

Hazard Mitigation Plan

Columbiana County Emergency Management Agency

Updated 2025

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COLUMBIANA COUNTY
HAZARD MITIGATION PLAN

UPDATED 2025

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
TABLE OF CONTENTS

Executive Summary..... xii

1.0 Introduction..... 1
1.1 Documentation of the Planning Process..... 5
1.2 Description of the Planning Area..... 15
1.3 Capabilities..... 56

2.0 Risk Assessment..... 72
2.1 Identify Hazards..... 73
2.2 Describe Hazards..... 78
2.2.1 Cyber Incidents..... 87
2.2.2 Dam & Levee Failure..... 98
2.2.3 Drought..... 120
2.2.4 Earthquake..... 139
2.2.5 Extreme Temperatures..... 155
2.2.6 Flood..... 174
2.2.7 Hazardous Materials Incident..... 190
2.2.8 Landslide..... 211
2.2.9 Public Health Emergency..... 224
2.2.10 Severe Thunderstorms & Hail..... 241
2.2.11 Severe Wind & Tornadoes..... 253
2.2.12 Severe Winter Storm..... 271
2.2.13 Wildfire..... 282

2.3 Analyze Impacts..... 297
2.4 Summarize Vulnerability..... 317

3.0 Mitigation Strategy..... 322
3.1 Mitigation Goals and Objectives..... 323
3.2 Mitigation Actions..... 324

4.0 Plan Maintenance and Integration…… 351
4.1 Monitoring, Evaluating, and Updating the Plan…… 352
4.2 Implementation through Existing Programs…… 356
4.3 Continued Public Involvement…… 364

5.0 Appendices
5.1 Planning Process Involvement
5.2 Project Prioritization
5.3 Inactive Projects
5.4 Public Participation
5.5 Jurisdictional Flood Mapping
5.6 References
5.7 Crosswalks and Resolutions

List of Tables and Figures

1.0 INTRODUCTION

Table 1.0.1: 44 CFR 201.6 Requirements in This Plan…… 2
Table 1.1.1: Columbiana County Hazard Mitigation Plan Steering Committee…… 5
Table 1.1.2: Jurisdictional Participation in the 2025 Update…… 9
Table 1.2.1: Jurisdictions in Columbiana County…… 15
Figure 1.2.a: Municipal Areas…… 16
Table 1.2.2: Columbiana County Population by Decennial Census, 1950-2020…… 17
Table 1.2.3: Columbiana County Detailed Demographics…… 18
Figure 1.2.b: Roadway Infrastructure…… 29
Figure 1.2.c: Rail Infrastructure…… 31
Figure 1.2.d: Aviation Facilities…… 34
Table 1.2.4: Major and Notable Employers, Columbiana County…… 36
Table 1.2.5: Columbiana County Asset Inventory…… 40
Figure 1.2.e: Columbiana County Asset Inventory Map…… 48
Table 1.2.6: Columbiana County Population Change (with Forecasts), 1950-2050…… 49
Figure 1.2.f: Columbiana County Population Change (with Forecasts), 1950-2050…… 50
Figure 1.2.g: Components of Population Change…… 50
Table 1.2.7: Residential Construction, 2013-2023…… 51

Figure 1.2.h: Columbiana County Bridge Inventory..... 52
Table 1.2.8: Establishments, Employment, and Wages by Sector, 2016-2022 Comparison..... 53
Figure 1.2.i: Columbiana County Broadband Profile..... 55
Table 1.3.1: Jurisdictional Capabilities (Summary)..... 56
Table 1.3.2: Opportunities for Expanding and Improving Local Capabilities: Comprehensive Plans..... 59
Figure 1.3.a: Village of New Waterford Land and Use Code Webpage..... 61
Figure 1.3.b: Village of Leetonia Zoning Department Webpage..... 62
Table 1.3.3: Opportunities for Expanding and Improving Local Capabilities: Zoning Ordinances..... 62
Table 1.3.4: NFIP Policies in Force, Participating Jurisdictions..... 64
Table 1.3.5: Current Effect Map Date (per NFIP Participation)..... 66
Table 1.3.6: Opportunities for Expanding and Improving Local Capabilities: Floodplain Management..... 66
Table 1.3.7: State Programs with Potential Financial Support for Mitigation Activities..... 69
Table 1.3.8: Federal Programs with Potential Financial Support for Mitigation Activities..... 70

2.0 RISK ASSESSMENT

Table 2.1.1: Included Hazard Types – Comparison of Columbiana County and Ohio Plans..... 75
Table 2.1.2: Disaster Declarations Impacting Columbiana County..... 76
Figure 2.2.a: Columbiana County Census Tracts..... 80
Table 2.2.1: Frequency Categories..... 81
Table 2.2.2: Qualitative Risk Variables..... 82
Table 2.2.1.1: United States Government Accountability Office Threat Table..... 89
Table 2.2.1.2: Types of Cyberattacks..... 90
Table 2.2.1.3: Public Sentiment, Cyber Incidents..... 95
Table 2.2.1.4: Cyber Incidents Risk Rating..... 95
Figure 2.2.1.a: Municipal Risk Variation, Cyber Incidents..... 97
Table 2.2.2.1: Dams in Columbiana County..... 100
Figure 2.2.2.a: Dams by Hazard Class..... 103
Figure 2.2.2.b: Dams by EAP Date..... 106

Figure 2.2.2.c: Wellsville Levee System..... 107
Table 2.2.2.2: Dam Hazard Classifications..... 107
Table 2.2.2.3: Levee Risk Classifications..... 109
Figure 2.2.2.d: Tracts by Limited English Proficiency..... 112
Figure 2.2.2.e: Tracts by Vehicle Availability..... 113
Table 2.2.2.4: Dam Incidents in Columbiana County..... 114
Table 2.2.2.5: Columbiana County Dam Failure Loss Estimates..... 116
Table 2.2.2.6: Public Sentiment, Dam & Levee Failure..... 117
Table 2.2.2.7: Dam & Levee Failure Risk Ranking..... 118
Figure 2.2.2.f: Municipal Risk Variation, Dam & Levee Failure..... 119
Table 2.2.3.1: USDM and PDSI Comparison..... 121
Table 2.2.3.2: Crop Moisture Index..... 122
Figure 2.2.3.a: Agricultural Land Cover..... 123
Table 2.2.3.3: U.S. Drought Monitor Classification..... 124
Figure 2.2.3.b: SVI Considerations (Poverty)..... 126
Figure 2.2.3.c: SVI Considerations (Age)..... 127
Table 2.2.3.4: Previous Drought Occurrences-Columbiana County..... 128
Figure 2.2.3.d: U.S. Drought Monitor, September 6, 2016..... 130
Table 2.2.3.5: USDA Census of Agriculture (2022) Data, Columbiana County..... 131
Table 2.2.3.6: Columbiana County Drought NRI Exposure/Expected Annual Loss (EAL) Estimates..... 132
Figure 2.2.3.e: Months in Severe/Extreme Drought..... 134
Figure 2.2.3.f: Fluctuation in the Number of Dry Days..... 135
Figure 2.2.3.g: Fluctuation in Days with Less than One Inch of Precipitation..... 135
Table 2.2.3.7: Public Sentiment, Drought..... 136
Table 2.2.3.8: Drought Risk Ranking..... 136
Figure 2.2.3.h: Municipal Risk Variation, Drought..... 137
Figure 2.2.4.a: Earthy's Layers..... 139
Figure 2.2.4.b: Oil & Gas Well Locations..... 141
Figure 2.2.4.c: Fault Lines in Ohio..... 143
Table 2.2.4.1: Modified Mercalli and Magnitude Scale Comparison..... 144
Figure 2.2.4.d: Perceived Shaking from a Major New Madrid Seismic Zone Incident..... 145
Figure 2.2.4.e: Earthquake Hazard Regions in the United States..... 147
Figure 2.2.4.f: SVI Considerations (Age)..... 148

Figure 2.2.4.g: SVI Considerations (Non-Institutional)..... 149
Table 2.2.4.2: Earthquake Epicenters in Columbiana County..... 150
Table 2.2.4.3: Expected Annual Losses, Earthquake (NRI)..... 150
Figure 2.2.4.h: MMI Level Earthquakes with a 2% Probability of Exceedance in 50 Years.. 152
Table 2.2.4.4: Public Sentiment, Earthquake..... 152
Table 2.2.4.5: Earthquake Risk Ranking..... 153
Figure 2.2.4.i: Municipal Risk Variation, Earthquake..... 154
Table 2.2.5.1: NOAA's National Weather Service Heat Index..... 156
Table 2.2.5.2: NOAA's National Weather Service Windchill Chart..... 157
Table 2.2.5.3: NWS, Heat-Related Products..... 157
Figure 2.2.5.a: Estimated Urban Heat Island Effect..... 159
Table 2.2.5.4: NWS, Products Related to Extreme Cold..... 160
Table 2.2.5.5: Heat Risks..... 161
Figure 2.2.5.b: SVI Considerations (Age)..... 162
Figure 2.2.5.c: SVI Considerations (Poverty)..... 164
Table 2.2.5.6: Previous Extreme Temperature Events..... 165
Table 2.2.5.7: Columbiana County Cold Wave NRI Exposure/Expected Annual Loss (EAL) Estimates..... 166
Table 2.2.5.8: Columbiana County Heat Wave NRI Exposure/Expected Annual Loss (EAL) Estimates..... 167
Figure 2.2.5.d: Area of the Contiguous 48 States with Unusually Hot Summer Temperatures, 1910-2020..... 168
Figure 2.2.5.e: Change in Unusually Hot Temperatures in the Contiguous 48 States, 1948-2020..... 169
Figure 2.2.5.f: Change in Unusually Cold Temperatures in the Contiguous 48 States, 1948-2020..... 170
Table 2.2.5.9: Public Sentiment, Extreme Temperatures..... 171
Table 2.2.5.10: Extreme Temperatures Risk Ranking..... 171
Figure 2.2.5.g: Municipal Risk Variation, Extreme Temperatures..... 173
Figure 2.2.6.a: Special Flood Hazard Areas (SFHAs)..... 176
Table 2.2.6.1: Repetitive Loss and Severe Repetitive Loss Definitions..... 177
Table 2.2.6.2: Columbiana County Repetitive Loss & Severe Repetitive Loss Structures (Unmitigated)..... 178
Table 2.2.6.3: Effects of Flooding..... 178

Figure 2.2.6.b: SFHAs & Poverty..... 181
Figure 2.2.6.c: SFHAs & Limited Vehicle Access..... 182
Table 2.2.6.4: Flooding Incidents, Columbiana County, 1996-2024..... 183
Table 2.2.6.5: Flash Flooding Incidents, Columbiana County, 1996-2024..... 184
Table 2.2.6.6: Columbiana County Riverine Flooding NRI Exposure / Expected Annual Loss (EAL) Estimates..... 185
Table 2.2.6.7: Public Sentiment, Flooding..... 187
Table 2.2.6.8: Flooding Risk Ranking..... 187
Figure 2.2.6.d: Municipal Risk Variation, Flooding..... 189
Table 2.2.7.1: U.S. Department of Transportation Hazard Classification System..... 191
Figure 2.2.7.a: Breakdown of (Hazmat) Incidents by Mode..... 192
Figure 2.2.7.b: Estimated Highway Risk Areas..... 193
Figure 2.2.7.c: Freight Rail Lines..... 195
Figure 2.2.7.d: Pipeline Commodity Transport..... 196
Table 2.2.7.2: Waterborne Commerce, All Traffic (All Directions), Ohio River, 2019-2023 (Tonnages)..... 197
Figure 2.2.7.e: Facilities with Permitted Discharges..... 199
Figure 2.2.7.f: Hazmat Land Uses (Pot.) & SVI Variables..... 202
Figure 2.2.7.g: Highway Incidents by Decade, PHMSA Data, 1981-2024..... 204
Table 2.2.7.3: Highway Incidents by Decade/Year and Class, PHMSA Data, 1981-2024.. 204
Table 2.2.7.4: Highway Incidents by Decade/Year and Result, PHSMSA Data, 1981-2024..... 205
Table 2.2.7.5: Hazardous Materials Incidents per NRC Data, 1990-2024..... 205
Figure 2.2.7.h: Controlled Burn, East Palestine Train Derailment..... 206
Table 2.2.7.6: Public Sentiment, Hazardous Materials Incident..... 208
Table 2.2.7.7: Hazardous Materials Incident Risk Ranking..... 208
Figure 2.2.7.i: Municipal Risk Variation, Hazardous Materials..... 209
Figure 2.2.8.a: Types of Landslides..... 212
Figure 2.2.8.b: Landslide Incidence Areas..... 212
Figure 2.2.8.c: Landslide Incidence and Susceptibility..... 213
Table 2.2.8.1: Probability Table-Rock Slope..... 214
Table 2.2.8.2: Tier Based on Tier Determination Score-Rock Slope..... 214
Figure 2.2.8.d: Landslide Dashboard (ODOT)..... 215
Figure 2.2.8.e: Rock Slope Dashboard (ODOT)..... 216

Figure 2.2.8.f: AUMIRA Dashboard (ODOT)..... 217
Figure 2.2.8.j: USGS Landslide Incidence Data..... 219
Table 2.2.8.3: Columbiana County Landslide NRI Exposure / Expected Annual Loss (EAL) Estimates..... 220
Table 2.2.8.4: Landslide Risk Ranking..... 222
Figure 2.2.8.h: Municipal Risk Variation, Landslides..... 223
Figure 2.2.9.a: Population Distribution by Group Quarters..... 227
Table 2.2.9.1: Seasonal Flu vs. Flu Pandemic..... 228
Figure 2.2.9.b: Percentage 17 & Under (by Tract)..... 230
Figure 2.2.9.c: Percentage 65+ (by Tract)..... 231
Table 2.2.9.2: Federal and State Outbreaks, 2010-2024..... 232
Figure 2.2.9.d: Infectious Diseases, Columbiana County, 2008-2024..... 233
Table 2.2.9.3: Previous Worldwide Pandemic Events..... 234
Figure 2.2.9.e: New Cases (COVID-19) per Day..... 235
Table 2.2.9.4: Public Sentiment, Public Health Emergency..... 237
Table 2.2.9.5: Public Health Emergency Risk Ranking..... 237
Figure 2.2.9.f: Municipal Risk Variation, Public Health Emergency..... 239
Exhibit 2.2.9.A: Reportable Conditions..... 240
Table 2.2.10.1: Types of Thunderstorms..... 241
Table 2.2.10.2: TORRO Hailstorm Intensity Scale..... 242
Figure 2.2.10.a: SVI Considerations (Mobile Homes)..... 245
Figure 2.2.10.b: SVI Considerations (Poverty)..... 246
Table 2.2.10.3: Historical Severe Thunderstorm and Hail Occurrences..... 247
Table 2.2.10.4: Columbiana County Hail NRI Exposure / Expected Annual Loss (EAL) Estimates..... 248
Table 2.2.10.5: Columbiana County Lightning NRI Exposure / Expected Annual Loss (EAL) Estimates..... 249
Table 2.2.10.6: Public Sentiment, Severe Thunderstorms & Hail..... 251
Table 2.2.10.7: Severe Thunderstorms & Hail Risk Ranking..... 252
Figure 2.2.11.a: Wind Zones in the United States..... 254
Table 2.2.11.1: Beaford Wind Scale..... 255
Table 2.2.11.2: Enhanced Fujita (EF) Tornado Scale..... 256
Table 2.2.11.3: (Original) Fujita Tornado Scale..... 257
Figure 2.2.11.b: SVI Considerations (Mobile Homes)..... 260

Table 2.2.11.4: Historical Severe Wind & Tornado Occurrences-Columbiana County..... 261
Figure 2.2.11.c: Path, 1978 F3 Tornado..... 262
Figure 2.2.11.d: Path, 2020 EF0 Tornado..... 263
Figure 2.2.11.e: Tornadoes & Mobile Home Density..... 265
Table 2.2.11.5: Columbiana County Strong Wind NRI Exposure / Expected Annual Loss (EAL) Estimates..... 266
Table 2.2.11.6: Columbiana County Tornado NRI Exposure / Expected Annual Loss (EAL) Estimates..... 267
Table 2.2.11.7: Public Sentiment, Severe Wind & Tornado..... 268
Table 2.2.11.8: Severe Wind Risk Ranking..... 269
Table 2.2.11.9: Tornado Risk Ranking..... 269
Figure 2.2.11.f: Municipal Risk Variation, Severe Wind & Tornado..... 270
Table 2.2.12.1: Sperry-Piltz Ice Accumulation Index..... 272
Figure 2.2.12.a: Snow Fall Categories (ODOT)..... 272
Table 2.2.12.2: Northeast Snowfall Impact Scale..... 273
Table 2.2.12.3: Historical Severe Winter Storm Occurrences..... 275
Table 2.2.12.4: Columbiana County Ice Storm NRI Exposure / Expected Annual Loss Estimates..... 276
Table 2.2.12.5: Columbiana County Winter Weather NRI Exposure / Expected Annual Loss Estimates..... 277
Table 2.2.12.6: Public Sentiment, Winter Storm..... 279
Table 2.2.12.7: Winter Storm Risk Ranking..... 279
Figure 2.2.12.b: Municipal Risk Variation, Winter Storm..... 281
Figure 2.2.13.a: ODNR Wildfire Protection Areas..... 283
Figure 2.2.13.b: Areas with Potential Wildfire Fuels..... 285
Figure 2.2.13.c: Approximation of the WUI..... 288
Figure 2.2.13.d: Social Vulnerability Scores..... 290
Figure 2.2.13.e: Social Vulnerability Scores & Wildfire Intersection..... 291
Table 2.2.13.1: Columbiana County Wildfire NRI Exposure / Expected Annual Loss (EAL) Estimates..... 292
Table 2.2.13.2: Public Sentiment, Wildfire..... 294
Table 2.2.13.3: Wildfire Risk Ranking..... 294
Figure 2.2.13.f: Municipal Risk Variation, Wildfire..... 296
Table 2.3.1: Cyber Incidents Summary..... 298

Table 2.3.2: Dam & Levee Failure Summary..... 299
Table 2.3.3.: Drought Summary..... 300
Table 2.3.4: Earthquake Summary..... 300
Table 2.3.5: Extreme Temperature Summary..... 301
Table 2.3.6: Flooding Summary..... 302
Table 2.3.7: Hazardous Materials Summary..... 303
Table 2.3.8: Landslides Summary..... 303
Table 2.3.9: Public Health Emergency Summary..... 304
Table 2.3.10: Severe Thunderstorms and Hail Summary..... 305
Table 2.3.11: Severe Wind and Tornado Summary..... 306
Table 2.3.12: Wildfire Summary..... 307
Figure 2.3.a: Impervious Surfaces and SFHAs..... 309
Figure 2.3.b: Residential Structures Built After 1970..... 311
Table 2.3.13: Resilience Scores per FEMA Tools (for Reference)..... 313
Figure 2.3.c: CRCI Tract Detail..... 313
Figure 2.3.d: CRCI Tract Detail..... 313
Figure 2.3.e: CRCI Tract Detail..... 314
Exhibit 2.3.A: East Palestine Train Derailment..... 315
Table 2.3.14: Key Development Influences on Risk in Columbiana County..... 315
Table 2.4.1: Summary of Risk Rankings..... 317
Table 2.4.2: NRI and Hazard Profile Rankings Comparison..... 318

3.0 MITIGATION STRATEGY

Table 3.1.1: Mitigation Goals and Objectives..... 323
Table 3.2.1: Mitigation Action Types Suitable for Profiled Hazards..... 326
Table 3.2.2: Columbiana County Prioritization Criteria..... 327
Table 3.2.3: Columbiana County Mitigation Actions, 2025-2030..... 330
Figure 3.2.a: Columbiana County Bridge Inventory..... 331
Table 3.2.4: Columbiana Mitigation Actions, 2025-2030..... 337
Table 3.2.5: East Liverpool Mitigation Actions, 2025-2030..... 338
Table 3.2.6: East Palestine Mitigation Actions, 2025-2030..... 339
Table 3.2.7: Hanoverton Mitigation Actions, 2025-2030..... 340
Table 3.2.8: Leetonia Mitigation Actions, 2025-2030..... 341
Table 3.2.9: Lisbon Mitigation Actions, 2025-2030..... 343

Table 3.2.10: New Waterford Mitigation Actions, 2025-2030..... 343
Table 3.2.11: Rogers Mitigation Actions, 2025-2030..... 344
Table 3.2.12: Salem Mitigation Actions, 2025-2030..... 345
Table 3.2.13: Salineville Mitigation Actions, 2025-2030..... 346
Table 3.2.14: Summitville Mitigation Actions, 2025-2030..... 347
Table 3.2.15: Washingtonville Mitigation Actions, 2025-2030..... 348
Table 3.2.16: Wellsville Mitigation Actions, 2025-2030..... 349

4.0 PLAN MAINTENANCE AND INTEGRATION
Figure 4.1.a: FEMA Mitigation Planning Wheel..... 352
Table 4.1.1: Project Status/Evaluation Worksheet..... 354
Table 4.2.1: Implementation through Existing Programs: Floodplain Management..... 357
Table 4.2.2: Implementation through Existing Programs: Stormwater Management..... 357
Table 4.2.3: Implementation through Existing Programs: Transportation Planning..... 358
Table 4.2.4: Implementation through Existing Programs: Community & Economic Development..... 259
Table 4.2.5: Implementation through Existing Programs: Emergency Operations Planning..... 360
Table 4.2.6: Implementation through Existing Programs: Zoning..... 362
Table 4.2.7: Implementation through Existing Programs: Building Codes..... 363

5.0 APPENDICES
Table A2.1: Project Prioritization, Columbiana County Hazard Mitigation Plan..... A2-2
Table A3.1: Columbiana County Inactive Mitigation Projects, 2020-2025 Cycle..... A3-1
Table A3.2: East Liverpool Inactive Mitigation Projects, 2020-2025 Cycle..... A3-2
Table A3.3: East Palestine Inactive Mitigation Projects, 2020-2025 Cycle..... A3-2
Table A3.4: Salem Inactive Mitigation Projects, 2020-2025 Cycle..... A3-2
Table A3.5: Wellsville Inactive Mitigation Projects, 2020-2025 Cycle..... A3-2
Table A3.6: Columbiana County Inactive Mitigation Projects, Previous Cycles..... A3-3
Table A3.7: City of Columbiana Inactive Mitigation Projects, Previous Cycles..... A3-6
Table A3.8: City of East Liverpool Inactive Mitigation Projects, Previous Cycles..... A3-7
Table A3.9: City of Salem Inactive Mitigation Projects, Previous Cycles..... A3-7
Table A3.10: Village of Hanoverton Inactive Mitigation Projects, Previous Cycles..... A3-8
Table A3.11: Village of Leetonia Inactive Mitigation Projects, Previous Cycles..... A3-8

Table A3.12: Village of Lisbon Inactive Mitigation Projects, Previous Cycles…… A3-8
Table A3.13: Village of New Waterford Inactive Mitigation Projects, Previous Cycles…… A3-9
Table A3.14: Village of Salineville Inactive Mitigation Projects, Previous Cycles…… A3-9
Table A3.15: Village of Washingtonville Inactive Mitigation Projects, Previous Cycles…. A3-9

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
EXECUTIVE SUMMARY

The *Columbiana County Hazard Mitigation Plan* of 2025 is an update to the 2020 mitigation plan. The Columbiana County Emergency Management Agency (CCEMA) sponsored this update. This plan considers all the cities and villages in the county, which include the following.

- City of Columbiana
- City of East Liverpool
- Village of East Palestine
- Village of Hanoverton
- Village of Leetonia
- Village of Lisbon
- Village of New Waterford
- Village of Rogers
- City of Salem
- Village of Salineville
- Village of Summitville
- Village of Washingtonville
- Village of Wellsville

Additionally, the CCEMA will ask township officials to adopt the plan, thereby making the plan applicable to all governmental jurisdictions in Columbiana County.

The CCEMA coordinated this update following federal requirements outlined in the Disaster Mitigation Act of 2000 (DMA2K), which requires jurisdictions to formulate a hazard mitigation plan to be eligible for mitigation funds made available by the U.S. Department of Homeland Security (USDHS), Federal Emergency Management Agency (FEMA). Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL 100-707) requires that all states and local jurisdictions develop and submit hazard mitigation plans designed to meet the criteria outlined in 44 CFR Parts 201 and 206. This plan has been approved by the participating jurisdictions, the steering committee that participated in its development, the Columbiana County Board of Commissioners, Ohio Emergency Management Agency (OEMA), and FEMA Region V.

Procedurally, the CCEMA convened a steering committee six times and asked participants to complete five additional activities to generate content for the plan. Meetings also served as opportunities to share information about risks and vulnerabilities. The county's consultant ran the meetings and compiled minutes to document the decisions made. See Section 1.1 and Appendix 1 for notes about these meetings and activities.

Public participation occurred through an online survey, a condensed survey distributed at food banks, and one public meeting. The online survey received 62 responses and identified the

types of risks to which the public was most concerned, as well as the types of mitigation projects the public might support. The surveys comprised the public's opportunities to contribute to the plan as it was being developed. Hazardous materials incident was the hazard to which the highest number of respondents indicated being "Concerned" or "Very Concerned" (n=56, 90.32% of respondents), followed by public health emergency (n=53, 85.48% of respondents). Cyber incident was third (n=46, 74.19% of respondents). Regarding the types of mitigation actions respondents would support in their communities, three types received the most support.

- Burying power lines to support uninterrupted service during hazards like windstorms (n=24)
- TIE: Installing generators at critical facilities like hospitals, police/fire stations, nursing homes, etc. (n=22)
- TIE: Upgrading water or sewer systems (n=22)

The CCEMA and The Way Station solicited and collected responses to a condensed survey at three food distributions in Salem and Lisbon in May and August of 2024. The survey included four questions.

1. Do you live or work in Columbiana County? (yes/no)
2. Are you concerned about any of these hazards? (option to circle all hazards included in the 2025 update)
3. Which of these hazards concerns you the most? (open-ended, short answer)
    3a. Why does this hazard concern you? (open-ended, long answer)
4. Is there any other hazard you feel we should consider? (open-ended, long answer)

The planning team received 173 responses to this condensed survey. Of these, 97.11% of respondents answered Question 1, with 160 of those indicating residence or employment in Columbiana County. For the second question, severe wind and tornado (n=96, 55.49% of respondents), hazardous materials incidents (n=70, 40.46% of respondents), and severe thunderstorm and hail (n=65, 37.57% of respondents) were the top three responses. Severe wind and tornado and hazardous materials incidents, respectively, were also the top responses to Question 3, with cyber incidents (n=18, 14.40% of those answering Q3) as the third-most frequent response. The CCEMA also sponsored a public meeting as an opportunity to review draft documents (before submission to the state and FEMA for approval). No members of the public attended.

Hazard considerations for the 2025 update were similar to those examined in 2020. The major additions were cyber incidents and wildfire. Another, more subtle change was the inclusion of landslides as a primary hazard, rather than a cascading phenomenon (as appeared in the 2020 version). Section 2.4 of the plan summarizes vulnerability to the hazards. Table 2.4.1 appears in that section, and it presents the risk ranking calculations for each of the hazards in the plan.

Table 2.4.1 (*reproduced*)

Summary of Risk Rankings									
Hazard	*Raw Ranking*	***Total***	*Frequency*	*Response*	*Onset*	*Magnitude*	*Business*	*Human*	*Property*
Public Health Emergency	High	**22**	5	5	1	4	2	4	1
Cyber Incidents	High	**21**	5	5	4	1	4	1	1
Hazardous Materials Incidents	Medium	**20**	5	5	4	1	2	2	1
Severe Winter Storm	Medium	**19**	5	3	1	4	1	3	2
Wildfire	Medium	**18**	5	3	4	1	2	2	1
Extreme Temperatures	Medium	**16**	5	2	1	4	1	2	1
Flooding	Medium	**16**	5	3	2	1	2	2	1
Landslides	Medium	**16**	5	2	2	4	1	1	1
Severe Thunderstorm & Hail	Medium	**16**	5	2	1	4	1	2	1
Tornado	Medium	**16**	3	3	4	1	2	2	1
Severe Wind	Low	**15**	4	3	1	4	1	1	1
Drought	Low	**14**	2	5	1	2	2	1	1
Earthquake	Low	**11**	1	2	4	1	1	1	1
Dam & Levee Failure	Lowest	**8**	1	1	1	1	1	2	1

The county's steering committee kept all five goals that appeared in the 2020 plan but modified the language of them and added objectives for each. These changes transformed the goals into measurable statements, allowing the CCEMA and participating jurisdictions an ability to track progress toward achieving them. The 2025 goals and objectives are as follows.

1. Sustain the health and safety of first responders and the general population in Columbiana County before, during, and after emergency incidents.
    - Objective 1.1: Increase the capabilities of the individuals and agencies that may respond to incidents.
    - Objective 1.2: Increase potable water and sanitary sewer capabilities throughout the county.

2. Maximize partnership with key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.
    - Objective 2.1: Increase the data available to support risk reduction decisions.
    - Objective 2.2: Increase the capabilities available to support risk reduction activities.

3. Protect vulnerable populations from the negative effects of hazards.
    - Objective 3.1: Increase the visibility of potential impacts to historically vulnerable populations.

4. Minimize death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous incidents.
    - Objective 4.1: Decrease the number of stormwater management issues throughout the county.
    - Objective 4.2: Reduce structure exposure in known hazard-prone areas.
    - Objective 4.3: Reduce downstream risk exposure from dam or levee failures.

5. Support the livelihoods of Columbiana County residents and businesses through risk reduction activities.
    - Objective 5.1: Increase the resilience of critical facilities and economic assets throughout the county.

The plan includes 50 mitigation actions to drive progress toward these objectives and goals. The actions cover a range of measures, including planning and regulatory efforts, structure and infrastructure projects, natural systems protection efforts, and education and outreach activities. The steering committee also updated a plan maintenance process. The CCEMA will use a combination of meetings and online tools to engage the steering committee and solicit public comment. Specifically, the following process will ensure this plan remains a dynamic, living document between the 2025 adoption and the next scheduled update in 2030.

This plan will serve as a vehicle for ensuring eligibility for hazard mitigation funding for participating jurisdictions throughout the next five years. Moving forward, the participatory processes set as a foundation in 2020 and reinforced in 2025 will enable a similarly engaged, more mature planning process in 2030 and, through regular plan review, perhaps result in a richer discussion of risk, vulnerability, and mitigation project status.

1.0 INTRODUCTION

Purpose

The purpose of this mitigation plan is to identify risks and vulnerabilities from hazards that affect Columbiana County and its wider region. With these risks and vulnerabilities identified, local officials can reduce losses of life, injuries, and limit future impacts by developing methods to mitigate or eliminate damage.

Scope

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

The plan is "multi-jurisdictional," meaning it includes several jurisdictions (i.e., the county, cities, and villages). County and municipal stakeholders as well as other preparedness partners prepared this plan per federal requirements outlined in the Disaster Mitigation Act of 2000 (DMA2K), which requires communities to formulate a hazard mitigation plan to be eligible for mitigation funds made available through the Federal Emergency Management Agency (FEMA). As such, this plan, dated 2025, serves as the official hazard mitigation plan for the 15 participating jurisdictions (and 18 associated townships), and it supersedes all previous versions.

Plan Authority

Section 322 of the Robert T. Stafford Act requires that local jurisdictions develop and submit plans meeting the criteria outlined in 44 CFR Part 201.6. Table 1.1.1 lists those requirements and identifies the sections of the plan fulfilling the guidance.

Table 1.0.1

44 CFR 201.6 Requirements in This Plan		
Section	*Description*	*Section in Plan*
§ 201.6	The local mitigation plan is the representation of the jurisdiction's commitment to reducing risks from natural hazards, serving as a guide for decision makers as they commit resources to reduce the effects of natural hazards. Local plans will also serve as the basis for the state to provide technical assistance and to prioritize project funding.	• Section 1.0 Introduction
§ 201.6(a)(4)	Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.	• Section 1.1 Documentation of the Planning Process
§ 201.6(b)(1)	An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval	• Section 1.1 Documentation of the Planning Process • Section 4.3 Continued Public Involvement
§ 201.6(b)(2)	An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process	• Section 1.1 Documentation of the Planning Process
§ 201.6(b)(3)	Review and incorporate, if appropriate, existing plans, studies, reports, and technical information	• Section 1.3 Capabilities • Section 1.2 Description of the Planning Area • Section 2.3 Analyze Impacts • Section 4.2 Implementation through Existing Programs
§ 201.6(c)(1)	Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved	• Section 1.1 Documentation of the Planning Process
§ 201.6(c)(2)	A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.	• Section 2.0 Risk Assessment

44 CFR 201.6 Requirements in This Plan		
Section	*Description*	*Section in Plan*
§ 201.6(c)(2)(i)	The risk assessment shall include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and the probability of future hazard events.	• Section 2.1 Identify Hazards • Section 2.2 Describe Hazards
§ 201.6(c)(2)(ii)	The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008, must also address NFIP-insured structures that have been repetitively damaged by floods.	• Section 2.2 Describe Hazards • Section 2.4 Vulnerability Summary
§ 201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;	• Section 2.2 Describe Hazards
§ 201.6(c)(2)(ii)(B)	The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;	• Section 2.2 Describe Hazards
§ 201.6(c)(2)(ii)(c)	The risk assessment shall provide a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.	• Section 1.2 Description of the Planning Area • Section 2.3 Analyze Impacts
§ 201.6(c)(2)(iii)	For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.	• Section 2.2 Describe Hazards
§ 201.6(c)(3)	A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.	• Section 3.0 Mitigation Strategy
§ 201.6(c)(3)(i)	This section shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.	• Section 3.1 Mitigation Goals & Objectives
§ 201.6(c)(3)(ii)	This section shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.	• Section 3.2 Mitigation Actions
§ 201.6(c)(3)(iii)	This section shall include an action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects and their associated costs.	• Section 3.2 Mitigation Actions

44 CFR 201.6 Requirements in This Plan		
Section	*Description*	*Section in Plan*
§ 201.6(c)(3)(iv)	For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.	• Section 3.2 Mitigation Actions
§ 201.6(c)(4)(i)	A plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.	• Section 4.1 Monitoring, Evaluating & Updating the Plan
§ 201.6(c)(4)(ii)	A plan maintenance process that includes a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.	• Section 4.2 Implementation through Existing Programs
§ 201.6(c)(4)(iii)	A plan maintenance process that includes discussion on how the community will continue public participation in the plan maintenance process.	• Section 4.3 Continued Public Involvement
§ 201.6(c)(5)	Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commission, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.	• Section 5.0 Appendix 7
§ 201.6(d)(1)	Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.	• Section 5.0 Appendix 7
§ 201.6(d)(3)	A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five years in order to continue to be eligible for mitigation project grant funding.	• Section 3.1 Mitigation Goals & Objectives • Section 3.2 Mitigation Actions • Section 5.0 Appendix 2

1.0 INTRODUCTION

1.1 Documentation of the Planning Process

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

The Columbiana County Emergency Management Agency (CCEMA) again served as the coordinating entity for the 2025 update to Columbiana County's hazard mitigation plan. CCEMA contracted JH Consulting, LLC, a consultant, to assist in the process. The following planning process was a joint effort between CCEMA, the steering committee, participating jurisdictions, and consulting staff.

Steering Committee

Columbiana County utilized a steering committee approach to accomplish the goals of the mitigation planning process. The committee provided overall strategic direction for jurisdictional and public outreach, listed hazards to include in the plan, generated project prioritization instructions, and outlined plan maintenance. The steering committee did not include representation from all participating municipalities, though the county's emergency management agency and consultant interacted frequently with all jurisdictions to gather their information, provide opportunities for data review, etc.

Using the steering committee for strategic direction allowed for a more significant consideration of countywide goals. It also allowed for a more intentional integration of non-municipal and non-emergency management voices into the planning process. The smaller membership of the committee encouraged more robust discussion, which planners then conveyed to the participating jurisdictions. Steering committee membership was as follows.

Table 1.1.1

Columbiana County Hazard Mitigation Plan Steering Committee		
Agency/Jurisdiction Name	*Representative*	*Participant Type*
Columbiana County Commissioners	Tim Weigle, Commissioner (through 2024)	Participant (County Government)
Columbiana County Emergency Management Agency (CCEMA)	Peggy Clark, Director Brian Rutledge, Deputy Director Lisa Elliott, Administrative Assistant	Partner Entity (Plan Developer)
Columbiana County Engineer	Troy Graft, Chief Deputy Sanitary Engineer	Partner Entity (Agency w/ Authority to Regulate Development)

Columbiana County Hazard Mitigation Plan Steering Committee		
Agency/Jurisdiction Name	*Representative*	*Participant Type*
Columbiana County Health District	Donald Schrader, Director, Public Health Emergency Preparedness Kayla Hamilton (through October 2024)	Partner Entity (Agency Involved in Mitigation Activities)
Columbiana County Mental Health & Recovery Services Board	Marcy Patton, Executive Director	Partner Entity (Work w/ Under-Represented Populations)
Columbiana County Office of Economic Development	Tad Herold, Director of Economic Development Gabe Durrant, GIS Coordinator	Partner Entity (Agency w/ Authority to Regulate Development)
Columbiana County Port Authority	Penny Traina, Executive Director	Partner Entity (Agency w/ Authority to Regulate Development)
Columbiana County Soil & Water District	Peter Conkle, Program Administrator	Partner Entity (Agency Involved in Mitigation Activities)
Columbiana, City of	Bryce Miner, Deputy City Administrator Tom Farley, EMS Supervisor	Participant (Municipal Government)
East Liverpool, City of	Bill Jones, Service-Safety Director	Participant (Municipal Government)
East Palestine, Village of (Fire Department)	Keith Drabick, Fire Chief	Participant (Municipal Government)
Lisbon, Village of	Peter Wilson, Mayor	Participant (Municipal Government)
Madison Township	Wayne Chamberlain, Trustee	Participant (Municipal Government)
Kent State University, Salem	Jeff Christopher, Facility Manager	Partner Entity (Business, Academia, Other Private Interests)
The Way Station	Chaney Nezbeth, Executive Director	Partner Entity (Work w/ Under-Represented Populations)
Ohio Edison (First Energy)	Troy Rhoades	Partner Entity (Business, Academia, Other Private Interests)

Steering Committee Meetings

The steering committee met six times throughout the update process. See Appendix 1 for meeting minutes. Though most steering committee members attended regularly, some could not attend at the times designated for the meetings. These individuals remained involved through other activities (detailed below), distribution of meeting minutes, and correspondence with the consultant and the emergency management agency.

FEBRUARY 16, 2024

The CCEMA convened a steering committee to begin the formal update to the county's hazard mitigation plan, last adopted in 2020. The meeting was at the CCEMA's office in Lisbon, and it began promptly at 10:00 a.m. (lasting approximately 75 minutes). The primary focus of this discussion was the scope of the plan (presented as the hazards to include), though committee members did briefly discussion an outreach plan for stakeholder and public participation.

APRIL 11, 2024

The CCEMA sponsored the second planning workshop for the 2024 update to its hazard mitigation plan on Thursday, April 11, 2024. The workshop was a virtual session, held via the Google Meet platform at 10:00 a.m. The primary topic was a continuation of the outreach plan, to include stakeholder and public participation, as well as a strategy for soliciting participation by historically under-represented populations.

JULY 11, 2024

On July 11, 2024, members of Columbiana County's hazard mitigation steering committee came together to discuss on-going public outreach efforts associated with the 2024 update to the county's mitigation plan. The public's participation in the planning process had been less than desired, so this meeting offered a chance for members to brainstorm ideas for garnering increased participation.

SEPTEMBER 5, 2024

The steering committee met at the CCEMA office on September 5, 2024. The meeting focused on updates and feedback for the hazard mitigation planning project, and the discussion began with a general project status update followed by an overview of public outreach received to date.

OCTOBER 28, 2024

The in-person meeting on October 28th provided an opportunity to finalize project prioritization criteria and to review the county project list from the 2020 plan. The committee went through the existing project list, one-by-one, and identified status updates. Committee members also discussed various risk reduction projects that had been completed since 2020 (but were not listed in the previous version of the plan) as well as potential new projects to add to the 2025 update.

MAY 6, 2025

The primary agenda items for the in-person meeting on May 6, 2025, were to discuss a proposed plan maintenance process and initiate draft document review (with particular emphasis on Section 1.0 and Section 3.0). The consultant provided updates on participation from

outstanding municipalities (at the time of the meeting) and instructions on how the committee members would be able to review Section 2.0 in the coming weeks.

