

2.2 PROFILING HAZARDS

2.2.6. Severe Thunderstorm/Hail/Lightning

A thunderstorm is considered severe when that storm produces a tornado, winds of at least 58 mph (50 knots), and/or hail at least $\frac{3}{4}$ " in diameter. Structural wind damage may imply the occurrence of a severe thunderstorm. A thunderstorm wind equal to, or greater than 40 mph (35 knots), and/or hail of at least $\frac{1}{2}$ " is defined as "approaching severe".

Hail is a form of precipitation which occurs when freezing water in thunderstorm type clouds accumulates in layers around an icy core. When this event takes place, balls or irregular lumps of ice are created. On average, hail can be from 5mm to 50mm in diameter.

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm.

INTRODUCTION

A severe thunderstorm is the result of a violent form of convection wherein cold upper air falls, and warm moist air rises. As the warm air rises, cumulonimbus clouds can develop and turn into severe thunderstorms with strong winds, lightning, heavy rain, and hail. Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a bolt. This flash of light usually occurs within the clouds or between the clouds and the ground.

Period of Occurrence:	Spring, and early summer.
Number of Events to Date (2006 – 2012):	44 Thunderstorms 37 Hail
Probability of Event:	Frequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems). Impacts human life, health, and public safety.
Cause Injury or Death:	Injury.
Potential Facility Shutdown:	Days.

Figure 2.6a

Several methods of research identified severe thunderstorms, hail, and lightning as natural hazards in Columbiana County, including discussions with local representatives, as well as research of several Internet sites.

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Columbiana County has a high probability, and low impact to severe thunderstorms, hail, and lightning. The hazard of severe thunderstorm, hail and lightning is not targeted to any specific portion of Columbiana County.

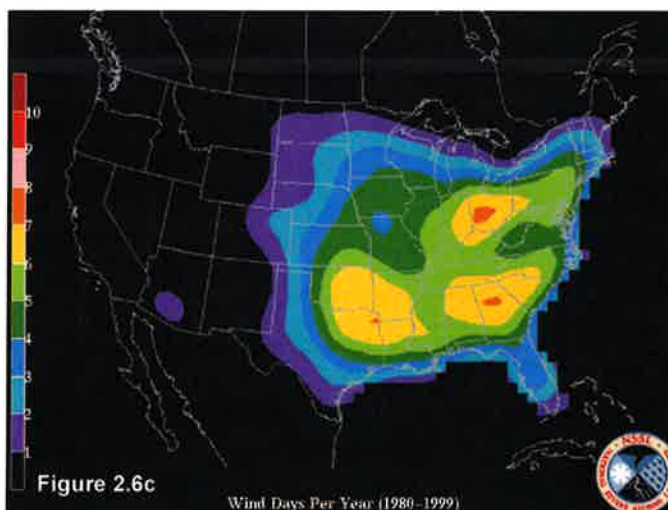
High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

Figure 2.6b

HAZARD IDENTIFICATION

The National Weather Service (NWS) defines a thunderstorm as “severe” when wind speeds reach 58 mph or stronger, and/or hail is produced that is ¾ inch in diameter or larger, and/or a tornado is produced. High wind events are one (1) of the most common types of hazards in Columbiana County.

Figure 2.6c shows the number of high-wind days that occur per year. To be classified as a “high wind event,” there must be sustained wind speeds of 40 mph or greater lasting for one (1) hour or longer, or winds of 58 mph or greater for any duration. As can be seen, northeast Ohio is one (1) of the most prominent areas for high wind events. Winds at these speeds are capable of doing great damage.



Winds at these speeds are capable of doing great damage.

Thunderstorms are a seasonal hazard and can be expected to occur every year. According to the NWS, the most active thunderstorm season in Ohio is late spring and early summer. The key ingredient that defines a thunderstorm is lightning. Because lightning creates thunder, a storm with lightning is termed a thunderstorm. A bolt of lightning reaches a temperature of 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder. Ohio averages four (4) deaths and 15 injuries per year as a result of lightning.

A hot summer afternoon thunderstorm is capable of transforming the landscape from verdant green to icy white with the onset of a hailstorm. The first sign that hail may be arriving is a growing whitening among shafts of rain. Soon, a rattling sound is heard as hailstones strike roofs and pavements and the ground whitens, becoming slippery as hailstones cover grass and roadways. A hailstorm can be the most damaging part of a thunderstorm, inflicting injury to man and beast and destroying crops, gardens, and property.

As water vapor inside a thunderstorm cloud condenses to become ice, a large amount of heat energy is given off during this transition and the process produces hailstones. Hailstones are initially small in size but due to rain water freezing over them they gradually grow in size as they fall to the ground at speeds of 50 meters per second or 111 miles per hour.

HISTORY OF EVENTS

According to records provided by the Columbiana County Emergency Management Agency (CCEMA) and the National Climatic Data Center (NCDC), Columbiana County has experienced numerous severe thunderstorm events.

- July 24, 2012: Columbiana County Emergency Agency reported a number of trees and power lines down as well as shingles and siding ripped from homes as a result of scattered severe thunderstorms.
- May 12, 2011: National Weather Service survey team confirms a microburst in Leetonia in Columbiana county Ohio. The estimated maximum wind speed was 70 mph with a path width of 75 yards and a path length of 1 mile. 12 homes sustained damage, mainly to their roofs. 3 sheds were destroyed and 40 trees were uprooted.
- June 23, 2010: Law enforcement reported trees down across much of the county from scattered severe thunderstorms that developed across the region ahead of an approaching cold front, resulting in a reported \$100,000 in property damage
- June 28-29, 2008: A mesoscale convective system (MCS) formed along a stalled frontal boundary across the Ohio Valley on the 28th. These severe thunderstorms produced significant wind damage across the region. CCEMA and law enforcement reported large trees and power lines down in the Lisbon area in particular.

- August 09, 2007: A National Weather Service (NWS) storm survey found a microburst hit Salem with maximum winds estimated at 85 MPH with maximum width about 200 yards. A roof was ripped off a gas station with minor damage to a supermarket. A truck was overturned and a car was pushed on top of another. Numerous trees and power lines were knocked down with several large signs damaged. Total property damage from this episode was reportedly \$500,000.

According to the National Climatic Data Center (NCDC) Event Record Database, there have been a total of 56 hailstorms since 1979. Nearly 75 percent (75%) of the hailstorms reported occurred between the months of May and July. There have been 23 hailstorm occurrences since the original plan was adopted in 2003. The following table details the hailstorms that have occurred in Columbiana County over the past 32 years, including the location, date, and magnitude of the event.

LOCATION	DATE OF OCCURRENCE	MAGNITUDE
Salem	06/08/2007	0.88 inches
Lisbon	06/13/2007	1.00 inches
Calcutta	07/26/2007	0.75 inches
Lisbon	08/09/2007	0.88 inches
Salem	07/26/2008	1.75 inches
Homeworth	08/14/2008	0.88 inches
Columbiana	05/28/2009	0.75 inches
Salineville	07/21/2009	0.75 inches
Hanoverton	07/21/2009	1.00 inches
Salem	07/21/2009	0.88 inches
Lisbon	03/22/2010	1.00 inches
Hanoverton	05/07/2010	1.00 inches
Lisbon	05/28/2010	0.88 inches
Salineville	06/02/2010	1.00 inches
Hanoverton	09/07/2010	1.00 inches
Countywide	03/23/2011	1.00 inches
Salineville	04/25/2011	0.75 inches
Lisbon	05/13/2011	1.00 inches
Salem/Leetonia	07/04/2011	1.00 inches
East Palestine/New Waterford	08/19/2011	0.75 inches
Columbiana	09/11/2011	0.75 inches
Unity	07/03/2012	1.00 inches
Leetonia	07/04/2012	1.00 inches
Columbiana/Unity	07/04/2012	0.75 inches
Wellsville	07/24/2012	1.75 inches
Hanoverton	08/09/2012	0.75 inches

Table 2.6a

HAZARD IMPACT

Severe thunderstorms that occur in Columbiana County can be associated with winds over 50 mph resulting in damage to trees, the loss of electrical power to several customers, as well the closure of roads due to limbs and other debris. Severe thunderstorms can also prompt flash flooding which can result in road closures, and minor basement flooding in some residential areas. Severe thunderstorms are also capable of producing hail which can break windows, destroy HVAC systems, and destroy several acres of cash crops.

According to event records maintained by the National Climatic Data Center (NCDC), Columbiana County has endured 44 severe thunderstorms with high winds since 2006. These storms have caused in excess of \$1.7 million in property damage with no reported injuries or fatalities. NCDC records reflect the most severe of thunderstorms.

Residents and businesses are likely to incur more damage as a result of these “smaller” storms as individual houses and vehicles are damaged by fallen limbs and businesses are forced to close due to a lack of electricity.

Hail damage is often confined to automobiles and crops; however, structural damage is a possibility in the form of broken windows and damaged gutters or HVAC systems (depending on the size of the structure). Historical records indicate that hailstorms are a countywide hazard and can occur at any time in any location. Hail is often associated with severe thunderstorms and/or severe winter storms, both of which have been identified as natural hazards in Columbiana County.

PAST MITIGATION EFFORTS

One of the most common impacts from severe weather is the loss of commercial power. Since many of the services rely on power for critical functions, providing backup power capabilities has long been a favored strategy for mitigating damages from severe thunderstorms.

HAZARD MAPPING

See the Columbiana County Severe Thunderstorm/Hail/Lightning Map for a graphical representation of the hazard areas with regard to severe thunderstorm, hail, and lightning. The green areas represent “low hazard areas,” the yellow areas represent “moderate hazard areas,” the orange areas represent “high hazard areas,” and the red areas represent “extreme high hazard areas.”

Hazard: Severe Thunderstorm/Hail/Lightning

Type of Structure (Occupancy Class)	Number of Structures		Value of Structures		Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	% in Hazard Area
<i>Residential</i>	47,088	47,088	100%	\$3,767,040,000	\$941,600	0.03%	100%
<i>Commercial</i>	1,578	1,578	100%	\$631,200,000	\$118,500	0.02%	100%
<i>Industrial</i>	444	444	100%	\$222,000,000	\$0	0%	100%
<i>Agricultural</i>	4,120	4,120	100%	\$721,000,000	\$19,250	0.003%	100%
<i>Religious/Non-Profit</i>	103	103	100%	\$20,600,000	\$0	0%	100%
<i>Government</i>	45	45	100%	\$18,000,000	\$0	0%	100%
<i>Education</i>	46	46	100%	\$17,250,000	\$0	0%	100%
<i>Utilities</i>	20	20	100%	\$30,000,000	\$0	0%	100%
Total	53,444	53,444	100%	\$5,427,090,000	\$1,079,350	0.02%	100%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?		X
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?	X	

