMAT	Walnut	Solvents
8/2/2018	HAZMAT	Clearcreek	Ammonium Nitrate
8/17/2018	HAZMAT	Liberty	Material White
8/19/2018	HAZMAT	Richland	Sewage, Human
9/28/2018	HAZMAT	Liberty	Ammonia
10/25/2018	HAZMAT	Berne	Diesel Fuel

10/31/2018	HAZMAT	Walnut	Asphalt / Bitumen
10/31/2018	HAZMAT	Walnut	Material Undetermined
11/9/2018	HAZMAT	Berne	Oil Petroleum
3/25/2019	HAZMAT	Bloom	Diesel Fuel
5/18/2019	HAZMAT	Bloom	Material Blue
8/10/2019	HAZMAT	Berne	Air Fire, Open Burning
10/6/2019	HAZMAT	Walnut	Material Undetermined
10/17/2019	HAZMAT	Berne	Sewage, Human
11/17/2019	HAZMAT	Violet	Sewage Sludge, Biosolids
1/17/2020	HAZMAT	Violet	Fuel, Gasoline
2/13/2020	HAZMAT	Walnut	Sewage, Human
3/5/2020	HAZMAT	Liberty	Orphan Containers
3/23/2020	HAZMAT	Lancaster	Oil Petroleum
3/27/2020	HAZMAT	Greenfield	Manure, Cattle
4/4/2020	HAZMAT	Violet	Mercury / Quicksilver
4/8/2020	HAZMAT	Lancaster	Unknown Acid Spill
4/9/2020	HAZMAT	Greenfield	Orphan Drums, no spill, solid waste NOS
4/20/2020	HAZMAT	Walnut	Runoff, Not Specified
4/25/2020	HAZMAT	Lancaster	Oil Transformer, non-PCB
7/14/2020	HAZMAT	Lancaster	Sewage, Human
8/5/2020	HAZMAT	Violet	Asphalt / Bitumen
8/11/2020	HAZMAT	Lancaster	Diesel Fuel Spill
8/13/2020	HAZMAT	Walnut	Sheen Rainbow / Hydrocarbon
8/25/2020	HAZMAT	Pleasant	50 KVA Transformer Oil Spill
9/9/2020	HAZMAT	Violet	Material White
10/12/2020	HAZMAT	Violet	Unknown Barrels Left in Parking Lot
11/23/2020	HAZMAT	Bloom	Fuel Tank Rupture - Diesel
12/3/2020	HAZMAT	Berne	Pipeline Release, Natural Gas
2/26/2021	HAZMAT	Lancaster	Motor Oil, Lube Oil
3/10/2021	HAZMAT	Liberty	Sewage, Human
5/23/2021	HAZMAT	Lancaster	Material Green
6/30/2021	HAZMAT	Lancaster	Petroleum Oil Spill into Storm Drain
6/30/2021	HAZMAT	Liberty	Fish Kill

#### Dam Failures

Date	Event	Jurisdiction
9/19/2013	Dam Failure	Berne
7/24/2015	Dam Failure	Violet
3/1/2017	Dam Failure	Pleasant
5/4/2021	Dam Failure	Lancaster