Jurisdictional Participation

As a multi-jurisdictional document, the steering committee did not include representation from all three cities, 10 villages, and 18 townships in Columbiana County. Jurisdictional participation occurred through one-on-one interactions with the county's consultant, particularly regarding action plan updates, asset inventory updates, and the capabilities assessment. The following table summarizes the participation by jurisdictions.

Table 1.1.2

Jurisdictional Participation in the 2025 Update												
	MEETINGS							ACTIVITIES				
MUNICIPALITY	*Mtg. 1 (02/16/2024)*	*Mtg. 2 (04/11/2024)*	*Mtg. 3 (07/11/2024)*	*Mtg. 4 (09/05/2024)*	*Mtg. 5 (10/28/2024)*	*Mtg. 6 (05/06/2025)*	*Public Mtg. (05/06/2025)*	*Jurisdictional Meeting*	*Capability Survey*	*Asset Updates*	*Project Updates*	*Misc. Contact (EMA & Consultant)*
Columbiana County	X	X	X	X	X	X	X	N/A	N/A	N/A	X	N/A
Columbiana (City)	X		X					X	X	X	X	X
East Liverpool		X						X		X	X	X
East Palestine		X			X	X	X	X	X	X	X	X
Hanoverton								X		X	X	X
Leetonia								X		X	X	X
Lisbon	X	X		X	X	X	X	X	X	X	X	X
New Waterford										X	X	X
Rogers										X	X	
Salem								X		X	X	X
Salineville								X		X	X	X
Summitville								X		X	X	X
Washingtonville										X	X	
Wellsville								X	X	X	X	X

The right side of the table identifies the scripted activities noted above. The activities correspond with the major elements of the mitigation plan.

- Jurisdictional Meeting: For jurisdiction-specific plan elements, the consultant scheduled brief discussions with select individuals from the municipalities. Though these discussions also included the capability survey, asset updates, and project updates, they began with opportunities to reflect on the hazards and associated impacts most relevant to their corporate limits (per requirements 201.6[c][2][ii]; see also Elements B1-f and B2-b of the *Local Mitigation Plan Review Tool* [FEMA, 2025b]).
- Capability Survey: The consultant created an online survey to aggregate information from the overall capability survey, but the consultant used the jurisdictional meeting as an opportunity to talk through the capabilities. The assessment gathered information on the existing codes, ordinances, authorities, and resources participating jurisdictions have available to support mitigation activities (see 201.6[c][3]; see also Element C1-a of the *Local Mitigation Plan Review Tool* [FEMA, 2025b]).
- Asset Updates: This activity included instructions for updating the asset inventory that appeared in the previous plan. Though not explicitly referenced by the *Local Mitigation Plan Review Tool*, it enabled participating jurisdictions to describe risks to critical and other vital facilities in their communities.
- Project Updates: Participating jurisdictions had projects in the previous version of the plan, and this activity enabled an updated status statement for each of them. The project updates activity also provided an opportunity for the participating jurisdiction and consultant to discuss new projects for the 2025 version (per requirement 201.6[c][3][ii]; see also Elements C4-a and C4-b of the *Local Mitigation Plan Review Tool* [FEMA, 2025b]).

Additional Stakeholders

The county ensured opportunities for a range of stakeholders to participate in the 2025 update. These stakeholders included the following.

- Local Agencies Involved in Hazard Mitigation Activities: These entities participated via the steering committee and through the jurisdictional outreach. This effort saw local government, code enforcement, floodplain management, emergency response, and municipal engineering departments exercise their voice in this update. See Appendix 1 for meeting attendance and for listings of those involved in jurisdictional outreach.

- Agencies with the Authority to Regulate Development: Code enforcement, floodplain management, and zoning officers participated through jurisdictional outreach. See Appendix 1 for meeting attendance and for listings of those involved in jurisdictional outreach. Additionally, regarding high-hazard potential dams in the county, the CCEMA and consultant coordinated directly with the Ohio Department of Natural Resources, Division of Water Resources, Dam Safety Program office. In so doing, ODNR Dam Safety provided insights into how it works with dam owners on identifying deficiencies and determining potential solutions for deficiencies.
- Neighboring Communities: The county emergency management agency emailed neighboring counties at the start of the project (to ask them for data to include in the update) and offered an opportunity to review a draft at the end of the project. See Appendix 1 for copies of emails to neighboring counties as well as received replies.
- Businesses, Academia, and Other Private Interests: The steering committee included representation from an economic development entity (see Appendix 1 as appropriate), an electric utility, the local branch of Kent State University, and a non-profit (see Appendix 1).

Outreach to Historically Under-Represented Populations

During the second steering committee meeting, attendees discussed various types of populations who were historically under-represented in planning processes (mitigation or otherwise). Categories of populations included those in poverty, children and the elderly, those who speak English as a second language, the unhoused, people in recovery, and those without reliable transportation. Though committee members recognized they could not successfully reach out to *all populations*, they realized that the active food distribution system in the county could provide a vehicle for not only reaching out to under-represented populations but also garnering input from them. As such, the CCEMA and The Way Station distributed and took responses to a condensed public survey from residents while they waited in line at food pantries. See “Face-to-Face Survey Solicitation” below.

Outreach to Stakeholders Representing Community Lifelines

Per FEMA, "community lifelines" are vital services in a community and, when stabilized in the aftermath of (or hardened before) a major incident, they enable other aspects of life in a community to continue (FEMA, 2025b, p. 1, 54-55). There are currently eight lifelines: (a) safety and security, (b) hazardous materials, (c) food, hydration, shelter, (d) health and medical, (e)

energy, (f) transportation, (g) communications, and (h) water systems (FEMA, 2024b). Columbiana County's planning process included people who represent several of those lifelines.

a. Safety and Security: Emergency management (EM) personnel served on the steering committee and coordinated the main efforts associated with this update, many of whom are responders in addition to their EM roles. Other government officials (e.g., fire-hazmat, public health, medical) also served on the steering committee. **These participants provided first-hand knowledge of past events, the impacts associated with them, and the performance of response systems.**
b. Hazardous Materials: As noted, fire-hazmat personnel participated on the steering committee. **These participants also provided first-hand knowledge of past events, their impacts, and the performance of response systems. These participants were also able to estimate potential impacts from future incidents.**
c. Food, Hydration, Shelter: The steering committee included the county's public health agency and The Way Station, a non-profit entity. **These participants provided insight as to how the hazards impacting the county might affect food security, insight as to processes associated with providing shelter, etc.**
d. Health and Medical: As noted, public health representatives were on the steering committee. **These participants helped the county's contractor understand underlying stressors.**
e. Energy: The steering committee included a representative from the primary electricity utility serving the county. **This individual provided information about potential cascading effects from the identified hazards as well as the range of actions the utility could take to reduce risk.**
f. Transportation: The county engineer's office served on the steering committee, **and in that role, representatives provided information on the transportation infrastructure of the county.**
g. Communications: The emergency managers referenced above work closely with emergency communications (i.e., 911) officials. Emergency responder representatives provided similar input **on things like system redundancy.**
h. Water Systems: N/A

Public Involvement

Columbiana County used in-person and online options for engaging the public in this process. The following narratives describe the results of a public meeting, face-to-face survey solicitation, and an online survey. See Appendix 4 for additional information

Public Meeting (May 6, 2025)

Columbiana County held a public meeting as part of its May 6, 2025, steering committee meeting. Advertisements for the meeting appeared in *The East Liverpool Review*, the *Morning Journal's* community calendar, the *Salem News* (see Appendix 1), and on the CCEMA's social media feed. The CCEMA scheduled the meeting to allow the public an opportunity to participate in discussion with the local leaders on the steering committee. Additionally, this meeting served as an opportunity for the public to comment on drafts of the updated plan. No members of the public attended the meeting.

Face-to-Face Survey Solicitation

As noted earlier, the CCEMA and The Way Station solicited and collected responses to a condensed survey at three food distributions in Salem and Lisbon in May and August of 2024. The survey included four questions.

1. Do you live or work in Columbiana County? (yes/no)
2. Are you concerned about any of these hazards? (option to circle all hazards included in the 2025 update)
3. Which of these hazards concerns you the most? (open-ended, short answer)
   3a. Why does this hazard concern you? (open-ended, long answer)

4. Is there any other hazard you feel we should consider? (open-ended, long answer)

The planning team received 173 responses to this condensed survey. Of these, 97.11% of respondents answered Question 1, with 160 of those indicating residence or employment in Columbiana County. For the second question, severe wind and tornado (n=96, 55.49% of respondents), hazardous materials incidents (n=70, 40.46% of respondents), and severe thunderstorm and hail (n=65, 37.57% of respondents) were the top three responses. Severe wind and tornado and hazardous materials incidents, respectively, were also the top responses to Question 3, with cyber incidents (n=18, 14.40% of those answering Q3) as the third-most frequent response.

Online Survey

The county's contractor hosted an online survey that steering committee members and participating jurisdictions promoted via websites and social media pages (see Appendix 4 for additional information). The survey accepted responses from May to September 2024; 62 individuals responded. The number of responses was consistent with the 70 responses collected during the 2020 update.

Hazardous Materials Incident was the hazard to which to highest number of respondents indicated being "Concerned" or "Very Concerned" (n=56, 90.32% of respondents), followed by *Public Health Emergency* (n=53, 85.48% of respondents) and *Cyber Incidents* (n=46, 74.19% of respondents). Regarding the types of mitigation actions respondents would support in their communities, three types of projects (out of 17 possible choices) received 20 or more selections.

- Burying power lines to support uninterrupted service during hazards like windstorms (n=24)
- TIE: Installing generators at critical facilities like hospitals, police/fire stations, nursing homes, etc. (n=22)
- TIE: Upgrading water or sewer systems (n=22)

The survey also asked participants about any mitigation or risk reduction efforts they have taken, and to standardize responses, the survey included six options (i.e., [a] elevated your home, [b] maintained trees around your house, [c] repaired or replaced your roof, [d] cleared the underbrush, [e] other, [f] none of the above). The top three responses were as follows.

- Repaired or replaced your roof (n=33)
- Maintained trees around your house or removed problematic trees (n=25)
- TIE: Cleared the underbrush (n=14)
- TIE: None of the above (n=14)

References to the survey responses also appear in the hazard profiles in Section 2.2 below. These references report the results for the levels of concern for the hazards included in the plan and the memory of past occurrences.

1.0 INTRODUCTION

1.2 Description of the Planning Area

Columbiana County, located in the eastern part of Ohio, spans 531.92 square miles (U.S. Census Bureau, 2025) and sits at the intersection of the glaciated and unglaciated sections of the Allegheny Plateau, a physiographic province known for mid-level hills and numerous stream-cut valleys (Britannica, n.d.; ODNR, 1998). The erosive forces that have shaped the wider region over millions of years appear in the county's varied topography, which includes valleys carved by rivers and streams, such as those that flow toward the Ohio River to the south (White & Totten, 1985). The underlying bedrock consists mainly of coal, limestone, and shale, with the area's rich natural resources historically supporting industries like coal and limestone mining.

Columbiana County includes 18 townships, 13 municipalities, and several unincorporated areas. Figure 1.2.a below is a map of these jurisdictions. Mahoning County borders Columbiana County to the north, Jefferson County to the west, and Beaver County, Pennsylvania, to the east. To the south, the county shares a border with Hancock County in West Virginia (Ohio Development Services Agency, 2024).

Table 1.2.1

Jurisdictions in Columbiana County	
Name	*Type*
Columbiana County	County
Butler Twp.	Township
Center Twp.	Township
Columbiana	City
East Liverpool	City
East Palestine	Village
Elkrun Twp.	Township
Fairfield Twp.	Township
Franklin Twp.	Township
Hanover Twp.	Township
Hanoverton	Village
Knox Twp.	Township
Leetonia	Village
Lisbon (County Seat)	Village
Liverpool Twp.	Township
Madison Twp.	Township
Middleton Twp.	Township
New Waterford	Village
Perry Twp.	Township
Rogers	Village
Salem	City
Salem Twp.	Township
Salineville	Village
St. Clair Twp.	Township
Summitville	Village
Unity Twp.	Township
Washington Twp.	Township
Washingtonville	Village
Wayne Twp.	Township
Wellsville	Village
West Twp.	Township
Yellow Creek Twp.	Township

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

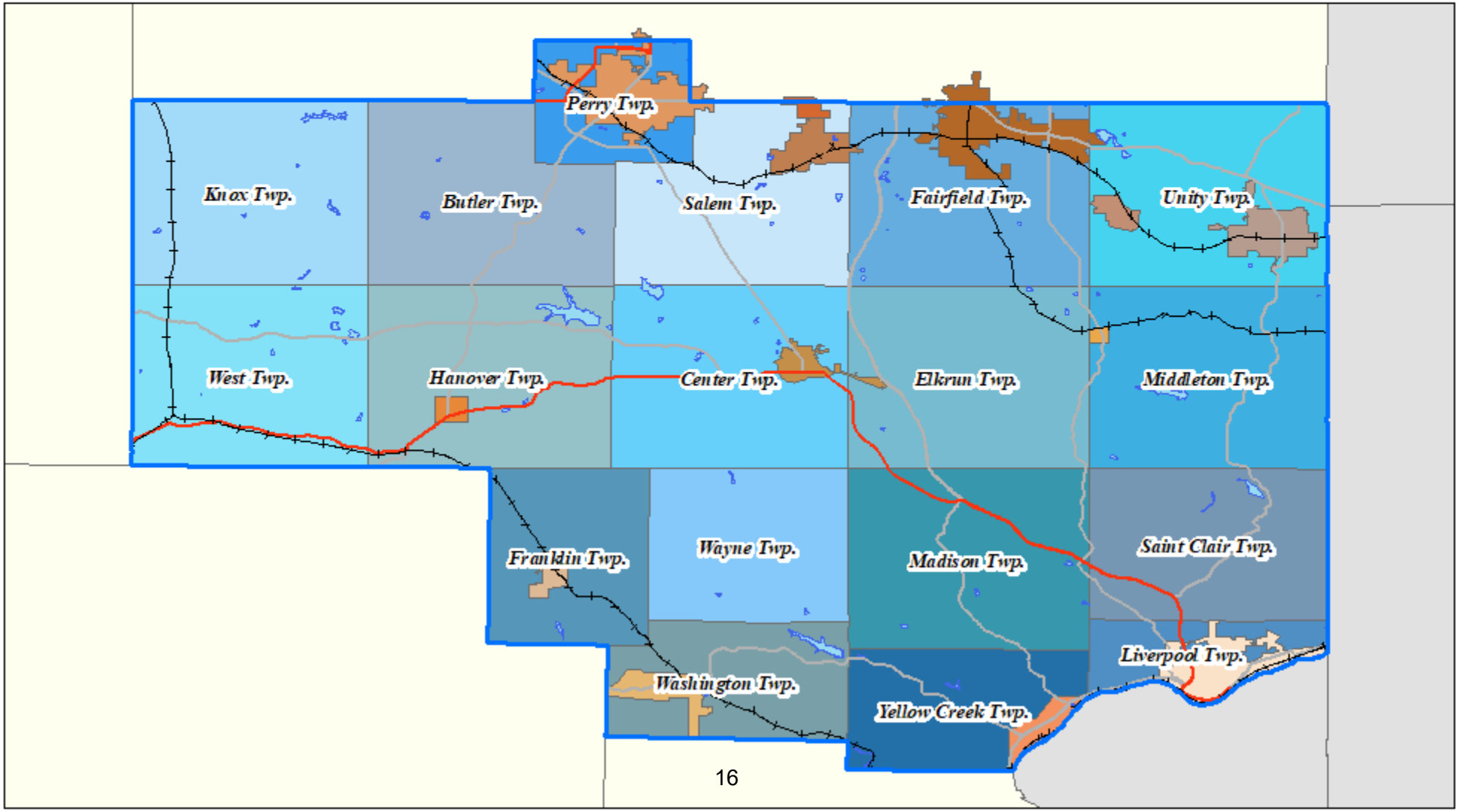
Figure 1.2.a: Municipal Areas

Data Source(s):
OGRIP

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

Columbiana
East Liverpool
East Palestine
Hanoverton
Leetonia
Lisbon
New Waterford
Rogers
Salem
Salineville
Summitville
Washingtonville
Wellsville





Demographics

Between 1950 and 2020, Columbiana County experienced notable demographic shifts, reflective of broader regional trends. In 1950, the population of the county was recorded at 98,420 people (U.S. Census Bureau, 1950). By 1960, the population had increased to 107,004 (U.S. Census Bureau, 1960); and in 1970, the population reached 108,310 (U.S. Census Bureau, 1970), continuing a trend of gradual growth.

In 1980, the population was recorded at 113,572 (U.S. Census Bureau, 1980), but by 1990, this number had decreased to 108,276 (U.S. Census Bureau, 1990). In 2000, the county's population rebounded to 112,075 (U.S. Census Bureau, 2000), reflecting the impact of economic restructuring and the loss of manufacturing jobs in the region. In 2010, the population began to decline, falling to 107,841 (U.S. Census Bureau, 2010). This decrease was in line with the broader trend of rural-to-urban migration, particularly among younger populations, who moved to larger metropolitan areas in search of employment opportunities. The county's economic challenges, especially in small industries, contributed to this demographic shift. The population decline continued into 2020, with the recorded figure at 101,877 (U.S. Census Bureau, 2025).

Over the 70 years from 1950 to 2020, Columbiana County's population trends reflected the broader economic shifts experienced in the Rust Belt, with initial growth followed by a period of decline. Columbiana County's population decline, though, began somewhat later than in surrounding areas, whose populations began steadily declining in the 1980s. These changes underscore the county's ongoing adaptation to regional and national economic forces. Table 1.2.2 shows these changes directly.

Table 1.2.2

Columbiana County Population by Decennial Census, 1950-2020							
1950	*1960*	*1970*	*1980*	*1990*	*2000*	*2010*	*2020*
98,420	107,004	108,310	113,572	108,276	112,075	107,841	101,877

Table 1.2.3 depicts the demographic breakdown of the county by city and village. The source for the data is the U.S. Census Bureau, American Community Survey, 2023 (Five-Year Estimates), except for the square miles (taken from Gazetteer Files, 2024[1]) and the persons per square mile, which utilizes a calculation between the total population for the jurisdiction and the land area in square miles.

[1] Columbiana County's land area came from U.S. Census QuickFacts and was dated 2020. The Lisbon and Rogers land areas were taken from ArcGIS REST Services Directory and dated 2022.

Table 1.2.3

Columbiana County Detailed Demographics							
Community	*Population*	*White Alone*	*Black or African American*	*American Indian & Alaskan Native*	*Asian*	*Hispanic or Latino*	*Two or More Races*
Columbiana County	101,203	94,309	1,937	160	440	1,871	3,522
Columbiana (City)	6,800	6,290	0	0	207	273	116
East Liverpool	9,869	8,438	420	2	0	263	871
Salem	11,805	11,359	44	100	0	144	247
East Palestine	4,699	4,264	0	0	0	317	348
Hanoverton	423	398	0	0	2	0	23
Leetonia	1,900	1,764	0	24	26	73	64
Lisbon	2,567	2,317	34	3	21	56	192
New Waterford	982	880	14	0	8	15	43
Rogers	181	179	0	0	0	0	2
Salineville	947	905	4	0	0	0	28
Summitville	203	203	0	0	0	0	0
Washingtonville	700	648	9	0	0	10	43
Wellsville	3,096	2,765	216	0	0	49	115
Community	*Veterans*	*Foreign Born Persons*	*Housing Units*	*Med. Household Income*	*Persons in Poverty*	*Square Miles*	*Persons Per Square Mile*
Columbiana County	7,344	878	46,133	$58,955	41,375	531.92	190.26
Columbiana (City)	183	113	3,515	$49,873	3,383	6.11	1,112.93
East Liverpool	738	36	4,800	$37,262	3,954	4.70	2,099.79
Salem	661	182	5,753	$50,250	5,109	6.43	1,835.93
East Palestine	380	31	2,282	$49,006	1,995	3.15	1,491.75
Hanoverton	18	8	165	$70,000	162	0.70	604.29
Leetonia	215	37	979	$60,893	894	2.26	840.71
Lisbon	160	31	1,322	$44,740	1,051	1.68	1,527.98
New Waterford	51	6	452	$51,932	419	0.91	1,079.12
Rogers	16	0	92	$38,750	77	0.23	786.96
Salineville	52	2	469	$47,955	414	2.21	428.51
Summitville	12	0	63	$67,760	50	0.92	220.65
Washingtonville	51	0	342	$42,727	306	0.67	1,044.78
Wellsville	159	0	1,683	$29,440	1,486	1.80	1,720.00

Community Profiles

This section provides community-level descriptions of the cities and villages in Columbiana County.

Columbiana City

The City of Columbiana is a thriving municipality known for its small-town charm and economic resilience. Located in both Columbiana and Mahoning Counties, Columbiana has a population of 6,800 residents (U.S. Census Bureau, 2023). With an estimated land area of 6.11 square miles and an elevation of approximately 1,180 feet above sea level (Gazetteer Files, 2024; USGS, 2025), the city serves as a key regional hub for commerce and community engagement.

Columbiana traces its roots to the early 19th century and was officially incorporated as a village in 1837. Over the decades, it evolved into a city, driven by its strategic location and robust economic activity. The historical development of Columbiana was significantly influenced by agriculture, manufacturing, and trade, which continue to shape its economic landscape today.

The city is home to 3,515 housing units (U.S. Census Bureau, 2023), contributing to a population density of 1,113 residents per square mile. The median age of Columbiana's residents is 50.5, reflecting the most recent estimate from the Census Bureau (U.S. Census Bureau, 2023), and consists of a balanced demographic mix of families, professionals, and retirees. Educational attainment levels in the city are strong, with 96.41% of residents holding a high school diploma or higher and 34.73% possessing a bachelor's degree or higher (U.S. Census Bureau, 2023). The median household income stands at $49,873 (U.S. Census Bureau, 2023), aligning with regional economic trends and opportunities.

As noted, Columbiana's economy has historically been driven by manufacturing, agriculture, and retail trade. While the early 20th century saw significant industrial development, the city has since diversified its economic base. Today, local businesses, retail establishments, and service industries comprise a part of the community's economic fabric. Two of the largest employers in Columbiana are Humtown Products, a leading manufacturer specializing in metal casting and 3D printing technologies, and Columbiana Exempted Village Schools, which employs a significant number of educators and staff.

A well-regarded public school system serves Columbiana. Within the city limits, the Columbiana Exempted Village School District operates Joshua Dixon Elementary School, South Side Middle School, and Columbiana High School (Columbiana Exempted Village School District, 2025). These institutions provide quality education and extracurricular opportunities to the community's youth. Public safety services are well-established in Columbiana. The city is

protected by the Columbiana Police Department, which provides law enforcement services, and the Columbiana Fire Department, which delivers fire suppression and emergency response services.

The city's transportation infrastructure supports both local and regional connectivity. Columbiana is primarily accessible via state routes. State Route (SR) 7 passes north-south in the eastern portion of the city, while SR 14 passes east-west through the central and northern portions of the city. SR 11 passes just to the west of Columbiana's corporate limits. Rail transport is available through Norfolk Southern Railroad (NS), a Class I freight operator whose line runs east-west in the southern and central portions of the city. The Youngstown and Southeastern short line railroad runs north-south through the central part of the city, intersecting the NS line just south of East Railroad Street and to the west of Pittsburgh Street (Ohio Rail Development Commission, 2016).

East Liverpool City

East Liverpool is in eastern Columbiana County along the Ohio River. It borders Pennsylvania and West Virginia, making it a key location in the tri-state area. Covering about 4.70 square miles (Gazetteer Files, 2024), East Liverpool sits at an elevation of approximately 760 feet above sea level (USGS, 2025). The area has hills and riverbanks, with small creeks flowing into the Ohio River. East Liverpool's climate is a humid continental climate with cold winters and warm, humid summers.

According to the U.S. Census Bureau (2023), East Liverpool has a population of 9,869, with 4,800 housing units and a population density of 2,099.79 people per square mile. The median age is 40.4 years (U.S. Census Bureau, 2023). About 85.90% of residents have a high school diploma or higher, and 7.70% have a bachelor's degree or beyond (U.S. Census Bureau, 2023). The median household income is $37,262.

The city's economy includes healthcare, education, retail, and service industries. Major employers include East Liverpool City Hospital, Kent State University's East Liverpool Campus, and local schools. Small businesses and retail stores also contribute, and transportation and logistics play a role due to the city's location along the Ohio River and major highways. Revitalization efforts aim to attract new businesses and tourism.

The East Liverpool City School District includes North Elementary School, LaCroft Elementary School, East Liverpool Junior High School, and East Liverpool High School. Kent State University East Liverpool Campus provides higher education and workforce programs (East Liverpool City School District, 2025).

Transportation is key to the city. U.S. Route 30 runs through its heart, crossing the Ohio River from Chester and running northward through the center of the city. SR 7 follows the Ohio River on the city's eastern side, and State Route 11 generally parallels US 30. Norfolk Southern Railway operates in the area, moving freight (Ohio Rail Development Commission, 2016). The Ohio River provides a transportation route, with port facilities for goods.

Public services include the East Liverpool Police Department, which handles law enforcement, and the East Liverpool Fire Department, which provides fire protection and emergency response. Emergency medical services (EMS) operate through partnerships with local healthcare providers. Healthcare services include East Liverpool City Hospital, which offers emergency care, inpatient treatment, and specialized services. Several clinics, urgent care centers, and nursing homes are also in the city. The city manages water and wastewater services through the East Liverpool Water Department. Electricity is provided by Ohio Edison, a subsidiary of FirstEnergy. Columbia Gas of Ohio supplies natural gas. Internet and telecommunications services are available through multiple providers.

East Palestine Village

The Village of East Palestine, located in northeastern Columbiana County near the Pennsylvania border, covers 3.15 square miles at an elevation of approximately 1,096 feet above sea level (Gazetteer Files, 2024; USGS, 2025). Part of the Mahoning Valley, the village is known for its small-town charm and close-knit community.

East Palestine has a population of approximately 4,699 residents, with approximately 2,282 housing units (U.S. Census Bureau, 2023) and a population density of 1,491.75 per square mile. The median age is 40.2 years (U.S. Census Bureau, 2023), with about 84.27% of adults holding a high school diploma or higher and 9.41% possessing a bachelor's degree (U.S. Census Bureau, 2023). The median household income is $49,006 (U.S. Census Bureau, 2023).

Founded in the early 19th century, East Palestine was incorporated in 1875 (Village of East Palestine, n.d.). The village once thrived as a pottery manufacturing hub, but like many Rust Belt communities, it experienced economic decline as industry waned in the late 20th century. Today, the economy is more diversified, with major employers including the East Palestine City School District and various small-scale manufacturing and logistics businesses.

Education in East Palestine is provided by the East Palestine City School District, consisting of East Palestine Elementary, Middle, and High Schools (East Palestine City School District, 2025). Infrastructure services include municipal water and sewer, electricity provided by Ohio Edison, and broadband services from Spectrum and AT&T (PUCO, n.d.). SR 14 passes to

the north of the village, while SR 165 and 170 serve as central thoroughfares. Norfolk Southern Railway facilitates freight transport (Ohio Rail Development Commission, 2016), and Pittsburgh International Airport, located about 50 miles southeast, provides air travel options. Public safety is ensured by the East Palestine Fire Department, East Palestine EMS, and the East Palestine Police Department, which maintain emergency response and law enforcement services.

Hanoverton Village

The Village of Hanoverton is in western Columbiana County at the intersection of US Route 30 and SR 9. Its population is 423, and there are approximately 165 housing units in the village (U.S. Census Bureau, 2023). The landscape consists of rolling hills, open farmland, and a compact residential area. The United Local School District serves the area, though its facilities are north of the village on SR 9. Ohio Edison provides electricity and GTE Frontier North is the telecom provider (PUCO, n.d.).

Leetonia Village

Leetonia is a village in northern Columbiana County with a history rooted in industry and hard work. Named for William Lee, a railroad and coal industry figure, Leetonia grew around the Cherry Valley Iron Works, a key employer in its early years. Though the iron industry faded, the village remains a close-knit community with historic and modern influences.

Spanning approximately 2.26 square miles at an elevation of 1,102 feet (Gazetteer Files, 2024; USGS, 2025), Leetonia has rolling hills and quiet neighborhoods. Its population is 1,900 (U.S. Census Bureau, 2023), with a density of 840.71 people per square mile. The village has about 979 housing units (U.S. Census Bureau, 2023). The median age is 48.1 (U.S. Census Bureau, 2023), with 92.31% of residents holding a high school diploma and 13.07% earning a bachelor's degree or higher (U.S. Census Bureau, 2023). The median household income is $60,893 (U.S. Census Bureau, 2023).

The Leetonia Exempted Village School District serves K-12 students at a single campus housing the elementary, middle, and high schools (Leetonia Exempted Village School District, n.d.). Leetonia’s infrastructure includes electricity supplied by Ohio Edison and telecom services through AT&T Ohio (PUCO, n.d.).

The village is accessible via SR 344, which runs through its center. While no U.S. highways pass directly through Leetonia, US Route 30 is a short drive south, linking to Canton and Pittsburgh. SR 11 runs north-south just to the east of village, while SR 14 runs east-west to

the north. The Norfolk Southern Railway supports freight transport (Ohio Rail Development Commission, 2016).

Leetonia's economy has transitioned from heavy industry to manufacturing, small businesses, and service jobs. Many residents commute to larger cities for work. Emergency services include the Leetonia Fire Department, a volunteer agency providing fire suppression and rescue operations. Law enforcement is handled by the Leetonia Police Department, with support from the Columbiana County Sheriff's Office.

Lisbon Village

The Village of Lisbon is a small but historic community and the county seat of Columbiana County. Founded in 1803 and incorporated in 1825, Lisbon has a population of 2,567 (U.S. Census Bureau, 2023) and a land area of 1.68 square miles (ArcGIS REST Services Directory, 2022), with a population density of 1,528 people per square mile. It sits at an elevation of 1,014 feet above sea level (USGS, 2025).

Lisbon's economy has evolved from early manufacturing and agriculture to government services, healthcare, and small businesses (Ohio History Connection, n.d.). The largest employers include Columbiana County Government, Lisbon Exempted Village School District, and Compass Family & Community Services. The village has 1,322 housing units, a median age of 42.1 years, and a median household income of $44,740 (U.S. Census Bureau, 2023). About 88.20% of adults have completed high school, and 14.62% hold a bachelor's degree or higher (U.S. Census Bureau, 2023).

Education is provided by the Lisbon Exempted Village School District, which includes McKinley Elementary School and David Anderson Junior/Senior High School (Lisbon Exempted Village Schools, n.d.). Healthcare facilities include the Continuing Healthcare of Lisbon, a nursing home and long-term care facility (Ohio Department of Health, n.d.).

Emergency services include the Lisbon Fire Department, a volunteer agency, and KLG Ambulance Services, the primary EMS provider. Law enforcement is provided by the Lisbon Police Department and the Columbiana County Sheriff's Office. Lisbon's utilities include municipal water and sewer services, Ohio Edison for electricity, and Columbia Gas of Ohio for natural gas (PUCO, n.d.).

The village is well-connected to surrounding areas by highways. U.S. Route 30 runs through the southern portions of the corporate limits, linking Lisbon to Canton and Pittsburgh. State Route 45 runs north-south along North Market Street, while State Routes 154, 164, and 517 also pass through downtown.

New Waterford Village

The Village of New Waterford is in eastern Columbiana County between Columbiana (City) and East Palestine. The village has a population of 982 (U.S. Census Bureau, 2023), a land area of 0.91 square miles (Gazetteer Files, 2024), and a population density of 1,079 persons per square mile. There are 452 housing units in the village, and those households have a median income of $51,932 (U.S. Census Bureau, 2023). Students from New Waterford attend Crestview Local Schools (Crestview Local School District, n.d.), but those schools are located outside of the corporate limits for the village. State Route 46, which runs through the center of the corporate limits, is the primary transportation route for the village. The Norfolk Southern Railroad operates a freight line in the eastern portion of the village (Ohio Rail Development Commission, 2016).

Rogers Village

The Village of Rogers is a small rural community covering 0.23 square miles (ArcGIS REST Services Directory, 2022) at an elevation of 1,099 feet (USGS, 2025). With a population of 181 (U.S. Census Bureau, 2023), Rogers is a quiet village with a close-knit atmosphere. Rogers has 92 housing units (U.S. Census Bureau, 2023) and a population density of 787 residents per square mile. The median age is 40.6 years, and 81.30% of adults have at least a high school diploma, while 11.38% hold a bachelor's degree or higher (U.S. Census Bureau, 2023). The median household income is $38,750 (U.S. Census Bureau, 2023), with most residents commuting to nearby towns for jobs in manufacturing, healthcare, and retail (Ohio Department of Development, 2023).

The village is part of the Beaver Local School District, which operates elementary, middle, and high schools outside the village limits (Beaver Local School District, n.d.). There are no hospitals, clinics, or nursing homes in Rogers, but residents can access healthcare in East Liverpool and Salem (ODH, n.d.).

Two state highways run through Rogers: SR 7 in the western portions and SR 154 through the north portions of town. The Youngstown and Southeastern Railroad maintains tracks near the village (along the northern corporate limits), though freight activity is limited (Ohio Rail Development Commission, 2016).

Salem City

Situated primarily in Columbiana County, with a small portion extending into Mahoning County, the City of Salem serves as a hub of commerce, education, and healthcare for the

surrounding rural region. The city spans approximately 6.43 square miles (Gazetteer Files, 2024) and sits at an elevation of around 1,280 feet above sea level (USGS, 2025). According to the most recent U.S. Census data, Salem has a population of 11,805 residents (U.S. Census Bureau, 2023). The city contains approximately 5,753 housing units (U.S. Census Bureau, 2023), indicative of a stable residential base that supports a mix of single-family homes, apartments, and historic properties. The population density is approximately 1,836 residents per square mile. The median age of Salem's population is 40.6 years (U.S. Census Bureau, 2023). In terms of educational attainment, 87.20% of residents aged 25 and older have obtained at least a high school diploma, while 19.79% hold a bachelor's degree or higher (U.S. Census Bureau, 2023). The median household income in Salem is approximately $50,250 (U.S. Census Bureau, 2023).

Salem City School District serves the educational needs of the community with institutions such as Buckeye Elementary School, Reilly Elementary School, Southeast Elementary School, Salem Junior High School, and Salem High School (Salem City Schools, n.d.). Salem's economic landscape reflects a blend of manufacturing, healthcare, retail, and professional services. While known for its role in manufacturing, the city has diversified its economy over the years, incorporating industries that provide stability and growth potential. The top three employers in the city include Salem Regional Medical Center, Fresh Mark, and the Salem City School District (Ohio Development Services Agency, 2024).

The Salem Fire Department provides fire protection and emergency response services to residents and businesses, ensuring a high level of preparedness and safety. Emergency medical services are primarily provided by KLG Ambulance and other local agencies, delivering rapid medical assistance to those in need. Law enforcement services fall under the jurisdiction of the Salem Police Department, which maintains public order, enforces laws, and provides community policing initiatives to enhance safety within the city limits.

Transportation infrastructure in Salem ensures connectivity with the broader region. U.S. Route 62 runs just to the north of the city, serving as a major corridor that links Salem to regional destinations, including Alliance and Youngstown. State Route 14 enters Salem from the east and passes through the city's center, providing an important route toward Columbiana and points west. State Route 45 runs north-south near (and through) Salem, providing a bypass to the western side of town and linking with US 62. Rail transport is also available, with Norfolk Southern operating freight rail lines that pass through southern Salem (Ohio Rail Development Commission, 2016).

Salineville Village

The Village of Salineville is in southern Columbiana County to the west of Wellsville. State Routes 39 and 164 are the primary transportation routes in the village, running through its center (as East Main Street for a short distance). Ultimately, SR 164 turns south out of the village. State Route 644 is a route that also intersects Salineville.

The population is 947, with 469 housing units (U.S. Census Bureau, 2023). The village has a land area of 2.21 square miles (Gazetteer Files, 2024) and a population density of 429 persons per square mile. The median household income is $47,955 (U.S. Census Bureau, 2023).

The Southern Local School District is headquartered near Salineville, and its schools are located outside of the village's corporate limits. The Salineville Volunteer Fire Department is in the center of town on Washington Street near Riley Run. The fire station sits adjacent to the Southern Community Center Food Pantry.

Summitville Village

The Village of Summitville is a small, rural community located in western Columbiana County. Summitville has a population of 203 (U.S. Census Bureau, 2023) and spans approximately 0.92 square miles (Gazetteer Files, 2024), situated at an elevation of 1,119 feet above sea level (USGS, 2025).

Summitville has around 63 housing units (U.S. Census Bureau, 2023), with a population density of about 221 people per square mile. The median age of residents is 34.9 years (U.S. Census Bureau, 2023), reflecting a mix of families and older generations. Educationally, 100% of adults have completed high school, but only 1.97% hold a bachelor's degree or higher (U.S. Census Bureau, 2023).

Summitville is served by the Southern Local School District, although its schools are not within the corporate limits (Southern Local Schools, n.d.). Healthcare services in Summitville are also limited. The nearest hospital is in Salem, about 15 miles away, and there are some clinics and nursing homes in the surrounding area.

Summitville is accessible via SR 644, which passes through the center of the village. The Norfolk Southern Railway also passes through the center part of the village, mostly along SR 644 (Main Street). The Summitville Volunteer Fire Department provides fire protection along with the Franklin Township Volunteer Fire Department. The Columbiana County Sheriff's Office handles law enforcement for the village, with additional support from the Salineville Police Department when needed.

Washingtonville Village

Washingtonville is a small village located in northern Columbiana County. The village is mostly within Columbiana County, though a small portion extends into Mahoning County. It sits just to the north of Leetonia, to the east of Salem, and to the west of Columbiana. With a population of 700 residents (U.S. Census Bureau, 2023), the village spans 0.67 square miles (Gazetteer Files, 2024) and sits at an elevation of 1,083 feet above sea level (USGS, 2025). The village's median household income is about $42,727 (U.S. Census Bureau, 2023). The population has a high school graduation rate of 88.07%, with around 10.70% of residents holding a bachelor's degree or higher (U.S. Census Bureau, 2023). Housing in Washingtonville consists mostly of older, single-family homes, although some newer residences have been built in recent years.

Transportation is primarily via SR 14, which runs east-west through the center of the village. The local school system is part of the Columbiana Exempted Village School District. For healthcare, residents rely on nearby facilities, including Salem Regional Medical Center, which is about 10 miles away (Columbiana Exempted Village School District, n.d.; Salem Regional Medical Center, n.d.).

Wellsville Village

The Village of Wellsville is along the Ohio River in southern Columbiana County. Covering about 1.80 square miles (Gazetteer Files, 2024), the village sits at an elevation of 715 feet above sea level (USGS, 2025). As of the most recent U.S. Census estimates, Wellsville has a population of 3,096 residents (U.S. Census Bureau, 2023), with a population density of around 1,720 people per square mile. The village has 1,683 housing units, mostly single-family homes (U.S. Census Bureau, 2023).

The median age of residents is 42.4 years, and the median household income is $29,440 (U.S. Census Bureau, 2023). Educationally, 88.81% of adults have completed high school, while 9.23% hold a bachelor's degree or higher (U.S. Census Bureau, 2023).

The Wellsville Local School District serves the village, operating Wellsville Elementary, Middle, and High Schools. These schools are central to the community's educational infrastructure (Wellsville Local Schools, 2025). Daw Elementary, Garfield Elementary, and Wellsville Junior/Senior High School are all within the village's corporate limits.

The Buckeye Water District supplies drinking water, while wastewater treatment is managed by the village. Electricity is provided by Ohio Edison, and natural gas comes from Dominion Energy. Broadband internet service is available through providers like Spectrum and Frontier, though speeds may vary across the village. Transportation in Wellsville is facilitated by

SR 7, which is the primary thoroughfare traversing the center of town. State Routes 39 and 45 intersect SR 7 (with 39 in the south and 45 in the north). The rest of the roadway network consists of city-style streets. The Norfolk Southern Railway also serves the village, providing access to regional and national rail networks (Ohio Rail Development Commission, 2016).

Transportation

Columbiana County's transportation infrastructure is robust, consisting of roadways, railways, waterways, and airways.

Roadways

Columbiana County has a well-established roadway network that connects the county to surrounding regions and facilitates both local and regional transportation needs. The roadways are a mix of federal and state highways, local roads, and several key thoroughfares that provide access to major cities and economic hubs. One of the most significant routes is U.S. Route 30, which runs through the central part of the county. US 30 links Columbiana County to neighboring regions, including Canton in Ohio, and Pennsylvania, ultimately leading to Pittsburgh. Additionally, U.S. Route 62 runs along the northern border of the county through Salem, providing another link into Canton before turning northward at Salem toward Youngstown.