Hazard: Severe Thunderstorm/Hail/Lightning

Structure Loss (Task A1)										Contents Loss (Task A2)			
Name/Description of Asset	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)			
Columbiana County Courthouse	\$1,850,000	X	0.10%	=	\$1,850	\$700,000	X	0%	=	\$0			
Columbiana City Hall	\$1,250,000	X	0.10%	=	\$1,250	\$400,000	X	0%	=	\$0			
East Liverpool City Hall	\$650,000	X	0.10%	=	\$650	\$325,000	X	0%	=	\$0			
East Palestine Village Offices	\$425,000	X	0.10%	=	\$425	\$275,000	X	0%	=	\$0			
Hanoverton Village Offices	\$375,000	X	0.10%	=	\$375	\$225,000	X	0%	=	\$0			
Salem City Hall	\$976,800	X	0.10%	=	\$977	\$390,000	X	0%	=	\$0			
Salineville Village Offices	\$311,900	X	0.10%	=	\$312	\$190,000	X	0%	=	\$0			
Wellsville Village Offices	\$518,100	X	0.10%	=	\$518	\$300,000	X	0%	=	\$0			
Leetonia Village Offices	\$335,000	X	0.10%	=	\$335	\$90,000	X	0%	=	\$0			
Lisbon Village Offices	\$979,500	X	0.10%	=	\$980	\$395,000	X	0%	=	\$0			
New Waterford Village Offices	\$265,000	X	0.25%	=	\$663	\$75,000	X	0%	=	\$0			
Washingtonville Village Offices	\$250,000	X	0.25%	=	\$625	\$55,000	X	0%	=	\$0			
Elkrun Township Hall	\$145,000	X	0.25%	=	\$363	\$70,000	X	0%	=	\$0			
Fairfield Township Hall	\$360,000	X	0.10%	=	\$360	\$220,000	X	0%	=	\$0			
Madison Township Hall	\$245,000	X	0.25%	=	\$613	\$165,000	X	0%	=	\$0			
Salem Township Hall	\$310,000	X	0.10%	=	\$310	\$200,000	X	0%	=	\$0			
Bridges	\$115,000,000	X	0%	=	\$0	\$0	X	0%	=	\$0			
Highways	\$1,525,000,000	X	0%	=	\$0	\$0	X	0%	=	\$0			
Railroads	\$85,000,000	X	0%	=	\$0	\$0	X	0%	=	\$0			
Columbiana County Airport	\$679,200	X	0%	=	\$0	\$203,760	X	0%	=	\$0			
Columbiana County Port Authority	\$595,000	X	0%	=	\$0	\$148,750	X	0%	=	\$0			
East Liverpool Water Works	\$1,895,000	X	0.05%	=	\$948	\$3,550,000	X	0%	=	\$0			
East Palestine Sewer and Water	\$3,165,000	X	0.05%	=	\$1,583	\$3,500,000	X	0%	=	\$0			
Leetonia Water Board	\$1,750,000	X	0.05%	=	\$875	\$2,110,000	X	0%	=	\$0			
Salem Sewage Plant	\$7,450,000	X	0.05%	=	\$3,725	\$6,250,000	X	0%	=	\$0			
Salineville Water Plant	\$2,450,000	X	0.05%	=	\$1,225	\$3,000,000	X	0%	=	\$0			

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)			
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	Percent Damage (%)	Loss to Contents (\$)
Washingtonville Water and Sewer	\$9,355,000	X	0.05%	=	\$4,678	\$10,000,000	0%	\$0
Wellsville Filtration Plant	\$985,000	X	0.05%	=	\$493	\$1,255,000	0%	\$0
Wellsville Sewage Disposal	\$1,553,000	X	0.05%	=	\$777	\$2,875,000	0%	\$0
Buckeye Water District	\$3,650,000	X	0.05%	=	\$1,825	\$4,250,000	0%	\$0
Columbiana City Water Works/Sewer Dept.	\$2,655,000	X	0.05%	=	\$1,328	\$3,150,000	0%	\$0
Leetonia Sewage Plant	\$3,950,000	X	0.05%	=	\$1,975	\$4,550,000	0%	\$0
Lisbon Village Water Dept.	\$1,875,000	X	0.05%	=	\$938	\$2,000,000	0%	\$0
New Waterford Water / Waste Water Plant	\$2,455,000	X	0.05%	=	\$1,228	\$3,655,000	0%	\$0
Salineville Sewer Plant	\$5,650,000	X	0.05%	=	\$2,825	\$5,000,000	0%	\$0
Columbiana County Sheriff	\$350,000	X	0.10%	=	\$350	\$625,000	0%	\$0
Columbiana County EMA	\$565,000	X	0.10%	=	\$565	\$200,000	0%	\$0
Columbiana County 911 Ctr.	\$265,000	X	0.25%	=	\$663	\$635,000	0%	\$0
Columbiana PD	\$225,000	X	0.25%	=	\$563	\$325,000	0%	\$0
East Liverpool PD	\$215,000	X	0.25%	=	\$538	\$289,000	0%	\$0
East Palestine PD	\$210,000	X	0.25%	=	\$525	\$198,000	0%	\$0
Leetonia PD	\$235,000	X	0.25%	=	\$588	\$105,000	0%	\$0
Lisbon PD	\$979,500	X	0.10%	=	\$980	\$320,000	0%	\$0
Liverpool Township PD	\$200,000	X	0.25%	=	\$500	\$165,000	0%	\$0
New Waterford PD	\$310,000	X	0.25%	=	\$775	\$175,000	0%	\$0
Ohio State Highway Patrol	\$865,000	X	0.10%	=	\$865	\$455,000	0%	\$0
Perry Township PD	\$309,900	X	0.25%	=	\$775	\$170,000	0%	\$0
Salem PD	\$395,000	X	0.25%	=	\$988	\$265,000	0%	\$0
Salineville PD	\$311,900	X	0.25%	=	\$780	\$250,000	0%	\$0
St. Clair Township PD	\$295,000	X	0.25%	=	\$738	\$175,000	0%	\$0
Washingtonville PD	\$235,000	X	0.25%	=	\$588	\$145,000	0%	\$0
Wellsville PD	\$518,100	X	0.25%	=	\$1,295	\$325,000	0%	\$0
Calcutta FD	\$170,000	X	0.25%	=	\$425	\$645,000	0%	\$0
Columbiana FD	\$426,700	X	0.25%	=	\$1,067	\$890,000	0%	\$0
East Liverpool FD	\$135,300	X	0.25%	=	\$338	\$465,000	0%	\$0

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)					
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)
East Palestine FD	\$192,300	X	0.25%	=	\$481	\$385,000	X	0%	=	\$0
Franklin Township VFD	\$95,850	X	0.50%	=	\$479	\$245,000	X	0%	=	\$0
Hanoverton VFD	\$235,450	X	0.25%	=	\$589	\$300,000	X	0%	=	\$0
Guilford Lake FD	\$195,000	X	0.25%	=	\$488	\$345,000	X	0%	=	\$0
Highlandtown VFD	\$104,900	X	0.25%	=	\$262	\$295,000	X	0%	=	\$0
Homeworth VFD	\$113,900	X	0.50%	=	\$570	\$310,000	X	0%	=	\$0
Leetonia FD/EMS	\$124,500	X	0.25%	=	\$311	\$565,000	X	0%	=	\$0
Lisbon FD	\$325,000	X	0.25%	=	\$813	\$610,000	X	0%	=	\$0
Dixonville FD	\$84,500	X	0.50%	=	\$423	\$285,000	X	0%	=	\$0
Lacroft VFD	\$149,300	X	0.25%	=	\$373	\$365,000	X	0%	=	\$0
Negley VFD/EMS	\$110,200	X	0.50%	=	\$551	\$410,000	X	0%	=	\$0
New Waterford FD	\$150,900	X	0.25%	=	\$377	\$425,000	X	0%	=	\$0
North Georgetown VFD	\$100,100	X	0.50%	=	\$501	\$315,000	X	0%	=	\$0
Perry Township VFD	\$309,900	X	0.25%	=	\$775	\$565,000	X	0%	=	\$0
Rogers Village FD	\$161,000	X	0.25%	=	\$403	\$435,650	X	0%	=	\$0
Salem FD	\$215,500	X	0.25%	=	\$539	\$565,000	X	0%	=	\$0
Salineville VFD	\$311,900	X	0.25%	=	\$780	\$325,000	X	0%	=	\$0
Wellsville VFD	\$143,600	X	0.25%	=	\$359	\$415,000	X	0%	=	\$0
West Point FD	\$200,000	X	0.25%	=	\$500	\$365,000	X	0%	=	\$0
Winona FD	\$172,500	X	0.25%	=	\$431	\$375,000	X	0%	=	\$0
Glenmoor VFD	\$752,000	X	0.25%	=	\$1,880	\$650,000	X	0%	=	\$0
Air Evac Lifeteam 81	\$86,600	X	0.50%	=	\$433	\$0	X	0%	=	\$0
EMT Ambulance	\$112,200	X	0.50%	=	\$561	\$240,000	X	0%	=	\$0
Lifeteam EMS Inc.	\$135,000	X	0.25%	=	\$338	\$220,000	X	0%	=	\$0
KLG Ambulance / MICU	\$76,500	X	0.50%	=	\$383	\$182,000	X	0%	=	\$0
North Star Critical Care	\$84,900	X	0.50%	=	\$425	\$175,000	X	0%	=	\$0
Maple-Cotton Funeral Home and EMS	\$165,000	X	0.25%	=	\$413	\$200,000	X	0%	=	\$0
Tri-County Ambulance	\$118,600	X	0.50%	=	\$593	\$190,000	X	0%	=	\$0
Columbiana EMS	\$426,800	X	0.25%	=	\$1,067	\$350,000	X	0%	=	\$0
Leetonia EMS	\$185,000	X	0.25%	=	\$463	\$265,000	X	0%	=	\$0
New Waterford EMS	\$175,000	X	0.25%	=	\$438	\$215,000	X	0%	=	\$0
East Palestine EMS	\$265,000	X	0.25%	=	\$663	\$300,000	X	0%	=	\$0
East Liverpool City Hospital	\$16,750,000	X	0.05%	=	\$8,375	\$8,000,000	X	0%	=	\$0
Salem Community Hospital	\$17,250,000	X	0.05%	=	\$8,625	\$8,350,000	X	0%	=	\$0

Name/Description of Asset		Structure Loss (Task A1)				Contents Loss (Task A2)				
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)
Parkside Healthcare Center	\$2,172,700	X	0.05%	=	\$1,086	\$410,000	X	0%	=	\$0
Vista Center	\$3,536,000	X	0.05%	=	\$1,768	\$475,000	X	0%	=	\$0
Blossom Nursing and Rehab. Center	\$1,650,000	X	0.05%	=	\$825	\$215,000	X	0%	=	\$0
Calcutta Healthcare Center	\$4,947,200	X	0.05%	=	\$2,474	\$500,000	X	0%	=	\$0
East Liverpool Convalescent Center	\$539,600	X	0.10%	=	\$540	\$275,000	X	0%	=	\$0
Nentwick Convalescent Home	\$2,109,100	X	0.05%	=	\$1,055	\$315,000	X	0%	=	\$0
Essex of Salem #1	\$1,768,800	X	0.05%	=	\$884	\$500,000	X	0%	=	\$0
Essex of Salem #2	\$1,882,800	X	0.05%	=	\$941	\$465,000	X	0%	=	\$0
Essex of Salem #3	\$1,569,900	X	0.05%	=	\$785	\$395,000	X	0%	=	\$0
Pleasant view North Retirement	\$1,243,300	X	0.05%	=	\$622	\$380,000	X	0%	=	\$0
Salem Care Center	\$1,443,900	X	0.05%	=	\$722	\$350,000	X	0%	=	\$0
Assisted Living Ministry Services	\$212,800	X	0.25%	=	\$532	\$185,000	X	0%	=	\$0
Crossroads at Beaver Creek	\$3,450,000	X	0.05%	=	\$1,725	\$550,000	X	0%	=	\$0
Grace Woods Senior Living	\$897,300	X	0.05%	=	\$449	\$365,000	X	0%	=	\$0
The Renaissance at Vista	\$3,536,000	X	0.05%	=	\$1,768	\$465,000	X	0%	=	\$0
Sterling House of Salem	\$325,000	X	0.10%	=	\$325	\$350,000	X	0%	=	\$0
Whispering Pines Village	\$415,000	X	0.10%	=	\$415	\$300,000	X	0%	=	\$0
St. Mary's Alzheimer's Center	\$650,000	X	0.05%	=	\$325	\$495,000	X	0%	=	\$0
Adkins Nursing Home	\$315,000	X	0.10%	=	\$315	\$256,000	X	0%	=	\$0
Great Trail Care Center	\$225,000	X	0.25%	=	\$563	\$195,000	X	0%	=	\$0
Holander House	\$200,000	X	0.25%	=	\$500	\$165,000	X	0%	=	\$0
Twin Oaks Retirement Center	\$600,000	X	0.05%	=	\$300	\$435,000	X	0%	=	\$0
Covington Skilled Nursing & Rehab Ctr.	\$795,000	X	0.05%	=	\$398	\$495,000	X	0%	=	\$0
American Health Care	\$435,000	X	0.10%	=	\$435	\$400,000	X	0%	=	\$0
Harmony Village	\$275,500	X	0.25%	=	\$689	\$165,000	X	0%	=	\$0
Courtyard at Lexington	\$595,000	X	0.10%	=	\$595	\$285,000	X	0%	=	\$0

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)			
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	Percent Damage (%)	Loss to Contents (\$)
Century House of Salem	\$275,000	X	0.25%	=	\$688	\$250,000	X	\$0
Columbiana County Mental Health	\$560,000	X	0.10%	=	\$560	\$325,000	X	\$0
Beaver Local HS	\$4,756,100	X	0.05%	=	\$2,378	\$295,000	X	\$0
Beaver Local MS	\$2,866,200	X	0.10%	=	\$2,866	\$255,000	X	\$0
Buckeye ES	\$1,914,500	X	0.10%	=	\$1,915	\$195,000	X	\$0
Calcutta ES	\$1,624,700	X	0.10%	=	\$1,625	\$165,000	X	\$0
Columbiana Co. Career and Technical Ctr.	\$6,888,400	X	0.05%	=	\$3,444	\$1,250,000	X	\$0
Columbiana HS	\$5,657,000	X	0.05%	=	\$2,829	\$355,000	X	\$0
Crestview ES	\$200,000	X	0.10%	=	\$200	\$185,000	X	\$0
Crestview MS/HS	\$12,341,800	X	0.05%	=	\$6,171	\$650,000	X	\$0
David Anderson Jr/Sr HS	\$4,015,300	X	0.10%	=	\$4,015	\$665,000	X	\$0
DAW MS	\$2,232,400	X	0.10%	=	\$2,232	\$245,000	X	\$0
East ES	\$1,455,000	X	0.10%	=	\$1,455	\$195,000	X	\$0
East Liverpool Jr./Sr. HS	\$12,683,000	X	0.05%	=	\$6,342	\$365,000	X	\$0
East Palestine ES	\$1,365,000	X	0.10%	=	\$1,365	\$225,000	X	\$0
East Palestine MS	\$3,450,000	X	0.10%	=	\$3,450	\$285,000	X	\$0
East Palestine HS	\$5,000,000	X	0.05%	=	\$2,500	\$400,000	X	\$0
Garfield ES	\$1,383,000	X	0.10%	=	\$1,383	\$225,000	X	\$0
Joshua Dixon ES	\$1,622,900	X	0.10%	=	\$1,623	\$265,000	X	\$0
Lacroft ES	\$4,765,600	X	0.05%	=	\$2,383	\$300,000	X	\$0
Leetonia K-12	\$3,650,000	X	0.10%	=	\$3,650	\$415,000	X	\$0
Mckinley ES	\$2,000,000	X	0.10%	=	\$2,000	\$150,000	X	\$0
North ES	\$2,155,000	X	0.10%	=	\$2,155	\$165,000	X	\$0
Reilly ES	\$2,566,500	X	0.10%	=	\$2,567	\$180,000	X	\$0
Rogers ES	\$1,714,100	X	0.10%	=	\$1,714	\$155,000	X	\$0
Salem Jr./Sr. HS	\$8,977,100	X	0.10%	=	\$8,977	\$455,000	X	\$0
South Side MS	\$4,000,000	X	0.05%	=	\$2,000	\$235,000	X	\$0
Southeast ES	\$2,975,700	X	0.10%	=	\$2,976	\$195,000	X	\$0
Southern Local K-12	\$4,650,000	X	0.05%	=	\$2,325	\$300,000	X	\$0
United K-12	\$9,694,000	X	0.05%	=	\$4,847	\$495,000	X	\$0
Wellsville HS	\$7,347,800	X	0.05%	=	\$3,674	\$325,000	X	\$0
West Point ES	\$614,200	X	0.10%	=	\$614	\$140,000	X	\$0
Westgate MS	\$3,695,300	X	0.10%	=	\$3,695	\$280,000	X	\$0
Act 1 Education Ctr. Jr. HS	\$900,100	X	0.10%	=	\$900	\$165,000	X	\$0

Name/Description of Asset		Structure Loss (Task A1)				Contents Loss (Task A2)					
		Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)
American Spirit Academy K-12		\$469,700	X	0.10%	=	\$470	\$180,000	X	0%	=	\$0
Heartland Christian School K-12		\$4,950,000	X	0.05%	=	\$2,475	\$545,000	X	0%	=	\$0
St. Aloysius ES		\$275,000	X	0.10%	=	\$275	\$200,000	X	0%	=	\$0
St. Paul ES		\$3,000,000	X	0.10%	=	\$3,000	\$155,000	X	0%	=	\$0
American Standards Brands		\$985,000	X	0.25%	=	\$2,463	\$425,000	X	0%	=	\$0
Flex-N-Gate/Ventra Salem		\$1,795,000	X	0.10%	=	\$1,795	\$500,000	X	0%	=	\$0
Fresh Mark Inc.		\$895,000	X	0.25%	=	\$2,238	\$350,000	X	0%	=	\$0
Wal-Mart Stores Inc.		\$6,985,000	X	0.05%	=	\$3,493	\$1,650,000	X	0%	=	\$0
Pioneer Pottery Inc		\$550,000	X	0.25%	=	\$1,375	\$110,000	X	0%	=	\$0
Zarbana Industries		\$455,000	X	0.25%	=	\$1,138	\$450,000	X	0%	=	\$0
Miller Casting		\$750,000	X	0.25%	=	\$1,875	\$650,000	X	0%	=	\$0
Columbiana Foundry Company		\$400,000	X	0.25%	=	\$1,000	\$375,000	X	0%	=	\$0
Kensington PO		\$315,000	X	0.25%	=	\$788	\$80,000	X	0%	=	\$0
Summitville PO		\$215,000	X	0.25%	=	\$538	\$56,000	X	0%	=	\$0
Columbiana PO		\$500,000	X	0.25%	=	\$1,250	\$175,000	X	0%	=	\$0
New Waterford PO		\$225,000	X	0.25%	=	\$563	\$65,000	X	0%	=	\$0
Calcutta PO		\$175,000	X	0.25%	=	\$438	\$60,000	X	0%	=	\$0
Winona PO		\$200,000	X	0.25%	=	\$500	\$70,000	X	0%	=	\$0
Homeworth PO		\$150,000	X	0.25%	=	\$375	\$55,000	X	0%	=	\$0
East Liverpool PO		\$436,400	X	0.25%	=	\$1,091	\$155,000	X	0%	=	\$0
East Palestine PO		\$244,500	X	0.25%	=	\$611	\$75,000	X	0%	=	\$0
East Rochester PO		\$230,000	X	0.25%	=	\$575	\$85,000	X	0%	=	\$0
Hanoverton PO		\$300,000	X	0.25%	=	\$750	\$80,000	X	0%	=	\$0
Rogers PO		\$325,000	X	0.25%	=	\$813	\$75,000	X	0%	=	\$0
Salem PO		\$596,600	X	0.25%	=	\$1,492	\$195,000	X	0%	=	\$0
Salineville PO		\$315,000	X	0.25%	=	\$788	\$65,000	X	0%	=	\$0
Negley PO		\$295,000	X	0.25%	=	\$738	\$85,000	X	0%	=	\$0
North Georgetown PO		\$250,000	X	0.25%	=	\$625	\$60,000	X	0%	=	\$0
Leetonia PO		\$134,800	X	0.25%	=	\$337	\$62,500	X	0%	=	\$0
Lisbon PO		\$614,300	X	0.25%	=	\$1,536	\$250,000	X	0%	=	\$0
Elkton PO		\$210,000	X	0.25%	=	\$525	\$69,500	X	0%	=	\$0
Washingtonville PO		\$265,000	X	0.25%	=	\$663	\$80,000	X	0%	=	\$0

Structure Loss (Task A1)											Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)					
Wellsville PO	\$145,600	X	0.25%	=	\$364	\$67,500	X	0%	=	\$0					
Carnegie Public Library	\$442,600	X	0.25%	=	\$1,107	\$250,000	X	0%	=	\$0					
Columbiana Public Library	\$1,312,500	X	0.25%	=	\$3,281	\$355,000	X	0%	=	\$0					
East Palestine Memorial Public Library	\$826,600	X	0.25%	=	\$2,067	\$315,000	X	0%	=	\$0					
Leetonia Community Public Library	\$2,122,600	X	0.10%	=	\$2,123	\$550,000	X	0%	=	\$0					
Lepper Library	\$580,000	X	0.25%	=	\$1,450	\$275,000	X	0%	=	\$0					
Salem Public Library	\$1,184,400	X	0.25%	=	\$2,961	\$400,000	X	0%	=	\$0					
Wellsville Public Library	\$367,900	X	0.25%	=	\$920	\$220,000	X	0%	=	\$0					
Hiram Bell Farmstead	\$165,000	X	0.50%	=	\$825	\$0	X	0%	=	\$0					
Burchfield Homestead	\$125,000	X	0.50%	=	\$625	\$50,000	X	0%	=	\$0					
Richard L Cawood Residence	\$95,000	X	0.50%	=	\$475	\$45,000	X	0%	=	\$0					
Cherry Valley Coke Ovens	\$85,000	X	0.50%	=	\$425	\$0	X	0%	=	\$0					
Church Hill Road Covered Bridge	\$450,000	X	0.50%	=	\$2,250	\$0	X	0%	=	\$0					
Diamond Historic District	\$3,000,000	X	0.10%	=	\$3,000	\$0	X	0%	=	\$0					
East Liverpool Historic District	\$2,000,000	X	0.10%	=	\$2,000	\$0	X	0%	=	\$0					
East Liverpool Pottery	\$215,000	X	0.50%	=	\$1,075	\$200,000	X	0%	=	\$0					
Nicholas Eckis House	\$150,000	X	0.50%	=	\$750	\$65,000	X	0%	=	\$0					
Elks Club	\$135,000	X	0.50%	=	\$675	\$35,000	X	0%	=	\$0					
Sandy and Beaver Canal District	\$675,000	X	0.50%	=	\$3,375	\$0	X	0%	=	\$0					
Godwin Knowles House	\$185,000	X	0.50%	=	\$925	\$80,000	X	0%	=	\$0					
Hanna-Kenty House	\$140,000	X	0.50%	=	\$700	\$70,000	X	0%	=	\$0					
Hanoverton Canal Town District	\$1,750,000	X	0.10%	=	\$1,750	\$0	X	0%	=	\$0					
Franklin Harris Farmstead	\$200,000	X	0.50%	=	\$1,000	\$65,000	X	0%	=	\$0					
Daniel Howell Hise House	\$95,000	X	0.50%	=	\$475	\$45,000	X	0%	=	\$0					
Hostetter Inn	\$465,000	X	0.50%	=	\$2,325	\$140,000	X	0%	=	\$0					
Ikirt House	\$85,000	X	0.50%	=	\$425	\$35,000	X	0%	=	\$0					
Homer Laughlin House	\$110,000	X	0.50%	=	\$550	\$40,000	X	0%	=	\$0					