Several state routes also pass through Columbiana County. State Route 7 runs along the eastern side of the county, paralleling the Ohio River. It serves as a critical transportation corridor, linking Columbiana County to southern Ohio and northward into greater Youngstown. State Route 7 also provides access to Steubenville and other important locations along the river. State Route 14 is another important east-west route running through northern Columbiana County, linking East Palestine and Columbiana to areas further west, including Ravenna, Ohio. State Route 11 also runs through the central-eastern portion of the county, providing a key connection to cities like Youngstown and intersecting with other major highways, including US 30 and SR 14. Figure 1.2.b is a map of the major roadways.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

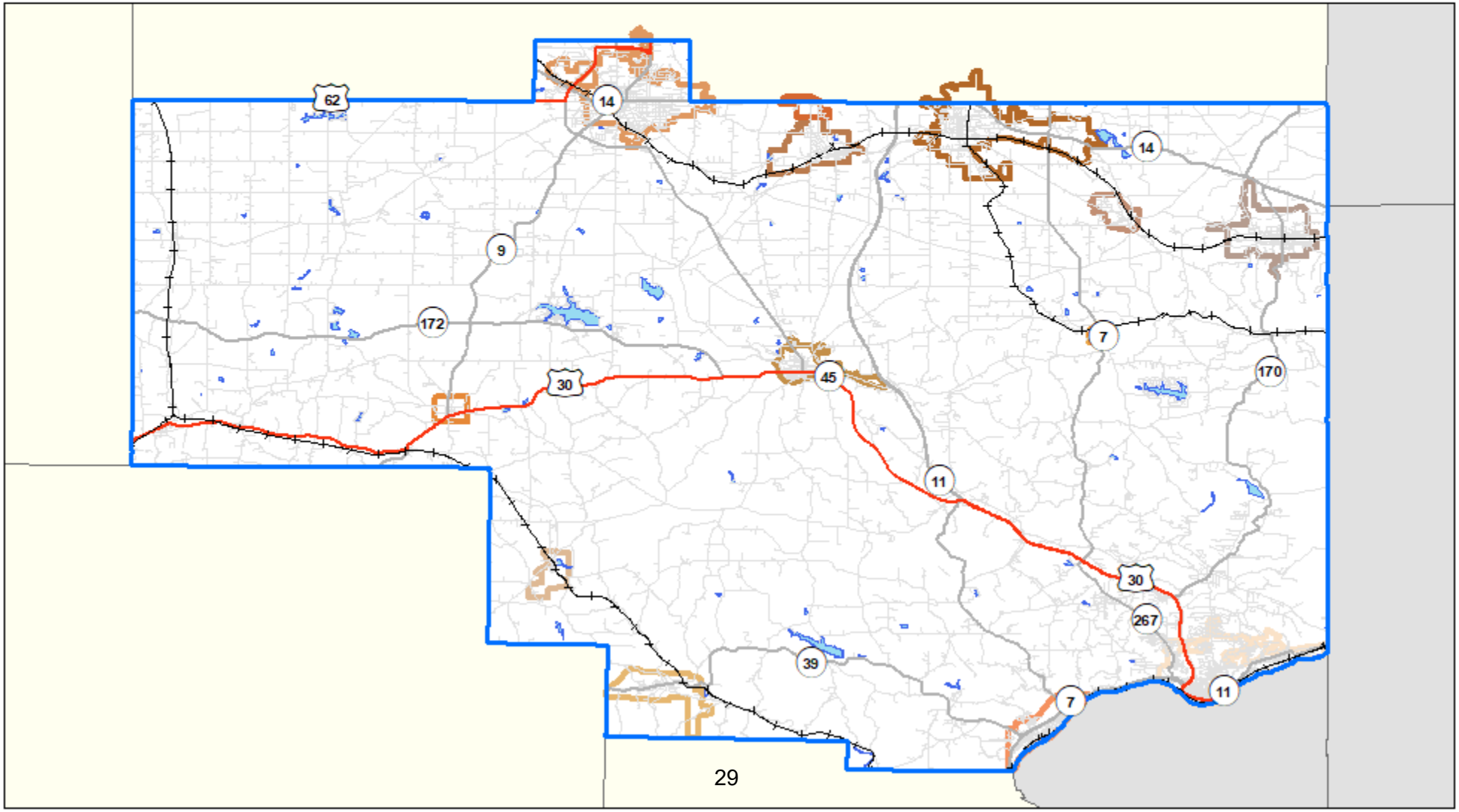
Figure 1.2.b: Roadway Infrastructure

Data Source(s):
US Census (Tiger Data)

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

US Routes
State Routes
Miscellaneous Roads





Railways

Columbiana County's rail infrastructure is dominated by freight operations. Freight rail also plays an important role in maintaining regional industry, with heavy volumes of materials such as coal, steel, and limestone being transported through Columbiana County's rail system. These materials are essential to local manufacturing operations, particularly in steel production, which has long been a key industry in the region. According to the Association of American Railroads (AAR), U.S. railroads transport over 1.7 billion tons of freight each year, and about 40% of all freight tonnage in the U.S. is moved by rail (AAR, n.d.).

Norfolk Southern is the primary freight rail operator in the county, with CSX Transportation having trackage, haulage, or detour rights on the NS line in northern Columbiana County. The Youngstown and Southeastern Railroad serves areas through Columbiana, Rogers, and into Pennsylvania, while a short spur of a Ohi-Rail Corporation line runs between Bayard and into Minerva (Ohio Rail Development Commission, 2016). Figure 1.2.c is a map of the rail infrastructure of the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 1.2.c: Rail Infrastructure

Data Source(s):
US Census (Tiger Data)

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

Norfolk Southern RR
Ohi-Rail Corp.
Youngstown & Southeastern RR



Waterways

Columbiana County benefits significantly from its proximity to the Ohio River, which forms part of the county's eastern boundary. This river is a vital link in the U.S. inland waterway system, serving as a primary conduit for transporting bulk goods such as coal, steel, chemicals, and agricultural products. The Ohio River provides direct access to the Mississippi River System, connecting the region to Gulf Coast ports and international shipping markets. This waterway plays a crucial role in reducing transportation costs for bulk commodities and strengthening the regional economy (USACE, n.d.B).

A key facility supporting Columbiana County's waterborne commerce is the Wellsville Intermodal Facility. The terminal serves as a multimodal freight hub, linking river barge, rail, and trucking operations. The facility handles a variety of bulk commodities, including petroleum products, dry bulk materials (such as coal and limestone), and liquid bulk chemicals (Wellsville Terminals Company, n.d.).

Beyond the Wellsville facility, the Port of Pittsburgh and other nearby river ports, such as those in Steubenville, contribute to the region's freight movement. These facilities enable barge shipments of steel, coal, petroleum, and industrial raw materials that are essential for local and national markets. Barge transportation remains a cost-effective method for moving bulk freight, as a single barge can transport the equivalent of 130 truckloads of cargo, reducing congestion and fuel consumption compared to overland transport (USACE, n.d.A).

Despite its advantages, the Ohio River transportation network faces challenges such as fluctuating water levels, aging infrastructure, and climate-related disruptions. The U.S. Army Corps of Engineers maintains a system of locks and dams along the river to regulate water flow and ensure year-round navigability. Investments in waterway infrastructure and modernization are critical for sustaining economic growth and ensuring the continued viability of the Ohio River as a major freight corridor (USACE, n.d.B).

Airways

The largest aviation facility in Columbiana County is the Columbiana County Airport (02G), a public-use general aviation airport located near East Liverpool. This airport features a 3,500-foot-long asphalt runway (07/25), capable of accommodating small aircraft, business jets, and air ambulances. The facility is managed by the Columbiana County Airport Authority and provides essential services such as fueling, hangar space, and aircraft maintenance. The airport primarily serves private pilots, corporate aircraft, and agricultural aviation operations (FAA, 2025).

Emergency medical services (EMS) and law enforcement agencies rely on several heliports within Columbiana County for rapid patient transport and aerial operations. East Liverpool City Hospital Heliport (4OH2) and Salem Regional Medical Center Heliport (38OH) serve as critical access points for medical helicopters operated by providers such as STAT MedEvac. These heliports enable rapid transport of critically ill or injured patients to Level I trauma centers in Pittsburgh, Cleveland, and Youngstown. Additionally, law enforcement agencies, including the Ohio State Highway Patrol, utilize temporary helicopter landing zones for aerial surveillance, search and rescue operations, and emergency response coordination. In addition to these medical facilities, there are nine other private aviation facilities in the county.

For commercial air travel, passengers from Columbiana County typically rely on airports in nearby metropolitan areas. The closest major airports include Pittsburgh International Airport (PIT), located approximately 40 miles southeast, and Akron-Canton Airport (CAK), situated about 50 miles northwest. Youngstown-Warren Regional Airport (YNG), though closer at 35 miles north, currently offers limited commercial services. These regional airports provide scheduled passenger flights, air cargo services, and international connections, making them the primary aviation hubs for Columbiana County residents and businesses. Figure 1.2.d shows the locations of the aviation facilities in Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 1.2.d: Aviation Facilities

Data Source(s):
ODOT TIMS

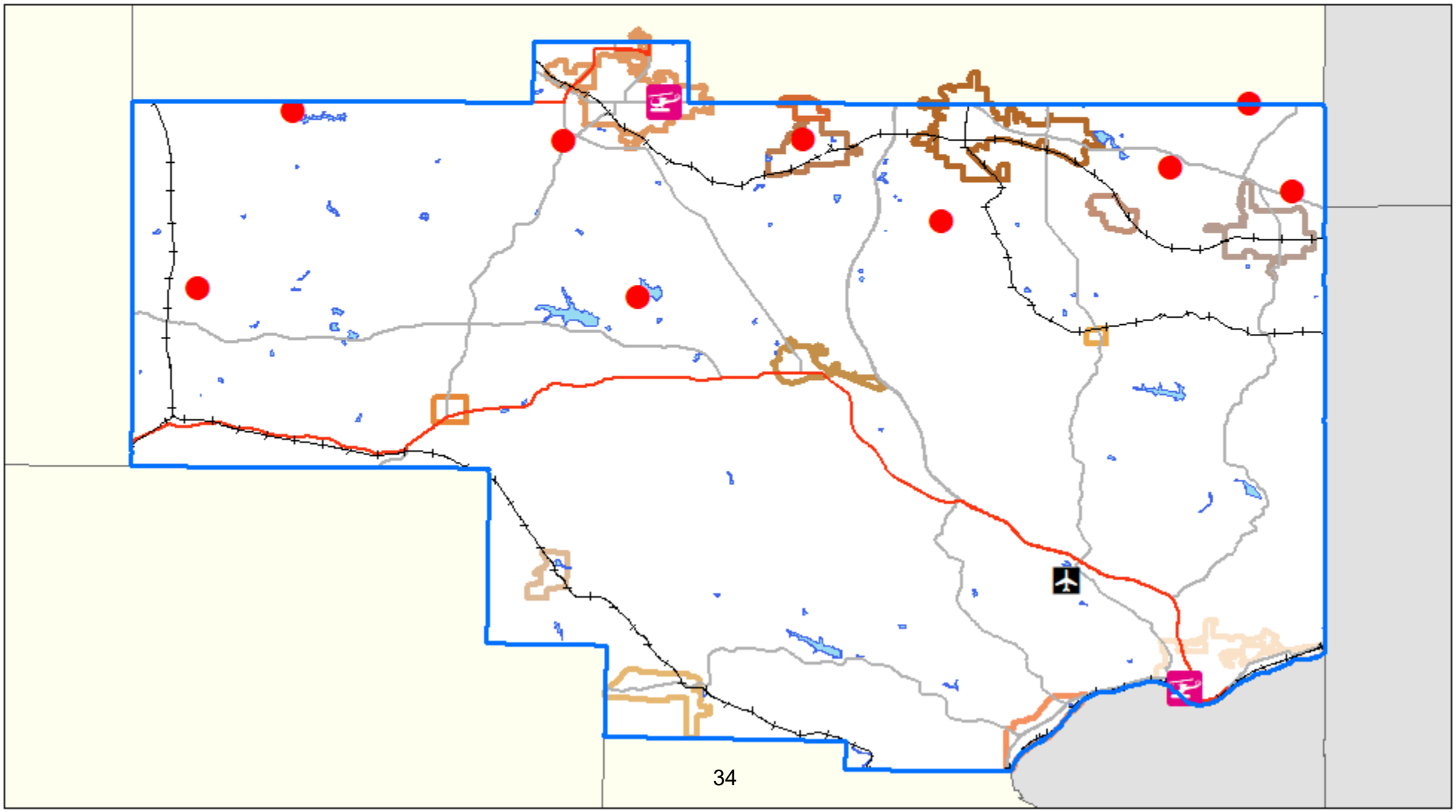
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Columbiana County Airport Auth.

Medical Heliports

Private Aviation Facilities





Economy

Columbiana County has a diverse economy historically rooted in manufacturing, agriculture, and energy production, with emerging sectors in healthcare, logistics, and small business development (Ohio Development Services Agency, 2024).

Manufacturing and Industry

Manufacturing remains a central pillar of the county's economy. The county has long been known for its steel production, metal fabrication, and ceramics industries, with a concentration of manufacturing firms in cities such as East Liverpool, Salem, and Columbiana. Other major employers include Butech Bliss, American Standard, and Hickey Metal Fabrication, which produce industrial machinery, plumbing fixtures, and metal components.

Beyond traditional industries, advanced manufacturing and chemical processing are expanding. Companies like Heritage Thermal Services in East Liverpool specialize in hazardous waste management and environmental services, supporting the region's broader industrial base. Additionally, the Shell Pennsylvania Petrochemicals Complex, located just across the border in Pennsylvania, has created economic ripple effects, spurring growth in plastics manufacturing, logistics, and chemical processing in Columbiana County. Shell, Ergon West Virginia, Inc., and Homer Laughlin China in and around Chester and Newell, West Virginia, also support the Columbiana County economy as part of the wider region.

Agriculture and Agribusiness

Agriculture has been a longstanding economic driver in Columbiana County, with more than 1,100 farms covering approximately 45% of the county's land area (USDA NASS, 2022). The region specializes in corn, soybeans, dairy, poultry, and livestock production, benefiting from fertile soil and a temperate climate. Agribusiness operations, including food processing and agricultural equipment manufacturing, contribute to the local economy. Companies such as Fresh Mark, Inc., in Salem, a major pork processing facility, provide employment and supply chain connections to regional markets.

Energy and Natural Resources

The energy sector has experienced growth in Columbiana County, particularly with the development of natural gas resources in the Utica Shale formation. Hydraulic fracturing (fracking) operations have increased investment in natural gas extraction, pipeline infrastructure, and energy-related manufacturing. Additionally, coal-fired power generation and alternative energy

projects, such as solar and wind energy development, contribute to the county's energy mix. While coal production has declined, energy infrastructure investments remain a key factor in the local economy.

Retail, Healthcare, and Small Business Development

Retail and service-based industries are integral to the county's economy, particularly in commercial hubs like Salem, Columbiana, and East Liverpool. The retail trade sector includes major employers such as Walmart, Giant Eagle, and Home Depot, while small businesses form the backbone of local commerce.

Healthcare is another growth industry, with Salem Regional Medical Center and East Liverpool City Hospital serving as primary healthcare providers. These facilities provide essential medical services while also acting as significant employers within the county (ODH, n.d.).

Small business development and entrepreneurship have gained traction, supported by local initiatives such as the Columbiana County Port Authority, which offers economic incentives, industrial site development, and small business support programs. The Ohio Small Business Development Center (SBDC) at Kent State University provides additional resources for startups and expanding businesses (Columbiana County Port Authority, 2024). Table 1.2.4 lists the "major and notable employers" (Ohio Development Services Agency, 2024) for Columbiana County.

Table 1.2.4

Major and Notable Employers, Columbiana County	
Entity Name (Sector)	*Entity Name (Sector)*
American Standard Brands (Manufacturing)	Butech Bliss (Manufacturing)
Columbiana County Government (Government)	East Liverpool City Schools (Government)
East Liverpool City Hospital (Services)	Flex-N-Gate/Ventra Salem (Manufacturing)
Fresh Mark, Inc. (Manufacturing)	Salem City Schools (Government)
Salem Regional Medical Center (Services)	State of Ohio (Government)
Walmart Stores, Inc. (Trade)	

Healthcare

Columbiana County has a diverse healthcare infrastructure that serves both its urban centers and rural communities and includes hospitals, specialty clinics, urgent care centers, and public health services. The largest healthcare provider in the county is Salem Regional Medical Center (SRMC), an independent nonprofit hospital that employs approximately 750 people. As a major referral center, SRMC offers a wide range of services, including emergency care through

its Level III trauma center, specialized cardiology and cardiovascular surgery, oncology treatment, orthopedic surgery, and comprehensive women's health services.

Complementing SRMC's services, East Liverpool City Hospital provides critical medical care in the southeastern part of the county. As a part of the Prime Healthcare Foundation network, the hospital delivers emergency services, cardiology and pulmonary care, orthopedic treatments, and general surgery. Given its location along the Ohio River, it also serves communities in nearby West Virginia and Pennsylvania, making it a key regional provider. Beyond hospitals and government services, Columbiana County supports a range of specialty and outpatient healthcare providers. Several primary care and family medicine practices operate throughout the region, including those affiliated with Mercy Health. Urgent care facilities, such as WellNow Urgent Care, provide walk-in medical services for minor illnesses and injuries.

Public health services are administered by the Columbiana County Health Department, which plays a central role in communicable disease control, immunization programs, maternal and child health initiatives, and environmental health oversight. Additionally, the health department is actively involved in public health emergency preparedness, often working in collaboration with the county's emergency management agency to coordinate disaster response efforts (CCHD, 2024).

Climate

The county experiences a humid continental climate characterized by four distinct seasons, with warm summers, cold winters, and moderate precipitation throughout the year. Situated on the eastern edge of Ohio's Appalachian Plateau, the county's topography and elevation play a key role in shaping its local climate, influencing temperature variations, precipitation levels, and extreme weather patterns (NOAA NCEI, 2025).

The average annual temperature in the county hovers around 50° F, though seasonal extremes are common. Summers are typically warm, with July average temperatures between 2000 and 2025 at 72° F, though heat waves can occasionally push temperatures into the 90s. In contrast, winters are cold, with average January temperatures in the mid-20s (i.e., 27° F over the period 2000-2025), and Arctic air masses sometimes send temperatures below zero (NOAA NCEI, 2025). Temperature differences exist within the county due to elevation changes. The higher elevations in the eastern and southeastern portions, particularly near the Yellow Creek and Beaver Creek State Park areas, tend to be slightly cooler year-round compared to the flatter western and central regions.

Columbiana County receives approximately 40 to 45 inches of precipitation annually, with rainfall relatively evenly distributed throughout the year. However, the eastern and southeastern portions tend to receive slightly more precipitation due to the influence of orographic lifting, where moist air rises over the elevated terrain, cools, and releases precipitation. In contrast, the northwestern and western parts of the county, which are at a lower elevation, see slightly lower annual rainfall totals (MRCC, 2023).

Over the past several decades, Columbiana County has experienced a gradual warming trend consistent with regional and global climate patterns. Since 1950, average annual temperatures have risen by approximately 1.5° F. This warming trend has contributed to milder winters with less snowfall, as well as hotter summer months with more extreme heat events (NOAA NCEI, 2025). Future climate projections suggest that precipitation patterns will also change, with an expected increase in heavy rainfall events that could heighten flood risks, particularly in the eastern and southeastern parts of the county. Meanwhile, Lake Erie's changing temperature and ice cover patterns may influence snowfall totals, potentially leading to less frequent, but more intense, lake-effect snow events in northern areas like Salem (MRCC, 2023). The Ohio River Valley in the south is projected to experience more frequent flooding and heat waves, as rising temperatures increase atmospheric moisture and storm intensity. This could have implications for agriculture, infrastructure resilience, and emergency preparedness across the county (OEMA, 2024).

Asset Inventory

§201.6(c)(2)(ii)	[The risk assessment shall include a] description of the jurisdiction's vulnerability of the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.
§201.6(c)(2)(ii)(A)	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Assets "include anything that is important to the character and function of a community" (USDHS FEMA, 2025b, p. 52). This plan stays consistent with that FEMA guidance document, defining assets as people (including underserved communities and socially vulnerable populations), structures, community lifelines and other critical facilities, natural, historic, and cultural resources, and economic and other activities having value in the region's communities (USDHS FEMA, 2025b, pp. 52-57).

Table 1.2.5 below lists the assets for Columbiana County's communities. In the update of 2025, cities and villages had latitude to determine their own asset lists, with the list from the previous plan and the broad FEMA definition above as starting points. Thus, while there will be consistency as to the types of assets appearing on the lists, readers should expect slight variance. The table below are built environment assets. The demographic discussions above consider *people* assets in detail, as will the social vulnerability and underserved community discussions in the profiles of Section 2.2. Other assets, like natural areas, appear in the discussion of development trends below. A map (Figure 1.2.e) of these assets follows the table.

Table 1.2.5

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Act 1 Education Center Jr. HS	9955 Union Ridge Road	Rogers	OH	44455		X		
Akron Children's Pediatrics	400 North Market Street	Lisbon	OH	44432	X			
American Health Care	107 Royal Birkdale Drive	Columbiana	OH	44408		X		
American Standards Brands	605 South Ellsworth Avenue	Salem	OH	44460			X	
Assisted Living Ministry Services	650 St. Clair Avenue	East Liverpool	OH	43920		X		
Auburn Skilled Nursing and Rehab	451 Valley Road	Salem	OH	44460		X		
Beaver Local ES	46090 Bell School Road	East Liverpool	OH	43920		X		
Beaver Local HS	46090 Bell School Road	East Liverpool	OH	43920		X		
Beaver Local MS	46090 Bell School Road	East Liverpool	OH	43920		X		
Blossom Nursing and Rehab. Center	109 Blossom Lane	Salem	OH	44460		X		
Brookdale Salem	1916 South Lincoln Avenue	Salem	OH	44460		X		
Buckeye ES	1200 Buckeye Avenue	Salem	OH	44460		X		
Buckeye Water District	1925 Clark Avenue	Wellsville	OH	43968	X			
Burchfield Homestead	867 East 4th Street	Salem	OH	44460				X
Calcutta FD	15455 Pugh Road	Calcutta	OH	43920	X			
Calcutta Healthcare Center	48444 Bell School Rd	Calcutta	OH	43920	X			
Calcutta PO	15713 State Route 170	East Liverpool	OH	43920	X			
Carnegie Public Library	219 East Fourth Street	East Liverpool	OH	43920	X			
Cassius Clark Thompson House	305 Walnut Street	East Liverpool	OH	43920				X
Century House of Salem	1171 East State Street	Salem	OH	44460		X		
Charles Nelson Schmick House	110 Walnut Street	Leetonia	OH	44431				X
Cherry Valley Coke Ovens	999 Cherry Valley Road	Leetonia	OH	44431				X
Church Hill Road Covered Bridge	42087 State Route 154	Lisbon	OH	44432				X
Circle of Care	1985 East Pershing Street	Salem	OH	44460		X		
Columbiana City Hall	28 West Friend Street	Columbiana	OH	44408	X			
Columbiana City Water Dept.	28 West Friend Street	Columbiana	OH	44408	X			
Columbiana Co. Career and Technical Center	9364 State Route 45	Lisbon	OH	44432		X		
Columbiana County 911 Center	105 South Market Street	Lisbon	OH	44432	X			
Columbiana County Airport	15606 County Airport Rd	East Liverpool	OH	43920	X		X	

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Columbiana County Courthouse	203 South Market Street	Lisbon	OH	44432	X			
Columbiana County EMA	215 South Market Street	Lisbon	OH	44432	X			
Columbiana County Mental Health	40722 State Route 154	Lisbon	OH	44432		X		
Columbiana County Port Authority	7860 Lincole Place	Lisbon	OH	44432	X		X	
Columbiana County Sewer Dept.	33395 State Route 172	Lisbon	OH	44432				
Columbiana County Sheriff	8473 Countyhome Road	Lisbon	OH	44432	X			
Columbiana EMS	28 West Friend Street	Columbiana	OH	44408	X			
Columbiana FD	28 West Friend Street	Columbiana	OH	44408	X			
Columbiana Foundry Company	501 Lisbon Street	Columbiana	OH	44408			X	
Columbiana HS	700 Columbiana-Waterford Road	Columbiana	OH	44408		X		
Columbiana PD	28 South Vine Street	Columbiana	OH	44408	X			
Columbiana PO	149 South Main Street Ste. 2	Columbiana	OH	44408	X			
Columbiana Public Library	322 North Middle Street	Columbiana	OH	44408	X			
Consumers National Bank (ATM)	7985 Dickey Drive	Lisbon	OH	44432			X	
Continuing Health Care Solutions	100 Vista Drive	Lisbon	OH	44432		X		
Courtyard at Lexington	2345 Lexington Avenue	Salem	OH	44460		X		
Covington Skilled Nursing & Rehab Center	100 Covington Drive	East Palestine	OH	44413		X		
Crestview ES	3407 Middleton Road	Columbiana	OH	44408		X		
Crestview MS/HS	44100 Crestview Road	Columbiana	OH	44408		X		
Crossroads at Beaver Creek	13280 Echo Dell Road	East Liverpool	OH	43920		X		
Daniel Howell Hise House	1100 Franklin Avenue	Salem	OH	44460				X
Daniel McBean Farmstead	18709 Fife Coal Road	Wellsville	OH	43968				X
David Anderson Junior/Senior HS	260 West Pine Street	Lisbon	OH	44432		X		
Daw ES	929 Center Street	Wellsville	OH	43968		X		
Diamond Historic District	Market & East 6th Street	East Liverpool	OH	43920				X
Dixonville FD	1181 Anderson Boulevard	East Liverpool	OH	43920	X			
East Liverpool Christian School	46682 Florence Street	East Liverpool	OH	43920		X		
East Liverpool City Hall	126 West Sixth Street	East Liverpool	OH	43920	X			
East Liverpool City Hospital	425 West 5th Street	East Liverpool	OH	43920	X	X		

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
East Liverpool FD	626 St. Clair Avenue	East Liverpool	OH	43920	X			
East Liverpool Jr./Sr. HS	100 Maine Avenue	East Liverpool	OH	43920		X		
East Liverpool PD	126 West Sixth Street	East Liverpool	OH	43920	X			
East Liverpool PO	515 Walnut Street	East Liverpool	OH	43920	X			
East Liverpool Pottery	2nd and Market Street	East Liverpool	OH	43920				X
East Liverpool Water Works	2220 Michigan Avenue	East Liverpool	OH	43920	X			
East Palestine EMS	67 East Clark Street	East Palestine	OH	44413	X			
East Palestine ES	195 West Grant Street	East Palestine	OH	44413		X		
East Palestine FD	67 East Clark Street	East Palestine	OH	44413	X			
East Palestine HS	360 West Grant Street	East Palestine	OH	44413		X		
East Palestine Memorial Public Library	309 North Market Street	East Palestine	OH	44413	X			
East Palestine MS	320 West Grant Street	East Palestine	OH	44413		X		
East Palestine PD	75 East Main Street	East Palestine	OH	44413	X			
East Palestine PO	269 North Market Street	East Palestine	OH	44413	X			
East Palestine Sewer and Water	166 Park Drive	East Palestine	OH	44413	X			
East Palestine Village Offices	144 North Market Street	East Palestine	OH	44413	X			
East Rochester PO	24781 US Route 30	East Rochester	OH	44625	X			
Elkrun Township Hall	41725 State Route 154	Lisbon	OH	44432	X			
Elks Club	139 West 5th Street	East Liverpool	OH	43920				X
Elkton PO	42188 State Route 154	Elkton	OH	44415	X			
EMT Ambulance	383 North Lincoln Avenue	Salem	OH	44460	X			
Fairfield Township Hall	3062 Fairfield School Road	Columbiana	OH	44408	X			
Farmers National Bank (ATM)	131 East Lincoln Way	Lisbon	OH	44432			X	
Flex-N-Gate/Ventra Salem	800 Pennsylvania Avenue	Salem	OH	44460			X	
Franklin Harris Farmstead	3525 Depot Road	Salem	OH	44460				X
Franklin Township Garage	15514 State Route 644	Summitville	OH	43962	X			
Franklin Township VFD	32046 Spruce Street	Summitville	OH	43962	X			
Fresh Mark, Inc.	1735 South Lincoln Avenue	Salem	OH	44460			X	
Garfield ES	1600 Lincoln Avenue	Wellsville	OH	43968		X		
Glenmoor VFD	16320 Annesley Road	East Liverpool	OH	43920	X			
Godwin Knowles House	422 Broadway	East Liverpool	OH	43920				X

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Grace Woods Senior Living	1166 Benton Road	Salem	OH	44460		X		
Great Trail Care Center	400 Carolyn Center	Minerva	OH	44657		X		
Guilford Lake FD	32120 Sunset Avenue	Hanoverton	OH	44423	X			
Hanna-Kenty House	251 East High Street	Lisbon	OH	44432				X
Hanoverton PO	29959 Market Street	Hanoverton	OH	44423	X			
Hanover Township Emergency Services Center	30456 Lincoln Highway	Hanoverton	OH	44423	X			
Hanoverton Village Offices	State Route 9	Hanoverton	OH	44423	X			
Harmony Village	901 South Main Street	Columbiana	OH	44408		X		
Heartland Christian School K-12	28 Pittsburgh Street	Columbiana	OH	44408		X		
Highlandtown VFD	18371 Steubenville Pike Road	Salineville	OH	43945	X			
Hiram Bell Farmstead	43628 State Route 517	Columbiana	OH	44408				X
Homer Laughlin House	414 Broadway	East Liverpool	OH	43920				X
Homeworth PO	4434 Middle Street	Homeworth	OH	44634	X			
Homeworth VFD	4354 Middle Street	Homeworth	OH	44634	X			
Huntington Bank (ATM)	24 North Park Avenue	Lisbon	OH	44432			X	
Ikirt House	200 6th Street	East Liverpool	OH	43920				X
John Street House	631 North Ellsworth Avenue	Salem	OH	44460				X
Joshua Dixon ES	333 North Middle Street	Columbiana	OH	44408		X		
Kensington PO	11011 State Route 644	Kensington	OH	44427	X			
KLG Ambulance / MICU	1516B South Lincoln Avenue	Salem	OH	44460	X			
Lacroft ES	2460 Boring Lane	East Liverpool	OH	43920		X		
Lacroft VFD	2360 Sherwood Avenue	East Liverpool	OH	43920	X			
Leetonia Community Public Library	181 Walnut Street	Leetonia	OH	44431	X			
Leetonia EMS	300 Main Street	Leetonia	OH	44431	X			
Leetonia FD	330 East Main Street	Leetonia	OH	44431	X			
Leetonia K-12	450 Walnut Street	Leetonia	OH	44431		X		
Leetonia PD	300 East Main Street	Leetonia	OH	44431	X			
Leetonia PO	235 Main Street	Leetonia	OH	44431	X			
Leetonia Sewage Plant	300 Main Street	Leetonia	OH	44431	X			
Leetonia Village Offices	300 East Main Street	Leetonia	OH	44431	X			

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Leetonia Water Board	300 Main Street	Leetonia	OH	44431	X			
Lepper Library	303 East Lincoln Way	Lisbon	OH	44432	X			
Lifeteam EMS Inc.	16644 St. Clair Avenue	East Liverpool	OH	43920	X			
Lisbon FD	113 South Jefferson Street	Lisbon	OH	44432	X			
Lisbon PD	203 North Market Street	Lisbon	OH	44432	X			
Lisbon PO	7983 Dickey Drive	Lisbon	OH	44432	X			
Lisbon Village Offices	203 North Market Street	Lisbon	OH	44432	X			
Lisbon Village Water Department	8077 State Route 164	Lisbon	OH	44432	X			
Liverpool Township PD	353 Adam Avenue	East Liverpool	OH	43920	X			
Madison Township Hall	13011 State Route 45	Lisbon	OH	44432	X			
Maple-Cotton Funeral Home and EMS	11009 State Route 644	Kensington	OH	44427	X			
Mary A. Patterson Memorial	East 4th Street	East Liverpool	OH	43920				X
Mckinley ES	441 East Chestnut Street	Lisbon	OH	44432		X		
Miller Castings	1634 Lower Elkton Road	Columbiana	OH	44408			X	
Museum of Cermaics	400 East 4th Street	East Liverpool	OH	43920				X
Negley PO	7560 Commerce Street	Negley	OH	44441	X			
Negley VFD/EMS	40683 Richardson Avenue	Negley	OH	44441	X			
New Waterford EMS	3766 West Main Street	New Waterford	OH	44445	X			
New Waterford FD	3766 East Main Street	New Waterford	OH	44445	X			
New Waterford PD	3700 Village Park Drive	New Waterford	OH	44445	X			
New Waterford PO	3818 West Main Street	New Waterford	OH	44445	X			
New Waterford Village Offices	3760 Park Drive	New Waterford	OH	44445	X			
New Waterford Water Plant	47250 State Route 46	New Waterford	OH	44445	X			
Nicholas Eckis House	High Street	East Fairfield	OH	44445				X
North ES	90 Maine Boulevard	East Liverpool	OH	43920		X		
North Georgetown PO	27416 Main Street	North Georgetown	OH	44665	X			
North Georgetown VFD	4050 Rochester Road	North Georgetown	OH	44665	X			
North Star Critical Care	16356 State Route 267	East Liverpool	OH	43920	X			
Odd Fellows Temple	120 West 6th Street	East Liverpool	OH	43920				X

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Ohio State Highway Patrol	9423 State Route 45	Lisbon	OH	44432	X			
Parkside Healthcare Center	930 East Park Avenue	Columbiana	OH	44408		X		
Perry Township PD	2198 North Ellsworth Avenue	Salem	OH	44460	X			
Perry Township VFD	2198 North Ellsworth Avenue	Salem	OH	44460	X			
Pioneer Pottery Inc	761 Dresden Avenue	East Liverpool	OH	43920			X	
Potters National Bank (The Vault Restraurant)	617 Bradshaw Avenue	East Liverpool	OH	43920				X
R&L Carriers	1320 Heck Road	Columbiana	OH	44408			X	
Reilly ES	491 Reilly Avenue	Salem	OH	44460		X		
Richard L Cawood Residence	2600 St. Clair Avenue	East Liverpool	OH	43920				X
Rogers PO	7529 Depot Street	Rogers	OH	44455	X			
Rogers Village FD	7580 Farr Street	Rogers	OH	44455	X			
Salem City Hall	231 South Broadway Avenue	Salem	OH	44460	X			
Salem East Health Care	250 Continental Drive	Salem	OH	44460		X		
Salem FD	260 South Ellsworth Avenue	Salem	OH	44460	X			
Salem Junior/Senior HS	1200 East Sixth Street	Salem	OH	44460		X		
Salem North Health Care	230 Continental Drive	Salem	OH	44460		X		
Salem PD	397 Columbia Street	Salem	OH	44460	X			
Salem PO	275 Penn Avenue	Salem	OH	44460	X			
Salem Public Library	821 East State Street	Salem	OH	44460	X			
Salem Regional Medical Center	1995 East State Street	Salem	OH	44460	X	X		
Salem Regional Medical Center (Lisbon)	38506 Saltwell Road	Lisbon	OH	44432				
Salem Sewage Plant	1600 Pennsylvania Avenue	Salem	OH	44460	X			
Salem Township Hall	37638 Old State Route 558	Leetonia	OH	44431	X			
Salem West Health Care	2511 Bentley Drive	Salem	OH	44460		X		
Salineville PD	34 Washington Street	Salineville	OH	43945	X			
Salineville PO	37 West Main Street	Salineville	OH	43945	X			
Salineville Sewer Plant	39 State Street	Salineville	OH	43945	X			
Salineville VFD	34 Washington Street	Salineville	OH	43945	X			
Salineville Village Offices	34 Washington Street	Salineville	OH	43945	X			

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
Salineville Water Plant	11271 Salineville Road NE	Salineville	OH	43945	X			
South Side MS	720 Columbiana-Waterford Road	Columbiana	OH	44408		X		
Southeast ES	2200 Merle Road	Salem	OH	44460		X		
Southern Local K-12	38095 State Route 39	Salineville	OH	43945		X		
St. Clair Township PD	15442 Pugh Road Suite 1	Calcutta	OH	43920	X			
St. Mary's Alzheimer's Center	1899 Garfield Road	Columbiana	OH	44408		X		
St. Paul ES	925 East State Street	Salem	OH	44460		X		
Summitville PO	15521 State Route 644	Summitville	OH	43962	X			
Summitville Tiles, Inc.	15364 State Route 644	Summitville	OH	43962			X	
The Inn at Old Saybrook	43171 County Line Road	Columbiana	OH	44408	X			
The Orchards of East Liverpool Convalescent Center	709 Armstrong Lane	East Liverpool	OH	43920		X		
The Renaissance at Vista	100 Vista Drive	Lisbon	OH	44432		X		
True North, LLC	128 East 5th Street	East Liverpool	OH	43920			X	
Twin Oaks Retirement Center	1166 Benton Road	Salem	OH	44460		X		
United K-12	8143 State Route 9	Hanoverton	OH	44423		X		
Valley Oaks Care Center	500 Selfridge Street	East Liverpool	OH	43920		X		
Wal-Mart Stores, Inc.	16280 Dresden Avenue	East Liverpool	OH	43920			X	
Washingtonville PD	415 South County Road	Washingtonville	OH	44490	X			
Washingtonville PO	195 East Main Street	Washingtonville	OH	44490	X			
Washingtonville Village Offices	415 South County Road	Washingtonville	OH	44490	X			
Washingtonville Water and Sewer	415 Boston Street	Washingtonville	OH	44490	X			
Wellsville Filtration Plant	17547 State Route 45	Wellsville	OH	43968	X			
Wellsville HS	1 Bengal Boulevard	Wellsville	OH	43968		X		
Wellsville PD	1200 Main Street	Wellsville	OH	43968	X			
Wellsville PO	1075 Main Street	Wellsville	OH	43968	X			
Wellsville Public Library	115 Ninth Street	Wellsville	OH	43968	X			
Wellsville Sewage Disposal	100 16th Street	Wellsville	OH	43968	X			
Wellsville VFD	1202 Main Street	Wellsville	OH	43968	X			
Wellsville Village Offices	1200 Main Street	Wellsville	OH	43968	X			

Columbiana County Asset Inventory								
Name	*Street*	*City*	*State*	*Zip*	*Built Env.*	*People*	*Economy*	*Natural Env.*
West Point FD	42572 State Route 518	Lisbon	OH	44432	**X**			
Westgate MS	810 West Eighth Street	East Liverpool	OH	43920		**X**		
Whispering Pines Village	937 East Park Avenue	Columbiana	OH	44408		**X**		
Winona FD	4894 Whinnery Road	Winona	OH	44493	**X**			
Winona PO	32036 Winona Road	Winona	OH	44493	**X**			
YMCA	500 East 4th Street	East Liverpool	OH	43920				**X**
Zarbana Industries	41738 Easterly Drive	Columbiana	OH	44408			**X**	