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)						
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)	
Lisbon Historic District	\$4,000,000	X	0.10%	=	\$4,000	\$0	X	0%	=	\$0	
Daniel McBean Farmstead	\$225,000	X	0.50%	=	\$1,125	\$80,000	X	0%	=	\$0	
Odd Fellows Temple	\$115,000	X	0.50%	=	\$575	\$65,000	X	0%	=	\$0	
Mary A. Patterson Memorial	\$60,000	X	0.50%	=	\$300	\$0	X	0%	=	\$0	
Potters National Bank	\$270,000	X	0.50%	=	\$1,350	\$110,000	X	0%	=	\$0	
Salem Downtown Historic District	\$3,250,000	X	0.10%	=	\$3,250	\$0	X	0%	=	\$0	
Charles Nelson Schmick House	\$90,000	X	0.50%	=	\$450	\$60,000	X	0%	=	\$0	
John Street House	\$85,000	X	0.50%	=	\$425	\$45,000	X	0%	=	\$0	
Teegarden-Centennial Covered Bridge	\$475,000	X	0.50%	=	\$2,375	\$0	X	0%	=	\$0	
Cassius Clark Thompson House	\$120,000	X	0.50%	=	\$600	\$65,250	X	0%	=	\$0	
Travelers Hotel	\$850,000	X	0.50%	=	\$4,250	\$250,000	X	0%	=	\$0	
YMCA	\$465,000	X	0.50%	=	\$2,325	\$125,000	X	0%	=	\$0	
Residential	\$3,767,040,000	X	0.01%	=	\$376,704	\$1,883,520,000	X	0%	=	\$0	
Total Loss to Structure					\$668,342	Total Loss to Contents					\$0

Name/Description of Asset	Structure Use and Function Loss (Task A3)							Structure Use & Function Loss (\$)
	Average Daily Operating Budget (\$)	X	Functional Downtime (# of days)	+	Displacement Cost per Day (\$)	X	Displacement Time (Days)	=
Washingtonville Water and Sewer	\$13,450,000	X	0	+	\$95,000	X	0	= \$0
Wellsville Filtration Plant	\$280,000	X	0	+	\$9,000	X	0	= \$0
Wellsville Sewage Disposal	\$750,000	X	0	+	\$18,000	X	0	= \$0
Buckeye Water District	\$2,350,000	X	0	+	\$40,000	X	0	= \$0
Columbiana City Water Works/Sewer Dept.	\$1,675,000	X	0	+	\$35,000	X	0	= \$0
Leetonia Sewage Plant	\$6,000,000	X	0	+	\$65,000	X	0	= \$0
Lisbon Village Water Dept.	\$3,250,000	X	0	+	\$48,000	X	0	= \$0
New Waterford Water / Waste Water Plant	\$3,000,000	X	0	+	\$45,000	X	0	= \$0
Salineville Sewer Plant	\$8,650,000	X	0	+	\$75,000	X	0	= \$0
Columbiana County Sheriff	\$14,400	X	0	+	\$2,000	X	0	= \$0
Columbiana County EMA	\$2,200	X	0	+	\$0	X	0	= \$0
Columbiana County 911 Ctr.	\$10,000	X	0	+	\$0	X	0	= \$0
Columbiana PD	\$5,500	X	0	+	\$0	X	0	= \$0
East Liverpool PD	\$3,000	X	0	+	\$0	X	0	= \$0
East Palestine PD	\$2,600	X	0	+	\$0	X	0	= \$0
Leetonia PD	\$7,000	X	0	+	\$0	X	0	= \$0
Lisbon PD	\$6,000	X	0	+	\$0	X	0	= \$0
Liverpool Township PD	\$3,200	X	0	+	\$0	X	0	= \$0
New Waterford PD	\$4,000	X	0	+	\$0	X	0	= \$0
Ohio State Highway Patrol	\$80,000	X	0	+	\$0	X	0	= \$0
Perry Township PD	\$2,500	X	0	+	\$0	X	0	= \$0
Salem PD	\$8,000	X	0	+	\$0	X	0	= \$0
Salineville PD	\$9,000	X	0	+	\$0	X	0	= \$0
St. Clair Township PD	\$5,500	X	0	+	\$0	X	0	= \$0
Washingtonville PD	\$3,500	X	0	+	\$0	X	0	= \$0
Wellsville PD	\$10,000	X	0	+	\$0	X	0	= \$0
Calcutta FD	\$4,800	X	0	+	\$0	X	0	= \$0
Columbiana FD	\$6,000	X	0	+	\$0	X	0	= \$0
East Liverpool FD	\$4,200	X	0	+	\$0	X	0	= \$0

Structure + Contents + Function Loss	
\$4,678	
\$493	
\$777	
\$1,825	
\$1,328	
\$1,975	
\$938	
\$1,228	
\$2,825	
\$350	
\$565	
\$663	
\$563	
\$538	
\$525	
\$588	
\$980	
\$500	
\$775	
\$865	
\$775	
\$988	
\$780	
\$738	
\$588	
\$1,295	
\$425	
\$1,067	
\$338	

Name/Description of Asset	Structure Use and Function Loss (Task A3)								Structure + Contents + Function Loss
	Average Daily Operating Budget (\$)	Functional Downtime (# of days)	+	Displacement Cost per Day (\$)	X	Displacement Time (Days)	=	Structure Use & Function Loss (\$)	
East Palestine FD	\$3,800	X	+	\$0	X	0	=	\$0	\$481
Franklin Township VFD	\$3,000	X	+	\$0	X	0	=	\$0	\$479
Hanoverton VFD	\$4,500	X	+	\$0	X	0	=	\$0	\$589
Guilford Lake FD	\$6,000	X	+	\$0	X	0	=	\$0	\$488
Highlandtown VFD	\$4,800	X	+	\$0	X	0	=	\$0	\$262
Homeworth VFD	\$5,000	X	+	\$0	X	0	=	\$0	\$570
Leetonia FD/EMS	\$7,000	X	+	\$0	X	0	=	\$0	\$311
Lisbon FD	\$10,000	X	+	\$0	X	0	=	\$0	\$813
Dixonville FD	\$3,500	X	+	\$0	X	0	=	\$0	\$423
Lacroft VFD	\$4,500	X	+	\$0	X	0	=	\$0	\$373
Negley VFD/EMS	\$3,900	X	+	\$0	X	0	=	\$0	\$551
New Waterford FD	\$4,600	X	+	\$0	X	0	=	\$0	\$377
North Georgetown VFD	\$5,550	X	+	\$0	X	0	=	\$0	\$501
Perry Township VFD	\$8,000	X	+	\$0	X	0	=	\$0	\$775
Rogers Village FD	\$6,500	X	+	\$0	X	0	=	\$0	\$403
Salem FD	\$10,000	X	+	\$0	X	0	=	\$0	\$539
Salineville VFD	\$5,100	X	+	\$0	X	0	=	\$0	\$780
Wellsville VFD	\$4,600	X	+	\$0	X	0	=	\$0	\$359
West Point FD	\$4,800	X	+	\$0	X	0	=	\$0	\$600
Winona FD	\$5,000	X	+	\$0	X	0	=	\$0	\$431
Glenmoor VFD	\$12,000	X	+	\$0	X	0	=	\$0	\$1,880
Air Evac Lifeteam 81	\$100,000	X	+	\$0	X	0	=	\$0	\$433
EMT Ambulance	\$6,500	X	+	\$0	X	0	=	\$0	\$561
Lifeteam EMS Inc.	\$7,000	X	+	\$0	X	0	=	\$0	\$338
KLG Ambulance / MICU	\$5,800	X	+	\$0	X	0	=	\$0	\$383
North Star Critical Care	\$4,000	X	+	\$0	X	0	=	\$0	\$425
Maple-Cotton Funeral Home and EMS	\$3,200	X	+	\$0	X	0	=	\$0	\$413
Tri-County Ambulance	\$3,500	X	+	\$0	X	0	=	\$0	\$593
Columbiana EMS	\$8,000	X	+	\$0	X	0	=	\$0	\$1,067
Leetonia EMS	\$4,300	X	+	\$0	X	0	=	\$0	\$463
New Waterford EMS	\$4,000	X	+	\$0	X	0	=	\$0	\$438
East Palestine EMS	\$6,000	X	+	\$0	X	0	=	\$0	\$663
East Liverpool City Hospital	\$750,000	X	+	\$104,000	X	0	=	\$0	\$8,375
Salem Community Hospital	\$800,000	X	+	\$120,000	X	0	=	\$0	\$8,625

Name/Description of Asset	Structure Use and Function Loss (Task A3)								Structure + Contents + Function Loss
	Average Daily Operating Budget (\$)	X	Functional Downtime (# of days)	+	Displacement Cost per Day (\$)	X	Displacement Time (Days)	=	
Parkside Healthcare Center	\$300,000	X	0	+	\$30,000	X	0	=	\$0
Vista Center	\$350,000	X	0	+	\$35,000	X	0	=	\$0
Blossom Nursing and Rehab. Center	\$300,000	X	0	+	\$30,000	X	0	=	\$0
Calcutta Healthcare Center	\$375,000	X	0	+	\$40,000	X	0	=	\$0
East Liverpool Convalescent Center	\$300,000	X	0	+	\$30,000	X	0	=	\$0
Nentwick Convalescent Home	\$425,000	X	0	+	\$36,000	X	0	=	\$0
Essex of Salem #1	\$450,000	X	0	+	\$40,000	X	0	=	\$0
Essex of Salem #2	\$425,000	X	0	+	\$37,000	X	0	=	\$0
Essex of Salem #3	\$375,000	X	0	+	\$31,000	X	0	=	\$0
Pleasant view North Retirement	\$415,000	X	0	+	\$33,000	X	0	=	\$0
Salem Care Center	\$400,000	X	0	+	\$37,500	X	0	=	\$0
Assisted Living Ministry Services	\$365,000	X	0	+	\$34,000	X	0	=	\$0
Crossroads at Beaver Creek	\$650,000	X	0	+	\$43,000	X	0	=	\$0
Grace Woods Senior Living	\$425,000	X	0	+	\$39,500	X	0	=	\$0
The Renaissance at Vista	\$500,000	X	0	+	\$42,000	X	0	=	\$0
Sterling House of Salem	\$435,000	X	0	+	\$40,000	X	0	=	\$0
Whispering Pines Village	\$395,000	X	0	+	\$35,000	X	0	=	\$0
St. Mary's Alzheimer's Center	\$465,000	X	0	+	\$42,000	X	0	=	\$0
Adkins Nursing Home	\$400,000	X	0	+	\$35,000	X	0	=	\$0
Great Trail Care Center	\$365,000	X	0	+	\$30,000	X	0	=	\$0
Holander House	\$370,000	X	0	+	\$31,000	X	0	=	\$0
Twin Oaks Retirement Center	\$550,000	X	0	+	\$42,500	X	0	=	\$0
Covington Skilled Nursing & Rehab Ctr.	\$565,000	X	0	+	\$43,000	X	0	=	\$0
American Health Care	\$415,000	X	0	+	\$33,000	X	0	=	\$0
Harmony Village	\$485,000	X	0	+	\$36,000	X	0	=	\$0