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

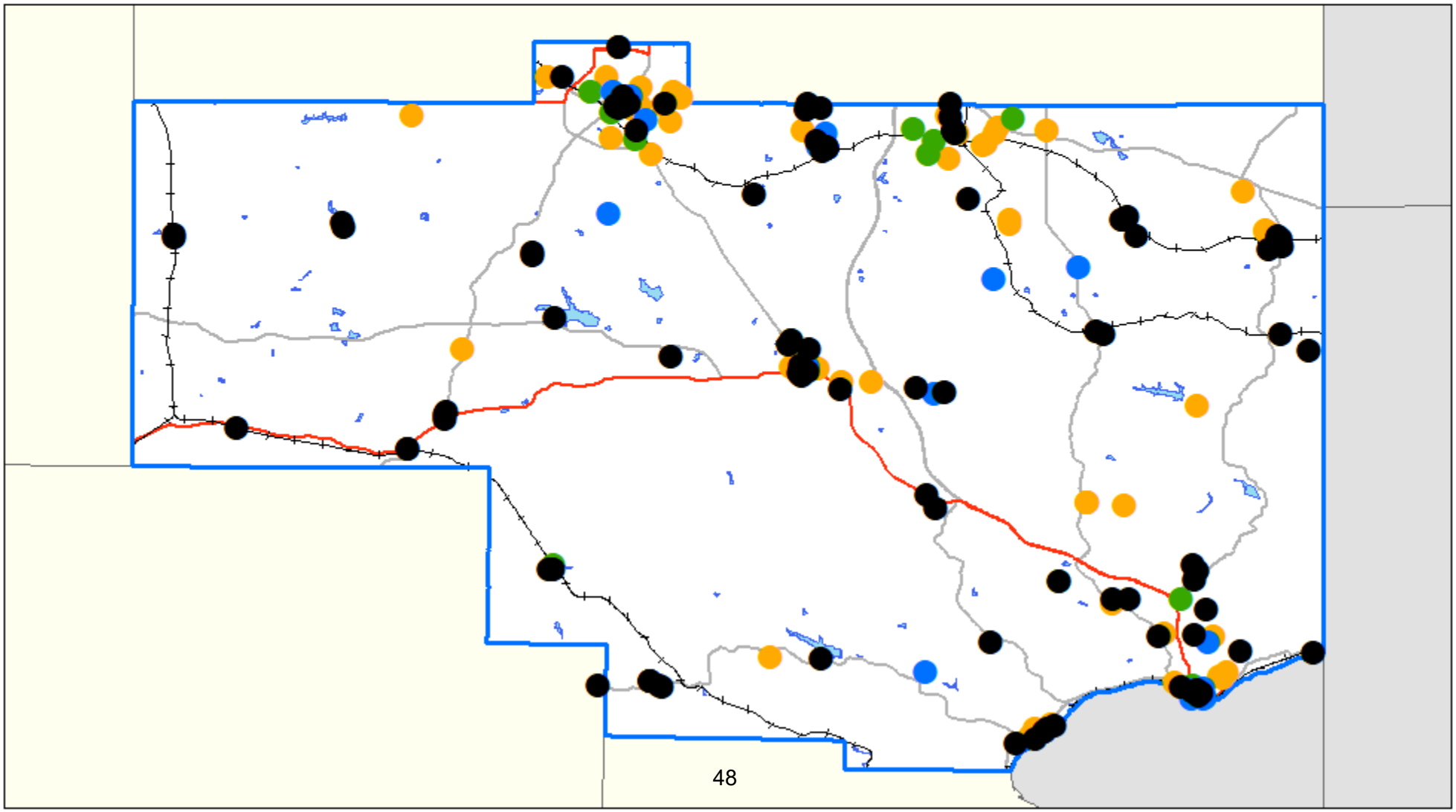
Figure 1.2.e: Columbiana County Asset Inventory Map

Data Source(s):
Participating Municipalities

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

- Assets: Built Environment
- Assets: Cultural & Natural
- Assets: Economy
- Assets: People





Development and Other Trends

§201.6(c)(2)(ii)(C)	[The plan should describe vulnerability in terms of] providing a general discussion of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Population Trends

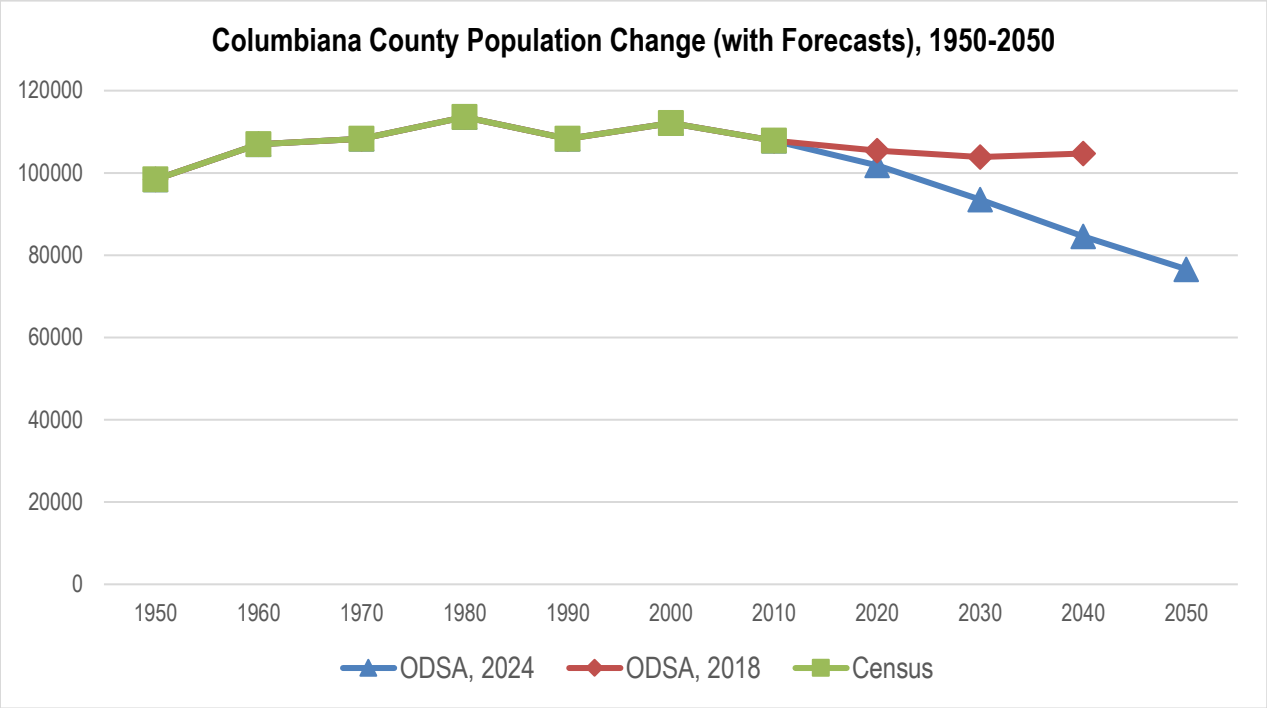
Many areas in the country's Rust Belt began experiencing population decline in the 1980s, though as noted above, Columbiana County's population grew slowly but steadily through 2000 before beginning its decline. Housing patterns have largely mirrored these population trends, with more vacant structures now appearing as the population continues to decrease. Aging demographics have also played a role in shaping population composition. In 1970, 11% of the population was 65 and older (U.S. Census Bureau, 1970), while in 2020, that percentage increased to 22.6% (U.S. Census Bureau, 2020), a change from 11,914 to 23,024 persons despite the overall decline in total population. This shift has created new demands for healthcare services, age-appropriate housing, and emergency response strategies tailored to an older population.

The Ohio Development Services Agency compiles county profiles which include population trends. Examining the change in the agency's forecasts from its 2018 county profile (used for the previous update of this plan) and the 2024 profile show a drastic change in outlook. Figure 1.2.f and Table 1.2.6 present the change.

Table 1.2.6

Columbiana County Population Change (with Forecasts), 1950-2050											
Source	*1950*	*1960*	*1970*	*1980*	*1990*	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Census	98,420	107,004	108,310	113,572	108,276	112,075	107,841	101,877			
ODSA, 2018								105,380	103,870	104,710	N/A
ODSA, 2024								101,877	93,544	84,587	76,596

Figure 1.2.f



The aging statistic cited above accounts for some of the population decline, and that accounting becomes clearer when looking at Figure 1.2.g at right, from the Ohio Development Services Agency, that shows the "natural change" and "net migration" components of the county's population change. Natural change (e.g., births and deaths) accounts for a far higher negative trend than does net migration (i.e., the number of people moving into the county).

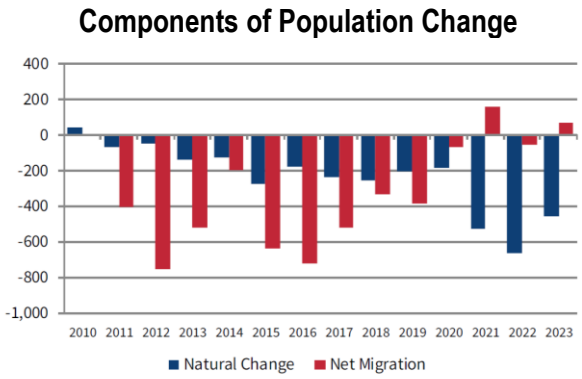


Figure 1.2.g

Housing Trends

The county's housing stock is older than the national average, with 34.5% of homes built before 1950 (Ohio Development Services Agency, 2024). These older homes present challenges in terms of energy efficiency, lead exposure, and structure resilience to extreme weather. Interestingly, residential construction has remained largely steady. Residential construction

averaged 66.5 units between 2013 and 2017 and 72.6 units between 2019 and 2023 (Ohio Development Services Agency, 2019, 2024). Table 1.2.7 shows the residential construction.

Table 1.2.7

Residential Construction, 2013-2023[2]										
Criterion	*2013*	*2014*	*2015*	*2016*	*2017*	*2019*	*2020*	*2021*	*2022*	*2023*
Total Units	30	16	50	90	80	83	94	63	72	51
Total Valuation ($X,000)	4,840	2,311	6,721	11,417	10,879	13,872	20,954	15,751	19,192	15,274
Single-Unit Buildings	28	16	27	32	28	47	64	57	51	31
Avg. Cost per Single Unit ($)	165,713	144,409	177,879	180,290	200,054	239,018	289,781	260,535	314,554	395,942
Multi-Unit Buildings	2	0	23	58	52	36	30	6	21	20
Avg. Cost per Multi-Unit ($)	100,000	N/A	83,391	97,367	101,496	73,278	80,267	150,000	150,000	150,000

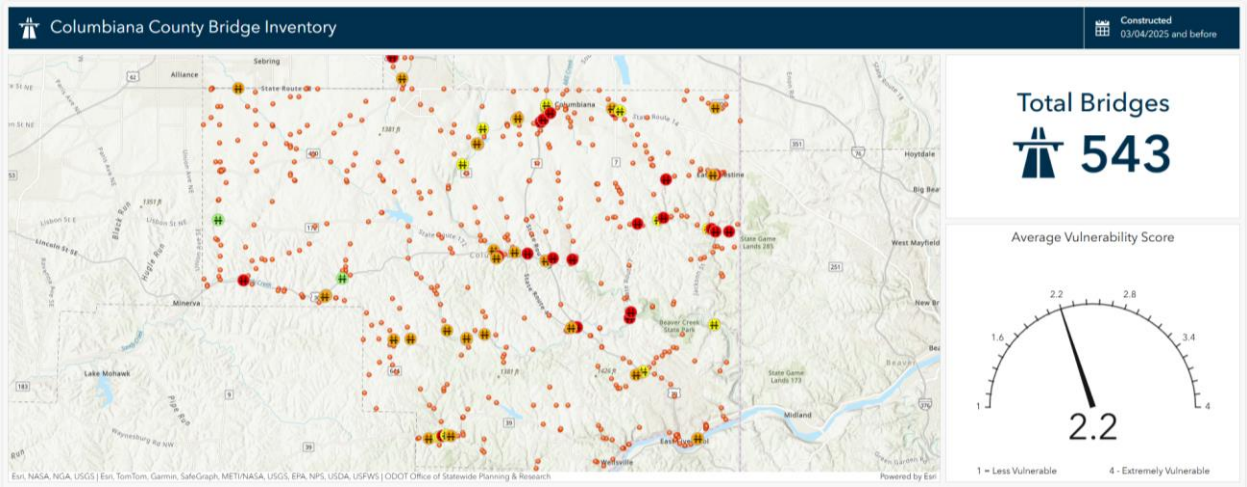
Housing policy in Columbiana County reflects the need to balance historic preservation, affordable housing development, and suburban expansion. The Ohio Housing Finance Agency (OHFA) has supported low-income housing tax credits (LIHTC) for new affordable housing units, particularly in Lisbon, Salem, and Columbiana (OHFA, 2025). The Columbiana County Land Bank has played a significant role in demolishing abandoned properties, rehabilitating salvageable homes, and stabilizing distressed neighborhoods (Columbiana County Land Bank, 2025). Programs that provide first-time homebuyer assistance and senior housing support have also helped maintain housing accessibility. However, the county continues to struggle with limited new housing construction, largely due to slow population growth and economic uncertainty.

Infrastructure Trends

Aging infrastructure represents another trend with which local officials must contend. Columbiana County's roadway network was largely developed during the mid-20th century as automobile dependence increased. Many roads and bridges are now reaching the end of their design life, requiring significant repairs and modernization. The Columbiana County GIS Department created a bridge inventory identifying vulnerability of the structures. It calculated an average vulnerability score of 2.2 out of 4 (where 4 = Extremely Vulnerable). Figure 1.2.h is a screen capture of the map; notice the density of red and orange dots, which indicate higher vulnerability for bridges.

[2] Data for 2018 appeared in a different version of the Ohio Development Services Agency's county profiles; planners used the 2018 and 2024 versions for this report.

Figure 1.2.h



The county also has aging water and sewer systems, particularly in the urban areas where the population was formerly centered, like East Liverpool and Wellsville. The state of rail infrastructure has also recently come under scrutiny following the Norfolk Southern derailment in East Palestine.

The built environment is influenced by the county's industrial history, particularly along the Ohio River corridor. Many of the industrial complexes and warehouses built during the late 19th and early 20th centuries remain, with some being repurposed for logistics, small-scale manufacturing, or retail. Repurposing these properties, though, creates challenges related to potential environmental contamination.

Economic Trends

The Ohio Development Services Agency (2024) compiles tracks changes in the various employment establishments of the county. Table 1.2.8 compares data from 2016 and 2022. The data shows an overall growth (though modest) in private sector employment as well as wage growth. However, average employment in several sectors fell, particularly in Information.

Table 1.2.8

Establishments, Employment, and Wages by Sector, 2016-2022 Comparison												
	Number of Establishments			Average Employment			Total Wages			Average Weekly Wage		
Sector	2016	% Change	2022	2016	% Change	2022	2016 ($)	% Change	2022 ($)	2016 ($)	% Change	2022 ($)
Private Sector	1,957	5.1	2,049	24,812	-5.5	23,329	848,506,312	19.7	1,043,639,906	658	26.7	860
Goods Producing	404	6.8	425	7,379	4.2	7,574	309,412,943	25.8	400,776,808	806	20.8	1,018
Natural Resources & Mining	43	12.2	46	379	-9.1	331	12,351,858	-15.7	11,680,930	327	-7.1	679
Construction	188	0.5	193	964	17.6	1,121	44,328,687	37.1	62,417,947	884	16.5	1,071
Manufacturing	173	11.4	185	6036	2.8	6,122	252,732,398	26.0	326,677,931	805	22.6	1,026
Service Producing	1,553	4.8	1,625	1,7433	-9.5	15,755	539,093,369	16.2	642,863,098	595	28.5	785
Trade, Transportation & Utilities	512	1.7	527	6036	-12.3	5236	201,611,565	12.5	231,135,104	642	28.2	849
Information	21	22.7	27	1,157	-32.3	107	6,899,923	22.3	9,443,421	845	81.9	1,704
Financial Services	160	2.6	160	720	-1.4	686	28,331,708	26.5	35,881,409	757	28.3	1,006
Professional & Business Services	234	23.9	295	1,720	0.5	1,770	63,105,992	39.4	92,630,825	706	38.8	1,006
Education & Health Services	255	-2.8	243	5,139	-13.2	4,445	178,084,572	7.5	194,816,505	666	24.0	843
Leisure & Hospitality	182	0.0	180	2,679	-7.9	2,510	32,888,409	19.2	41,501,952	236	29.3	318
Other Services	186	1.1	190	977	2.1	999	28,012,989	27.5	37,384,580	551	24.8	720
Federal Government				606	-6.8	565	39,187,271	6.5	43,190,111	1,244	14.1	1,469
State Government				326	-18.8	255	16,961,527	-0.6	15,798,547	1,001	22.5	1,192
Local Government				3,881	-0.8	3,820	143,688,978	18.2	172,729,173	712	19.3	870

Retail and commercial activity has shifted away from historic downtown districts toward highway-adjacent shopping centers and suburban-style retail corridors, particularly along US Route 30. These developments bring economic opportunities, typically in the service sector, but they can weaken traditional downtown districts, leaving vacant storefronts and struggling business districts (Columbiana County Port Authority, 2024). The Ohio River Valley has been a traditional home for many industrial operations when compared to other communities in eastern Ohio and western Pennsylvania. Columbiana County's efforts to bolster intermodal commodity transport may need to keep pace with similar investments in other communities (like Jefferson and Belmont Counties) (Ohio River Valley Institute, n.d.). To take full advantage of the Ohio River, not only would commodity transport facilities and capabilities along the river need to be upgraded and maintained, but roadway and railway infrastructure serving those areas should also be upgraded.

Generally, redevelopment efforts in Columbiana County have focused on revitalizing industrial corridors, downtown districts, and brownfield sites. The Columbiana County Port Authority has spearheaded projects aimed at redeveloping former industrial sites into logistics hubs and mixed-used developments (Columbiana County Port Authority, 2024). Recent media coverage has highlighted efforts to revitalize East Liverpool's downtown, with the Thompson and BOSS building projects (Jobs Ohio, 2024).

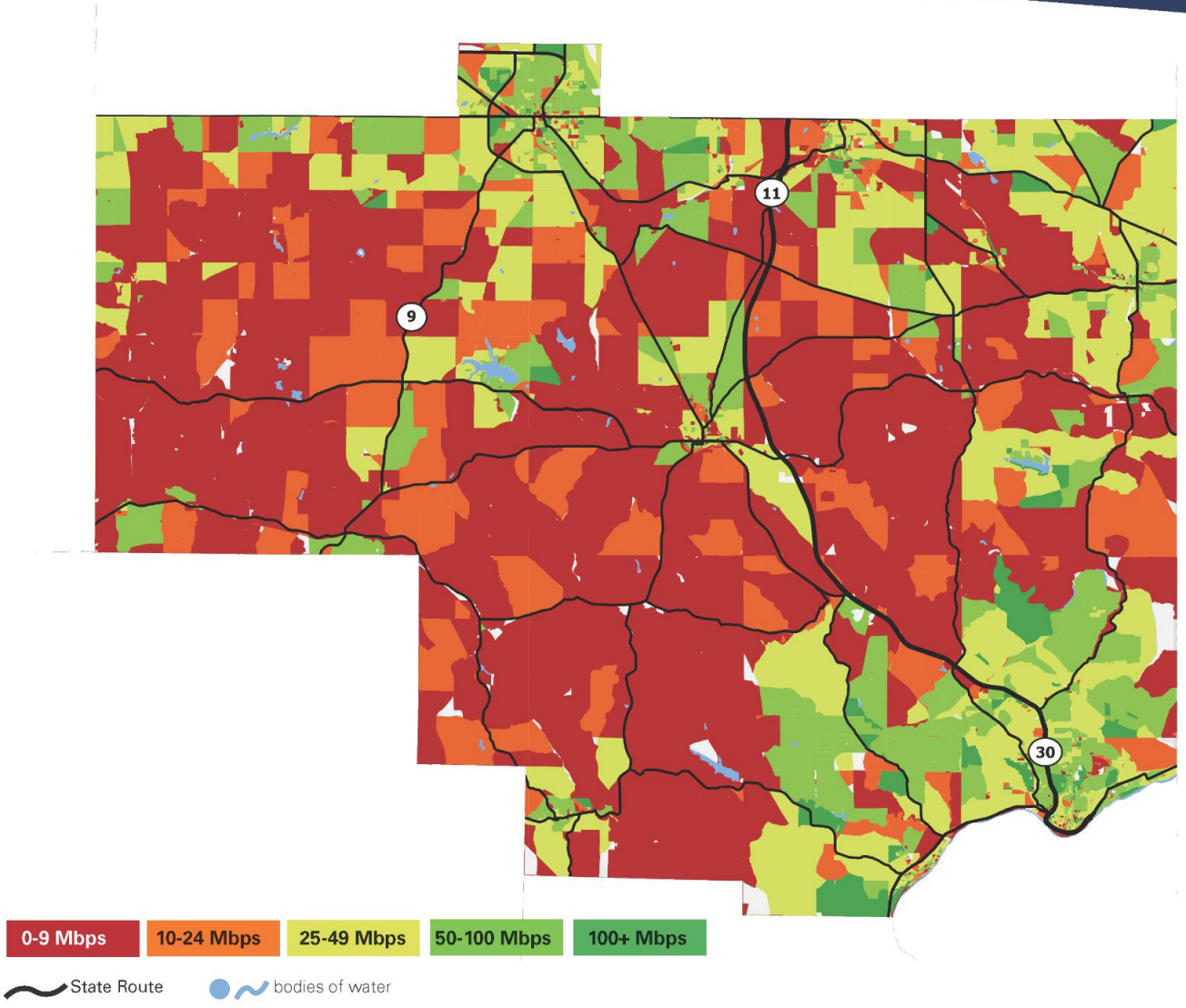
The county's energy landscape is also evolving. In the past 15 to 20 years, natural gas production has played a central role in regional economic activity (USEIA, 2022). Small-scale solar installations have become a debated topic, with several sites proposed in Columbiana County, but none built as of the composition of the 2025 update. (In 2023, wind and solar farms were banned in all the county's 18 townships.) As recently as February 28, 2025, companies announced intentions to build a solar power project that would be below the 50-megawatt threshold regulated by the state (Huff, 2025).

Broadband access is a critical component of economic and educational development, yet gaps persist in rural sections of the country (and county). Efforts to expand fiber-optic networks, supported by federal programs such as the Broadband Equity Access and Deployment (BEAD) initiative, aim to bridge the "digital divide" (NTIA, n.d.). Schools and businesses increasingly rely on high-speed internet, underscoring the need for infrastructure investments in the county. Comparisons with Carroll and Tuscarawas Counties reveal successful public-private partnerships that could serve as models for Columbiana County's broadband expansion efforts. BroadbandOhio (n.d.) produced maps to highlight broadband availability gaps. Figure 1.2.i below is BroadbandOhio's Columbiana County profile.

COLUMBIANA COUNTY *broadband profile*

BroadbandOhio

Ohio | Department of Development



67%
of the populated area

& 28%
of households

DO NOT HAVE ACCESS TO MINIMUM 25/3 Mbps

the county has .....

524 mi²
of populated area
▶ *348 mi² are unserved*

48,611 households
▶ *13,739 are below 25/3*

66%
below 10/1 Mbps
= 9,123 households

This map is based on a rating system developed by Reid Consulting Group, LLC. Data sources include Ookla Speedtest Intelligence® data licensed by InnovateOhio from the State of Ohio for the months of February 2020 through August 2021, carrier filings of available speeds with the FCC (Form 477), carrier reports of actual broadband deployments to USAC (HUBB), RDOF Phase 1 eligibility and E-911/LBRS household locations.†

1.0 INTRODUCTION

1.3 Capabilities

§201.6(b)(3)	Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.
§201.6(c)(4)(ii)	[This plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

This section discusses the capabilities present within Columbiana County that can support risk reduction. The county and the participating jurisdictions have many resources to implement mitigation activities, including complementary plans, development ordinances, available state and federal funding sources, and various materials to support educational outreach. These resources facilitate community resilience by supporting actions before, during, and after hazard occurrences.

Overview of Findings

This section presents the findings of the capability assessment; the table below summarizes the capabilities by county and municipality. Data sources for the summary included the discussions held during jurisdiction-specific meetings and web-based searches for existing ordinances.

Table 1.3.1

Jurisdictional Capabilities (Summary)								
Jurisdiction	*Planning Body / Commission*	*Comprehensive Plan*	*NFIP*	*Building Codes*	*Zoning Ordinance*	*SALDOs*	*Capital Budget*	*Public Works Budget*[2]
Columbiana County	YES	YES	YES	YES	YES	YES	NO	NO
Columbiana (City)	YES	NO	YES	YES	YES	YES	YES	YES
East Liverpool	YES	YES	YES	YES	YES	YES	NO	YES
East Palestine	YES	YES	YES	YES	YES	YES	NO	NO
Hanoverton	N/A	N/A	YES	N/A	N/A	N/A	NO	NO
Leetonia	YES	NO	YES	YES	YES	YES	NO	NO
Lisbon	YES	NO	YES	N/A	N/A	N/A	NO	NO
New Waterford	N/A	N/A	YES	YES	YES	YES	NO	NO
Rogers	N/A	N/A	YES	N/A	N/A	N/A	NO	NO
Salem	YES	YES	YES	YES	YES	YES	NO	NO

Jurisdictional Capabilities (Summary)								
Jurisdiction	*Planning Body / Commission*	*Comprehensive Plan*	*NFIP*	*Building Codes*	*Zoning Ordinance*	*SALDOs*	*Capital Budget*	*Public Works Budget*[2]
Salineville	N/A	N/A	YES	N/A	N/A	N/A	NO	NO
Summitville	NO	NO	NO	YES	NO	N/A	NO	NO
Washingtonville	N/A	N/A	YES	N/A	N/A	N/A	NO	NO
Wellsville	YES	YES	YES	YES	YES	YES	NO	NO

The capability assessment for the 2025 update yielded a more complete table than appeared in the 2019/2020 document (i.e., there were less "unknown" fields). However, the overall results suggest similar findings as in previous planning cycles, namely that capabilities for implementing risk reduction and mitigation initiatives are available in Columbiana County. Through inter-jurisdictional assistance, there could be capabilities to reduce risk available to all participating jurisdictions.

Capabilities Assessment

The remainder of this section considers the broad capability categories (i.e., planning and regulatory, administrative and technical, and financial) in more detail.

Planning and Regulatory Capability

The Columbiana County Office of Economic Development (CCOED) supports planning at a county level, and several municipalities have designated planning departments. Other partners, like the Columbiana County Port Authority and the Ohio Mid-Eastern Governments Association (OMEGA), support planning for development. Miscellaneous powers and duties include (but may not be limited to) the following.

- Promote planning
- Enter any land and make examinations and surveys
- Accept and use gifts and public or private grants for the performance of planning activities
- Enact, adopt, amend, and execute comprehensive or other development plans
- Adopt zoning regulations to control street congestion; promote health, public safety, and general welfare; provide adequate light and air; promote the conservation of natural resources; prevent environmental pollution; properly manage growth and development;

and promote or facilitate adequate transportation, water, sewerage, schools, recreation, parks, and other public facilities

- Recommend subdivision regulations to legislative bodies
- Support the preservation of historic structures

Though these entities do not directly coordinate hazard mitigation planning, their responsibilities for coordinating community-level and regional planning make them valuable resources for embedding actionable mitigation strategies into wider visions of the future.

COMPREHENSIVE PLANS

Comprehensive plans promote sound land use and cooperation among local governments to address planning issues. These plans serve as an official policy guide for influencing the location, type, and extent of future development by establishing the fundamental decision-making and review processes on zoning matters, subdivision and land development, land uses, public facilities, and housing needs over time. In Columbiana County, some documents, like the *Salem Area Sustainable Comprehensive Plan* (City of Salem et al., 2009), are traditional comprehensive plans; others, like the *Wellsville Strategic Plan* (Village of Wellsville, 2023), take a more implementation-forward focus. Still others focus on specific areas, like a downtown (Downtown East Liverpool, n.d.), or on specific topics, like transportation (OMEGA, 2020; OMEGA, 2024). All these documents represent an important capability, that being the ability to look forward and plan strategically.

Despite the availability of many plans, risk reduction appears more implied than explicitly discussed. Some deal with safety issues (e.g., the *OMEGA Regional Roadway Safety Plan* [OMEGA, 2021]), though the focus is on transportation safety. Similar references in the regional transportation plan (OMEGA, 2020) address transportation system resilience. East Palestine's visioning report (2023) implies risk reduction through resilience, and Salem's plan (City of Salem et al., 2009) implies it through a sustainability framework, community safety, and infrastructure integrity. More direct consideration of the hazards in this document in comprehensive plan updates as well as (for starters) the creation of a matrix to identify where the chapters of a traditional comprehensive plan should feature in the next update of this document could reinforce the mutual compatibility between not only the documents, but also the planning processes.

Table 1.3.2

Opportunities For Expanding and Improving Local Capabilities: Comprehensive Plans		
Jurisdictions	*Capability in Place*	*Considerations for Expansion or Improvement*
Columbiana County	YES	Expand discussions of resilience to include commonly occurring hazards; make plans readily available via the internet and other means.
East Liverpool	YES	Expand plan to include entire city and expand discussions of resilience to commonly occurring hazards. Even if there is a desire to sustain plan focus on revitalization and development, consider ways to ensure the resilience of said development or identify ways that developers could address nearby risks through their projects.
East Palestine	YES	Consider the creation of a traditional comprehensive plan; expand discussions of resilience to include commonly occurring hazards.
Salem	YES	Expand discussions of resilience to include commonly occurring hazards.
Wellsville	YES	Expand considerations of exposure to commonly occurring hazards for the projects identified by the strategic plan.
All Other Participating Jurisdictions (not otherwise listed):		Either compile a comprehensive plan or consider partnering with the county or other jurisdiction in the creation of a plan; ensure the plan includes a chapter on resilience and risk/exposure reduction for common hazards. Make the plan readily available to citizens.

The rest of the planning and regulatory subsection reviews specific ordinances. The narrative may make it seem that these ordinances exist as stand-alone documents for Columbiana County's jurisdictions; however, many are chapters within an overall title. For example, "flood damage reduction" appears as an element of a larger land use code (e.g., Village of Wellsville) or a building code (e.g., City of Columbiana). This cross-referencing and embedded nature is an already-realized opportunity for reinforcing the importance of risk reduction as an element of planned development.

BUILDING CODES

Building codes regulate standards for new construction and substantially renovated buildings. Communities can adopt standards that require resistant or resilient building design practices to address common hazard impacts. Participating jurisdictions utilize Ohio building codes, including the *2024 Ohio Existing Building Code,* the *2024 Ohio Building Code,* the *2019 Residential Code of Ohio*, and the *2017 Ohio Fire Code with January 2019 Errata*.

Planners reviewed a sampling of readily available building codes for Columbiana, East Liverpool, East Palestine, Leetonia, New Waterford, Salem, and Wellsville. Key similarities include references to model codes (like the IRC, though some codes listed older IRC or pre-IRC era references), explicit references to local enforcement machinery (like building inspectors, permitting processes, and fee schedules), and identifying the stricter standard as a conflict resolution mechanism.

Some of the reviewed building code titles included a flood damage reduction section (as noted above) that appears to function as the jurisdiction's floodplain management ordinance. Co-location of these topics reinforces the notion that regulating building construction, particularly in floodplains, can reduce risk. Some of these chapters within the building code call out flood resilience construction. Since the building codes for participating jurisdictions utilize the state's codes, the following is a listing of opportunities for expanding or improving the local capabilities of all participating jurisdictions, specifically regarding building codes.

- Revise codes to include uniform, up-to-date model code references (e.g., Residential Code of Ohio, 2024 IRC); prompt all participating municipalities to adopt the latest NEC and Ohio Building Code amendments that embed ASCE 7 wind and seismic language.
- Consider the addition of post-construction stormwater elements.
- Consider integration of wildfire and high-wind roof standards like ICC 500/600 criteria for critical facilities and requiring Class A roofing plus ember-resistant vents in wildland urban interface (WUI) fringe areas (see Section 2.2.13: Wildfire).

SUBDIVISION AND LAND USE DEVELOPMENT ORDINANCES

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

For the 2025 update, planners reviewed representative land use ordinances for seven municipalities (i.e., Columbiana, East Liverpool, East Palestine, Lisbon, New Waterford, Salem, and Wellsville) and the county, checking them for key similarities and differences. Key similarities include framing based on health and welfare, safety, and methodical (i.e., orderly) growth. The ordinances typically contain a two-track review system that distinguished between minor and major subdivisions (with requirements for each). Generally, the ordinances require bonding from developers to build or guarantee streets, drainage, and water and sewer elements. Finally, the ordinances reference ORC 711 for authority and tie subdivision layouts to the appropriate comprehensive plan mapping (as examples, see §1240.04 of Columbiana's ordinance and §1101.03 of Salem's ordinance).

The ordinances differ on the extent of extraterritorial coverage. For instance, Columbiana reviews land within 1.5 miles of its city limits (§1240.06), while East Palestine (§1224.04) and Salem (§1101.02) review a three-mile reach. East Palestine devotes a full subsection (§§1224.81-

91) with graded slope limits, benching, retaining walls, and driveway-grade caps. There are also differences in the stormwater requirements within the ordinances.

Access to this information varies widely by jurisdiction. In some instances, simple web searches can quickly yield the target information. In others, the municipality shares the information through its website. As an example, Figure 1.3.a comes from New Waterford's website, which contains links to sections of the village's land and use code as well as the county's land and subdivision regulations.

Figure 1.3.a



Still others utilize a repository website (e.g., American Legal Publishing). All these means of access are suitable, provided they are readily publicized to the jurisdiction's citizens.

The following list offers opportunities for strengthening subdivision and land use ordinances with respect to hazard mitigation and risk reduction.

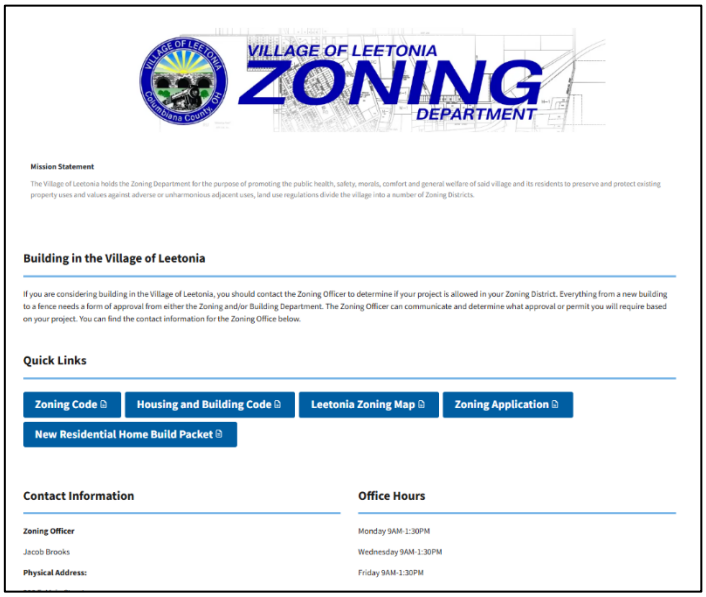
- Ensure cross-referencing with appropriate risk-targeting elements (e.g., floodplain management ordinances) to make risk reduction intents explicit.
- Consider creating a uniform drainage plan checklist.
- Consider language similar to the open space provisions in the county's ordinance as space for green infrastructure or other low-impact development options.

- Look for opportunities to regionalize hillside and steep-slope controls in relevant areas (see Section 2.2.8 below).
- Standardize inspection and maintenance language.

ZONING ORDINANCES

Zoning ordinances allow local communities to regulate the use of land to protect the interests and safety of the public. Zoning ordinances can address unique conditions or concerns within a given community. They may be used to create buffers between structures and high-risk areas, limit the type or density of development, or require land development to consider specific hazard vulnerabilities.

Figure 1.3.b



A snapshot of how Leetonia's Zoning Department makes information available to residents.

Planners reviewed several municipal zoning codes, and it is likely that those for whom copies of ordinances were not readily available have some level of zoning in place. There is consistency in the language of the ordinances reviewed for the 2025 update. For example, they use a similar district framework of residential, commercial, and industrial districts shown an official zoning map (e.g., Columbiana, §§1268-1290, Leetonia, Article 3). Each reviewed ordinance set forth a zoning officer, a board of zoning appeals, and amendment procedures. Where the ordinances diverge is with risk-specific language. Salem specifically addresses illicit-discharges through stormwater management language (§1186), and Leetonia includes specific language for steep-slope hazards (Section 1.02).

Table 1.3.3

Opportunities For Expanding and Improving Local Capabilities: Zoning Ordinances		
Jurisdictions	*Capability in Place*	*Considerations for Expansion or Improvement*
Columbiana County	YES	• Consider more explicit language addressing known risk areas. • Consider adding hazard-area overlays for site-specific hazards on zoning maps.

Opportunities For Expanding and Improving Local Capabilities: Zoning Ordinances		
Jurisdictions	*Capability in Place*	*Considerations for Expansion or Improvement*
Columbiana (City)	YES	• Consider more explicit language addressing known risk areas. • Consider adding hazard-area overlays for site-specific hazards on zoning maps.
East Liverpool	YES	• Consider more explicit language addressing known risk areas. • Consider adding hazard-area overlays for site-specific hazards on zoning maps.
East Palestine	YES	• Consider more explicit language addressing known risk areas. • Consider adding hazard-area overlays for site-specific hazards on zoning maps.
Hanoverton	N/A	• Consider making zoning information readily available via the Internet.
Leetonia	YES	• Consider adding hazard-area overlays for site-specific hazards on zoning maps.
Lisbon	N/A	• Consider making zoning information readily available via the Internet.
New Waterford	YES	• Consider more explicit language addressing known risk areas. • Consider adding hazard-area overlays for site-specific hazards on zoning maps.
Rogers	N/A	• Consider making zoning information readily available via the Internet.
Salem	YES	• Consider adding hazard-area overlays for site-specific hazards on zoning maps.
Salineville	N/A	• Consider making zoning information readily available via the Internet.
Summitville	NO	• Consider the creation of a zoning ordinance.
Washingtonville	N/A	• Consider making zoning information readily available via the Internet.
Wellsville	YES	• Consider adding hazard-area overlays for site-specific hazards on zoning maps.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) PARTICIPATION & FLOODPLAIN MANAGEMENT ORDINANCES

The NFIP is a FEMA-managed program designed to provide flood insurance to property owners, renters, and businesses. The program intends to help those property owners recover more quickly following a flood event. The NFIP, though, is not *just* an insurance program. Program representatives work with communities to adopt and enforce floodplain management regulations to lessen the exposure to damage in flood-prone areas. All but one of the participating jurisdictions in the county participate in the NFIP. The following table outlines NFIP policies in force[1] throughout Columbiana County.

[1] This table is a recreation of the spreadsheet available from the NFIP. Some policies are flagged for a county, but the community name is unknown. In those cases, this table will report "Unknown."

Table 1.3.4

NFIP Policies in Force, Participating Jurisdictions			
Community Name (Number)	*Policies in Force*	*Total Coverage*	*Total Written Premium + FPF*
Columbiana County (390076)	40	$7,059,000	$48,420
Columbiana City (390077)	11	$2,379,000	$8,350
East Liverpool (390078)	11	$3,414,000	$36,112
East Palestine (390079)	38	$7,324,000	$33,800
Hanoverton (390082)	5	$533,000	$5,781
Leetonia (390084)	7	$1,213,000	$15,886
Lisbon (390085)	5	$1,106,000	$10,922
New Waterford (390663)	1	$210,000	$723
Rogers (390645)	No data.	No data.	No data.
Salem (390086)	5	$2,675,000	$7,246
Salineville (390628)	2	$155,000	$4,151
Washingtonville (390087)	2	$290,000	$1,371
Wellsville (390088)	7	$1,481,000	$9,169

Through the administration of floodplain ordinances, jurisdictions can ensure that all new construction or substantial improvements to existing structures located in the floodplain are flood-proofed, dry-proofed, or built above anticipated flood elevations. Floodplain ordinances may also prohibit development in certain areas. The NFIP establishes minimum ordinance requirements that must be met for that community to participate in the program. However, a community is permitted and (in fact) encouraged to adopt standards that exceed NFIP requirements. Thirteen of the 14 participating jurisdictions within the county participate in the NFIP and have floodplain regulations in place. The exception is the Village of Summitville, which has no special flood hazard area (NSFHA).

Floodplain management ordinances throughout Columbiana County are similar. Planners reviewed seven ordinances individually as part of the 2025 update; all seven selected jurisdictions (i.e., Columbiana, East Liverpool, East Palestine, Lisbon, New Waterford, Salem, and Wellsville) adopted the Ohio template ordinance. They share common definitions (base flood elevation [BFE], flood protection elevations [FPE], substantial damage [SubD], and substantial improvements [SubI]), the 50% market value threshold, and permitting, variance, and enforcement structures. The reviewed ordinances put forth several flood resilience standards, like lowest-floor elevation to FPE, utility elevation and protection, engineered openings, anchoring, the use of flood-resistant materials, dry-floodproofing options for non-residential construction, and no-rise requirements in mapped floodways.

There are important differences worth nothing, though. Freeboard/FPEs are different. The FPE appears as zero feet in Columbiana's, East Palestine's, and Salem's ordinances, while it is two feet in East Liverpool's and Lisbon's (Zone A) ordinances. The FPE is three feet in Wellsville's ordinance. While the no-rise language appeared in all reviewed ordinances, the means for determining the floodway vary. East Liverpool and New Waterford use alternative analysis language allowing rises only with documented upstream concurrence. Lisbon and New Waterford specify a size cap for relief (i.e., 600 sq. ft.), while the other reviewed ordinances did not specify size caps. New Waterford's ordinance fixes a 30-day decision deadline as part of its permit timing and coordination, while the other ordinances simply required reference measures in place prior to permit issuance.

Additional variance lies with the SubD and SubI practices. Columbiana, East Liverpool, East Palestine, and Salem follow the model template language: their floodplain administrator makes 50% calculations using pre-damage market values. These municipalities advise owners via violation/permit notices. For Wellsville, the same 50% language appears, though its ordinance places the burden of submitting cost documentation to applicants and empowers the village's floodplain administrator to obtain independent appraisals. In New Waterford, the floodplain administrator performs post-event inspections and must attempt direct contact with property owners, plus issue press releases and public information materials before issuing permits.

Planners also identified instances where local ordinances exceed minimum NFIP standards. They are as follows (and this is a non-exhaustive list; there may be others in ordinances not reviewed).

- East Liverpool: Two-foot freeboard; explicit no-rise floodway rule; mandatory engineered openings even when the enclosure is less than or equal to 300 sq. ft.
- Lisbon: Two-foot freeboard where FEMA provides no BFE
- New Waterford: Two-foot freeboard where FEMA provides no BFE; community-wide two-foot freeboard definition plus no-rise floodway rule; 30-day permit clock
- Wellsville: Three-foot freeboard

The following table identifies the current map date for the jurisdictions in Columbiana County (FEMA, 2022).

Table 1.3.5

Current Effective Map Date & Floodplain Administrator (per NFIP Participation)		
Jurisdiction	*Date*	*Floodplain Administrator*
Columbiana County	05/02/2012	Columbiana County Soil & Water Conservation District SWCD Program Coordinator
Columbiana (City)	05/02/2012 (M)	Columbiana City Manager
East Liverpool	05/02/2012 (M)	East Liverpool Director of Planning
East Palestine	05/02/2012 (M)	East Palestine Village Manager
Hanoverton	05/02/2012 (M)	Hanoverton Mayor
Leetonia	05/02/2012 (M)	Leetonia Village Administrator
Lisbon	05/02/2012 (M)	Lisbon Mayor
New Waterford	05/02/2012 (M)	New Waterford Village Administrator
Rogers	05/02/2012 (M)	Rogers Mayor
Salem	05/02/2012 (M)	Salem City Service Director
Salineville	05/02/2012	Salineville Fire Chief
Washingtonville	05/02/2012 (M)	Washingtonville Mayor
Wellsville	04/05/2006	Wellsville Cemetery/Floodplain Administrator

Participating jurisdictions acknowledge that, in most cases, flooding is the primary hazard causing damage in their communities. Despite a robust floodplain management capability countywide, there are opportunities to strengthen the capability.

Table 1.3.6

Opportunities For Expanding and Improving Local Capabilities: Floodplain Management		
Jurisdictions	*Capability in Place*	*Considerations for Expansion or Improvement*
All Participating Jurisdictions (less Summitville)	Yes	• Add measures beyond minimum requirements, such as adopting a minimum two-foot freeboard. • Make the floodplain management ordinance more readily available (e.g., via the jurisdiction's website). • Clarify SubI costs as being one-time or cumulative; track cumulative SubI improvements that identify instances where multiple smaller permits collectively exceed 50%. • Create public-facing SubD/SubI guidance. • Consider critical facility siting in ordinances (which appeared in only East Liverpool's ordinance [of the ones planners reviewed for the 2025 update]). • Add a local in-construction inspection capability. • Add language addressing compensatory storage and low-impact stormwater design.

FIRE PREVENTION

Finally, planners reviewed several local fire prevention codes[2] since Columbiana County's steering committee added wildfire as a hazard during the 2025 update. These ordinances focus heavily on the built environment. While planners identified an opportunity to standardize Ohio Building Code/Residential Code references, the primary focus of their analysis was identifying specific measures related to wildfires (like an identification of wildland-urban interface [WUI] fringe areas). There was limited reference to these WUI areas. Opportunities for improvement would thus include adding WUI language and, perhaps, ignition-resistant material requirements/recommendations for roofing and siding in fringe areas. The International Wildland-Urban Interface Code could serve as a resource.

Administrative and Technical Capability

"Administrative capability" refers to the adequacy of departmental and personnel resources for implementing mitigation-related activities. "Technical capability" relates to the adequacy of local government employees' knowledge and technical expertise to effectively execute mitigation activities (or the ability to contract outside resources for this expertise). Common examples of skill sets and technical personnel for hazard mitigation include planners with knowledge of land development/management practices, engineers or professionals trained in construction practices related to buildings or infrastructure (e.g., building inspectors), planners or engineers with an understanding of natural and human-caused hazards, emergency managers, floodplain managers, land surveyors, scientists familiar with hazards in the community, staff with the education or expertise to assess community vulnerability to hazards, personnel skilled in geographic information systems, resource development staff or grant writers, and fiscal staff to handle complex grant application processes. The participating municipalities vary widely on how many of these resources are on their paid staff, though most referenced access to county departments and regional and state entities that could assist.

The Columbiana County Planning Department, municipal planning departments, the Columbiana County Port Authority, and the Ohio Mid-Eastern Governments Association (OMEGA) provide technical assistance to member governments. State agencies that can provide technical assistance for mitigation activities include, but are not limited to:

- Ohio Department of Development,
- Ohio Department of Natural Resources (ODNR),

[2] Planners reviewed fire prevention codes for Columbiana, East Liverpool, East Palestine, Lisbon, New Waterford, and Salem.

- Ohio Emergency Management Agency (OEMA),
- Ohio Environmental Protection Agency (OEPA), and
- OhioRISE (Resilience through Integrated Systems and Excellence).

Federal agencies which can provide technical assistance for mitigation activities include, but are not limited to:

- U.S. Army Corps of Engineers (USACE)
- U.S. Department of Agriculture (USDA)
- U.S. Department of Homeland Security (USDHS), Federal Emergency Management Agency (FEMA)
- USDHS/FEMA Emergency Management Institute (EMI)
- U.S. Department of Housing and Urban Development (HUD)
- U.S. Economic Development Administration (USEDA)
- U.S. Environmental Protection Agency (USEPA)
- U.S. Small Business Administration (SBA)

Financial Capability

The decision and capacity to implement mitigation-related activities often depend on funding availability. While some mitigation actions are less costly than others, money must be available locally to implement policies and projects. Financial resources are particularly important if communities are trying to take advantage of state or federal mitigation grant funding opportunities that require local-match contributions. Most jurisdictions do not have dedicated funds set-aside for risk reduction purposes, particularly in an area where development trends such as out-migration potentially constrain local budgets. Still, participating municipalities recognize the value of and need to reduce risk and pointed to entities like the Columbiana County Emergency Management Agency, Columbiana County Office of Economic Development, and the Columbiana County Port Authority as resources to support local entities in identifying potential funding for risk reduction projects.

The cities of Columbiana and East Liverpool indicated they have funds available for risk reduction projects in their regular public works budgets. Often, public works projects address critical infrastructure, whether via maintenance or significant upgrade. They improve service delivery, water quality, service reliability, etc., which indirectly strengthen resilience and reduce risk. Columbiana also identified the potential for the use of capital funds for risk reduction where priorities align.

Generally, financial capabilities are limited in the county. Therefore, grant or loan programs will be crucial to the completion of significant mitigation projects. State programs that may provide financial support for mitigation activities include but are not limited to the following.

Table 1.3.7

State Programs with Potential Financial Support for Mitigation Activities		
Program	*Notes*	*Relevant Hazard(s)*
319 Nonpoint Source Program Ohio Environmental Protection Agency	Grant funds from the Federal Clean Water Act Section §319(h) to fund projects to help reduce water quality impairments caused by nonpoint sources. Funds can be used for staff, planning activities, operating costs, outreach and education, and additional grant opportunities (AGOs). The maximum reimbursement is 60% of the total project cost; there must be a 40% non-federal match. Administrative, overhead, and indirect costs cannot exceed 10% of the grant award. There is a 20% limit on grant funds for non-implementation activities such as planning and monitoring.	Flooding Hazardous Materials Incident (i.e., contamination)
Brownfields Remediation Program Ohio Environmental Protection Agency	Provides grants for the cleanup of brownfield sites, to assist in the remediation of hazardous substances or petroleum at an industrial, commercial, or institutional property. Remediation includes acquisition of a brownfield, demolition performed at a brownfield, and the installation or upgrade of the minimum amount of infrastructure necessary to make a brownfield site operational for economic development activity.	Hazardous Materials Incident
Emergency Management Performance Grant (EMPG) Program Ohio Emergency Management Agency	Reimbursement for expenditures related to operating an emergency management program in local communities (focused on all phases of emergency management).	All Hazards
Hazardous Materials Emergency Preparedness (HMEP) Program Ohio State Emergency Response Commission	Grant funds to support planning for transportation-based hazardous materials emergencies.	Hazardous Materials Incident
Non-Profit Security Grant Program (NSGP) Ohio Emergency Management Agency	Grant funds for physical and cybersecurity enhancements and other security-related activities to non-profit organizations at high risk of terrorist or other extremist attack.	Cyber Incidents
State Homeland Security Grant Program (SHSP) Ohio Emergency Management Agency	Risk-based grants to support local efforts in preventing, protecting against, mitigating, responding to, and recovering from acts of terrorism and other threats.	Cyber Incidents

Federal programs that may provide financial support for mitigation activities include but are not limited to the following.

Table 1.3.8

Federal Programs with Potential Financial Support for Mitigation Activities		
Program	*Notes*	*Relevant Hazard(s)*
Community Development Block Grant (CDBG) U.S. Dept. of Housing & Urban Development	CDBG-MIT grant funds enable communities to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses.	Natural Hazards
Emergency Conservation Program U.S. Department of Agriculture	Matching grant funds to repair damage to farmlands and to put in place water conservation measures during severe drought.	Drought Flooding Severe Thunderstorms & Hail Severe Wind & Tornado
Emergency Watershed Protection Program USDA Natural Resources Conversation Service	Technical assistance and grant funds to help relieve imminent threats to life and property that impair a watershed. Eligible activities can include debris removal from streams channels, culverts, and bridges; streambank protection; correcting damaged drainage facilities; establishing vegetative cover on eroded lands; repairing levees and structures; repairing certain conservation practices; or EWP buyouts.	Flooding Severe Thunderstorms & Hail Tornadoes Wildfire Winter Storms
Flood Mitigation Assistance (FMA) Program Federal Emergency Management Agency	Grant funds (via a competitive program) to states and local governments to eliminate or reduce the risk of repetitive flood damage to buildings insured by the NFIP.	Flooding
Hazard Mitigation Grant Program (HMGP) Federal Emergency Management Agency	Grant funds to state, local, tribal, and territorial governments to develop hazard mitigation plans or rebuild in a way that reduces future losses. Available after a Presidentially-declared disaster, HMGP funds also often fund mitigation projects such as acquisition, elevation, etc.	Natural Hazards
High-Hazard Potential Dams (HHPD) Program Federal Emergency Management Agency	Grant funds for technical, planning, design, and construction assistance to rehabilitate eligible high-hazard potential dams.	Dam & Levee Failure
Individuals and Households Program (IHP) Federal Emergency Management Agency	Financial assistance and direct services to eligible individuals and households affected by a disaster; regarding mitigation, IHP can help eligible homeowners repair or rebuild stronger, more durable homes.	Natural Hazards
Non-Insured Crop Disaster Assistance Program (NAP) U.S. Department of Agriculture	Grant funds to producers of non-insurable crops when low yields, loss of inventory, or prevented planting occur due to natural disasters.	Natural Hazards
Repetitive Flood Claims (RFC) Program Federal Emergency Management Agency	Grant funds to reduce flood damages to insured properties that have had one or more claims with the NFIP.	Flooding

Federal Programs with Potential Financial Support for Mitigation Activities		
Program	*Notes*	*Relevant Hazard(s)*
Section 108 Loan Guarantee Programs U.S. Dept. of Housing & Urban Development	Loan program that allows CDBG recipients to leverage grant allocations to access low-cost, flexible financing for economic development, housing, public facilities, and infrastructure projects.	Natural Hazards (for purposes of the mitigation plan)
Severe Repetitive Loss (SRL) Program Federal Emergency Management Agency	Grant funds to states, territories, and local governments to reduce or eliminate the long-term risk of flood damage to severe repetitive loss properties insured under the NFIP.	Flooding
Weatherization Assistance Program (WAP) U.S. Department of Energy	Administered at the state level (through the Ohio Home Weatherization Assistance Program [HWAP]); assists income-eligible homeowners and renters in reducing heating and cooling costs through energy conservation measures. In Columbiana County, the Community Action Agency of Columbiana County is in the weatherization service network.	Extreme Temperatures Severe Thunderstorms & Hail Severe Winter Storm

2.0 RISK ASSESSMENT

"A risk assessment is a robust, data-driven analysis. It explains what might happen. It also finds where the local jurisdiction is vulnerable to hazards" (FEMA, 2025b, p. 42). This section contains information on identified hazards that threaten the county and the vulnerability of the political divisions in the county as it relates to their assets.

2.0 RISK ASSESSMENT

2.1 Identify Hazards

§ 201.6(c)(1)	[The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

This section identifies the hazards included in the *Columbiana County Hazard Mitigation Plan*. Planners used several research methods to identify the hazards to which the county is susceptible, and the steering committee validated the research with the members' experiences living and working in the area. When meeting with participating jurisdictions one-on-one, representatives from those jurisdictions provided context on this list from their perspectives, further validating the list. This process led to the inclusion of the following 13 hazards.

- Cyber incidents
- Dam and levee failure
- Drought
- Earthquake
- Extreme temperatures
- Flooding
- Hazardous materials incident
- Landslides
- Public health emergency
- Severe thunderstorms and hail
- Severe wind and tornado
- Severe winter storm
- Wildfires

Though the list looks very similar to those in previous versions of Columbiana County's plan, the steering committee's discussion surrounding hazards was robust. "Wildfire" and "cyber incidents" appear as new hazards in the 2025 update. Members considered fires and other hazards that may occur because of development in the county (specifically the development of large commercial solar energy fields). With a solar field, panels could overheat, potentially igniting a fire in the grasses around the panels. A fire may also damage lithium-ion batteries. The fire aspect of the solar development discussion noted that the development itself was not a hazard, but the new and different opportunity for fires resulting from that development could be a hazard. That distinction appealed to steering committee members because wildfires were not included in previous versions of the plan. As such, committee members included it in this update.

Committee members also noted cyber incidents as becoming priority concerns amongst local government entities, businesses, medical facilities, schools, etc. These entities work on

plans and other protective measures regularly. As a result, attacks are more and more sophisticated. Though a somewhat dissimilar hazard than others in the plan, the committee opted to house a cyber discussion in this document.

Planners utilized additional sources as lists to ensure the steering committee's consideration of a full range of hazard types. FEMA's National Risk Index (NRI) (2023) summarizes risks to communities from a range of hazards, including the following.

- Avalanche
- Coastal Flooding
- Cold Wave
- Drought
- Earthquake
- Hail
- Heat Wave
- Hurricane
- Ice Storm
- Landslides
- Lightning
- Riverine Flooding
- Strong Wind
- Tornado
- Tsunami
- Volcanic Activity
- Wildfire
- Winter Weather

Columbiana County's committee included most of these hazards when considering several consolidations. *Drought*, *earthquake*, *landslides*, and *wildfire* appear in this plan verbatim, and *riverine flooding* appears as an expanded consideration with flash flooding. Regarding weather hazards, *cold waves* and *heat waves* will appear under "extreme temperatures," *hail* and *lightning* will appear under "severe thunderstorms and hail," *strong wind* and *tornado* under "severe wind and tornado," and *ice storm* and *winter weather* under "severe winter storm." *Hurricane* will not appear in Columbiana County's plan by name, but the "severe thunderstorms and hail" and "severe wind and tornado" profiles will recognize the severe storms in the county that were the remnants of Atlantic hurricanes. The committee did not include the following FEMA-identified hazards.

- Avalanche: FEMA's NRI notes this hazard does not apply to Columbiana County.
- Coastal Flooding: Columbiana County does not contain coastlines; further, the NRI notes that this hazard does not apply.
- Tsunami: The NRI notes this hazard does not apply to Columbiana County.
- Volcanic Activity: The NRI notes this hazard does not apply to Columbiana County.

Another source was the state hazard mitigation plan. In that document, the Ohio Emergency Management Agency (OEMA) identified 14 hazards (OEMA, 2024). Table 2.1.1 compares the hazards from the state plan with the list generated by the steering committee above.

Table 2.1.1

Included Hazard Types – Comparison of Columbiana County and Ohio Plans		
Hazard	*In CC Plan? (Y/N)*	*Notes*
Flood	Y	Columbiana County Profile Title: Flooding
Tornado	Y	Columbiana County Profile Title: Severe Wind & Tornado Twenty-one (21) tornadoes have occurred in Columbiana County, which effectively documents the risk. Though these tornadoes were unique wind events, steering committee members opted to keep all high wind hazards under a single heading.
Winter Storm	Y	Columbiana County Profile Title: Severe Winter Storm
Landslide	Y	Columbiana County Profile Title: Landslides
Dam/Levee Failure	Y	Columbiana County Profile Title: Dam & Levee Failure
Wildfire	Y	Columbiana County Profile Title: Wildfire
Seiche/Coastal Flooding	N	OEMA included this hazard because of Lake Erie to the north. Columbiana County does not border Lake Erie.
Earthquake	Y	Columbiana County Profile Title: Earthquake
Coastal Erosion	N	See notes above regarding “Seiche/Coastal Flooding.”
Drought	Y	Columbiana County Profile Titles: Drought
Severe Summer Storms	N	Columbiana County Profile Title: Severe Thunderstorms & Hail The definition of “severe summer storms” in the OEMA plan is the same as Columbiana County’s definitions despite the headings being different.
Invasive Species	N	Columbiana County contains agriculture and wooded areas. Local officials are aware of existing invasive species, including the presence of the top ten as noted in the OEMA plan. Local officials are committed to support state (and federal) efforts in education and containment but noted no significant local resources for addressing the hazard.
Land Subsidence	N	Columbiana County notes the presence of abandoned mines in the central portions of the county and is aware of site-specific instances of subsidence. However, landslides are a more pressing “mass movements” hazard, and the steering committee opted to address it as a priority in the 2025 update.

Included Hazard Types – Comparison of Columbiana County and Ohio Plans		
Hazard	*In CC Plan? (Y/N)*	*Notes*
Extreme Heat	Y	Columbiana County Profile Title: Extreme Temperatures Extreme heat is a concern for Columbiana County, but committee members noted that extreme cold temperatures are an equal concern. Further, committee members noted greater resource constraints, particularly for serving vulnerable populations, during extreme cold events. As such, the "extreme temperatures" profile covers both ends of the temperature spectrum.

Columbiana County's list is very similar to the state's list. The two notable deviations, invasive species and land subsidence, represent the county's efforts to craft an actionable plan focusing on those hazards that are most visible and impactful. A final step in validating the committee's thoughts comes by reviewing disaster declarations for the county (FEMA, 2024a). Table 2.1.2 denotes the disaster declarations (n = 25). For declarations referenced by the U.S. Small Business Administration (SBA) (SBA Office of Disaster Assistance, 2024) and the U.S. Department of Agriculture's Farm Service Agency (FSA) (USDA FSA, 2024), "P" refers to a "primary" designation, meaning Columbiana County was directly impacted, and "C" refers to those counties designated as "contiguous." A review of the SBA database, though, revealed no declarations for Columbiana County since 2012. References to these declarations appear, as appropriate, in the profiles in Section 2.2 below.

Table 2.1.2

Disaster Declarations Impacting Columbiana County				
Year	*Number*	*Incident Category*	*Declaration Title*	*In CC Plan? (Y/N)*
1977	EM-3029-OH	Snowstorm	Snowstorms	Y
1978	EM-3055-OH	Snowstorm	Blizzards & snowstorms	Y
1980	DR-630-OH	Flood	Severe storms & flooding	Y
1985	DR-738-OH	Tornado	Severe storms & tornadoes	Y
1990	DR-870-OH	Severe Storm	Severe storms, tornadoes, & flooding	Y
1992	DR-951-OH	Severe Storm	Severe storms, tornadoes, & flooding	Y
1996	DR-1097-OH	Flood	Severe storms and flooding	Y
2003	DR-1478-OH	Severe Storm	Severe storms and flooding	Y
2003	DR-1484-OH	Tornado	Tornadoes, flooding, severe storms, and high winds	Y
2004	DR-1519-OH	Severe Storm	Severe storms and flooding	Y
2004	DR-1556-OH	Severe Storm	Severe storms and flooding	Y
2005	DR-1580-OH	Severe Storm	Severe winter storms, flooding, and mudslides	Y

Disaster Declarations Impacting Columbiana County				
Year	*Number*	*Incident Category*	*Declaration Title*	*In CC Plan? (Y/N)*
2005	EM-3250-OH	Tropical Storm/Hurricane	Hurricane Katrina evacuation	N
2012	EM-3346-OH	Severe Storm	Severe storms	Y
2012	S3384 (FSA)	Drought	(Columbiana Co. = P) Drought, excessive heat	Y
2015	S3934 (FSA)	Flood	(Columbiana Co. = P) Excessive rain, flash flooding, flooding, excessive heat, landslides, mudslides, high winds, hail, and lightning	Y
2016	S4165 (FSA)	Drought	(Columbiana Co. = C) Drought	Y
2018	DR-4360-OH	Flood	Severe storms, landslides, and mudslides	Y
2019	DR-4447-OH	Tornado	Severe storms, straight-line winds, tornadoes, flooding, landslides, and mudslides	Y
2019	S4539 (FSA)	Flood	(Columbiana Co. = P) Excessive rain and flooding	Y
2019	S4541 (FSA)	Flood	(Columbiana Co. = C) Excessive rain and flooding	Y
2020	EM-3457-OH	Other/Biological	COVID-19	Y
2020	DR-4507-OH	Other/Biological	COVID-19 pandemic	Y
2024	S5747 (FSA)	Drought	(Columbiana Co. = C) Drought – FAST TRACK	Y
2024	S5767 (FSA)	Drought	(Columbiana Co. = C) Drought – FAST TRACK	Y

The list of declarations also suggests that the hazards identified by the steering committee are appropriate; all incident types resulting in declarations (except for the Hurricane Katrina evacuation, a special consideration) appear in the list. For clarity, mudslides will be included in the landslides profile.

2.0 RISK ASSESSMENT

2.2 Describe Hazards

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

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

§201.6(c)(2)(i)	A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

- Impacts and Vulnerability: Describes the impacts on different topics such as health, the environment, or infrastructure that may result from the hazard as well as specific populations that may be vulnerable.[1]

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

- Previous Occurrences: Summarizes significant past events related to the hazard.

§201.6(c)(2)(i)	A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

- Loss and Damages: Outlines the methods used for loss amounts (of deaths, injuries, and property/crop damage depending on available information) and estimates based on historical data and projections. Many of the loss estimates in the profiles that follow utilize

[1] The "Impacts and Vulnerability" section includes a consideration of the county's social vulnerability to each of the identified hazards. These discussions vary in length and depth as per both the nature of the hazard itself and the data available. See below for a discussion of specific social vulnerability variables as they are available in the data.

the National Risk Index (NRI) (FEMA, 2023) as a data source, and the NRI presents data at the Census tract level. As such, Figure 2.2.a shows the Census tracts of the county.

§201.6 (c)(2)(ii)(B)	An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

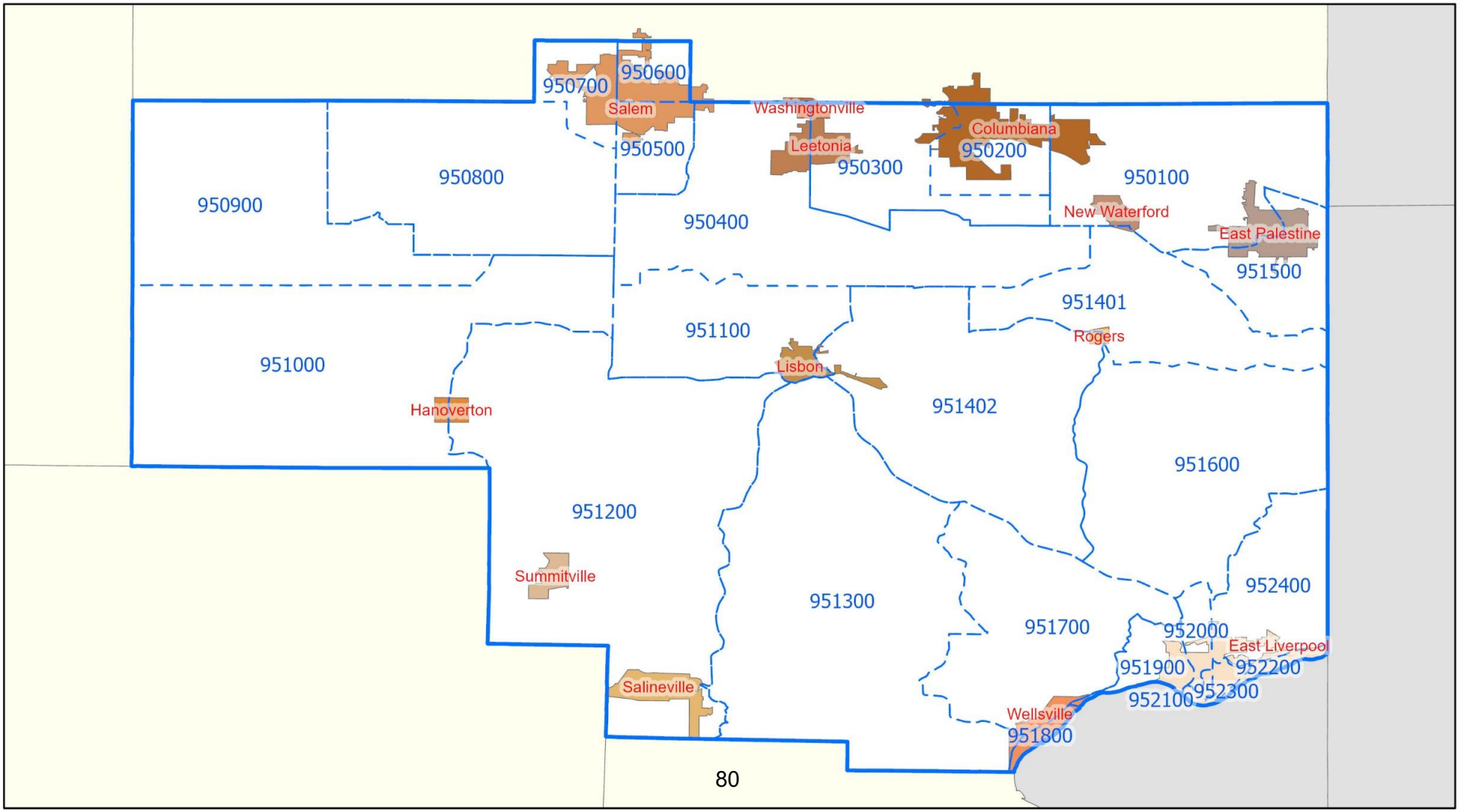
Figure 2.2.a: Columbiana County Census Tracts

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

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

Census Tract Boundaries





- Future Occurrences: Describes the probability of future occurrences of the hazard under consideration. This section of each profile also includes a description of future climate considerations, where appropriate.

§201.6(c)(2)(ii)(A)	The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

- Risk Assessment: Includes a summary of public sentiment about the hazard as well as risk categories (see below), and multi-jurisdictional considerations.

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

One of the components of the risk assessment is to quantify, to the extent possible, the risk of hazards as determined by the probability of occurrence and the potential severity of those occurrences. This process helps to identify which hazards pose the most significant concerns to Columbiana County's communities. It is essential to recognize the value of implementing several categories to determine the overall risk. The following narrative and tables describe the categories utilized by this plan and how they relate to the available data. Historical occurrences inform all calculations, not worst-case scenarios. In cases with zero events, other available data (which varies across the hazards and is outlined in each profile) supports determinations.

"Frequency" refers to the number of times a hazard occurs in a specific period (based on available historical data). In most instances, the total occurrences (e.g., three occurrences) are divided by the length of time (in years) that data is available (e.g., 10 years). Thus, in the example, three occurrences divided by 10 years equals 0.3. Table 2.2.1 translates the resultant numeric values into a narrative frequency description. The hazard would have a "low" frequency in the example described here.

Frequency Categories			
Value	*Score*	*Description*	*Definition*
0.76 - >1.0	5	Excessive	Will occur during a year
0.51 – 0.75	4	High	Likely to occur in a year
0.26 – 0.50	3	Medium	May (or may not) occur in a year
0 – 0.25	2	Low	Unlikely to occur in a year
0	1	None	So unlikely that it can be assumed it will not occur in a year

Table 2.2.1

Other qualitative categories enable a clearer understanding of a hazard's potential impact. Table 2.2.2 below depicts the variables used in this plan. Planners assigned values to these categories based on available research (cited, as appropriate, in the profiles), and each profile includes a brief description to contextualize the selection of the proper variable. Notably, the qualitative nature of these variables enables planners to consider potential future impacts, which is helpful when considering the intersection of risk and future development as well as the potential impacts of climate change. These variables should be considered as a set. For instance, in the following profiles, a hazard like severe summer storms would receive a *Magnitude* score of "catastrophic" simply because the entire county (i.e., well over 50% of the land area) is at risk. A catastrophic score, though, could mislead a reader without the context provided by the other variables that would receive a much lower score (such as *Onset* and *Human*, which would both receive the lowest scores available).

Table 2.2.2

Qualitative Risk Variables						
	Response	*Onset*	*Magnitude*	*Business*	*Human*	*Property*
1	Less than half a day	Over 24 hours	Localized (less than 10% of land area affected)	Less than 24 hours	Minimum (minor injuries)	Less than 10% of property affected
2	One day	12-24 hours	Limited (10-25% of land area affected)	One week	Low (some injuries)	10-25% of property affected
3	One week	6-12 hours	Critical (25-50% of land area affected)	At least two weeks	Medium (multiple severe injuries)	25-50% of property affected
4	One month	Less than 6 hours	Catastrophic (more than 50% of land area affected)	More than 30 days	High (multiple deaths)	More than 50% of property affected
5	More than one month	N/A	N/A	N/A	N/A	N/A

All hazards receive a score for each category corresponding to the number in the far-left column. Hazards receive scores of between 7 (i.e., all seven categories receive a value of one) and 25 points (i.e., all seven categories receive a value of four or five). The list below represents a broad range by which planners ranked all the hazards in this plan.

Range of Points (Score)	*Hazard Ranking*
7 – 10	Lowest
11 – 15	Low
16 – 20	Medium
21 – 24	High
25	Highest

Social Vulnerability

The Agency for Toxic Substances and Disease Registry (ATSDR), a division of the Centers for Disease Control and Prevention (CDC) has developed a "social vulnerability index" (SVI) that measures and compares social vulnerability among census tracts. The ATSDR defines social vulnerability as the degree to which certain social conditions in a community, including poverty, car ownership, or the number of people in a household may affect the community's ability to prevent human suffering and financial loss in the event of a disaster (2022). The dataset includes numerous variables informed by data collected and developed by the Census Bureau; data sources include the American Community Survey (ACS) administered between 2018 and 2020 (ATSDR, 2022).

Poverty and Educational Attainment

The SVI includes a variable that measures the estimated number of persons who live below the poverty level. Researchers at the CDC, who authored *A Social Vulnerability Index for Disaster Management*, explain, "economically disadvantaged populations are disproportionately affected by disasters" (Flanagan et al., 2011). The poor are less likely to have the income or assets needed to properly prepare for a possible disaster, or to recover after a disaster occurs (Cutter, Boruff, & Shirley, 2003). These areas will need significant support during recovery activities, and could greatly benefit from targeted mitigation. Closely associated with the poverty level is the unemployment rate.

Scholars consider education as a socioeconomic variable, though the relationship between education and vulnerability is not absolutely understood (Flanagan et al, 2011). Education associates with both income and poverty. Many people without a high school diploma will struggle to find steady, well-paying jobs. This is especially true within the boom-and-bust cycles associated with natural resource industries. During boom times, these residents can earn decent wages, but when the industry enters a bust cycle there is little on which to fall back. Applying for federal aid and other recovery activities requires the proper completion of complex

paperwork. For people with less education, the practical and bureaucratic hurdles to cope with and recover from disaster prove increasingly difficult to surmount (Morrow & Gladwin, 1997).

Access to Internet

During the COVID-19 pandemic, the internet kept many connected to work, school, family, and friends. However, a Gallup analysis shows "more than half a billion of the world's most-vulnerable people, who were struggling to meet even their basic food and shelter needs and didn't have anyone to help them, didn't have internet access" (Ray et al., 2020). Inequality in income and of opportunity worsens due to disadvantaged groups of people who live in rural areas that have limited, or no internet access (Garcia-Escribano, 2020).

Household Composition

The household composition section of the SVI includes variables measuring vulnerable ages and vulnerable households. Vulnerable ages include those under the age of 18 and those over the age of 65. Multiple researchers have concluded that children and elders are the most vulnerable groups in disaster events (Flanagan et al, 2011). Nearly 75% of the victims of Hurricane Katrina were elderly (Phillips et al., 2010). Many elderly citizens have disabilities that require the assistance of either machines (e.g., oxygen concentrators) or others (e.g., difficulty walking). The family members or neighbors who typically assist elderly persons may be either overwhelmed by the disaster or physically unable to gain access to those persons (Flanagan et al, 2011). Extended power outages will disproportionality effect elderly populations.

Children, and especially the very young, generally cannot protect themselves and are heavily reliant on their care takers for protection and care. Scholars have determined that children are rarely incorporated into disaster planning and scenario exercises due to the assumption of parental responsibility (Martin et al., 2006). By not including this population in the planning process, responders are not adequately prepared or equipped to deal with children.

The final variable among the housing composition grouping is the percent of households that are single-parent households with children who are under the age of 18. Similar to the discussion of previous variables, children are among the most vulnerable of populations, while single-parent households are among the lowest socioeconomic status households. These households are especially vulnerable during a disaster because all the caretaker duties fall to one parent, who must also deal with the disaster event and recovery from that event (Flanagan et al, 2011).

Housing/Transportation

The SVI includes a number of variables that describe housing and transportation, three of which appear here: mobile homes, vehicle ownership/access, and institutionalized housing. Housing quality is an important factor in evaluating vulnerability and is closely tied with socioeconomic status and personal wealth (Flanagan et al, 2011). Mobile homes, which typically are inhabited by those of lower socioeconomic groups, are not designed to withstand severe weather events or flooding. Mobile homes are frequently found outside of metropolitan areas, making access difficult in regular conditions, even more so during and immediately after a disaster (Flanagan et al, 2011). Mobile homes are often clustered in communities, which increases the overall vulnerability of these communities (Flanagan et al, 2011).

Vehicle ownership/access is crucial to being prepared as well as evacuating, when needed. Those who do not possess (or have access to) a vehicle will have difficulty going to stores in order to obtain preparedness supplies and will have less capacity to bring those supplies back to their home. This is even more pronounced in rural areas, which typically lack robust public transportation networks. The Community Action Rural Transit System (CARTS) provides general transportation service for everyone within Columbiana County, though not everyone may know of the service, be able to get to where they can access it or afford fares (though fares are reasonable).

The final housing vulnerability variable to discuss is those who live in institutional settings. These include college dorms, farm worker's dormitories, health institutions, and prisons, which present special concerns for evacuations (Flanagan et al, 2011). Nursing homes and other residential medical facilities are particularly vulnerable. The increased vulnerability is due to the special and timely needs of the residents, and because of understaffing in these institutions in emergencies (Flanagan et al, 2011). Evacuating these facilities is a time and resource consuming operation, requiring numerous specialty vehicles and staff such as advanced life support ambulances. While these facilities will have backup generators for vital machines, in an extended power outage, these generators will need additional fuel deliveries. The Ohio Department of Health (ODH) lists 20 nursing homes and assisted living/residential care facilities in Columbiana County. There are no institutions of higher education providing on-campus residential facilities in the county.

Minority Status/Language

Several studies have found that the overall marginalization of racial and ethnic minority groups has made these populations more vulnerable during all stages of a disaster (Flanagan et

al, 2011). Specifically, studies have shown that populations of African Americans, Native Americans, Asian Americans, Pacific Islanders, and those of Hispanic origin are correlated with higher vulnerability rates (Flanagan et al, 2011).

A specific variable among minorities that can greatly increase their vulnerability during a disaster is an inability to speak or read English well, or at all. While small in comparison to the overall population of the county, this population is exceedingly vulnerable. Without accurate translations, these populations may not understand impending disasters, preparedness warnings, or evacuation notices. Research has shown that immigrant populations are more likely to rely on relatives, friends, and neighbors for information, rather than official sources (Flanagan et al., 2011).

Section 2.0: Risk Assessment concludes with a "risk ranking" table that summarizes the scores for all the hazards. Profiles appear in the following order.

- 2.2.1: Cyber Incidents
- 2.2.2: Dam & Levee Failure
- 2.2.3: Drought
- 2.2.4: Earthquake
- 2.2.5: Extreme Temperatures
- 2.2.6: Flooding
- 2.2.7: Hazardous Materials Incidents
- 2.2.8: Landslides
- 2.2.9: Public Health Emergency
- 2.2.10: Severe Thunderstorm & Hail
- 2.2.11: Severe Wind & Tornadoes
- 2.2.12: Severe Winter Storm
- 2.2.13: Wildfire

2.2.1 Cyber Incidents

A "cyber incident" is an assault launched, by cyber criminals using one or more computers, against a single (or multiple) computers or networks.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time	**Risk Ranking:**	High
	Warning Time:	Less than 6 hours	**Type of Hazard:**	Technological
	Probability:	Will occur during a year	**Impact:**	Less than 10% of land area affected
	Disaster Declarations:	None		

Hazard Overview

Cyber incidents are generally defined as an event that actually or imminently jeopardizes, without lawful authority, the confidentiality, integrity, or availability of information or an information system; or constitutes a violation or imminent threat of violation of law, security policies, security procedures, or acceptable use policies. According to the U.S. Department of Homeland Security – Industrial Control Systems Cyber Emergency Response Team, cyber threats to a control system refer to persons who attempt unauthorized access to a control system device or network using a data communications pathway. This access can be from within an organization by trusted users or from remote locations by unknown persons using the Internet. Threats to control systems can come from numerous sources, including hostile governments, terrorist groups, disgruntled employees, and malicious intruders.

A cyberattack targets an organization's use of cyberspace for the purpose of disrupting, disabling, destroying, or maliciously controlling a computing environment/infrastructure, destroying the integrity of data, or stealing controlled information. Cyberattacks are unpredictable and typically occur without warning. To protect against these threats, it is necessary to create a secure cyber-barrier around the industrial control system. Though other threats exist, including environmental, mechanical failure, and inadvertent actions of an authorized user, this discussion will focus on deliberate threats as categorized in the Statement for the Record to the Joint Economic Committee by Lawrence K. Gershwin, the Central Intelligence Agency's National Intelligence Officer for Science and Technology (June 21, 2001). These include national governments, terrorists, industrial spies, organized crime groups, hacktivists, and hackers. Activities could include espionage, hacking, identity theft, crime, and terrorism.

Location and Extent

According to the FireEye Cyber Threat Map, approximately 725,000 major cyberattacks occur throughout the world per day. Because cyberattacks can cause severe disruptions to computers and electronics associated with critical infrastructure, transportation, data centers, public safety, and utility services, all of which use supervisory control and data acquisition (SCADA) systems, all are vulnerable to attack. Because of this, the county and municipal agencies of Columbiana County, as well as individuals, businesses and other institutions are potential targets for cyberattacks. The actual cause of cyberattacks can be difficult to identify because the internet provides cover for those responsible for attack initiation.

Although the most numerous and publicized cyber intrusions and other incidents are ascribed to lone computer-hacking hobbyists, such hackers pose a negligible threat of widespread long-duration damage to national-level infrastructure. Nevertheless, the large worldwide population of hackers poses a relatively high threat of an isolated or brief disruption causing serious damage, including extensive property damage or loss of life. As the hacker population grows, so does the likelihood of an exceptionally skilled and malicious hacker attempting and succeeding in such an attack. Hackers are subdivided as follows.