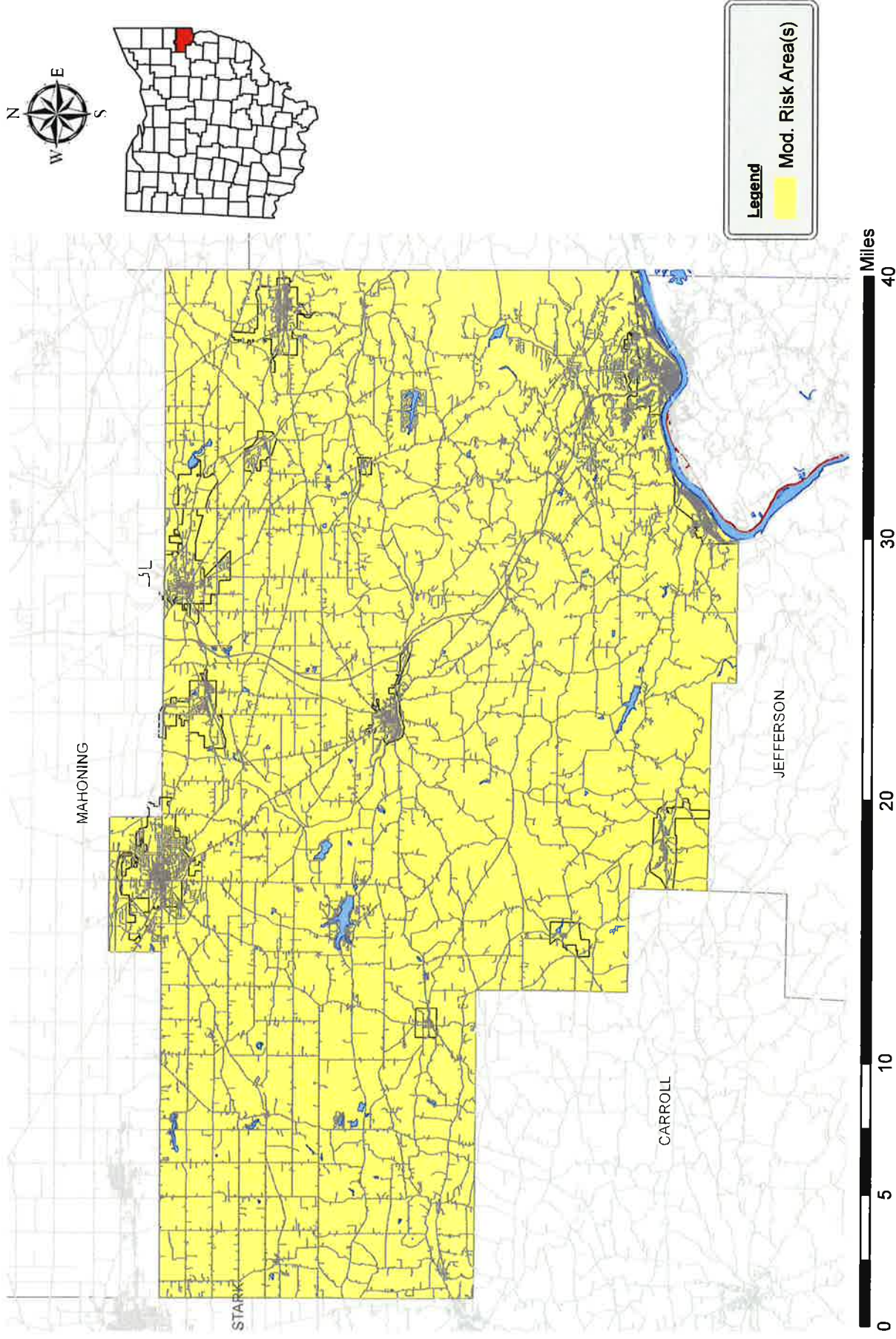
Name/Description of Asset	Structure Use and Function Loss (Task A3)							Structure + Contents + Function Loss
	Average Daily Operating Budget (\$)	Functional Downtime (# of days)	+	Displacement Cost per Day (\$)	X	Displacement Time (Days)	=	
Courtyard at Lexington	\$585,000	X	0	\$43,500	X	0	=	\$595
Century House of Salem	\$480,000	X	0	\$35,500	X	0	=	\$688
Columbiana County Mental Health	\$400,000	X	0	\$31,000	X	0	=	\$560
Beaver Local HS	\$43,000	X	0.25	\$0	X	0	=	\$13,128
Beaver Local MS	\$32,000	X	0.25	\$0	X	0	=	\$10,866
Buckeye ES	\$25,000	X	0.25	\$0	X	0	=	\$8,165
Calcutta ES	\$22,500	X	0.25	\$0	X	0	=	\$7,250
Columbiana Co. Career and Technical Ctr.	\$280,000	X	0.25	\$0	X	0	=	\$73,444
Columbiana HS	\$40,000	X	0.25	\$0	X	0	=	\$12,829
Crestview ES	\$25,000	X	0.25	\$0	X	0	=	\$6,450
Crestview MS/HS	\$75,000	X	0.25	\$0	X	0	=	\$24,921
David Anderson Jr/Sr HS	\$54,000	X	0.25	\$0	X	0	=	\$17,515
DAW MS	\$33,000	X	0.25	\$0	X	0	=	\$10,482
East ES	\$26,500	X	0.25	\$0	X	0	=	\$8,080
East Liverpool Jr./Sr. HS	\$38,000	X	0.25	\$0	X	0	=	\$15,842
East Palestine ES	\$23,000	X	0.25	\$0	X	0	=	\$7,115
East Palestine MS	\$35,000	X	0.25	\$0	X	0	=	\$12,200
East Palestine HS	\$40,000	X	0.25	\$0	X	0	=	\$12,500
Garfield ES	\$22,500	X	0.25	\$0	X	0	=	\$7,008
Joshua Dixon ES	\$26,000	X	0.25	\$0	X	0	=	\$8,123
Lacroft ES	\$35,000	X	0.25	\$0	X	0	=	\$11,133
Leetonia K-12	\$39,500	X	0.25	\$0	X	0	=	\$13,525
McKinley ES	\$25,000	X	0.25	\$0	X	0	=	\$8,250
North ES	\$28,500	X	0.25	\$0	X	0	=	\$9,280
Reilly ES	\$30,000	X	0.25	\$0	X	0	=	\$10,067
Rogers ES	\$26,500	X	0.25	\$0	X	0	=	\$8,339
Salem Jr./Sr. HS	\$60,000	X	0.25	\$0	X	0	=	\$23,977
South Side MS	\$33,000	X	0.25	\$0	X	0	=	\$10,250
Southeast ES	\$23,500	X	0.25	\$0	X	0	=	\$8,851
Southern Local K-12	\$48,500	X	0.25	\$0	X	0	=	\$14,450
United K-12	\$70,000	X	0.25	\$0	X	0	=	\$22,347
Wellsville HS	\$65,000	X	0.25	\$0	X	0	=	\$19,924
West Point ES	\$31,000	X	0.25	\$0	X	0	=	\$8,364
Westgate MS	\$38,000	X	0.25	\$0	X	0	=	\$13,195

Name/Description of Asset	Structure Use and Function Loss (Task A3)								Structure + Contents + Function Loss	
	Average Daily Operating Budget (\$)	Functional Downtime (# of days)	Displacement Cost per Day (\$)	Displacement Time (Days)	Structure Use & Function Loss (\$)					
Elkton PO	\$4,150	X	0	+	\$0	X	0	=	\$0	\$525
Washingtonville PO	\$4,100	X	0	+	\$0	X	0	=	\$0	\$663
Wellsville PO	\$3,450	X	0	+	\$0	X	0	=	\$0	\$364
Carnegie Public Library	\$1,600	X	0	+	\$800	X	0	=	\$0	\$1,107
Columbiana Public	\$12,000	X	0	+	\$1,250	X	0	=	\$0	\$3,281
East Palestine Memorial Public Library	\$9,500	X	0	+	\$1,000	X	0	=	\$0	\$2,067
Leetonia Community Public Library	\$22,000	X	0	+	\$2,000	X	0	=	\$0	\$2,123
Lepper Library	\$3,840	X	0	+	\$500	X	0	=	\$0	\$1,450
Salem Public Library	\$13,500	X	0	+	\$1,500	X	0	=	\$0	\$2,961
Wellsville Public Library	\$1,500	X	0	+	\$750	X	0	=	\$0	\$920
Hiram Bell Farmstead	\$0	X	0	+	\$0	X	0	=	\$0	\$825
Burchfield Homestead	\$0	X	0	+	\$0	X	0	=	\$0	\$625
Richard L Cawood Residence	\$0	X	0	+	\$0	X	0	=	\$0	\$475
Cherry Valley Coke Ovens	\$0	X	0	+	\$0	X	0	=	\$0	\$425
Church Hill Road Covered Bridge	\$0	X	0	+	\$0	X	0	=	\$0	\$2,250
Diamond Historic District	\$0	X	0	+	\$0	X	0	=	\$0	\$3,000
East Liverpool Historic District	\$0	X	0	+	\$0	X	0	=	\$0	\$2,000
East Liverpool Pottery	\$0	X	0	+	\$0	X	0	=	\$0	\$1,075
Nicholas Eckis House	\$0	X	0	+	\$0	X	0	=	\$0	\$750
Elks Club	\$0	X	0	+	\$0	X	0	=	\$0	\$675
Sandy and Beaver Canal District	\$0	X	0	+	\$0	X	0	=	\$0	\$3,375
Godwin Knowles House	\$0	X	0	+	\$0	X	0	=	\$0	\$925
Hanna-Kenty House	\$0	X	0	+	\$0	X	0	=	\$0	\$700
Hanoverton Canal Town District	\$0	X	0	+	\$0	X	0	=	\$0	\$1,750
Franklin Harris Farmstead	\$0	X	0	+	\$0	X	0	=	\$0	\$1,000
Daniel Howell Hise House	\$0	X	0	+	\$0	X	0	=	\$0	\$475
Hostetter Inn	\$0	X	0	+	\$0	X	0	=	\$0	\$2,325
Ilkirt House	\$0	X	0	+	\$0	X	0	=	\$0	\$425

Structure Use and Function Loss (Task A3)									
Name/Description of Asset	Average Daily Operating Budget (\$)	X	Functional Downtime (# of days)	+	Displacement Cost per Day (\$)	X	Displacement Time (Days)	=	Structure Use & Function Loss (\$)
Homer Laughlin House	\$0	X	0	+	\$0	X	0	=	\$0
Lisbon Historic District	\$0	X	0	+	\$0	X	0	=	\$0
Daniel McBean Farmstead	\$0	X	0	+	\$0	X	0	=	\$0
Odd Fellows Temple	\$0	X	0	+	\$0	X	0	=	\$0
Mary A. Patterson Memorial	\$0	X	0	+	\$0	X	0	=	\$0
Potters National Bank	\$0	X	0	+	\$0	X	0	=	\$0
Salem Downtown Historic District	\$0	X	0	+	\$0	X	0	=	\$0
Charles Nelson Schmick House	\$0	X	0	+	\$0	X	0	=	\$0
John Street House	\$0	X	0	+	\$0	X	0	=	\$0
Teegarden-Centennial Covered Bridge	\$0	X	0	+	\$0	X	0	=	\$0
Cassius Clark Thompson House	\$0	X	0	+	\$0	X	0	=	\$0
Travelers Hotel	\$0	X	0	+	\$0	X	0	=	\$0
YMCA	\$0	X	0	+	\$0	X	0	=	\$0
Residential	\$0	X	0	+	\$0	X	0	=	\$0
Total Loss to Structure Use & Function									\$386,625

Structure + Contents + Function Loss	\$550
	\$4,000
	\$1,125
	\$575
	\$300
	\$1,350
	\$3,250
	\$450
	\$425
	\$2,375
	\$600
	\$4,250
	\$2,325
	\$376,704
	\$1,054,967

HAZARD MAPPING: SEVERE THUNDERSTORM/HAIL/LIGHTNING



2.2 PROFILING HAZARDS

2.2.7. Severe Wind/Tornado

Wind storms are destructive wind events that occur with or without the presence of other storm events, such as tornados or severe thunderstorms.

A tornado is a violently rotating column of air extending from a super-cell thunderstorm to the ground.

INTRODUCTION

A windstorm is a storm with high winds or violent gusts, sometimes called a wind shear or microburst, but with little or no rain. A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one (1) mile wide and 50 miles long.

Several methods of research identified severe wind and tornadoes as natural hazards in Columbiana

Period of Occurrence:	At any time – Primarily during March through August.
Number of Events to Date (1950 – 2012 tornadoes): (2006 – 2012 high winds):	15 tornados & 6 high wind events.
Probability of Event:	Infrequent.
Warning Time:	Minutes to hours.
Potential Impacts:	Utility damage and outages, infrastructure damage (transportation and communication systems), structural damage, and damaged or destroyed critical facilities. Impacts human life, health, and public safety.
Cause Injury or Death:	Injury and risk of multiple deaths.
Potential Facility Shutdown:	Days to weeks or more.

Figure 2.7a

County. General severe wind and tornado information was obtained from the following sources:

- FEMA *State and Local Mitigation Planning How-to-Guide: Understanding Your Risks*.
- National Climatic Data Center (NCDC) – Event Records.
- Columbiana County Emergency Operations Plan

For the purposes of this Hazard Risk Assessment (HRA), it is assumed that Columbiana County has a moderate probability, and moderate impact to severe wind and tornadoes. The hazard of severe wind and tornadoes is not targeted to any specific portion of Columbiana County.

High Probability Low Impact	High Probability Moderate Impact	High Probability High Impact
Moderate Probability Low Impact	Moderate Probability Moderate Impact	Moderate Probability High Impact
Low Probability Low Impact	Low Probability Moderate Impact	Low Probability High Impact

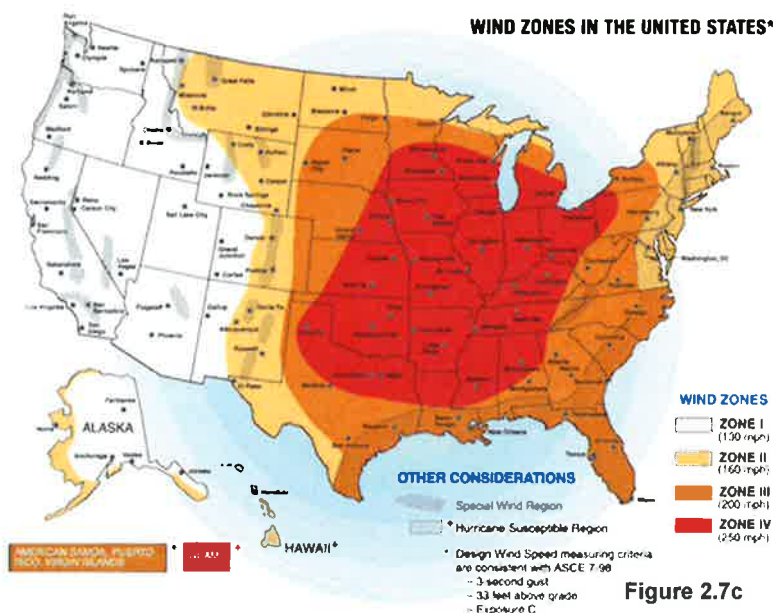
Figure 2.7b

HAZARD IDENTIFICATION

Tornadoes are among the most unpredictable of weather phenomena. Tornadoes can occur in any state in the United States but are more frequent in the Midwest, Southeast, and Southwest. Ohio is positioned geographically on the eastern-most edge of what has come to be known as “tornado alley” and is no stranger to tornado sightings.

The nature of tornadoes is they strike at random. While it is known that some areas of the country experience tornadoes more than others, predicting exactly what parts of Columbiana County have a greater chance of being struck by a tornado is difficult. The best predictor of future tornadoes is the occurrence of previous tornadoes which are discussed below.

Most sources have only been recording tornado activity since 1950. Northeastern Ohio falls into the “moderate” category for tornado risk, and the second highest category for wind zones in the United States, which is illustrated in figure 2.7c at right. Columbiana County falls within the zone IV, wind zone. According to county and National Weather Service (NWS) records there have been no recorded tornado events in Columbiana County over the past six (6) years.



However information provided by the *TornadoHistoryProject.com* shows that since 1950 there have been 15 tornado events within the county. The largest of these tornadoes was characterized as an F3 on the Fujita Tornado Measurement Scale.

The Enhanced Fujita Damage scale is illustrated in table 2.10a. The Enhanced Fujita Scale (EF Scale) rates the strength of tornadoes in the United States based on the damage they cause.

SCALE	WIND SPEED mph	RELATIVE FREQUENCY	POTENTIAL DAMAGE
EF0	65-85	53.5%	<i>Minor or no damage.</i> Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	31.6%	<i>Moderate damage.</i> Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	<i>Considerable damage.</i> Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	<i>Severe damage.</i> Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	0.7%	<i>Extreme damage.</i> Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF5	>200	<0.1%	<i>Total destruction.</i> Strong framed, well built houses leveled off foundations and swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations.

Table 2.7a

Implemented in place of the Fujita scale introduced in 1971 by Ted Fujita, it began operational use on February 1, 2007. The scale has the same basic design as the original Fujita scale, six (6) categories from zero (0) to five (5) representing increasing degrees of damage. It was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. Better standardizing and elucidating what was previously subjective and ambiguous, it also

adds more types of structures, vegetation, expands degrees of damage, and better accounts for variables such as differences in construction quality.

It was developed from 2000 to 2004 by the Fujita Scale Enhancement Project of the Wind Science and Engineering Research Center at Texas Tech University, which brought together dozens of expert meteorologists and civil engineers in addition to its own resources.

The rolling terrain of the southern half of the county helps to break-up intense straight-line winds and tornadoes that form and touchdown. These hazards are present in the flat open areas that exist in the northern part of the county.

HISTORY OF EVENTS

According to information from the Spatial Hazard Events and Losses Database for the United States (SHELDUS) there has been six (6) tornado occurrences in Columbiana County since 1985 (see Table 2.7b below); the largest of which was an EF-2 that occurred on May 31, 1985, this tornado outbreak is illustrated in Figure 2.7d below. The most recent tornado, as reported by *TornadoHistoryProject.com* was an EF-0 which occurred in August of 2003, see narrative below.

There were six (6) high wind events listed in the NCDC between 2006 and 2012 that were not associated with thunderstorms. All of these events were recorded with wind speeds at 55 knots or below.

SHELDUS – Tornado History Project Data Summary						
Date	Location	EF Scale	Fatalities	Injuries	Property Damage	Crop Damage
May 31, 1985	Salem	EF-2	0	20	\$5,000,000	\$0
August 9, 1987	Sebring	EF-1	0	0	\$5,000	\$0
July 22, 1990	Columbiana	EF-0	0	0	\$5,000	\$0
July 22, 1990	East Palestine	EF-0	0	0	\$5,000	\$0
Sept. 21, 1992	Salem	EF-1	0	0	\$25,000	\$0
Sept. 21, 1992	Salineville	EF-0	0	0	\$25,000	\$0
April 15, 1993	Lisbon	EF-0	0	0	\$50,000	\$0
June 21, 1995	Lisbon	EF-0	0	0	\$2,000	\$0
TOTALS			0	20	\$5,112,000	\$0

Table 2.7b

May 31st, 1985 Tornado Outbreak

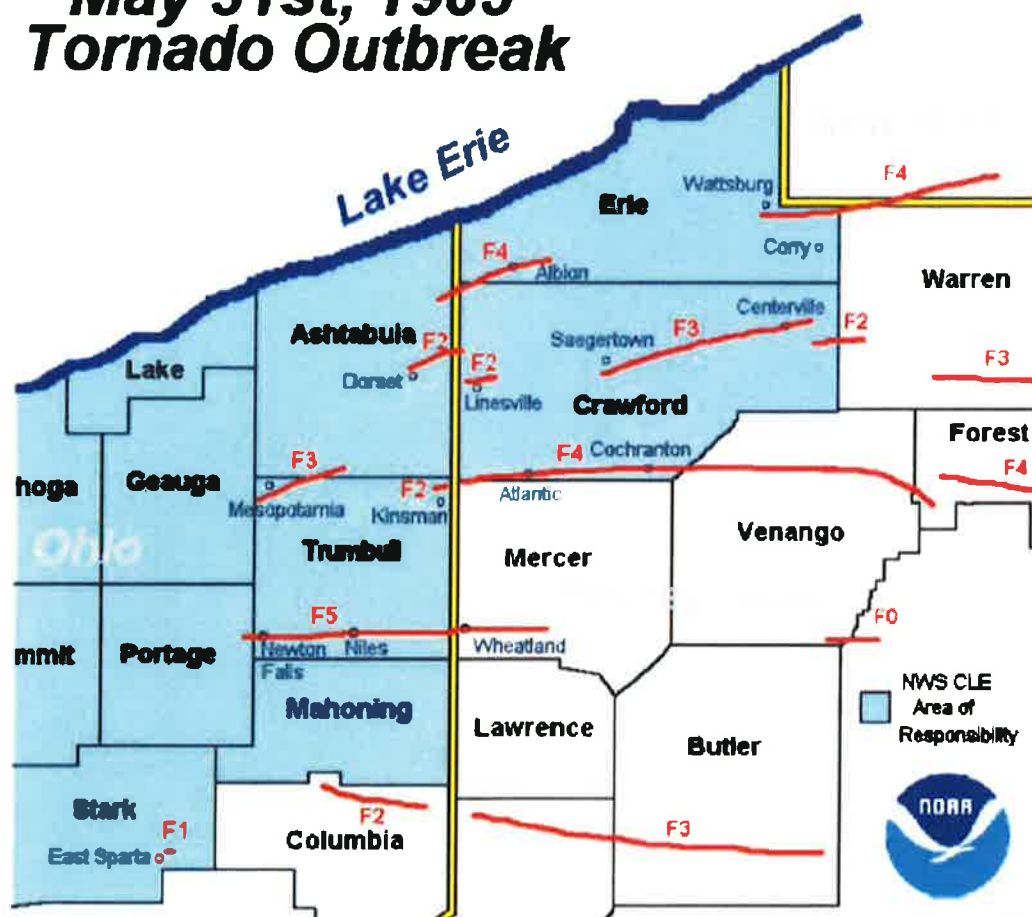


Figure 2.7d

- August 1, 2003** – Numerous showers and thunderstorms developed with a cold front moving across the upper Ohio Valley, with some severe storms across eastern Ohio, northern West Virginia, and western Pennsylvania. At approximately 4:27pm, a brief tornado touched down near the border of Carroll and Columbiana counties, and a stronger downburst occurred in East Liverpool in Columbiana County. A National Weather Service (NWS) storm survey found an EF-0 tornado crossed into Columbiana County from Carroll County west of Summitville near Acker Road, and then dissipated shortly thereafter. The tornado damaged trees in its path for nearly one (1) mile into Columbiana before dissipating. The entire path length of this storm was 3.2 miles, with a maximum path width of 75 yards. Maximum winds were estimated at 75 miles per hour (MPH). No fatalities or injuries occurred. Property damage was estimated at \$5,000.