- Script kiddies are unskilled attackers who do NOT have the ability to discover new vulnerabilities or write exploit code and are dependent on the research and tools from others; their goal is achievement and to gain access and deface web pages.
- Worm and virus writers are attackers who write the propagation code used in the worms and viruses but not typically the exploit code used to penetrate the systems infected. Their goals are notoriety and to cause disruption of networks and attacked computers systems.
- Security researcher – white hats have two sub-categories: bug hunters and exploit coders. Their goal is profit, to improve security, earn money, and achieve recognition with an exploit.
- Professional hacker – black hats get paid to write exploits or actually penetrate networks. They also fall into the two sub-categories: bug hunters and exploit coders. Their goal is profit.

Hackers and researchers interact with each other to discuss common interest, regardless of color of hat. Hackers and researchers specialize in one or two areas of expertise and depend on the exchange of ideas and tools to boost their capabilities in other areas. Information regarding

computer security research flows slowly from the inner circle of the best researchers and hackers to the general information technology (IT) security world in a ripple-like pattern.

The table below was excerpted from NIST 800-82, "Guide to Supervisory Control and Data Acquisition (SCADA) and Industrial Control System Security" and provides a description of the extent of various threats to computer system networks.

Table 2.2.1.1

United States Government Accountability Office Threat Table	
Cyber-Threat	*Description*
Bot-network operations	Bot-network operators are hackers; however, instead of breaking into systems for the challenge of bragging rights, they take over multiple systems to coordinate attacks and to distribute phishing schemes, spam, and malware attacks.
Criminal groups	Groups that seek to attack systems for monetary gain. Organized crime groups are using spam, phishing, and spyware/malware to commit identify theft and online fraud.
Foreign intelligence services	Use cyber tools as part of their information-gathering and espionage activities. In addition, several nations are aggressively working to develop information warfare doctrine, programs, and capabilities. Such capabilities enable them to have a significant impact by disrupting the supply, communications, and economic infrastructures that support military power.
Hackers	Hackers break into networks for the thrill of the challenge or for bragging rights in the hacker community. While remote cracking once required a fair amount of skill or computer knowledge, hackers can now download attack scripts and protocols from the Internet and launch them against victim sites. While attack tools have become more sophisticated, they have also become easier to use.
Insiders	The disgruntled organization insider is a principal source of computer crime. Insiders may not need a great deal of knowledge about computer intrusions because their knowledge of a target system often allows them to gain unrestricted access to cause damage to the system or to steal system data. The insider threat also includes outsourcing vendors as well as employees who accidentally introduce malware into systems.
Phishers	Individuals, or small groups, who execute phishing schemes to steal identities or information for monetary gain. Phishers may also use spam and spyware/malware to accomplish their objectives.
Spammers	Individuals or organizations who distribute unsolicited e-mail with hidden or false information to sell products, conduct phishing schemes, distribute spyware/malware, or attack organizations (i.e., denial of service).
Spyware/malware authors	Individuals or organizations carry out attacks by producing and distributing spyware and malware. Several destructive computer viruses and worms have harmed files and hard drives, including the Melissa Macro Virus, Explore.Zip worm, CIH (Chernobyl) Virus, Nimda, Code Red, Slammer, and Blaster.
Terrorist	Terrorist seek to destroy, incapacitate, or exploit critical infrastructures to threaten national security, cause mass casualties, weaken the U.S. economy, and damage public morale and confidence. Terrorists may use phishing schemes or spyware/malware to generate funds or gather sensitive information.

Impacts and Vulnerability

Impacts from large-scale cyberattacks could disrupt the county's economy and potentially threaten its economic stability. The magnitude of a cyberattack will vary greatly based on the extent of systems affected, attack duration, and the type of attack. The magnitude will vary based upon the specific system affected and the ability to preempt and address emerging issues.

While physical structures are generally not at risk, all networked electronic devices are vulnerable to cyberattacks. Because computer networks contain sensitive information that is integral to the county's security, they will likely continue to be the focus of coordinated cyberattacks. Computer networks are also entrusted with many forms of personal and financial information, including tax filings, birth and death records, social security numbers, medical information, and more. Additionally, many critical facilities that are essential to county operations rely upon computer networks to monitor and control critical functions. For example, an attack on the power grid could have detrimental impacts on county services and functions. A large-scale computer breach would likely lead to significant economic costs in lost productivity to the impacted county agencies and potentially related businesses and industries.

Cyberattack impacts can range from insignificant to catastrophic. The majority of cyberattacks involve targeted attacks on a single computer. These happen every day and have little impact on the county's operations. However, a coordinated attack could render county and municipal networks useless.

In recent years, cyberattacks have become a significant threat and can impact people, businesses, institutions, local governments, and state agencies to varying degrees. The table below describes the types of cyberattacks and the associated impacts likely to be encountered.

Table 2.2.1.2

Types of Cyberattacks	
Threat	*Description*
Malware	Malware is a term used to describe malicious software, including spyware, ransomware, viruses, and worms. Malware breaches a network through a vulnerability, typically when a user clicks a dangerous link or email attachment that then installs risky software. Once inside the system, malware can do the following: • Block access to key components of the network (ransomware) • Install malware or additional harmful software • Covertly obtain information by transmitting data from the hard drive (spyware) • Disrupt certain components and render the system inoperable

Types of Cyberattacks	
Threat	*Description*
Botnet	A collection of computers subject to control by an outside party, usually without the knowledge of the owners, using secretly installed software robots. The robots are spread by Trojan horses and viruses. The botnets can be used to launch denial-of-service attacks and transmit spam.
Denial-of-Service Attack	Flooding the networks or servers of individuals or organizations with false data requests so they are unable to respond to requests from legitimate users.
Phishing	Phishing is the practice of sending fraudulent communications that appear to come from a reputable source, usually through email. The goal is to steal sensitive data such as credit care and login information or to install malware on the victim's machine. Phishing is an increasingly common cyberthreat.
SQL Injection	A Structured Query Language (SQL) injection occurs when an attacker inserts malicious code into a server that uses SQL and forces the server to reveal information it normally would not. An attacker could carry out an SQL injection simply by submitting malicious code into a vulnerable website search box.
Spoofing	Making a message or transaction appear to come from a source other than the originator. Spyware software that collects information without a user's knowledge and transfers it to a third party.
Trojan Horse	A destructive program that masquerades as a benign application. Unlike viruses, Trojan horses do not replicate themselves, but they can be just as destructive. One of the most insidious types of Trojan horse is a program that claims to rid your computer of viruses but instead introduces viruses onto your computer.
Virus	A program designed to degrade service, cause inexplicable symptoms, or damage networks.
Worm	Program or algorithm that replicates itself over a computer network and usually performs malicious actions, such as using up the computer's resources and possibly shutting the system down. A worm, unlike a virus, has the capability to travel without human action and does not need to be attached to another file or program.

Pursuant to the requirements of Ohio Revised Code (ORC), Section §111.09, the Secretary of State appoints a Chief Information Security Officer (CISO) to advise on information security matters. Ohio law assigns responsibility for information security policies to the Office of Information Technology (OIT). Local governments in Ohio must report any cybersecurity incidents that result in the following in accordance with ORC §1349.19:

- Entities that conduct business in Ohio and that own, or license computerized personal information must notify Ohio residents of any data breach that does result, or could result, in the unauthorized access and acquisition of their unencrypted or unredacted personal information that is likely to cause a risk of identify theft or fraud.
- Notice must be made in the most expedient time possible, no later than 45 days after discovery or notification of the breach. Breached third parties must notify the relevant data owners or licensees as well.

- If more than 1,000 individuals must be notified of a breach, breached entities must also notify all consumer reporting agencies that compile and maintain files on consumers on a nationwide basis, unless they are covered by Health Insurance Portability and Accountability Act (HIPAA).
- Substitute notice is permitted in specific circumstances, and notification may be delayed for law enforcement purposes.
- Financial institutions compliant with the Federal Interagency Guidance Response Programs for Unauthorized Access to Consumer Information and Customer Notice are deemed to comply with this law.

Columbiana County has established an information technology (IT) department that focuses on protecting data and systems from unauthorized access, disclosure, modification, and disruption, encompassing network, application, endpoint, and data security measures.

Social Vulnerability Considerations

The latest Cybercrime Report from LexisNexis Risk Solutions reveals that the people most vulnerable to cybercrime tend to be adults over the age of 75 and younger adults. “It is believed that the particular vulnerability of young and older adults is largely due to the surge of new customers going online or working from home during the COVID-19 pandemic” (Cybernews, 2024). The report suggests that it is easy to assume that young adults are tech-savvy and therefore relatively immune from cyberattacks, but they often have a false sense of their capabilities and therefore tend to be more relaxed, especially in terms of their willingness to share personal information. “While younger adults are most susceptible to online fraud attacks, the average fraud loss per customer increases progressively with age, likely influenced by larger disposable incomes later in life” (Cybernews, 2024). The older demographic, by contrast, is much less familiar with the latest technologies, and their lack of familiarity raises their susceptibility to the various scams and phishing attacks. “Protection of the older, and potentially more vulnerable population, is critical for organizations that are prioritizing a digital-first strategy” (Cybernews, 2024).

Previous Occurrences

In addition to large-scale cyberattacks, smaller incidents occur on a daily basis. Billions of emails are sent each day, and spam and phishing emails account for a significant share of all email traffic. Brute force attacks, which are trial-and-error attempts to obtain user passwords and

pins, are frequently used by criminals to attempt to crack encrypted data or gain access to private accounts.

The majority of cyberattacks go unnoticed or unreported and, therefore, there is no definitive list of all attacks. In recent years, several significant cyberattacks have disrupted or even halted the provision of municipal services. Columbiana County has experienced two reported cyberattacks since 2016.

Juvenile Court "Locky" Ransomware Attack, 2016

In 2016, the Columbiana County Juvenile Court computer system was hacked just before Memorial Day weekend; officials paid a ransom to regain access to records. "The cyberattack began minutes before juvenile court closed for the day on May 26, 2016. Staff members arrived at work the next day to discover its system had been hacked and they were locked out and could not gain access to records. The anonymous hackers demanded to be paid in exchange for a password that would grant the court access to its records. After the ransom was paid, the hackers sent a file that returned control of the system to the courts" (The Review, 2016, Para. 2).

The county's insurance carrier sent experts to determine if any confidential records had been compromised, and they determined that files containing personal information were not accessed. This advanced ransomware attack known as "Locky" plagued several entities across the country and the State of Ohio.

Recorder's Office Cott System Security Breach, 2022/2023

A more recent incident occurred in late 2022 through early 2023, involving a cyberattack on the Cott Systems, a Columbus-based computer data processing business used by the Columbiana County Recorder's Office to process documents. This attack caused a system outage and disrupted property transfers (i.e., the recorder's office was unable to access any already-recorded documents, process new documents, or take cash or credit card payments). "Attorneys, title company workers, and citizens trying to record documents before the end of 2022 found they could not due to a security breach affecting the Columbiana County Recorder's Office. No other Columbiana County offices or servers were affected" (Greier, 2022, Para. 1).

During Cott's routine maintenance of the system, unusual activity was noticed, so Cott shut down all servers and connections to their clients, including the recorder's office. The breach reportedly occurred at an off-site data center containing the recorder's office data.

Loss and Damages

Cyberattacks can lead to loss of money, theft of personal information, and damage to an individual's or company's reputation and safety. Cyberattacks can be carried out using computers, mobile phones, gaming systems, and other electronic devices. The attacks may include identity theft, fraud, or block access to, or delete documents and pictures.

According to a February 2018 report from The Council of Economic Advisers, malicious cyber activity cost the U.S. economy between $57 billion and $109 billion in 2016. The IBM Cost of Data Breach Report 2023 indicated that the average cost of a data breach reached an all-time high in 2023 of USD 4.45 million. This represented a 2.3% increase from the 2022 cost of USD 4.35 million. This report revealed that an alarming 83% of organizations experienced more than one data breach during 2022. If a major cyberattack was to strike the State of Ohio and cripple power plants and other critical lifeline utilities for an extended time, the economic impact would be in the billions.

As cybercriminals become more ruthless, the risks and damage they can unleash become more serious to include physical losses and personal injury. Such events are now known as "cyber-physical attacks," according to the International Risk Management Institute's online glossary. A malicious user can take control of the computing or communication component of water pumps, transportation system, pipeline valves, etc. and cause damage to property and put lives at risk.

Future Occurrences

Based on past historical data and trends, the future probability of cyberattacks occurring within Columbiana County is moderate to high. Cyberterrorism is an emerging hazard that has the potential to impact the county's computer infrastructure and the services provided to the public. Concerns about cyberattacks throughout the United States are growing as its impacts could have potentially crippling effects. Security experts describe the threat of cyber-terrorism as imminent and highly likely to occur in any given year.

In today's threat landscape, defenders have a huge disadvantage. Attackers only have to get it right once to accomplish their goal, whereas the defender must patch, and keep up on possible vulnerabilities in all their systems. With more data accessible from anywhere in the world, passwords are not enough protection alone.

Risk Assessment

This section summarizes the vulnerability of the county to cyber incidents. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding cyber incidents.

Table 2.2.1.3

Public Sentiment, Cyber Incidents					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Cyber Incidents	6 (9.7%)	10 (16.1%)	27 (43.5%)	19 (30.6%)	62
In the past five years, do you remember this hazard occurring in your community?				16	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 57 (32.95%) indicated being concerned about cyber incidents, with 18 respondents indicating that cyber incidents are the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

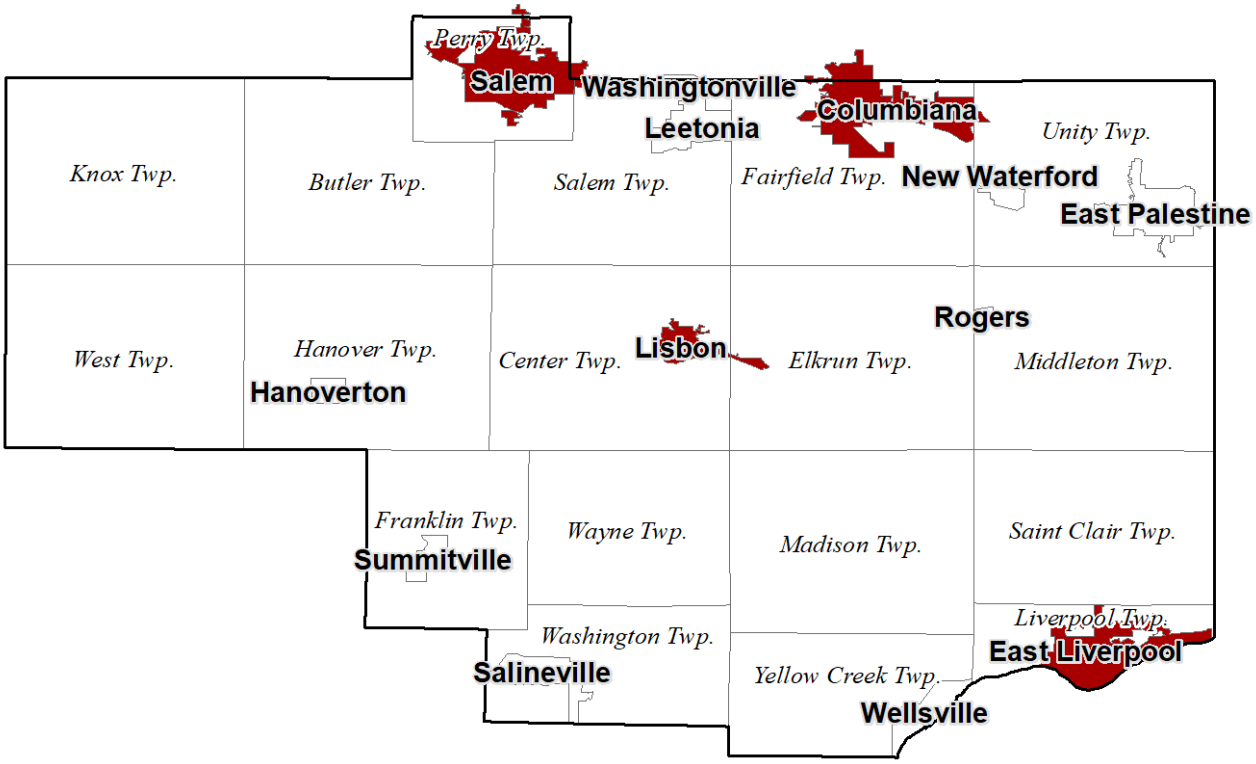
Table 2.2.1.4

Cyber Incidents Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	Though no aggregated data summarizing the total number of cyber incidents that have occurred in a given period are available, local officials indicate that incidents are frequent (i.e., weekly, or even daily).
Response	5	More than one month	IBM's 2022 data security report indicates an average of 73 days to contain a cyber breach (on top of 206 days to identify a breach).
Onset	4	Less than 6 hours	A cyber incident is typically underway when local officials receive notification about it.

Cyber Incidents Risk Ranking			
Category	*Points*	*Description*	*Notes*
Magnitude	1	Localized (less than 10% of land area affected)	Cyber incidents can severely disrupt critical infrastructure, transportation systems, and utility services. Magnitude will vary greatly based on the extent of systems affected, the attack durations, and type of attack; however, the incidents target individual systems or facilities, not large segments of the county (land area-wise).
Business	4	More than 30 days	Cyber incidents can impact residences, businesses, institutions, local governments, etc. A large-scale incident could yield operational impacts for the entirety of the response (see "Onset" above).
Human	1	Minimum (minor injuries)	Cyber incidents would not likely cause widespread injury.
Property	1	Less than 10% of property affected	Despite significant disruption, cyber incidents would not likely "damage" personal property (beyond computers or digital systems themselves).
Totals	**21**	**High**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for cyber incidents. The jurisdictions labeled in white are not more or less at risk of cyber incidents. Those in red are more at risk; those in green are less at risk.

Figure 2.2.1.a



The committee did not consider any of the participating jurisdictions to be *less at risk* of cyber incidents; the red jurisdictions below appear as *more at risk* because of the number of governmental facilities, economic assets, higher education facilities, and medical facilities within their corporate limits.

2.2.2 Dam & Levee Failure

A dam is an artificial barrier or obstruction that impounds or will impound water. A dam failure is a failure of that structure, which occurs when the barrier does not obstruct/restrain water as designed. Dam failures can rapidly result in large areas of completely inundated land.				
Risk  HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time, but typically following a period of prolonged precipitation	**Risk Ranking:**	Lowest
	Warning Time:	More than 24 hours	**Type of Hazard:**	Technological
	Probability:	So unlikely that it can be assumed it will not occur in a year	**Impact:**	Less than 10% of land area affected
	Disaster Declarations:	None.		

Hazard Overview

This hazard profile addresses both dam and levee failures in Columbiana County. The three leading causes of dam failure in the United States include overtopping, foundation defects and slope instability, and piping.

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

These types of failures are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to structural failure. A structural failure may shorten the seepage path and lead to a piping failure. Surface erosion may result in structural failure, and so on. Minor defects, such as cracks in the embankment, could be the first visual sign of a significant problem, which could lead to the failure of the structure. Someone experienced in

dam design and construction should evaluate the seriousness of all deficiencies as soon as they are detected.

Dam failures can be no-notice failures that occur during non-flooding situations when reservoirs are at normal levels. No-notice failures are generally more hazardous because of their unexpected nature and little warning time for evacuation. Other failures occur during periods of excessive rainfall or flooding and can exacerbate inadequate spillway capacity. Dam failures can be a cascading event following a large wildland fire, where heavy rains may rapidly run off burnt areas unable to absorb the excess water into an impoundment that subsequently cannot handle the additional water. Finally, though improbable and likely low-impact, seismic events could destabilize a dam just enough to prompt deterioration or failure.

Though levees are designed to a certain level of potential flood, the U.S. Army Corps of Engineers (USACE) notes that levees are not subject to consistent design, construction, operations, and maintenance standards. Levees function as part of a system. In other words, a levee in one area may overtop by design to protect larger populations downstream (USACE, 2018). A levee "failure" implies that something about the levee failed to operate as designed, and impacts to the protected area(s) occurred. Levee failures can result from overtopping, water flow through or under a levee, erosion, an object hitting the levee, or an object on the levee (e.g., tree or building) falling and taking a portion of the structure with it (USACE, 2018). The USACE also maintains the National Levee Database (NLD).

Location and Extent

The Ohio Administrative Code defines a dam as " any artificial barrier together with any appurtenant works, which either does or may impound water or other liquefied material " (OAC 1501.21-3-01). The Ohio Department of Natural Resources (ODNR), Division of Water Resources provided a list of dams in Columbiana County, and that list appears in Table 2.2.2.1 below.

Of the 43 existing dams in the county, eight (18.6%) are "Class I" structures, which means they are greater than 60' in height and store greater than 5,000 acre-feet of liquid. The downstream hazards from failures of Class I structures include probable loss of life. Twenty-two (22) (51.16%) of the structures are "Class II," meaning they are greater than 40' in height and store more than 500 acre-feet of liquid. Losses from failures of Class II structures include damage to structures (including infrastructure like roadways and utilities), but no anticipated loss of life. Finally, there are 13 (30.23%) "Class III" structures, which are greater than 25' high and store more than 50 acre-feet of liquid. Per the ODNR, there are no Class IV structures in the county.

Table 2.2.2.1

Dams in Columbiana County								
Dam Name	*Hazard Class*	*Purpose*	*Length (ft.)*	*Max. Height (ft.)*	*Pool Area (ac.)*	*Volume (ac-ft.)*	*EAP (Y/N)*	*Latest EAP Date*
Beaver Lake Dam	II	Recreation, Private	255	17.7	102	1,072	N	N/A
Bibbee's Little Rock Lake Dam	I	Recreation, Private	470	27	15.5	184	N	N/A
Big Rock Lake Dam	III	Recreation, Private	970	32.2	12.8	159	N	N/A
Buckeye Water District Reservoir	I	Water Supply, Public	1,200	56	1.8	32.4	Y	04-Jan-08
Buckeye Water District Reservoir II	I	Water Supply	1,956	28	4.7	80.35	Y	15-Jul-22
Caldwell Spruce Lake Dam	III	Recreation, Private	375	21.3	6	49	N	N/A
Csonka Brothers Pond Dam	II	Recreation, Private	750	24	5.7	57	N	N/A
Dickey Lake Dam	III	Recreation, Private	1,530	13.5	7.8	54.6	N	N/A
East Palestine Reservoir Dam	II	Recreation, Public	173	18.1	6	31.6	Y	20-Apr-12
Flying Finn Lake Dam	II	Recreation, Private	900	29.3	13.3	155	N	N/A
Fritz Pond Dam	III	Recreation, Private	490	26.4	7.7	79.2	N	N/A
Goerig Lake Dam	III	Water Supply, Agricultural	927	15.3	4.9	28	N	N/A
Guilford Lake Dam	I	Recreation, Public	3,200	34.5	330	5,650	Y	27-Jan-17
Hammond Lake II Dam	III	Recreation, Private	465	17	8	70	N	N/A
Hide Away Hollow Dam	III	Recreation, Private	385	19.6	3	30.4	N	N/A
Highlandtown Lake Dam	I	Recreation, Public	1,476	44	184	5710	Y	16-Dec-16
Hillyer Lake Dam	III	Recreation, Private	450	18.5	4.3	28.1	N	N/A
Ismond Pond Dam	III	Recreation, Public	385	27	7.5	86	N	N/A
Lake Cha-Vel Dam	II	Recreation, Private	534	35	10	155	N	N/A
Lake Copeland Dam	II	Recreation, Private	360	27.8	18.5	261.8	N	N/A
Lake P'Na Dam	II	Recreation, Private	280	17	23.3	139	Y	06-Apr-17
Lake Tomahawk Dam	I	Recreation, Private	1,320	61.9	100	2,589	Y	12-Jun-19
Lower Wallace Lake Dam	II	Recreation, Private	450	22	3.5	62.4	N	N/A
Ludwig Dam	III	Recreation, Private	1,150	14.8	8.5	54.9	N	N/A
Manfull Lake Dam	II	Recreation, Private	597	18	10	88	N	N/A
Maroscher Lake Dam	III	Recreation, Private	400	14.6	5.8	37	N	N/A
Mill Pond Lake Dam	II	Recreation, Private	740	21.9	9.8	72.2	N	N/A
Paradise Lake Dam	II	Recreation, Public	400	30.2	22.8	318	Y	04-Sep-96
Rayls Lake Dam	II	Recreation, Private	425	22.4	7	65.2	N	N/A
Salem Regional Campus Lake Dam	II	Recreation, Public	600	26	4	49.7	N	N/A

Dams in Columbiana County								
Dam Name	*Hazard Class*	*Purpose*	*Length (ft.)*	*Max. Height (ft.)*	*Pool Area (ac.)*	*Volume (ac-ft.)*	*EAP (Y/N)*	*Latest EAP Date*
Salem Reservoir (South Embankment)	I	Water Supply, Public; Recreation, Public	2,825	47.6	110	2,182	Y	06-Apr-05
Salem-Grubbs UG Reservoir	PROPOSED STRUCTURE							
Sevakeen Country Club Lake Dam	II	Recreation, Private	370	16.5	8	77.5	Y	26-Jan-18
Shrontz's Lake Dam	III	Recreation, Private	276	15.9	3.6	31.5	N	N/A
Slates Lake Dam	II	Recreation, Private	520	27.8	7.1	70	N	N/A
Spring Valley Lake Dam	III	Recreation, Private	650	14	10	58.2	N	N/A
Spring Valley Park Lake Dam	I	Water Supply, Public	1,200	28.5	21.1	391.4	Y	01-Apr-13
Summitcrest Farm Pond Dam	II	Recreation, Private	320	38.9	4.3	66	N	N/A
Summitville Lake Dam	II	Recreation, Private	305	26.3	16.6	179.2	N	N/A
Sunshine Lakes Dam	II	Surface Mining	600	37.5	14	211	N	N/A
Werner Lake Dam	II	Recreation, Private	220	19.1	6	49	N	N/A
Westville Lake Dam	II	Recreation, Public; Water Supply, Public	600	29	77	1039	Y	24-Jun-21
Woodland Lake Dam	II	Recreation, Private	735	19	9.5	109	N	N/A
Zepernick Lake Dam	II	Recreation, Public	570	13.8	38.7	214.9	N	N/A

The United States Army Corps of Engineers (USACE) National Inventory of Dams (NID) is another resource to identify the locations of dams in a planning area. The NID identifies 37 dams in Columbiana County with an average age of 66 years (USACE, 2020). According to the NID webpage, all the dams are state-regulated, and a deeper review of the site confirms that Table 2.2.2.1 includes all NID-listed structures.

Dams physically within Columbiana County could certainly impact the county if they fail, but the downstream impacts of a dam failure would not necessarily stop at a county line. The ODNR Dam Safety Programs Ohio Dam Locator (ODNR, n.d.) shows several structures near the Columbiana County line, as does the NID. The NID also shows dams in neighboring Pennsylvania that are in close proximity to Columbiana County's borders. However, the orientation of the largest of these structures suggests that downstream areas are in the opposite direction of Columbiana County.

The average maximum height of the dams in the county is 25.93', while the average length is 762.88'. Of the 37 dams listed in the NID, the oldest is Westville Lake Dam in Knox Township, constructed in 1912, while the most recently constructed dam (i.e., 2020) is the Buckeye Water District Reservoir II Dam in Madison Township. ODNR noted one proposed structure, the Salem-Grubbs UG Reservoir near Salem. Figure 2.2.2.a shows the location of the dams in the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

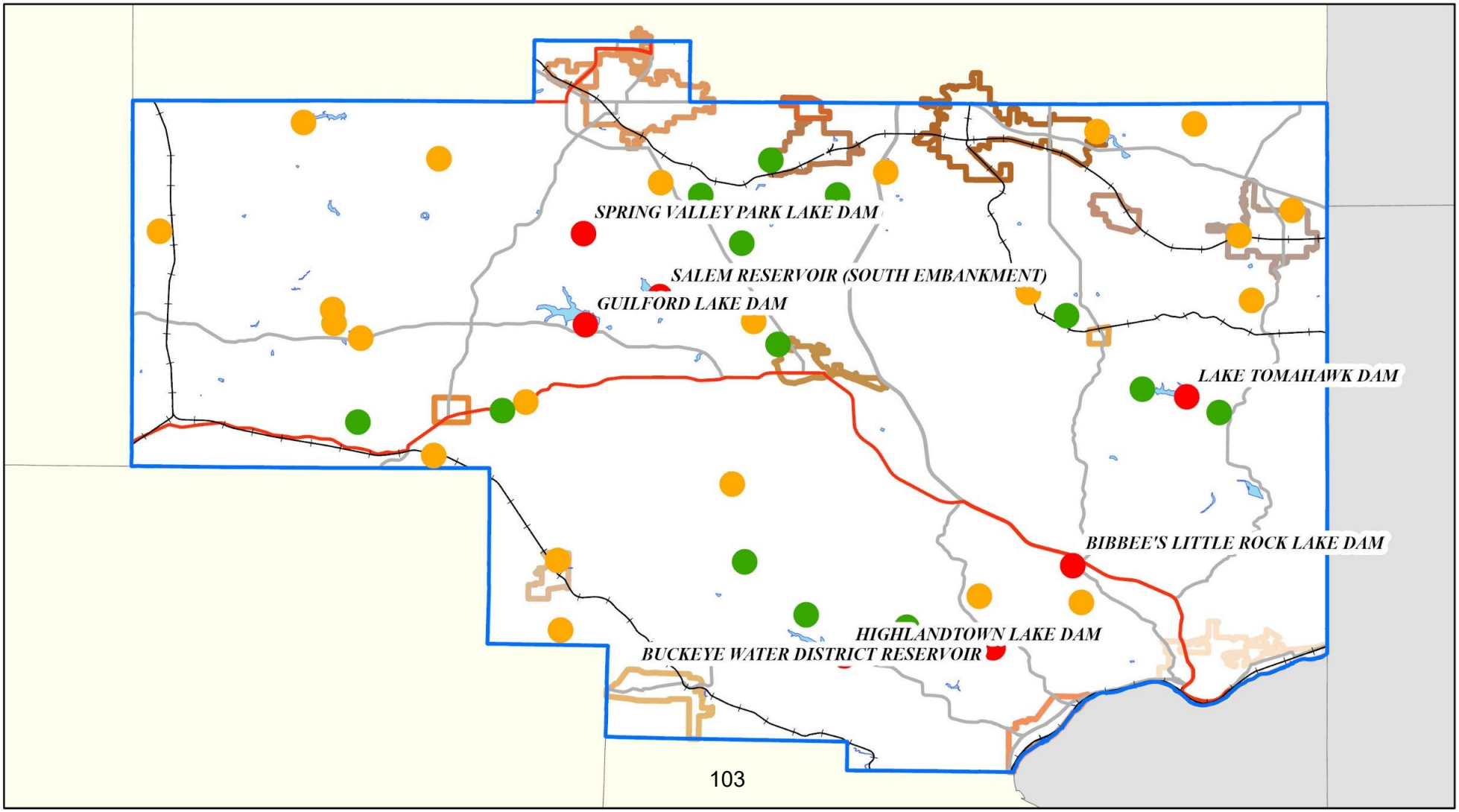
Figure 2.2.2.a: Dams by Hazard Class

Data Source(s):
ODNR Dam Safety, USACE NID

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

Class I
Class II
Class III





As noted, the ODNR Division of Water Resources oversees the state's dam safety program. As overseer, the ODNR works with dam owners and engineers to ensure design, construction, operation, and maintenance to prevent failures and the resulting consequences to the extent possible. The ODNR preliminary design reports, final design reports, and oversees registered professional engineer inspections (during construction and for maintenance) (ODNR, n.d.). The ODNR Division of Water Resources, through the dam safety program, maintains records of structures that fail to meet minimum safety standards. In late 2023, dam safety notified the Columbiana County Emergency Management Agency (CCEMA) that four structures in Columbiana County would be eligible for funding allocated for the rehabilitation of high hazard potential dams. (Failure to meet minimum dam safety standards, structures that pose an unacceptable risk to the public, or those having a condition assessment rating of “poor” or “unsatisfactory” in the NID are eligible.) Those structures were as follows.

- Guilford Lake Dam (Owner: ODNR, Division of Parks & Watercraft)
- Highlandtown Lake Dam (Owner: ODNR, Division of Wildlife)
- Lake Tomahawk Dam (Owner: Lake Tomahawk Property Owners Association)
- Salem Reservoir, South Embankment (Owner: City of Salem)

ODNR also requires the owners of all dams regulated by the Division of Water Resources to compile an emergency action plan (EAP). ODNR makes a variety of information available for dam owners respective to the EAP, including templates for the documents themselves. Doing so ensures EAPs meet a minimum set of requirements. EAPs must include data on event detection, emergency level determination, notifications and communications, expected actions, and plan termination. Of the 43 existing structures, ODNR reports having EAPs on file for 15 (34.88%). Two of the plans on file are labeled “emergency preparedness plans,” presumably for low hazard structures (as both of the facilities, Zepernick Lake Dam and Ismond Pond Dam, are Class II and Class III structures respectively).

The EAPs are important in mitigating risk for two primary reasons. First, and most obviously, the plans outline the emergency response guidelines should an incident occur. Part of an EAP discusses how dam owners would notify emergency response personnel and warn those downstream from a dam. During EAP preparation, dam owners should coordinate with local authorities to determine the capabilities and limitations of emergency response agencies. Secondly, EAPs for high-hazard dams identify a potential inundation area that allows responders to work directly with potentially impacted communities and facilities. Current and accurate inundation areas also identify areas where property owners can consider mitigation actions. The

following maps show, by county, the dams listed by the age of their EAP. Despite the importance of the EAP, local officials should recognize that many dams have private owners, and many of these owners may not have the resources readily available to procure engineering firms to conduct analyses to accompany thorough EAPs. Still, committing basic emergency actions to paper and sharing them with the appropriate authorities can be accomplished cost effectively.

Columbiana County was the site of the first ever dam safety tabletop exercise in Ohio. Local officials reviewed the EAP for the Highlandtown Lake Dam, and in so doing noted the plan referenced an annual tabletop exercise. As such, the CCEMA and ODNR Division of Water Resources held an event on May 22, 2025.

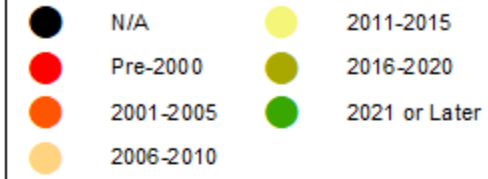
At the time of this update, there were emergency action plans on file for all buy one Class I dam: Bibbee's Little Rock Lake Dam. EAPs for Class I structures ranged in age from 2005 through 2022. Figure 2.2.2.b shows the dams in Columbiana County by EAP status.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.2.b: Dams by EAP Date

Data Source(s):
ODNR Dam Safety, USACE NID

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Levees are far less numerous in Columbiana County. According to the National Levee Database (USACE, 2016), the Wellsville Local Protection Project (LPP) is the only levee system in the county. The Wellsville levee system, built in 1942, is 1.451 miles in length and has an average height of nine feet. It protects approximately 1,113 buildings, $250 million in property value, and approximately 1,868 people (USACE, 2016). According to the USACE, Ohio River water levees have exceeded 50% of the levee's height on three occasions and 75% its height just once. Figure 2.2.2.c shows the details of the Wellsville levee system.

Figure 2.2.2.c



Impacts and Vulnerability

The hazard classification of a dam corresponds to the potential for downstream impacts, not the structural integrity of a dam. Table 2.2.2.2 below describes the downstream effects of a dam failure based on the hazard class.

Table 2.2.2.2

Dam Hazard Classifications				
	Class IV	*Class III*	*Class II*	*Class I*
Loss of Human Life	N/A	None anticipated	None anticipated, though impacts may include health hazards	Loss of life probable
Economic Loss	Losses restricted mainly to the dam	Damage to low-value non-residential structures	Flood water damage to homes, businesses, industrial structures	

Dam Hazard Classifications				
	Class IV	*Class III*	*Class II*	*Class I*
Environmental Damages	Minimal damage in immediately surrounding areas	Damage to agricultural crops and livestock	Damage to agricultural crops and livestock	
Lifeline Interest Impacted	N/A	Damage to local roads	Damage to state and interstate highways, loss of public utilities, railroads, downstream dams, access to some residential areas	

Further, there are generally three types of risks associated with dams: incremental risk, non-break risk, and residual risk.

- **Incremental Risk:** The risk (likelihood and consequences) to the pool area and downstream floodplain occupants attributed to the presence of the dam should the dam breach prior to or after overtopping or undergo component malfunction or misoperation, where the consequences considered are over and above those that would occur without dam breach. The consequences typically are due to downstream inundation, but a loss of the pool can result in significant impacts in the pool area upstream of the dam.
- **Non-Breach Risk:** The risk in the reservoir pool area and affected downstream floodplain due to 'normal' operation of the dam (e.g., large spillway flows within the design capacity that exceeds channel capacity) or 'overtopping of the dam without breaching' scenarios.
- **Residual Risk:** The risk remaining after completing all mitigation and risk reduction actions. Concerning dams, FEMA defines residual risk as "risk remaining at any time" (FEMA, 2018). It is the risk that remains after decisions related to a specific dam safety issue are made and prudent actions have been taken to address the risk. It is the remote risk associated with the condition that was judged not to be a credible dam safety issue.

The USACE has adopted six classes of levees as it pertains to risk. Table 2.2.2.3 further explains these risk classification ratings.

Table 2.2.2.3

Levee Risk Classifications		
Classification	*Actions for Levee Systems and Leveed Areas in this Class*	*Risk Characteristics of this Class*
Very High (1)	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure the community is aware of flood warning systems and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a very high priority.	The likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very high risk.
High (2)	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a high priority.	The likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in high risk.
Moderate (3)	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure O&M is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure the community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions as a priority.	The likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in moderate risk.
Low (4)	Verify risk information is current and implement routine monitoring program and interim risk reduction measures if appropriate; assure O&M is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure the community is aware of flood warning and evacuation procedures; and, recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.	The likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.

Levee Risk Classifications		
Classification	*Actions for Levee Systems and Leveed Areas in this Class*	*Risk Characteristics of this Class*
Very Low (5)	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure the community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.	The likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very low risk.
No Verdict	Not enough information is available to assign risk.	N/A

The USACE (2016) provided an interesting description of its risk rating for the Wellsville system (see https://levees.sec.usace.army.mil/levees/4905000003 for additional information). The following is a direct quote from the database.

> The…Risk Characterization is a description of risk associated with this levee system. It is currently undergoing review and may be updated in the future. The LSOG considers the risk associated with the Wellsville, OH levee system (LST ID# 4391) to be moderate (LSAC 3) for prior to overtopping and low (LSAC 4) for overtopping. The north levee and floodwall (upstream) have been historically loaded up to 50%, but the south levee and floodwall (downstream) were constructed on higher ground and have never been loaded. Large uncertainties exist. There are significant concerns related to seepage and piping and floodwall stability under full load conditions. Performance concerns are driven by unknown foundation materials, the presence of large trees, encroachments, burrowing animal activity, multiple culverts that are 75 years old and in unknown condition, and historic movement of the northern floodwall. The potential for overtopping is low, about 1/1000 ACE, and high river levels would be predicted days in advance allowing for ample warning time for evacuation of the population and reducing the life loss risk.

Social Vulnerability Considerations

There may be social vulnerability variables at play concerning both dam failure risk and impacts. When constructing dams, locations are typically those where should the structure fail, resultant damage would be minimal (e.g., farmland or wildland). There are instances, though, where large infrastructure projects like highway projects displaced socially vulnerable populations thanks to a perception of lower property values (Norwood, 2021). Examples of similar dam projects are much fewer than roadways, and with the benefit of this hindsight, future dam projects

can avoid those mistakes, thereby minimizing risks and some impacts exclusively to socially vulnerable populations.

Regarding impacts, imminent dam failure necessitates rapid notification of potentially impacted populations. Those with low English proficiency may not understand immediate warnings to evacuate. Further, they may be caught off guard by imminent warnings because of similar effects surrounding awareness messages about deteriorating conditions associated with nearby dams. Further, upon receiving an evacuation notice, households with no vehicle can experience difficulty evacuating. Figure 2.2.2.d shows those areas with higher percentages of people speaking English “less than well,” and Figure 2.2.2.e depicts the percentage of households with no vehicle available.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.2.d: Tracts by Limited English Proficiency

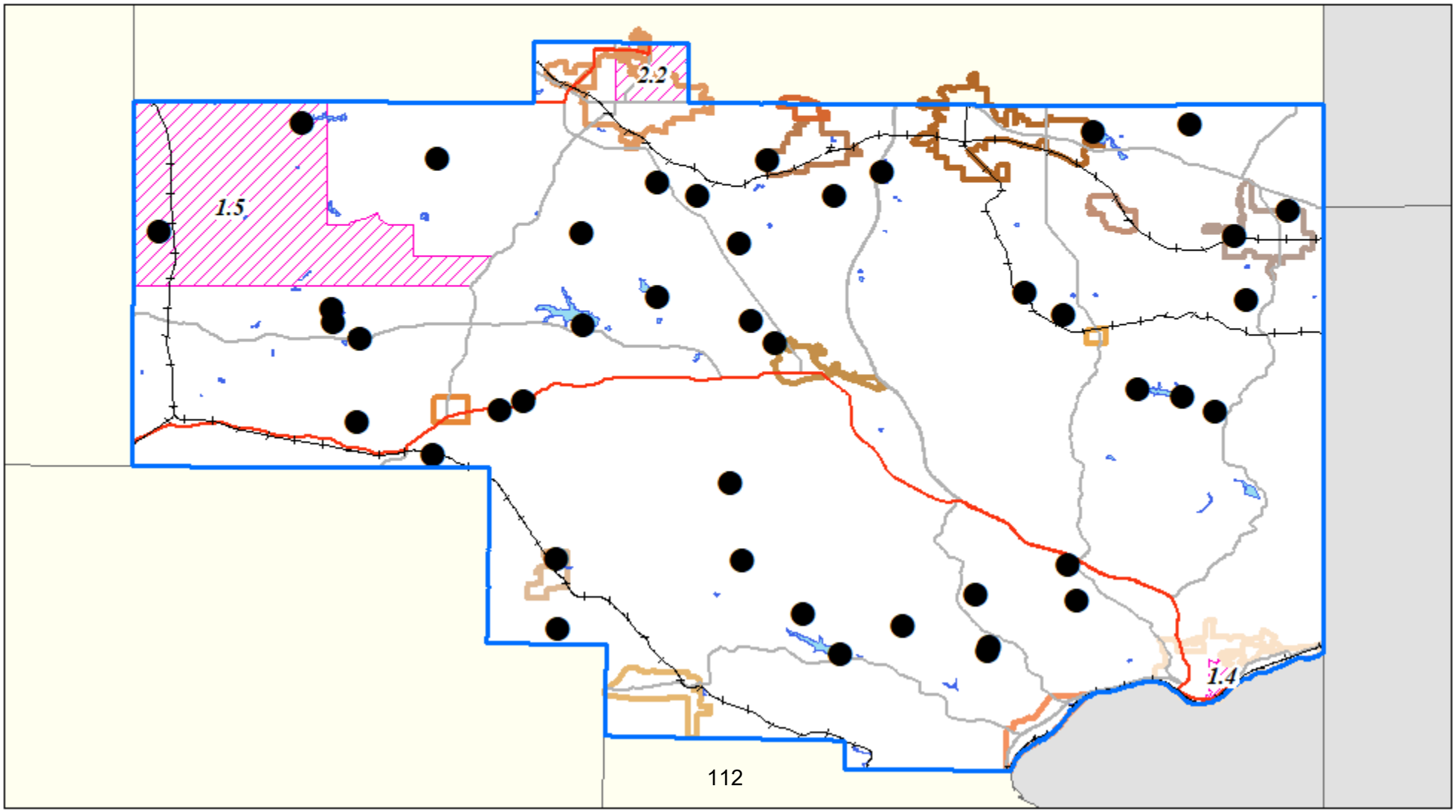
Data Source(s):
CDC ATSDR (2020), ODNR Dam Safety

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

Dams (any class)

Greater than 1% of Persons w/ Lim. English Prof.





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.2.e: Tracts by Vehicle Availability

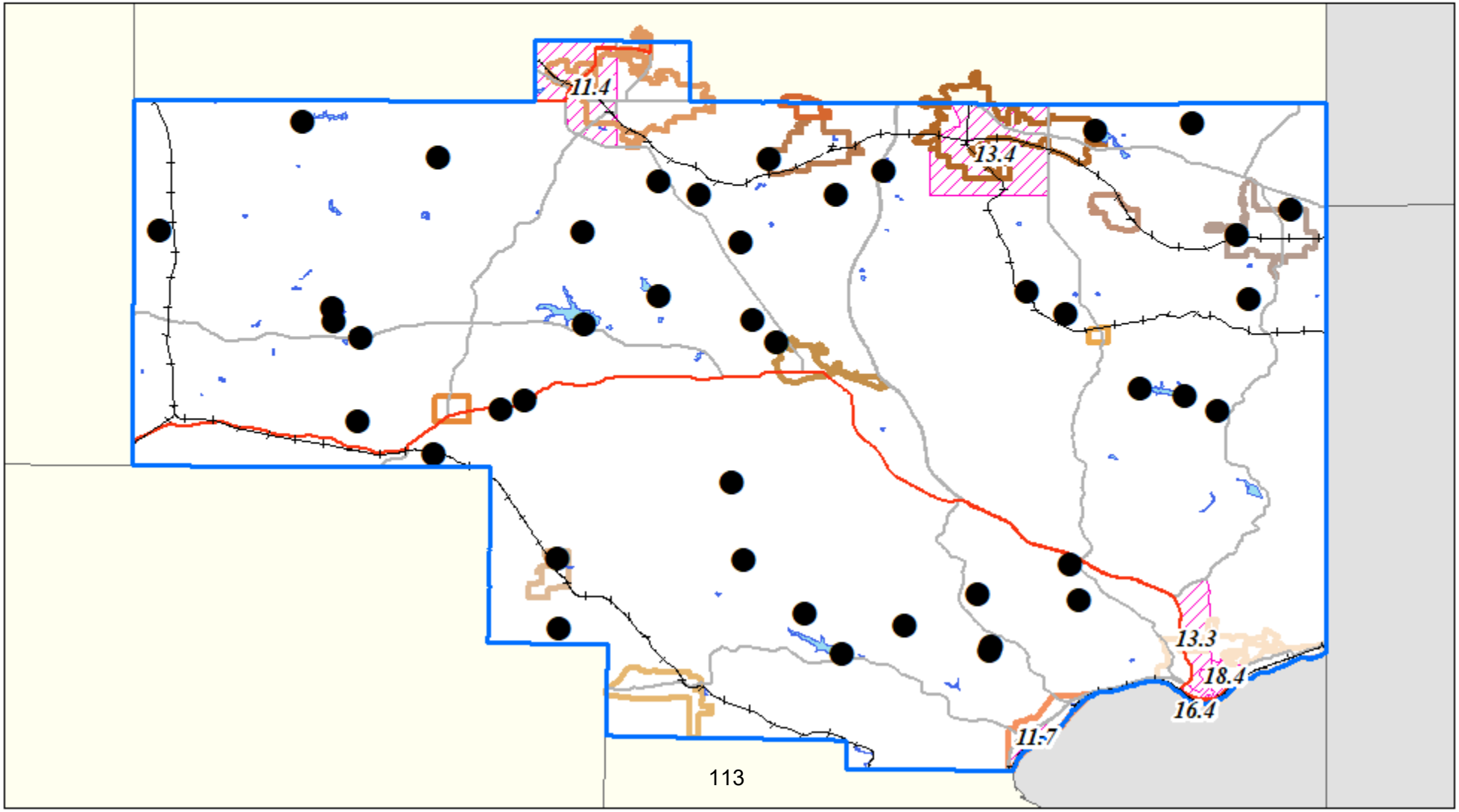
Data Source(s):
CDC ATSDR (2020), ODNR Dam Safety

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

Dams (any class)

Greater than 10% of Households w/ No Vehicle





Previous Occurrences

The National Performance of Dams Program (NPDP) at Stanford University maintains records on modifications, repairs, incidents and their consequences, and inspections for dams in the United States and worldwide. According to the NPDP, since 1991, there have been eight incidents in the county (NPDP, n.d.). Additionally, the NPDP lists a 1901 event caused by piping in East Liverpool (with no other details). Table 2.2.2.4 lists those incidents.

Table 2.2.2.4

Dam Incidents in Columbiana County			
Dam Name	*Class*	*Incident Type*	*Date*
East Liverpool	N/A	Piping	1901
Spring Valley Park Lake Dam	Class I	Inadequate Spillway Capacity	9/5/1991
Summitville Lake Dam	Class II	Inadequate Spillway Capacity	3/19/1996
Woodland Lake Dam	Class II	Concrete Deterioration	7/21/1998
Beaver Lake Dam	Class II	Inadequate Spillway Capacity	10/26/1999
Lake Tomahawk Dam	Class I	Inadequate Spillway Capacity	10/26/1999
Lake P'NA Dam	Class II	Inadequate Spillway Capacity	8/10/2000
Lower Wallace Lake Dam	Class II	Inadequate Spillway Capacity	6/12/2001
Rayls Lake Dam	Class II	Inadequate Spillway Capacity	5/17/2001

A search of the "Dam Incident Database" maintained by the Association of State Dam Safety Officials (2025) lists 74 failure incidents in Ohio between 2011 and 2023, one of which was in Columbiana County. The most recent version of the Ohio enhanced state mitigation plan listed eight previous dam incidents in the county (OEMA, 2024).

- **Guilford Lake Dam, 1852** (Source: Ohio Enhanced State Mitigation Plan, p. 2-108)

  The dam breached; no downstream damage was noted.

- **Sevakeen Country Club Lake Dam, 1930s** (Source: Ohio Enhanced State Mitigation Plan, p. 2-109)

  The dam was breached and rebuilt; no downstream damage occurred.

- **Slates Lake Dam, 1965** (Source: Ohio Enhanced State Mitigation Plan, p. 2-108)

  The dam failed during the initial filling of the lake due to seepage around spillway pipe; no damage downstream occurred.

- **Westville Lake Dam, 1980, 1982, 1994** (Source: Ohio Enhanced State Mitigation Plan, p. 2-109)

  Officials detected a breach in the south dike in 1980 as well as another breach in 1982. A portion of replacement spillway washed out during construction in 1994; no damage downstream was reported.

- **Woodland Lake Dam, 2003** (Source: Ohio Enhanced State Mitigation Plan, p. 2-109)

  The dam overtopped; no downstream damage occurred.

- **Buckeye Water District Reservoir, 2008** (Source: Ohio Enhanced State Mitigation Plan, p. 2-109)

  No incident description listed.

- **Buckeye Water District Reservoir II, 2021** (Source: Dam Incident Database, Association of State Dam Safety Officials)

  On July 1, 2021, excessive seepage occurred at the facility upon its first filling. As a result, the owner added a toe drain and interior clay liner. There was no downstream damage reported from this incident.

There have been no recorded levee failures in Ohio (OEMA, 2024). As noted above, the northern portion of the Wellsville levee has been loaded up to 50%, and the southern portion has never been loaded.

Loss and Damages

Planners reviewed the emergency action plans (EAPs) for the Class I facilities in Columbiana County[1]. These plans identified structures at risk in various ways, and planners then used this data to extrapolate loss estimates in other categories. Using houses as a source figure, an estimated number of exposed persons was calculated by multiple the number of houses by the Census-derived persons per household figure (2.37) for Columbiana County (U.S. Census Bureau, 2025). Planners then used the following variables to derive an aggregated loss estimate.

[1] Planners did not review the EAP for Bibbee's Little Rock Lake Dam. Columbiana County has tried numerous times to obtain the EAP, but the owners of the dam have not provided it. The CCEMA will continue working with ODNR to obtain the file, and upon receipt, will update this narrative.

- Residential: Median value of owner-occupied housing units ($139,100) (U.S. Census Bureau, 2025)
- Non-Residential: Taxable value of real property of the non-residential categories on the Ohio Development Services Agency's most recent county profile ($611,911,160) and the corresponding number of private sector structures (2,049) to estimate a per-facility dollar loss for structures (Ohio Development Services Agency, 2024). Importantly, non-residential structures may include anything from barns to bridges, so the per-facility dollar estimate here serves as a proxy. These figures are meant to identify the magnitude of relative exposure only.

Table 2.2.2.5 lists the results of these calculations.

Table 2.2.2.5

Columbiana County Dam Failure Loss Estimates				
Dam	*Exposed Persons*[2]	*Residential Structures*	*Non-Residential Structures*	*Loss Estimate*[1]
Buckeye Water District Reservoir	0	0	Est. 2 (on-site)	$597,278
Buckeye Water District Reservoir II	5	2	0	$278,200
Guilford Lake Dam	299	126	1	$17,825,200
Highlandtown Lake Dam[3]	1,349	569	1,123	$414,519,497
Lake Tomahawk Dam	21	9	1	$1,550,500
Salem Reservoir (South Embankment)	0	0	1 (on-site)	$298,639

Future Occurrences

The state of dam infrastructure in Ohio is a concern. As dams age, they become susceptible to issues related to that age (concerning the life span of materials used in construction). The average age of dams in Columbiana County is 67.1 years. The communities around dams, particularly upstream along the waterways they impound, also change. While some changes, such as declining population in those upstream areas, might not alter the risk profile in measurable ways, other changes, such as increased development (leading to increased runoff) upstream, can strain dams. The American Society of Civil Engineers (ASCE) regularly issues a

[2] Figures derived from the calculation detailed in the bullet list above.
[3] The Highlandtown Lake Dam EAP identified "critical structures" and "inundated structures." Planners figured critical structures as non-residential.

"report card" on America's infrastructure with state-by-state breakdowns. The ASCE's 2021 grade for Ohio's dams was a "C-" (ASCE, 2025). Its grade for Ohio's levees was a "D".

Future Climate Considerations

As a technological hazard, one might not readily think of the implications of future climate impacts on dam or levee failures. However, though indirect, future conditions may impact dams and levees, particularly as those dams and levees age and greater quantities of precipitation fall. A 2022 USA Today article compared what was "once considered a 25-year storm" in 1995, 2025, and 2055 (Caruso, Crowe & Lackmeyer, 2022) for dams east of the Rocky Mountains. The findings of their analysis suggested that what was once a 25-year storm may ultimately be considered at 15-year storm by 2055 (i.e., 65% more likely for the occurrence of such storms). The authors and their researcher colleagues used the 25-year storm as a baseline because such storms had been contributing factors for the failures of Edenville, Michigan and Spencer, Nebraska dams (in 2020 and 2019, respectively).

Risk Assessment

This section summarizes the vulnerability of the county to dam and levee failure. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding the failure of dams or levees.

Table 2.2.2.6

Public Sentiment, Dam & Levee Failure					
	Level of Concern				*Total Respondents*
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	
Dam & Levee Failure	23 (37.1%)	23 (37.1%)	15 (24.2%)	1 (1.6%)	62
In the past five years, do you remember this hazard occurring in your community?				3	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, six (3.47%) indicated being concerned about dam and levee failures, with no respondents indicating that a failure was the hazard that concerned them the most.

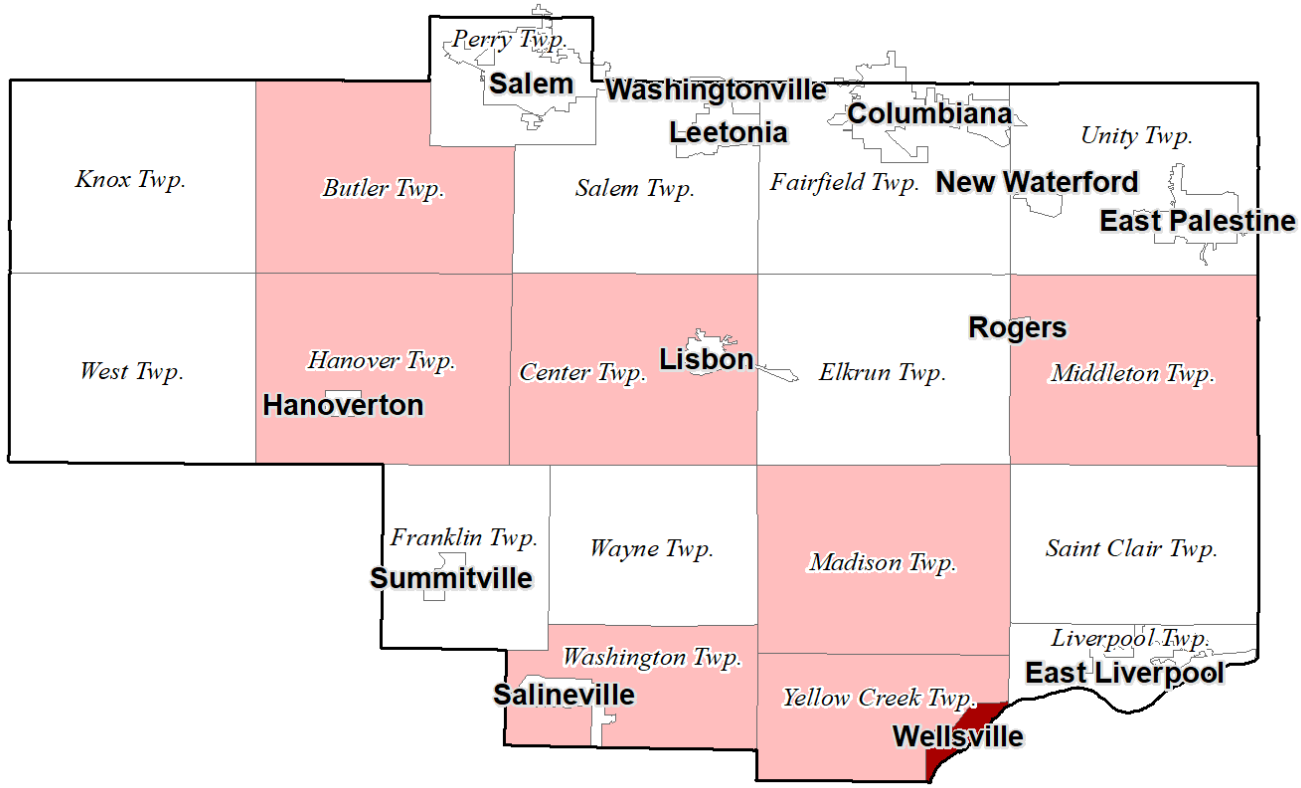
The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

Table 2.2.2.7

Dam & Levee Failure Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	1	So unlikely that it can be assumed it will not occur in a year	There have been 14 dam incidents and zero levee failures in Columbiana County since 1852 (for an average of 0.08 incidents per annum).
Response	1	Less than 1 day	Due to frequent inspections of dams in Columbiana County and minimal recorded historical damage downstream, the response to an event would be expected to be minimal.
Onset	1	More than 24 hours	Because dams are frequently inspected, and their inundation can be predicted based on weather, warning of a critical failure is expected. Further, high river levels on the Ohio River would likely yield warning time for a potential overtopping of the Wellsville levee.
Magnitude	1	Less than 10% of land area	Most dams are in rural areas, and the single levee protects less than one square mile of land area.
Business	1	Less than 24 hours	Most dams are in rural areas, and the single levee protects less than one square mile of land area. The county's economy should not be disrupted by either failure.
Human	2	Low (some injuries)	Though most dams in the county are Class IV or unclassified, there are dams with Class I and II status. Failure from those dams could potentially harm people.
Property	1	Less than 10% of property affected	Most dams in the county are Class IV or unclassified, suggesting that property loss would be primarily from loss of the dam itself and the owner's property.
Totals	**8**	**Lowest**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for dam or levee failure. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.2.f



Though risk from dam and levee failure is a combination of factors (e.g., age, materials, wear, etc.), the figure above lists the areas downstream from Class I dams as well as those with areas protected by a levee.

2.2.3 Drought

A drought is a period of abnormally dry weather that persists long enough to produce a serious hydrological imbalance, and a temporary shortage of water for humans, animals, and plants.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	Typically after a period of prolonged absence of precipitation	**Risk Ranking:**	Low
	Warning Time:	Over 24 hours	**Type of Hazard:**	Natural
	Probability:	Unlikely to occur in a year	**Impact:**	25-50% of land area affected
	Disaster Declarations:	S5767 (USDA FSA), 2024 S5747 (USDA FSA), 2024 S4165 (USDA FSA), 2016 S3384 (USDA FSA), 2012		

Hazard Overview

"Drought" is a period of abnormally dry weather, which persists long enough to produce a serious hydrological imbalance. Drought is a term used in relation to who or what is affected by the lack of moisture. Drought can be a result of multiple causes, including global weather patterns that produce persistent, upper-level high-pressure systems with warm, dry air, resulting in less precipitation. According to the National Centers for Environmental Information (NCEI), a drought is a complex event that is difficult to either monitor or clearly define. Droughts develop slowly; typically, they are already underway when officially identified. There are several types of droughts (Sears, 2017, p. 138).

- Meteorological Drought: Differences from the normal precipitation amounts. Because different areas receive different amounts of rainfall, a drought in one place might not be considered a drought in another.
- Agricultural Drought: Moisture deficiency seriously injurious to crops, livestock, or other agricultural commodities. Parched crops may wither and die. Pastures may become insufficient to support livestock. The effects of agricultural droughts are difficult to measure because many other variables may impact production during the same growing season.
- Hydrological Drought: Reduction in stream flow, lake and reservoir levels, depletion of soil moisture, and a lowering of the groundwater table. Consequently, there is a decrease in groundwater discharge to streams and lakes. Prolonged hydrological drought will affect the water supply.

- Socioeconomic Drought: A lack of water that begins to affect people's daily lives. "A socioeconomic drought occurs when the demand for an economic good exceeds supply as a result of a weather-related shortfall in water supply" (NDMC, 2025).

Precipitation falls in uneven patterns across a region (and as steering committee members indicate, it may fall unevenly across an area as small as the county). The amount of precipitation at a particular location varies from year to year, but over the years, the average amount is reasonably constant. The amount of rain and snow also varies with the seasons. Even if the total amount of rainfall for a year is about average, rainfall shortages can occur during a period when moisture is critically necessary for plant growth, such as in early summer. When little to no rain falls, soils can dry out, and plants can die. When rainfall is less than normal for several weeks, months, or years the water in wells decreases. "If dry weather persists and water-supply problems develop, the dry period can become a drought" (USGS, 2018).

Location and Extent

Droughts occur throughout North America, and in any given year, at least one region of the country is likely to experience drought conditions. Droughts are region-wide phenomena that can affect many areas and jurisdictions simultaneously. The severity of drought can evolve throughout the year; what begins as a mild drought can become severe or extreme, then subside to a mild incident. This process can take weeks or months, and the effects can be felt after drought conditions end.

The Palmer Drought Severity Index (PDSI) is a widely used measure of drought to track moisture conditions. The PDSI is "an interval of time, generally in months or years in duration, during which the actual moisture supply at a given place rather consistently falls short of the climatically appropriate moisture supply." The range of PDSI is from -4.0 (extremely dry) to +4.0 (excessively wet), with the central half (-0.5 to +0.5) representing normal or near-normal conditions. In the United States, the USDA,

USDM and PDSI Comparison

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

Table 2.2.3.1

National Drought Mitigation Center at the University of Nebraska-Lincoln, the U.S. Department of Commerce, and the National Oceanic and Atmospheric Administration (NOAA) developed another measurement of droughts named the U.S. Drought Monitor (USDM). The table above shows the two scales and how they compare.

As illustrated in the Table 2.2.3.1 above, D0, described as **Abnormally Dry**, corresponds with the PDSI of -1.0 to -1.9. Possible impacts include "short-term dryness, slowing of crop and pasture growth" (NDMC, 2016). **Moderate Drought**, level D1, corresponds to a PDSI of -2.0 to -2.9. "These conditions can result in damage to crops and pastures and can cause the development of some water shortages" (NDMC, 2025). The D2 level, known as a **Severe Drought**, is a condition where "crop or pasture losses are likely and water shortages will be common" (NDMC, 2016). This correlates with a PDSI of -3.0 to -3.9. The D3 (PDSI of -4.0 to -4.9), or **Extreme Drought** level includes impacts such as "major crop and pasture losses as well as widespread water shortages and restrictions" (NDMC, 2016). The most critical drought category (D4, **Exceptional Drought**), with a PDSI of -5.0 or less, will create exceptional and widespread loss and will lead to water emergencies as reservoirs, streams, and wells are short of water (NDMC, 2025).

In addition to the PDSI, the Crop Moisture Index (CMI) calculates the change in moisture available from week to week, which gives a short-term status of agricultural moisture (NOAA NIDIS, n.d.). Table 2.2.3.2 describes the Crop Moisture Index.

Crop Moisture Index	
Crop Moisture Index Value	*Drought Condition*
3.0 and up	Excessively Wet
2.0 to 2.9	Wet
1.0 to 1.9	Moist
-0.9 to 0.9	Slightly Dry/ Favorable Moist
-1.0 to -1.9	Abnormally Dry
-2.0 to -2.9	Excessively Dry
-3.0 or less	Severely Dry

Table 2.2.3.2

Figure 2.2.3.a below shows the U.S. Geological Survey's National Land Cover Dataset with areas having a "land cover class code value" denoting *Pasture* and *Crops* highlighted. These areas are those most likely to be impacted by drought from an agricultural perspective.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.3.a: Agricultural Land Cover

Data Source(s):
USGS NLCD (2021)

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

Crop
Pasture



Impacts and Vulnerability

Droughts can impact drinking water both in terms of availability and demand. According to the U.S. Environmental Protection Agency (USEPA), as temperatures rise, people and animals need more water to maintain health. Additionally, many economic activities require abundant water sources, such as energy production and growing food crops. As droughts reduce available water sources, local officials will need to monitor water usage closely to maintain enough for critical uses. An extreme drought could harm the large agricultural or open urban area sectors of Columbiana County. According to the United States Department of Agriculture's (USDA) 2022 Census of Agriculture, there are 1,129 farms in the county encompassing over 153,993 acres of land. In total, Columbiana County produced over $172,530,000 worth of agricultural products (based on market prices at the time). The effects of drought would negatively impact the following business types throughout the region (and county): farmers, local water utilities, restaurants, laundry mats, community swimming pools, and car washes.

Prolonged droughts can affect a municipality's ability to provide adequate water supplies as storage could become critically low. Mandatory water conservation measures and water use priorities may be necessary. The local health district may have to conduct water quality sampling of private water wells as a buildup of contaminants in these wells is common during extreme drought conditions. Local clinics and hospitals may begin to see a significant increase in respiratory infections (i.e., asthma, bronchitis, and pneumonia) resulting from the dry and windy conditions potentially affecting air quality.

The National Drought Mitigation Center (NDMC) has developed the U.S. Drought Monitor. The Drought Monitor is a map that is updated weekly using data from the previous week to show areas of the U.S. that are in a drought. The following table lists the U.S. Drought Monitor classifications of drought, along with potential impacts (NDMC, 2025).

Table 2.2.3.3

U.S. Drought Monitor Classification			
Category	*Description*	*Possible Impacts*	*Palmer Drought Severity Index*
D0	Abnormally Dry	Going into drought: • Short-term dryness slows planting, growth of crops or pastures Coming out of drought • Some lingering water deficits • Pastures or crops not fully recovered	-1.0 to -1.9

U.S. Drought Monitor Classification			
Category	*Description*	*Possible Impacts*	*Palmer Drought Severity Index*
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells are low, and some water shortages developing or imminent • Voluntary water-use restrictions requested	-2.0 to -2.9
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	-3.0 to -3.9
D3	Extreme Drought	• Major crop/pasture losses • Widespread shortages or restrictions	-4.0 to -4.9
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells create water emergencies	-5.0 or less

Severe drought conditions can negatively affect human health (CDC, 2024). Some effects are short-term and can be directly observed and measured, while others are indirect and are not easy to anticipate or monitor. The possible health implications of drought include:

- Compromised quantity and quality of drinking water,
- Increased recreational risks,
- Effects on air quality,
- Diminished living conditions related to energy, air quality, sanitation, and hygiene,
- Compromised food and nutrition, and
- Increased incidence of illness and disease.

Social Vulnerability Considerations

Other human-centric impacts are possible. Drought vulnerability has generally been linked to poverty and drought-related health outcomes have been associated with air quality. The reliance on small or poorly maintained water distribution systems puts populations at increased risk of morbidity due to exposure to contaminated drinking water or issues resulting from reduced use of water resources for hygiene and food washing. Finally, children and the elderly are vulnerable to various drought-related health outcomes, such as air and waterborne diseases (Fard et al., 2022). The following images show (a) Census tracts in the county where more than 25% of the tract's population is below 150% of the poverty level (Figure 2.2.3.b), and (b) Census tracts showing the highest percentages of vulnerable populations (i.e., those under 18 and 65+) as a function of the total population (Figure 2.2.3.c).

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.3.b: SVI Considerations (Poverty)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, below 150% of Poverty Level



COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.3.c: SVI Considerations (Age)

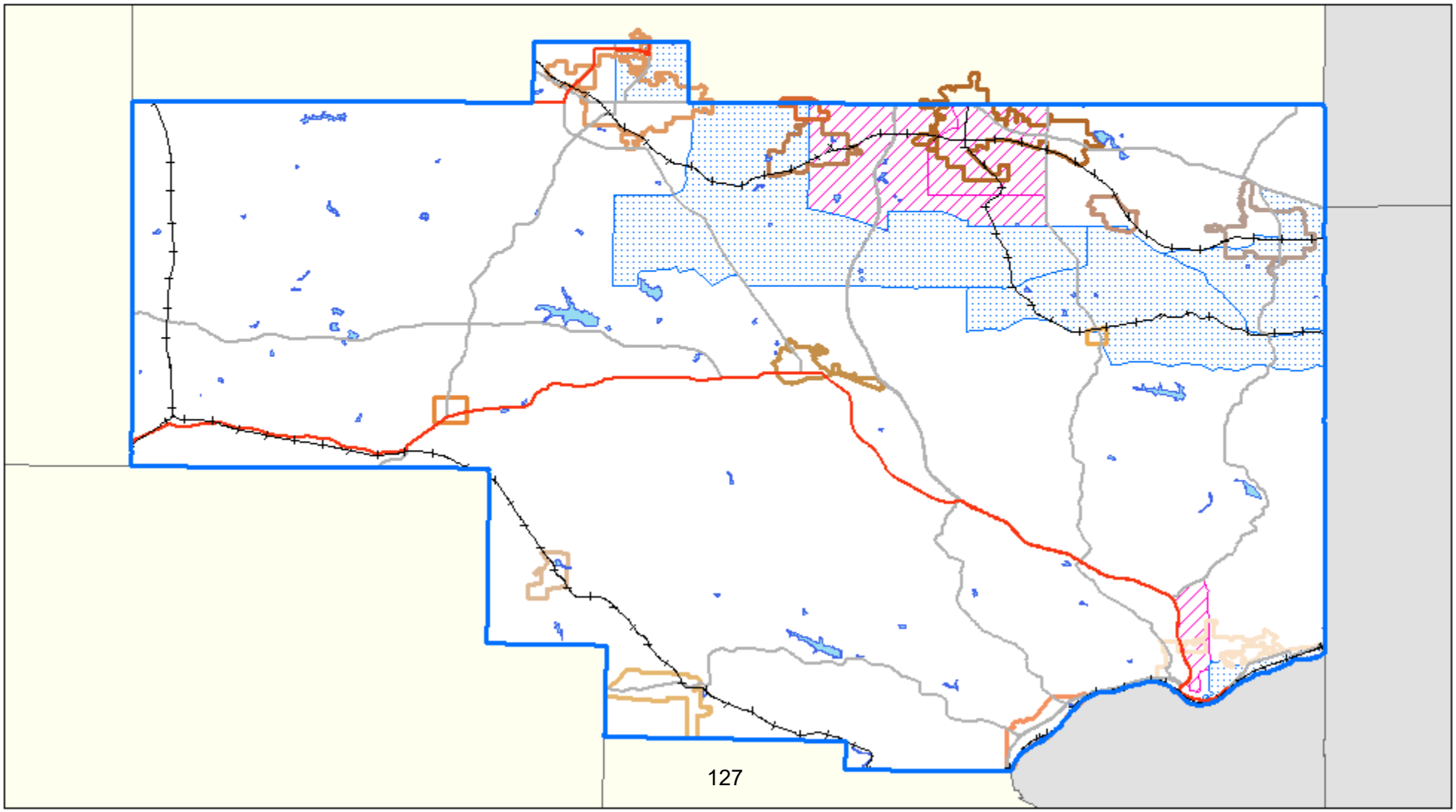
Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, Age 17 & Under

Greater than 25% of Population, Age 65+





Taken together, these maps contribute to a refined understanding of the potential social impacts of droughts. Land cover in the northern and western portions of the county are more agricultural than the southeastern areas (as one gets closer to the Ohio River). Areas north of US Route 30, particularly from Lisbon and north, have Census tracts with greater than 25% of the population consistent with both social vulnerability categories considered. Though not a direct correlation, in areas where land cover suggests a higher chance of employment and economic impacts surrounding agriculture, there are also instances of higher poverty and more exposure to vulnerable age demographics.

Hydrological drought is also of concern. The Ohio Environmental Protection Agency (OEPA) maintains data on water systems in Ohio. Its data indicates 25 public water systems in Columbiana County, with service populations ranging from 35 through 16,850 (OEPA, 2025). All water systems in the county utilize either ground water or surface water as the primary source, meaning prolonged hydrological droughts will impact the water supply. These impacts may more adversely affect the demographics with the social vulnerability characteristics noted above.

Previous Occurrences

The National Centers for Environmental Information (NCEI) Storm Event Database records instances of drought from 1999 to the present. The following table presents the NCEI droughts that have affected Columbiana County.

Table 2.2.3.4

Previous Drought Occurrences – Columbiana County					
Location	*Date*	*Injuries*	*Deaths*	*Property Damage*	*Crop Damage*
Columbiana (Zone)	08/01/1999	0	0	$0 Reported	$0 Reported
Columbiana (Zone)	09/01/1999	0	0	$0 Reported	$0 Reported

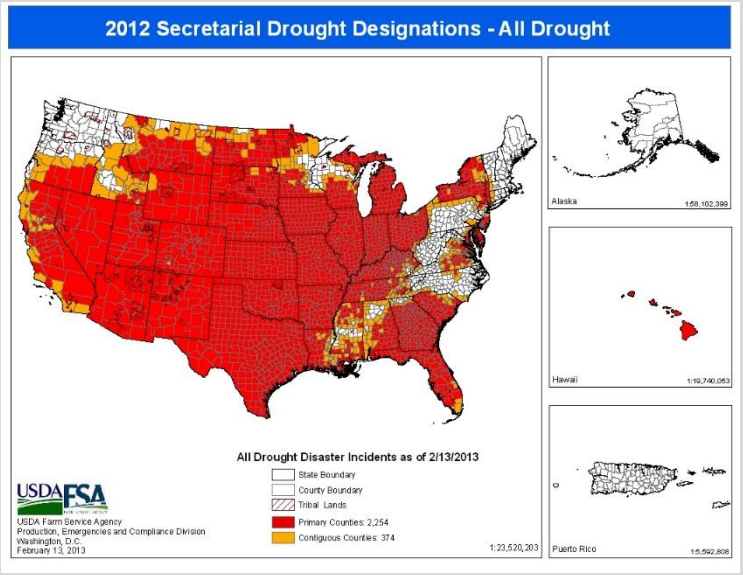
1999 EASTERN OHIO DROUGHT

Dry conditions (that began in July 1998) continued through the summer of 1999 and into the month of August. On August 10, the U.S. Department of Agriculture declared all Eastern Ohio as an agricultural disaster area. Precipitation deficits for the period of May through August (1999) showed the area to be between 2 and 8 inches below normal. Preliminary estimates predicted a $600 million agricultural loss statewide from the drought. September rainfall again averaged below normal for Eastern Ohio, with the Palmer Drought Severity Index keeping the entire area under a moderate to severe drought. The Crop Moisture Index also showed abnormally dry conditions (NOAA NCEI, 2024).

Data from the NCEI appears incomplete for Columbiana County, particularly given the three USDA Farm Service Agency Secretarial Designations since 2012. Columbiana County was a "primary county" for Designation S3384, issued in 2012. The county was a "contiguous county" for Designation S4165 in 2016.

2012 DROUGHT (Excessive Heat)

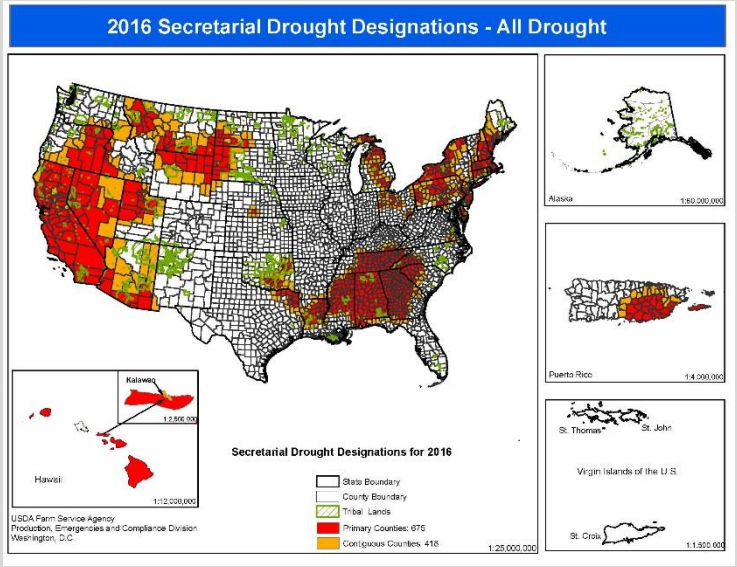
USDA FSA Designation: S3384 (Primary)



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

2016 DROUGHT

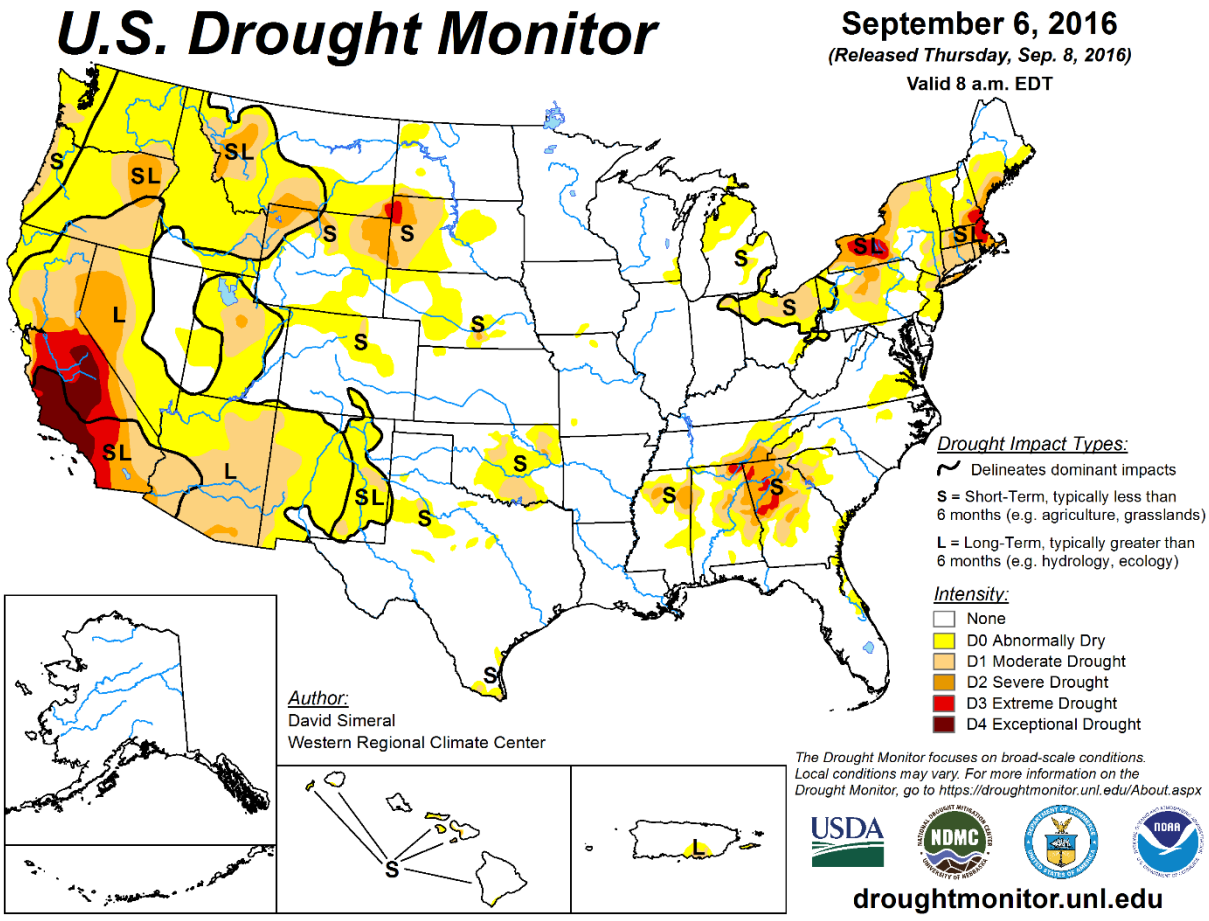
USDA FSA Designation: S4165 (Contiguous)



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

As this plan was updated in 2024, several areas in Midwest and Mid-Atlantic states were experiencing drought conditions. The September 3, 2024, drought monitor indicates areas in and around Columbiana County as ranging from D0 through D1, with areas just to the south and west as D3 and D4. Columbiana County appeared in the USDA FSA Secretarial Disaster Declarations (S5747 and S5767) as a "continuous county." Figure 2.2.3.d below comes from the September 2024 U.S. Drought Monitor report.