HAZARD IMPACT

While tornadoes are relatively short lived in duration, they are intensely focused, making them one of the most destructive forces in nature. As previously discussed above, Columbiana County is located in the “Zone IV” wind zone. This wind zone places Columbiana County in a category that could experience severe tornadoes with 158-206 mph wind speeds. Such winds would cause significant damage to structures, such as roofs torn off frame houses, mobile homes demolished, and boxcars pushed over.

Columbiana County has endured F3 tornados in the past, an F3 tornado is considered a severe tornado with wind speeds well in excess of 100 mph, and these types of tornados leave behind major destruction. Damages from F3 tornados can include entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structure with weak foundations can be badly damaged. Localized geographic conditions can exacerbate the damages from high winds and cause increases in wind intensity.

The enormous power and destructive capability of tornadoes are beyond mankind’s capabilities to control. The severity of the effects of tornadoes will continue, including deaths, injuries, and property damages. Tornadoes are rather unpredictable by nature, however; technological advances will facilitate earlier warning than previously available. This combined with a vigorous public education program and improved construction techniques, provide the potential for significant reductions in the number of deaths and injuries as a result of tornadoes in Columbiana County.

Severe wind events can cause a variety of secondary, or cascading, hazard events. For instance, wind may blow limbs from trees down knocking out electric power or blocking roadways. Wind often results in damages to roofs and other home finishings (such as siding, etc.). Damage and loss of life could be severe and overwhelm the ability of local responders to address the emergency. No estimates were available on the total losses from past tornadoes and severe winds. However, between 1955 and 1995 over 20 injuries were reportedly associated with tornadoes.

PAST MITIGATION EFFORTS

Past mitigation efforts to reduce losses associated with severe wind and tornadoes in Columbiana County have included, the development and distribution of public awareness materials about natural hazard risks, preparedness, and mitigation;

establishment of a protocol for the sharing of annual shelter survey information between the local Red Cross Chapter and Columbiana County Emergency Management Agency (CCEMA), and continued to conduct National Weather Service Storm Spotter classes.

HAZARD MAPPING

See the Columbiana County Severe Wind/Tornado Map for a graphical representation of the hazard areas with regard to severe wind and tornadoes. The green areas represent “low hazard areas,” the yellow areas represent “moderate hazard areas,” the orange areas represent “high hazard areas,” and the red areas represent “extreme high hazard areas.”

Hazard: Severe Wind/Tornado

Type of Structure (Occupancy Class)	Number of Structures			Value of Structures		Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	\$ in Community	\$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area
<i>Residential</i>	47,088	16,480	35%	\$3,767,040,000	\$8,000,000	0.21%	107,841	43,136
<i>Commercial</i>	1,578	316	20%	\$631,200,000	\$400,000	0.06%	17,469	3,493
<i>Industrial</i>	444	89	20%	\$222,000,000	\$300,000	0.14%	6,505	1,301
<i>Agricultural</i>	4,120	1,648	40%	\$721,000,000	\$2,275,000	0.32%	3,090	1,236
<i>Religious/Non-Profit</i>	103	21	20%	\$20,600,000	\$32,000	0.16%	4,120	824
<i>Government</i>	45	9	20%	\$18,000,000	\$48,000	0.27%	1,350	270
<i>Education</i>	46	9	20%	\$17,250,000	\$45,000	0.26%	18,276	3,655
<i>Utilities</i>	20	4	20%	\$30,000,000	\$60,000	0.20%	60	12
Total	53,444	18,576	35%	\$5,427,090,000	\$11,160,000	0.21%	158,711	53,927
								34%

	Yes	No
1. Do you know where your greatest damages may occur in your hazard areas?		X
2. Do you know whether your critical facilities will be operational after a hazard event?		X
3. Is there enough data to determine which assets are subject to the greatest potential damages?	X	
4. Is there enough data to determine whether significant elements of the community are vulnerable to potential hazards?	X	
5. Is there enough data to determine whether certain areas of historic, environmental, political, or cultural significance are vulnerable to potential hazards?		X
6. Is there concern about a particular hazard because of its severity, repetitiveness, or likelihood of occurrence?	X	
7. Is additional data needed to justify the expenditure of community or state funds for mitigation initiatives?		X

Hazard: Severe Wind/Tornado

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)				
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	Percent Damage (%)	=	Loss to Contents (\$)
Columbiana County Courthouse	\$1,850,000	X	0.10%	=	\$1,850	\$700,000	0%	=	\$0
Columbiana City Hall	\$1,250,000	X	0.10%	=	\$1,250	\$400,000	0%	=	\$0
East Liverpool City Hall	\$650,000	X	0.10%	=	\$650	\$325,000	0%	=	\$0
East Palestine Village Offices	\$425,000	X	0.10%	=	\$425	\$275,000	0%	=	\$0
Hanoverton Village Offices	\$375,000	X	0.10%	=	\$375	\$225,000	0%	=	\$0
Salem City Hall	\$976,800	X	0.10%	=	\$977	\$390,000	0%	=	\$0
Salineville Village Offices	\$311,900	X	0.10%	=	\$312	\$190,000	0%	=	\$0
Wellsville Village Offices	\$518,100	X	0.10%	=	\$518	\$300,000	0%	=	\$0
Leetonia Village Offices	\$335,000	X	0.10%	=	\$335	\$90,000	0%	=	\$0
Lisbon Village Offices	\$979,500	X	0.10%	=	\$980	\$395,000	0%	=	\$0
New Waterford Village Offices	\$265,000	X	0.10%	=	\$265	\$75,000	0%	=	\$0
Washingtonville Village Offices	\$250,000	X	0.10%	=	\$250	\$55,000	0%	=	\$0
Elkrun Township Hall	\$145,000	X	0.20%	=	\$290	\$70,000	0%	=	\$0
Fairfield Township Hall	\$360,000	X	0.10%	=	\$360	\$220,000	0%	=	\$0
Madison Township Hall	\$245,000	X	0.10%	=	\$245	\$165,000	0%	=	\$0
Salem Township Hall	\$310,000	X	0.10%	=	\$310	\$200,000	0%	=	\$0
Bridges	\$115,000,000	X	0%	=	\$0	\$0	0%	=	\$0
Highways	\$1,525,000,000	X	0%	=	\$0	\$0	0%	=	\$0
Railroads	\$85,000,000	X	0%	=	\$0	\$0	0%	=	\$0
Columbiana County Airport	\$679,200	X	0%	=	\$0	\$203,760	0%	=	\$0
Columbiana County Port Authority	\$595,000	X	0%	=	\$0	\$148,750	0%	=	\$0
East Liverpool Water Works	\$1,895,000	X	0.10%	=	\$1,895	\$3,550,000	0%	=	\$0
East Palestine Sewer and Water	\$3,165,000	X	0.10%	=	\$3,165	\$3,500,000	0%	=	\$0
Leetonia Water Board	\$1,750,000	X	0.10%	=	\$1,750	\$2,110,000	0%	=	\$0
Salem Sewage Plant	\$7,450,000	X	0.10%	=	\$7,450	\$6,250,000	0%	=	\$0
Salineville Water Plant	\$2,450,000	X	0.10%	=	\$2,450	\$3,000,000	0%	=	\$0

Name/Description of Asset	Structure Loss (Task A1)			Contents Loss (Task A2)		
	Structure Replacement Value (\$)	Percent Damage (%)	Loss to Structure (\$)	Replacement Value of Contents (\$)	Percent Damage (%)	Loss to Contents (\$)
Washingtonville Water and Sewer	\$9,355,000	X 0.10%	= \$9,355	\$10,000,000	X 0%	= \$0
Wellsville Filtration Plant	\$985,000	X 0.10%	= \$985	\$1,255,000	X 0%	= \$0
Wellsville Sewage Disposal	\$1,553,000	X 0.10%	= \$1,553	\$2,875,000	X 0%	= \$0
Buckeye Water District	\$3,650,000	X 0.10%	= \$3,650	\$4,250,000	X 0%	= \$0
Columbiana City Water Works/Sewer Dept.	\$2,655,000	X 0.10%	= \$2,655	\$3,150,000	X 0%	= \$0
Leetonia Sewage Plant	\$3,950,000	X 0.10%	= \$3,950	\$4,550,000	X 0%	= \$0
Lisbon Village Water Dept.	\$1,875,000	X 0.10%	= \$1,875	\$2,000,000	X 0%	= \$0
New Waterford Water / Waste Water Plant	\$2,455,000	X 0.10%	= \$2,455	\$3,655,000	X 0%	= \$0
Salineville Sewer Plant	\$5,650,000	X 0.10%	= \$5,650	\$5,000,000	X 0%	= \$0
Columbiana County Sheriff	\$350,000	X 0.10%	= \$350	\$625,000	X 0%	= \$0
Columbiana County EMA	\$565,000	X 0.10%	= \$565	\$200,000	X 0%	= \$0
Columbiana County 911 Ctr.	\$265,000	X 0.10%	= \$265	\$635,000	X 0%	= \$0
Columbiana PD	\$225,000	X 0.10%	= \$225	\$325,000	X 0%	= \$0
East Liverpool PD	\$215,000	X 0.10%	= \$215	\$289,000	X 0%	= \$0
East Palestine PD	\$210,000	X 0.10%	= \$210	\$198,000	X 0%	= \$0
Leetonia PD	\$235,000	X 0.10%	= \$235	\$105,000	X 0%	= \$0
Lisbon PD	\$979,500	X 0.10%	= \$980	\$320,000	X 0%	= \$0
Liverpool Township PD	\$200,000	X 0.10%	= \$200	\$165,000	X 0%	= \$0
New Waterford PD	\$310,000	X 0.10%	= \$310	\$175,000	X 0%	= \$0
Ohio State Highway Patrol	\$865,000	X 0.10%	= \$865	\$455,000	X 0%	= \$0
Perry Township PD	\$309,900	X 0.10%	= \$310	\$170,000	X 0%	= \$0
Salem PD	\$395,000	X 0.10%	= \$395	\$265,000	X 0%	= \$0
Salineville PD	\$311,900	X 0.10%	= \$312	\$250,000	X 0%	= \$0
St. Clair Township PD	\$295,000	X 0.10%	= \$295	\$175,000	X 0%	= \$0
Washingtonville PD	\$235,000	X 0.10%	= \$235	\$145,000	X 0%	= \$0
Wellsville PD	\$518,100	X 0.10%	= \$518	\$325,000	X 0%	= \$0
Calcutta FD	\$170,000	X 0.50%	= \$850	\$645,000	X 0%	= \$0
Columbiana FD	\$426,700	X 0.10%	= \$427	\$890,000	X 0%	= \$0
East Liverpool FD	\$135,300	X 0.50%	= \$677	\$465,000	X 0%	= \$0

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)					
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)
East Palestine FD	\$192,300	X	0.50%	=	\$962	\$385,000	X	0%	=	\$0
Franklin Township VFD	\$95,850	X	0.50%	=	\$479	\$245,000	X	0%	=	\$0
Hanoverton VFD	\$235,450	X	0.10%	=	\$235	\$300,000	X	0%	=	\$0
Guilford Lake FD	\$195,000	X	0.50%	=	\$975	\$345,000	X	0%	=	\$0
Highlandtown VFD	\$104,900	X	0.50%	=	\$525	\$295,000	X	0%	=	\$0
Homeworth VFD	\$113,900	X	0.50%	=	\$570	\$310,000	X	0%	=	\$0
Leetonia FD/EMS	\$124,500	X	0.50%	=	\$623	\$565,000	X	0%	=	\$0
Lisbon FD	\$325,000	X	0.10%	=	\$325	\$610,000	X	0%	=	\$0
Dixonville FD	\$84,500	X	0.50%	=	\$423	\$285,000	X	0%	=	\$0
Lacroft VFD	\$149,300	X	0.50%	=	\$747	\$365,000	X	0%	=	\$0
Negley VFD/EMS	\$110,200	X	0.50%	=	\$551	\$410,000	X	0%	=	\$0
New Waterford FD	\$150,900	X	0.50%	=	\$755	\$425,000	X	0%	=	\$0
North Georgetown VFD	\$100,100	X	0.50%	=	\$501	\$315,000	X	0%	=	\$0
Perry Township VFD	\$309,900	X	0.10%	=	\$310	\$565,000	X	0%	=	\$0
Rogers Village FD	\$161,000	X	0.50%	=	\$805	\$435,650	X	0%	=	\$0
Salem FD	\$215,500	X	0.10%	=	\$216	\$565,000	X	0%	=	\$0
Salineville VFD	\$311,900	X	0.10%	=	\$312	\$325,000	X	0%	=	\$0
Wellsville VFD	\$143,600	X	0.50%	=	\$718	\$415,000	X	0%	=	\$0
West Point FD	\$200,000	X	0.10%	=	\$200	\$365,000	X	0%	=	\$0
Winona FD	\$172,500	X	0.50%	=	\$863	\$375,000	X	0%	=	\$0
Glenmoor VFD	\$752,000	X	0.10%	=	\$752	\$650,000	X	0%	=	\$0
Air Evac Lifeteam 81	\$86,600	X	0.50%	=	\$433	\$0	X	0%	=	\$0
EMT Ambulance	\$112,200	X	0.50%	=	\$561	\$240,000	X	0%	=	\$0
Lifeteam EMS Inc.	\$135,000	X	0.50%	=	\$675	\$220,000	X	0%	=	\$0
KLG Ambulance / MICU	\$76,500	X	0.50%	=	\$383	\$182,000	X	0%	=	\$0
North Star Critical Care	\$84,900	X	0.50%	=	\$425	\$175,000	X	0%	=	\$0
Maple-Cotton Funeral Home and EMS	\$165,000	X	0.50%	=	\$825	\$200,000	X	0%	=	\$0
Tri-County Ambulance	\$118,600	X	0.50%	=	\$593	\$190,000	X	0%	=	\$0
Columbiana EMS	\$426,800	X	0.10%	=	\$427	\$350,000	X	0%	=	\$0
Leetonia EMS	\$185,000	X	0.20%	=	\$370	\$265,000	X	0%	=	\$0
New Waterford EMS	\$175,000	X	0.20%	=	\$350	\$215,000	X	0%	=	\$0
East Palestine EMS	\$265,000	X	0.10%	=	\$265	\$300,000	X	0%	=	\$0
East Liverpool City Hospital	\$16,750,000	X	0.10%	=	\$16,750	\$8,000,000	X	0%	=	\$0
Salem Community Hospital	\$17,250,000	X	0.10%	=	\$17,250	\$8,350,000	X	0%	=	\$0

Name/Description of Asset	Structure Loss (Task A1)				Contents Loss (Task A2)					
	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)
Parkside Healthcare Center	\$2,172,700	X	0.10%	=	\$2,173	\$410,000	X	0%	=	\$0
Vista Center	\$3,536,000	X	0.10%	=	\$3,536	\$475,000	X	0%	=	\$0
Blossom Nursing and Rehab. Center	\$1,650,000	X	0.10%	=	\$1,650	\$215,000	X	0%	=	\$0
Calcutta Healthcare Center	\$4,947,200	X	0.10%	=	\$4,947	\$500,000	X	0%	=	\$0
East Liverpool Convalescent Center	\$539,600	X	0.10%	=	\$540	\$275,000	X	0%	=	\$0
Nentwick Convalescent Home	\$2,109,100	X	0.10%	=	\$2,109	\$315,000	X	0%	=	\$0
Essex of Salem #1	\$1,768,800	X	0.10%	=	\$1,769	\$500,000	X	0%	=	\$0
Essex of Salem #2	\$1,882,800	X	0.10%	=	\$1,883	\$465,000	X	0%	=	\$0
Essex of Salem #3	\$1,569,900	X	0.10%	=	\$1,570	\$395,000	X	0%	=	\$0
Pleasant view North Retirement	\$1,243,300	X	0.10%	=	\$1,243	\$380,000	X	0%	=	\$0
Salem Care Center	\$1,443,900	X	0.10%	=	\$1,444	\$350,000	X	0%	=	\$0
Assisted Living Ministry Services	\$212,800	X	0.10%	=	\$213	\$185,000	X	0%	=	\$0
Crossroads at Beaver Creek	\$3,450,000	X	0.10%	=	\$3,450	\$550,000	X	0%	=	\$0
Grace Woods Senior Living	\$897,300	X	0.10%	=	\$897	\$365,000	X	0%	=	\$0
The Renaissance at Vista	\$3,536,000	X	0.10%	=	\$3,536	\$465,000	X	0%	=	\$0
Sterling House of Salem	\$325,000	X	0.10%	=	\$325	\$350,000	X	0%	=	\$0
Whispering Pines Village	\$415,000	X	0.10%	=	\$415	\$300,000	X	0%	=	\$0
St. Mary's Alzheimer's Center	\$650,000	X	0.10%	=	\$650	\$495,000	X	0%	=	\$0
Adkins Nursing Home	\$315,000	X	0.10%	=	\$315	\$256,000	X	0%	=	\$0
Great Trail Care Center	\$225,000	X	0.10%	=	\$225	\$195,000	X	0%	=	\$0
Holander House	\$200,000	X	0.10%	=	\$200	\$165,000	X	0%	=	\$0
Twin Oaks Retirement Center	\$600,000	X	0.10%	=	\$600	\$435,000	X	0%	=	\$0
Covington Skilled Nursing & Rehab Ctr.	\$795,000	X	0.10%	=	\$795	\$495,000	X	0%	=	\$0
American Health Care	\$435,000	X	0.10%	=	\$435	\$400,000	X	0%	=	\$0
Harmony Village	\$275,500	X	0.10%	=	\$276	\$165,000	X	0%	=	\$0
Courtyard at Lexington	\$595,000	X	0.10%	=	\$595	\$285,000	X	0%	=	\$0

Structure Loss (Task A1)										Contents Loss (Task A2)				
Name/Description of Asset	Structure Replacement Value (\$)	X	Percent Damage (%)	=	Loss to Structure (\$)	Replacement Value of Contents (\$)	X	Percent Damage (%)	=	Loss to Contents (\$)				
Century House of Salem	\$275,000	X	0.10%	=	\$275	\$250,000	X	0%	=	\$0				
Columbiana County Mental Health	\$560,000	X	0.10%	=	\$560	\$325,000	X	0%	=	\$0				
Beaver Local HS	\$4,756,100	X	0.10%	=	\$4,756	\$295,000	X	0%	=	\$0				
Beaver Local MS	\$2,866,200	X	0.10%	=	\$2,866	\$255,000	X	0%	=	\$0				
Buckeye ES	\$1,914,500	X	0.10%	=	\$1,915	\$195,000	X	0%	=	\$0				
Calcutta ES	\$1,624,700	X	0.10%	=	\$1,625	\$165,000	X	0%	=	\$0				
Columbiana Co. Career and Technical Ctr.	\$6,888,400	X	0.10%	=	\$6,888	\$1,250,000	X	0%	=	\$0				
Columbiana HS	\$5,657,000	X	0.10%	=	\$5,657	\$355,000	X	0%	=	\$0				
Crestview ES	\$200,000	X	0.10%	=	\$200	\$185,000	X	0%	=	\$0				
Crestview MS/HS	\$12,341,800	X	0.10%	=	\$12,342	\$650,000	X	0%	=	\$0				
David Anderson Jr/Sr HS	\$4,015,300	X	0.10%	=	\$4,015	\$565,000	X	0%	=	\$0				
DAW MS	\$2,232,400	X	0.10%	=	\$2,232	\$245,000	X	0%	=	\$0				
East ES	\$1,455,000	X	0.10%	=	\$1,455	\$195,000	X	0%	=	\$0				
East Liverpool Jr./Sr. HS	\$12,683,000	X	0.10%	=	\$12,683	\$365,000	X	0%	=	\$0				
East Palestine ES	\$1,365,000	X	0.10%	=	\$1,365	\$225,000	X	0%	=	\$0				
East Palestine MS	\$3,450,000	X	0.10%	=	\$3,450	\$285,000	X	0%	=	\$0				
East Palestine HS	\$5,000,000	X	0.10%	=	\$5,000	\$400,000	X	0%	=	\$0				
Garfield ES	\$1,383,000	X	0.10%	=	\$1,383	\$225,000	X	0%	=	\$0				
Joshua Dixon ES	\$1,622,900	X	0.10%	=	\$1,623	\$265,000	X	0%	=	\$0				
Lacroft ES	\$4,765,600	X	0.10%	=	\$4,766	\$300,000	X	0%	=	\$0				
Leetonia K-12	\$3,650,000	X	0.10%	=	\$3,650	\$415,000	X	0%	=	\$0				
Mckinley ES	\$2,000,000	X	0.10%	=	\$2,000	\$150,000	X	0%	=	\$0				
North ES	\$2,155,000	X	0.10%	=	\$2,155	\$165,000	X	0%	=	\$0				
Reilly ES	\$2,566,500	X	0.10%	=	\$2,567	\$180,000	X	0%	=	\$0				
Rogers ES	\$1,714,100	X	0.10%	=	\$1,714	\$155,000	X	0%	=	\$0				
Salem Jr./Sr. HS	\$8,977,100	X	0.10%	=	\$8,977	\$455,000	X	0%	=	\$0				
South Side MS	\$4,000,000	X	0.10%	=	\$4,000	\$235,000	X	0%	=	\$0				
Southeast ES	\$2,975,700	X	0.10%	=	\$2,976	\$195,000	X	0%	=	\$0				
Southern Local K-12	\$4,650,000	X	0.10%	=	\$4,650	\$300,000	X	0%	=	\$0				
United K-12	\$9,694,000	X	0.10%	=	\$9,694	\$495,000	X	0%	=	\$0				
Wellsville HS	\$7,347,800	X	0.10%	=	\$7,348	\$325,000	X	0%	=	\$0				
West Point ES	\$614,200	X	0.10%	=	\$614	\$140,000	X	0%	=	\$0				
Westgate MS	\$3,695,300	X	0.10%	=	\$3,695	\$280,000	X	0%	=	\$0				
Act 1 Education Ctr. Jr. HS	\$900,100	X	0.10%	=	\$900	\$165,000	X	0%	=	\$0				