Figure 2.2.3.d



Loss and Damages

Loss estimates concerning drought are difficult to quantify, though droughts generally affect crops rather than structures. There is no need for a loss estimate for structural damage. The varying severity levels of drought make estimating crop loss difficult, especially considering the numerous possible mitigating factors such as time of year, heartiness of crops, etc.

The worst-case scenario would involve the entire agricultural sector being affected by a prolonged and serious drought. Based on 2022 numbers, the most recent Census of Agriculture published by the USDA, the market value of crops sold in the county was $64,765,000. Drought conditions also affect livestock production. Low rainfall causes a drop in available drinking water precluding the effective grazing of pastures. During drought years, a study from Africa demonstrated that livestock suffers a lower conception rate due to an incomplete return to peak body weight and a higher rate of miscarriage due to high-stress levels as the dry season proceeds. Therefore, drought in one year will lead to lower calving rates in the following year. As access to grazing pastures is reduced there will be a decrease in livestock body weight reducing the value of livestock sold at market. Female milk output will also decrease as fodder access is reduced. Once food intake is below a certain level, lactation will cease, reducing products for the market and affecting a calf's nutrition (Toumlin, 1986).

Table 2.2.3.5

USDA Census of Agriculture (2022) Data, Columbiana County	
Number of Farms	1,129
Land in Farms	153,993 ac
Average Size of Farm	136 ac
Market Value of Products Sold	$172,530,000
Crop Sales	$64,765,000
Crop Sales %	38%
Livestock Sales	$107,765,000
Livestock Sales %	62%
Average Sales Per Farm	$152,817

Note: ac = Acre

Although there is no direct correlation between the presence of farms and drought risk, the market value of agricultural products sold provides evidence of total economic activity exposed to losses from drought. On average, $172.5 million of agricultural products in Columbiana County are vulnerable to drought conditions in any given year.

For planning purposes, utilizing research on average crop yield losses provides the basis for a mathematical loss calculation. Kuwayama (2019), focused on corn and soybeans and found that a week of drought in non-irrigating counties results in average crop yield reductions ranging from 0.1% to 1.2%. The average market value of agricultural crops sold annually (i.e., across 52 weeks) in the county suggests an average weekly value of approximately $1,245,500 (for a potential exposure ranging from $1,246 to $14,946).

The declared incident cited above indicates the length of the 2012 drought was from February through September (eight months). Using the 2012 drought as a proxy occurrence representing significant droughts for the county (approximately 32 weeks), the Kuwayama (2019) calculation would suggest a range of exposure of $39,872 to $478,272 per drought.

Another way to estimate potential drought losses is via FEMA's National Risk Index (2023). Planners utilized that resource for the data in the following table.

Table 2.2.3.6

Columbiana County Drought NRI Exposure / Expected Annual Loss (EAL) Estimates			
Census Tract	*Exposure (Agriculture)*	*EAL Agriculture*	*EAL Total*
39029950100	$29	$0	$0
39029950200	$8	$0	$0
39029950300	$14	$0	$0
39029950400	$37	$0	$0
39029950500	$6	$0	$0
39029950600	$4	$0	$0
39029950700	$6	$0	$0
39029950800	$33	$0	$0
39029950900	$36	$0	$0
39029951000	$58	$0	$0
39029951100	$18	$0	$0
39029951200	$73	$0	$0
39029951300	$62	$0	$0
39029951401	$21	$0	$0
39029951402	$40	$0	$0
39029951500	$10	$0	$0
39029951600	$38	$0	$0
39029951700	$26	$0	$0
39029951800	$1	$0	$0
39029951900	$4	$0	$0
39029952000	$2	$0	$0
39029952100	$0	$0	$0
39029952200	$1	$0	$0
39029952300	$1	$0	$0
39029952400	$13	$0	$0
Grand Total	**$540**	**$0**	**$0**

Future Occurrences

Though it is difficult to anticipate precisely where drought conditions will occur in the future, local officials can estimate the chances of experiencing drought conditions generally. The National Oceanic and Atmospheric Administration's (NOAAs) Earth System Research Laboratory (ESRL) has divided the U.S. into "climate divisions." ESRL further maintains data for each of these areas,

including the Palmer Drought Severity Index (PDSI) values for all months between 1895 and 2023.

Columbiana County is in the Northeast Hills climate division of Ohio. It experienced severe or extreme drought conditions during 84 of the 1,560 months (5.38%) comprising the 1895-2024 period. Interestingly, this percentage of months in drought is the lowest of Ohio's 10 climate divisions. Despite the dry conditions of 2024, only November and December were at the "severe" level (though it is worth noting that July and August were at the "mild" level, while September and October were at the "moderate" level). Figure 2.2.3.e below displays ESRL Climate Divisions' months spent in severe or extreme drought in the county (NOAA NCEI, 2025).

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

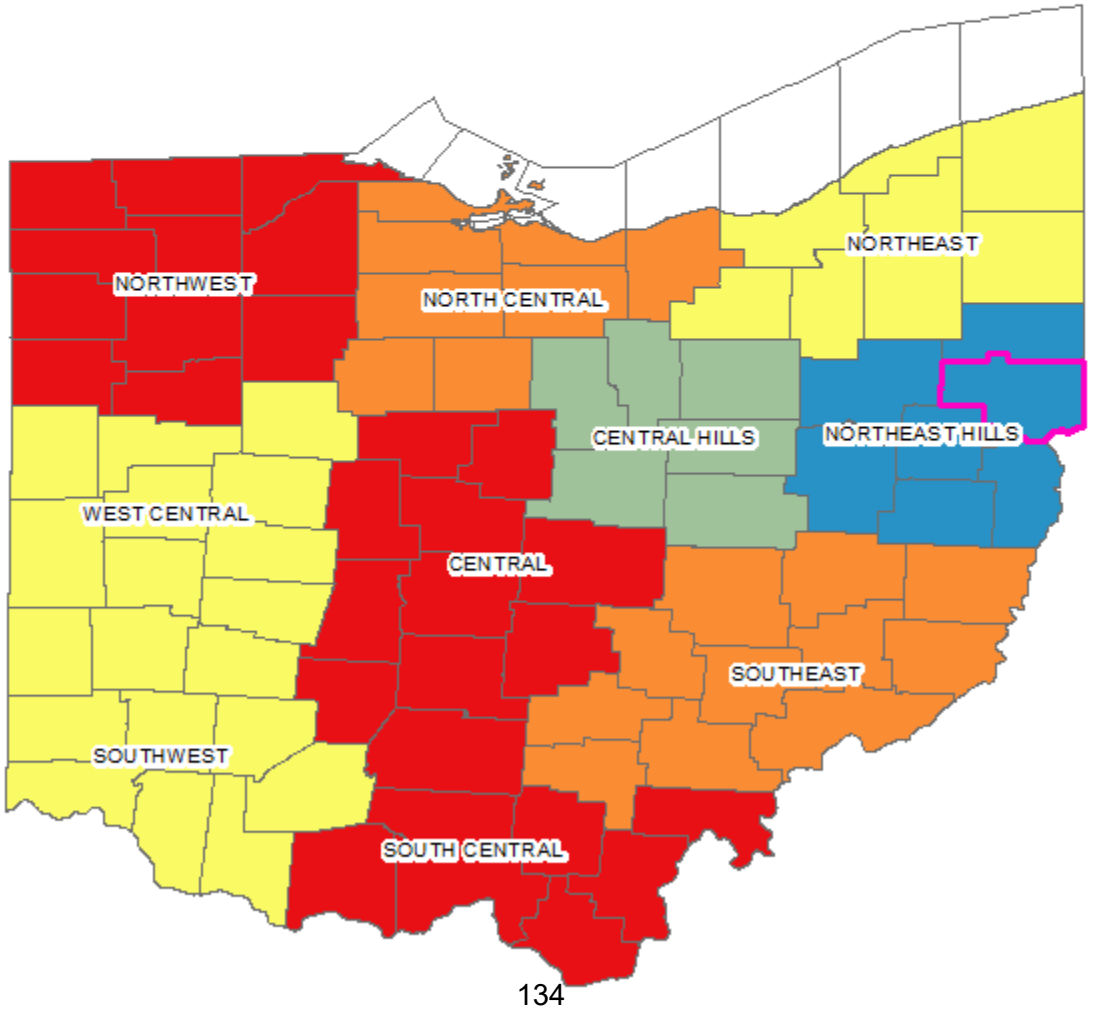
Figure 2.2.3.e: Months in Severe/Extreme Drought

Data Source(s):
NOAA Earth Systems Research Laboratory

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

Columbiana County
5.38% or Less
5.39% - 6.22%
6.23% - 6.92%
6.93% - 7.44%
7.45% - 7.88%

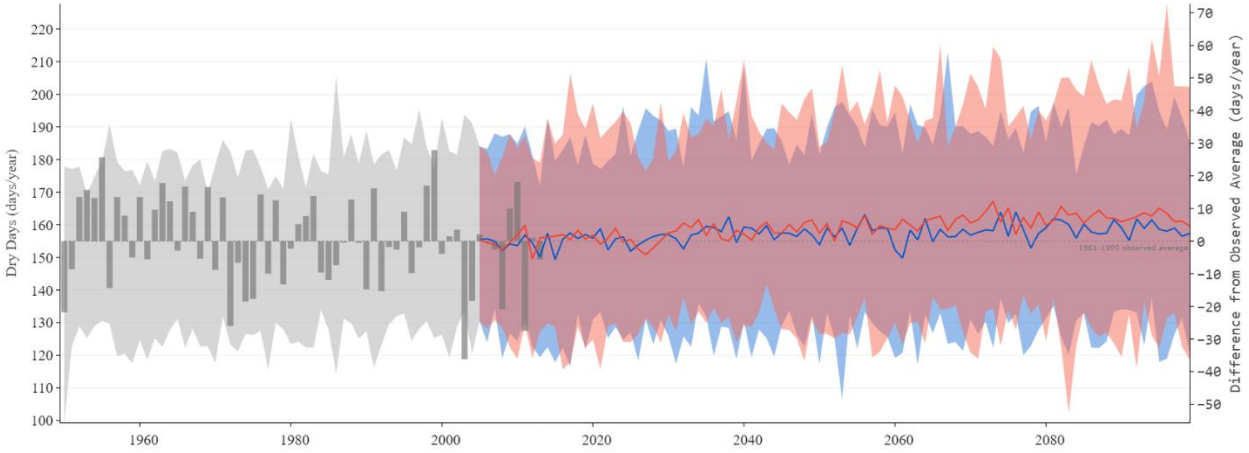




Future Climate Considerations

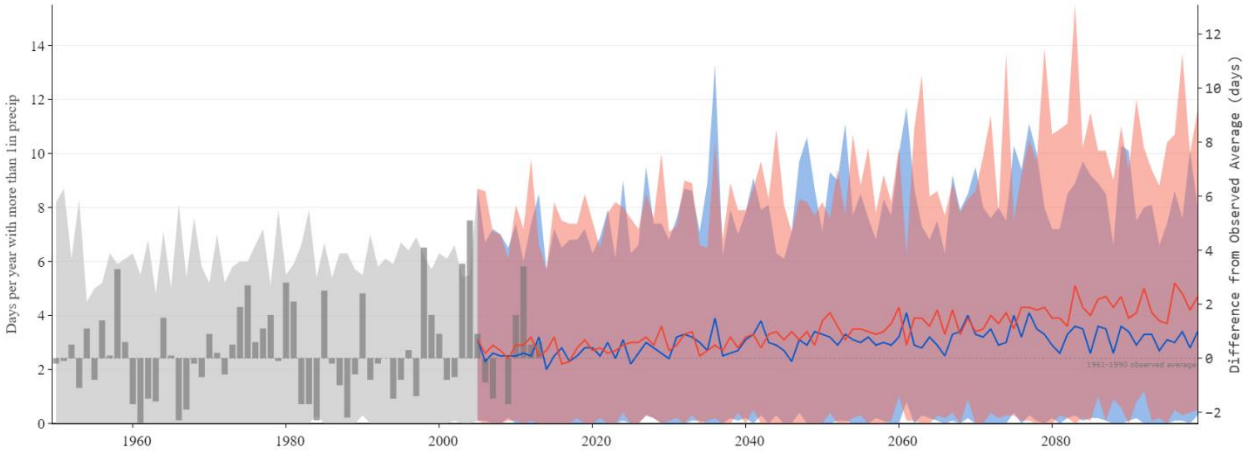
The following image, taken from The Climate Explorer (NEMAC, n.d.), shows the numbers and ranges of dry days experienced and anticipated (by year) in the county. The image shows data (as gray bars) above and below the mean for 1950 through 2005). The blue and red bands from the center of the image through the right model conditions under lower greenhouse gas emissions (the blue line and band) and increasing emissions (the red line and band). Per Figure 2.2.3.f, the number of dry days shows relatively little fluctuation.

Figure 2.2.3.f



Similar data depicting days with less than one inch of precipitation, though, show a slight increase above the mean (NEMAC, n.d.).

Figure 2.2.3.g



Risk Assessment

This section summarizes the vulnerability of the county to drought. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding drought.

Table 2.2.3.7

Public Sentiment, Drought					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Drought	9 (14.5%)	28 (45.2%)	20 (32.3%)	5 (8.1%)	62
In the past five years, do you remember this hazard occurring in your community?				14	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 19 (10.98%) indicated being concerned about drought, with two respondents indicating that drought was the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

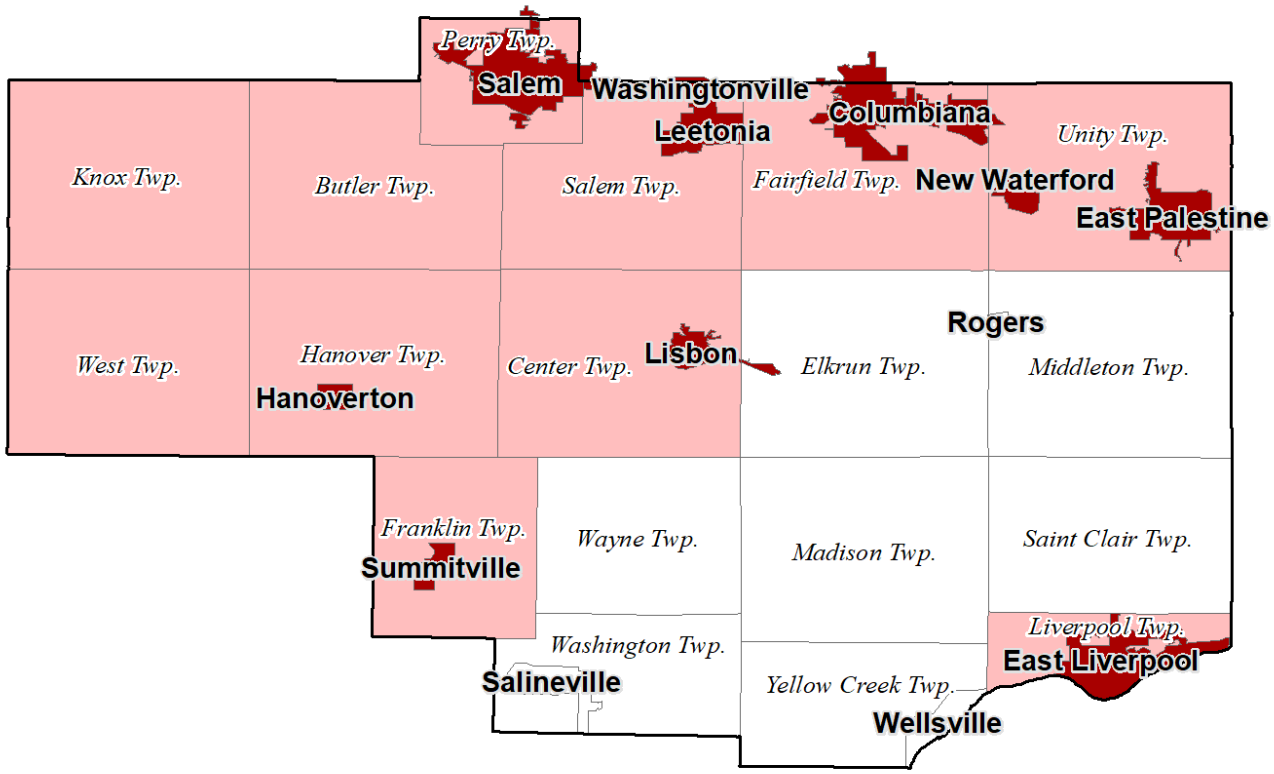
Table 2.2.3.8

Drought Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	2	Low (Unlikely to occur in a year)	Data above indicates six droughts between 1999 and 2024 (i.e., 25 years), for an average of 0.24 droughts per year.
Response	5	More than one month	The proxy instance of drought cited above was eight months in duration.
Onset	1	Over 24 hours	Drought conditions occur following an extended period of specific hydrological conditions. As noted above, communities are often in drought before an official declaration.
Magnitude	2	Critical (25-50% of land area affected)	Columbiana County has a land area of 531.89 mi2 (Census, 2024) (or 340,409.6 acres). Given 153,993 acres in farmland (2022 Census of Agriculture), approximately 45.24% of the county's land area is agricultural.
Business	2	One week	Drought is not likely to necessitate business closure.
Human	1	Minimum (Minor injuries)	Drought is not likely to result in acute injuries.

Drought Risk Ranking			
Category	*Points*	*Description*	*Notes*
Property	1	Less than 10% of property affected	Though a significant amount of the land area could be impacted, drought conditions do not affect personal property as severely.
Totals	**14**	**Low**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. Figure 2.2.3.h identifies those multi-jurisdictional risks for drought. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.3.h



Since groundwater and surface water sources all public water systems, none of the municipalities rated at a higher risk per their water systems; neither did any rate lower by having known redundancies in their water supplies. As such, no specific jurisdictions are at a lower risk

than generally described above. The cities, villages, and townships rated at slightly higher risk in Figure 2.2.3.h are as such by virtue of their location in the more agricultural areas of the county or, in the cases of East Liverpool and Liverpool Township, the presence of higher densities of populations consistent with the socially vulnerable variables considered above.

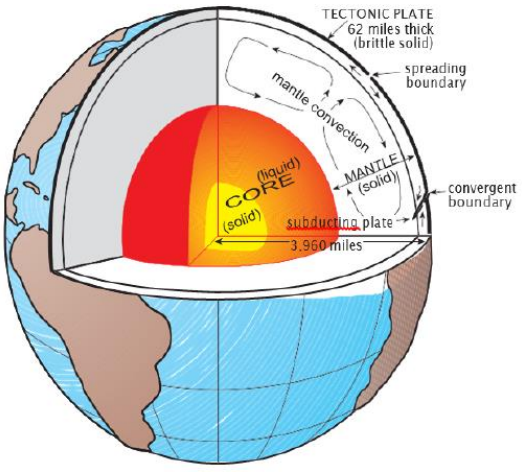
2.2.4 Earthquake

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates.				
Risk 	**Period of Occurrence:**	At any time	**Risk Ranking:**	Low
	Warning Time:	Less than 6 hours	**Type of Hazard:**	Natural
	Probability:	Unlikely to occur in a year	**Impact:**	Less than 10% of land area affected
	Disaster Declarations:	None		

Hazard Overview

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

Figure 2.2.4.a



Interior zones of Earth. Earth's crust consists of great plates that slowly move across the surface of Earth in response to convection cells in the mantle. Most earthquakes occur where plates meet, such as at spreading or convergent boundaries. Modified from Washington Division of Geology and Earth Resources, Information Circular No. 85, 1988.

Source: Educational Leaflet No. 9 Revised Edition 2015 Division of Geological Survey

Some earthquakes have foreshocks, which are smaller earthquakes that happen at the same location as the larger earthquake that follows. The largest, main earthquake is called the main shock, which always has aftershocks that follow. Current technology does not allow scientists to determine that an earthquake is a foreshock until the larger earthquake follows.

Regulators and researchers have documented earthquakes induced by human activity in the United States, Japan, and Canada. The source of these human-caused earthquakes has been the injection of fluids into deep wells for waste disposal, secondary recovery of oil, and filling large

reservoirs for water supplies. Deep mining and nuclear testing can also cause small to moderate quakes. A common misconception is that hydraulic fracturing, or "fracking," is causing *all* the induced earthquakes. In reality, fracking "is directly causing a small percentage of the felt-induced earthquakes observed in the United States. Most induced earthquakes in the United States are a result of the deep disposal of fluids (wastewater) related to oil and gas production" (Rubinstein and Mahani, 2015). Figure 2.2.4.b shows the locations of storage wells (typically for injection or withdrawal purposes [IADC85, 2025]) in Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.4.b: Oil & Gas Well Locations

Data Source(s):
ODNR, Division of Oil & Gas Resources

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

O&G Storage Wells

O&G All Wells

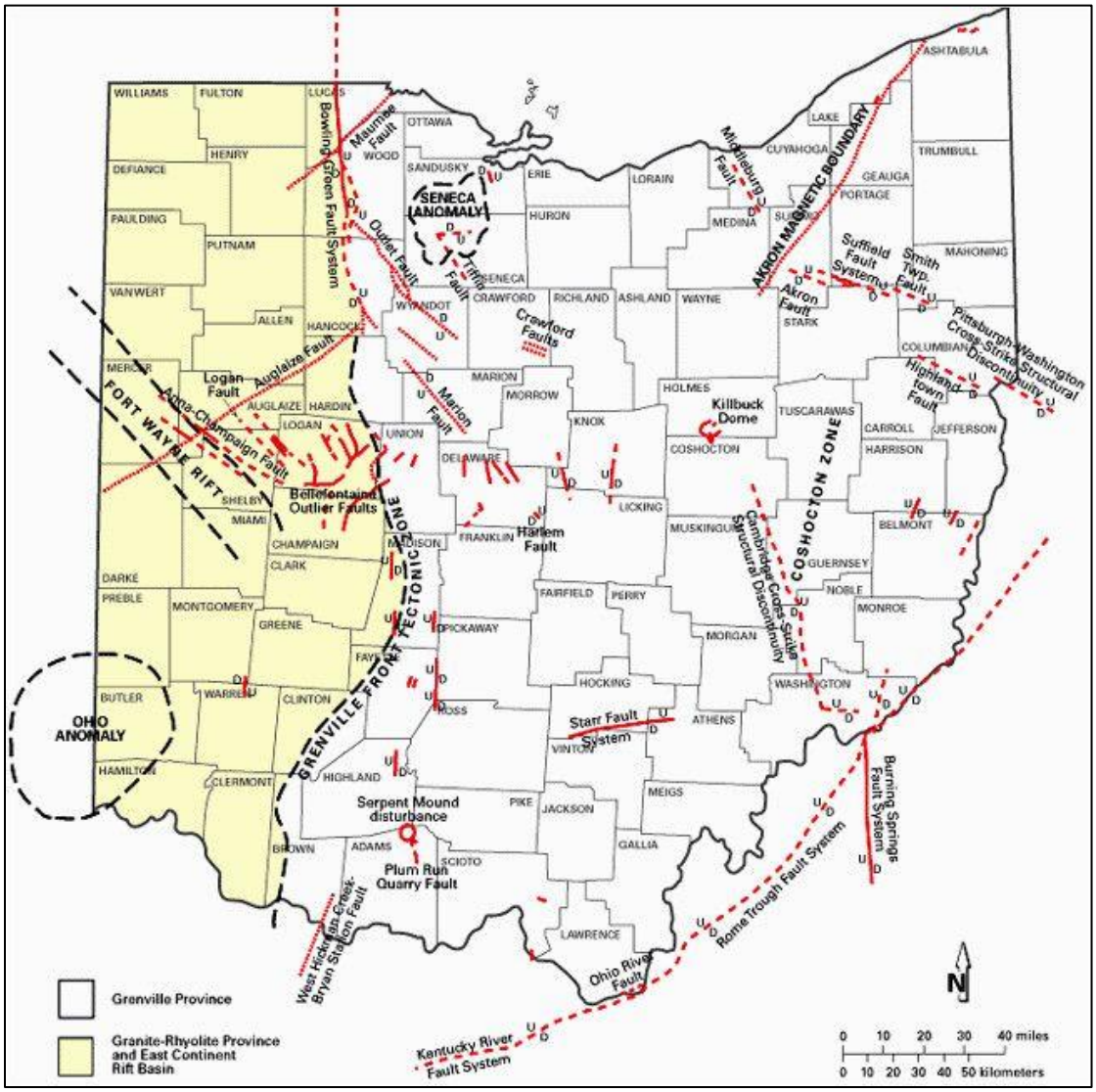


Location and Extent

Earthquakes are one of nature's most damaging hazards and are more widespread than most people realize. The area of greatest seismic activity in the United States is along the Pacific Coast in the states of California and Alaska; however, as many as 40 states can be characterized as having moderate earthquake risk. Although most people do not think of Ohio as an earthquake-prone state, at least 170 earthquakes with epicenters in Ohio have been felt since 1776. Ohio is on the periphery of the New Madrid Seismic Zone, an area in Missouri and adjacent states that was the site of the largest earthquake sequence to occur in historical times in the continental United States.

Though earthquake epicenters are on fault lines, their effects can be felt miles away. Ohio is not considered to be at high risk for an earthquake, but there are several fault lines, some well-known and others speculative, traversing the state. The map below illustrates fault lines in Ohio and was modified from the USGS Division of Geological Survey Map. This map portrays several deep faults and other structures that have been identified by a variety of geologic studies. As shown, there are two faults in Columbiana County, the Pittsburgh-Washington Cross-Strike Structural Discontinuity and the Highland Town Fault. Though there is evidence of these faults, they have not been the site of earthquake events in the past. Columbiana County is in proximity to the Southern Great Lakes Seismic Zone, which is an area of low to moderate earthquake activity around Lakes Erie and Ontario.

Figure 2.2.4.c



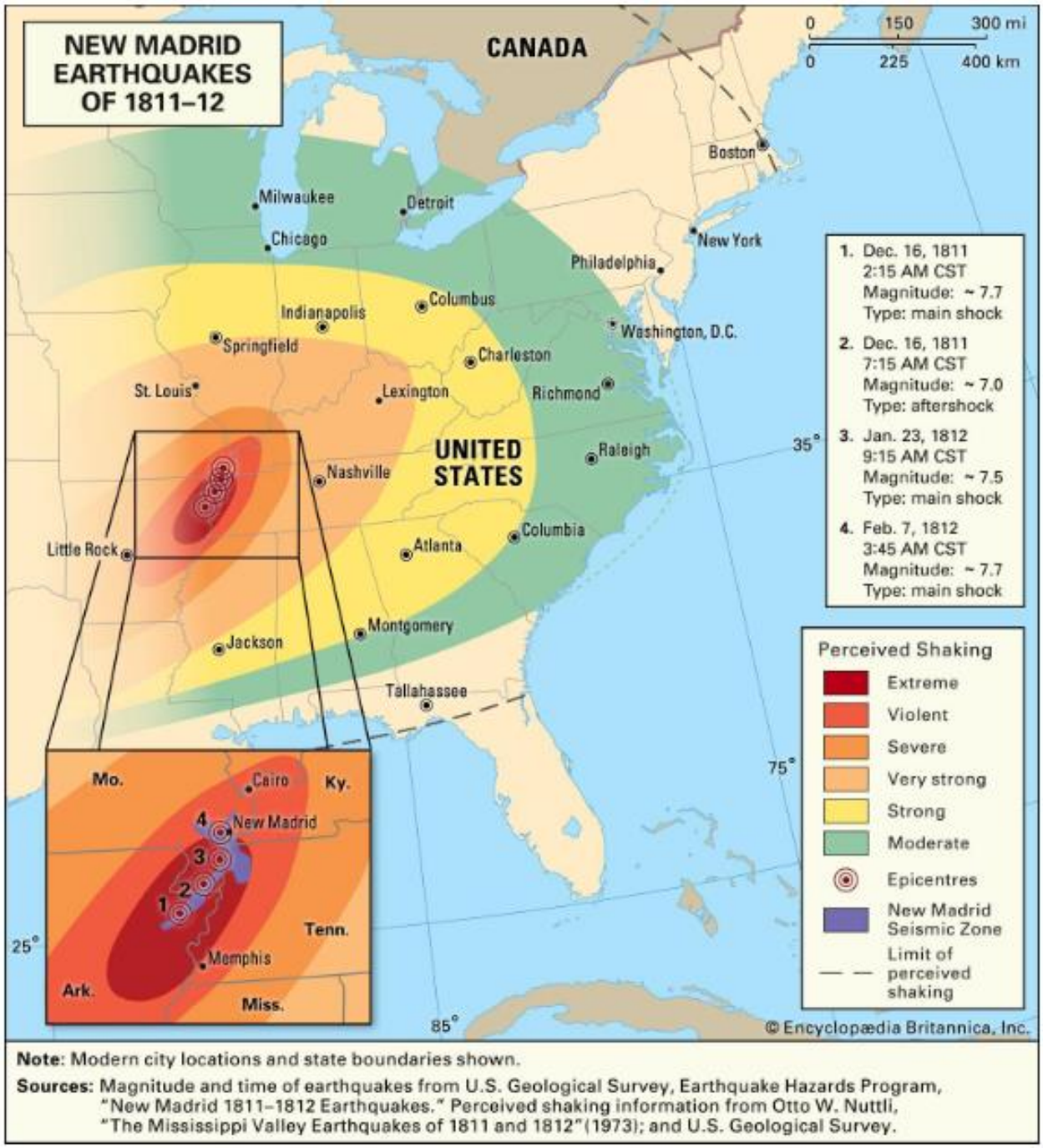
Although there are numerous intensity scales to evaluate the effects of earthquakes, the Modified Mercalli Intensity Scale (MMI) is the scale currently used in the United States. The MMI was developed in 1931 by seismologists Harry Wood and Frank Neumann. The MMI scale assigns value to a site after an earthquake based on observed effects, ranging from acceptable to catastrophic. The MMI scale is shown on the table below.

Table 2.2.4.1

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

Scientific studies regarding earthquakes have identified the potential for a major incident occurring within the New Madrid Seismic Zone. Based on data from the New Madrid earthquake of 1811 and 1812, all of Columbiana County could perceive moderate shaking (Britannica.com, n.d.).

Figure 2.2.4.d



Note: Modern city locations and state boundaries shown.

Sources: Magnitude and time of earthquakes from U.S. Geological Survey, Earthquake Hazards Program, "New Madrid 1811–1812 Earthquakes." Perceived shaking information from Otto W. Nuttli, "The Mississippi Valley Earthquakes of 1811 and 1812"(1973); and U.S. Geological Survey.

Impacts and Vulnerability

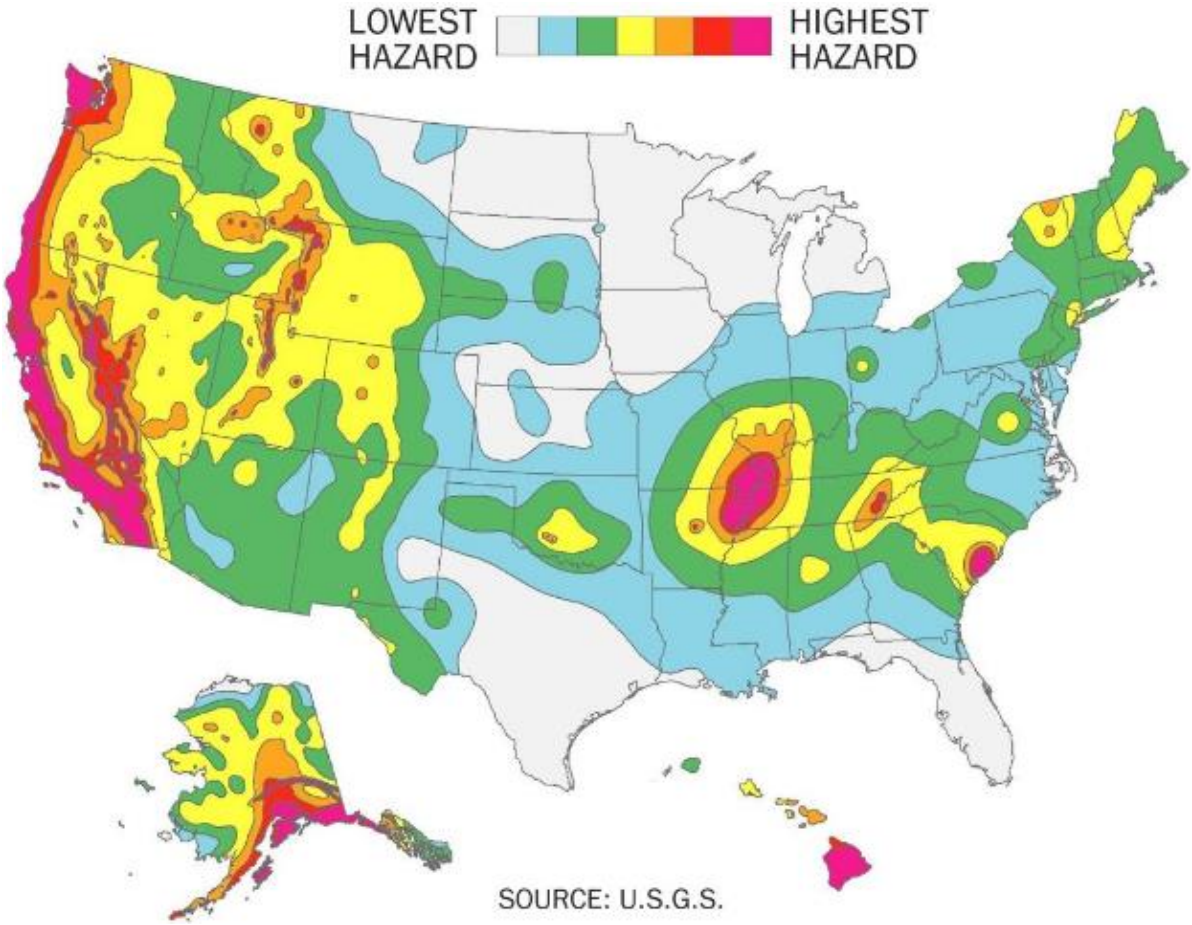
The severity of the effects of earthquakes are dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface ruptures, and ground failure. The most significant human risk during an earthquake is structure movement and collapse. Contents within structures may fall or fail and injure or kill occupants inside of the structures.

Earthquakes can affect people and structures alike, although older structures may be more susceptible to cracks and damage. With most earthquakes, trauma caused by the collapse of buildings is the cause of most deaths and injuries. A surprisingly large number of patients require acute care for non-surgical problems such as acute myocardial infarction, exacerbation of chronic diseases such as diabetes or hypertension, anxiety and other mental health problems, respiratory disease from exposure to dust and asbestos fibers from rubble, and near-drowning resulting from significant, rapid flooding because of earthquake-induced dam or levee failures.

Earthquakes can cause a variety of cascading effects, including fires due to broken electrical lines and gas mains, structural damage and utility and communication system outages; they can trigger landslides, and, less commonly, tsunamis. Ground shaking refers to the vibration of the ground during an earthquake. Generally, the severity of ground shaking increases as magnitude increases, and decreases as distance from the causative fault increases.

The largest magnitude earthquake epi-centered in Columbiana County was a 3.2 that occurred on March 30, 2024, in Knox Township. This earthquake measured as IV on the Modified Mercalli Intensity scale. This earthquake likely resulted in negligible damage to buildings of good design and construction, possible broken chimneys, and was most likely noticed by vehicle drivers.

Figure 2.2.4.e



Social Vulnerability Considerations

The elderly, children, and the chronically ill and disabled seem to be at an elevated risk for injury or death following an earthquake. Mobility impairment, inability to compensate for trauma, and underlying disease contribute to the vulnerability of these groups (Naghii, 2005). The following maps show the Census tracts of the county with the highest percentages of (a) elderly and youth populations (Figure 2.2.4.f) and (b) non-institutionalized populations with functional/access needs (Figure 2.2.4.g).

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.4.f: SVI Considerations (Age)

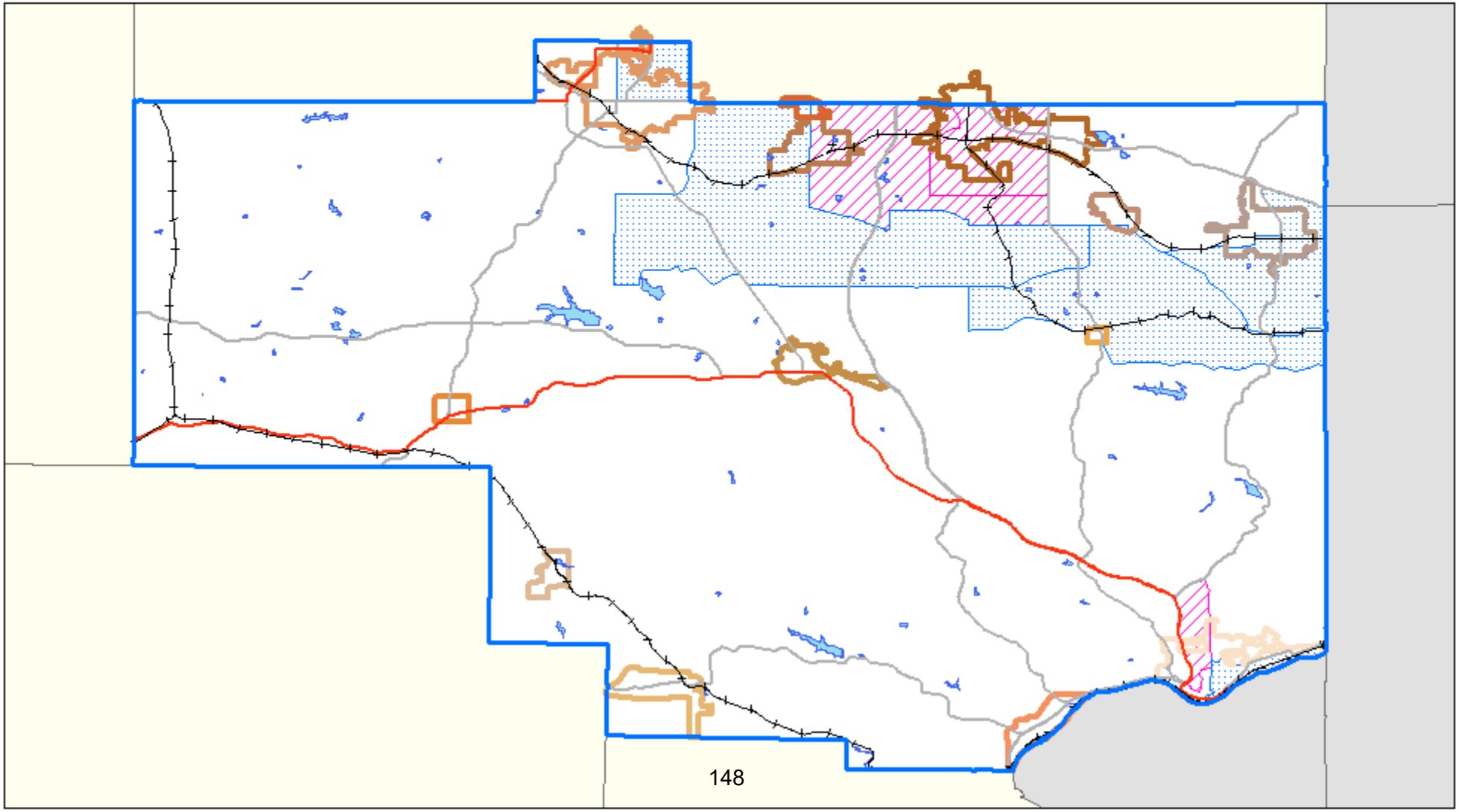
Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, Age 17 & Under

Greater than 25% of Population, Age 65+





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

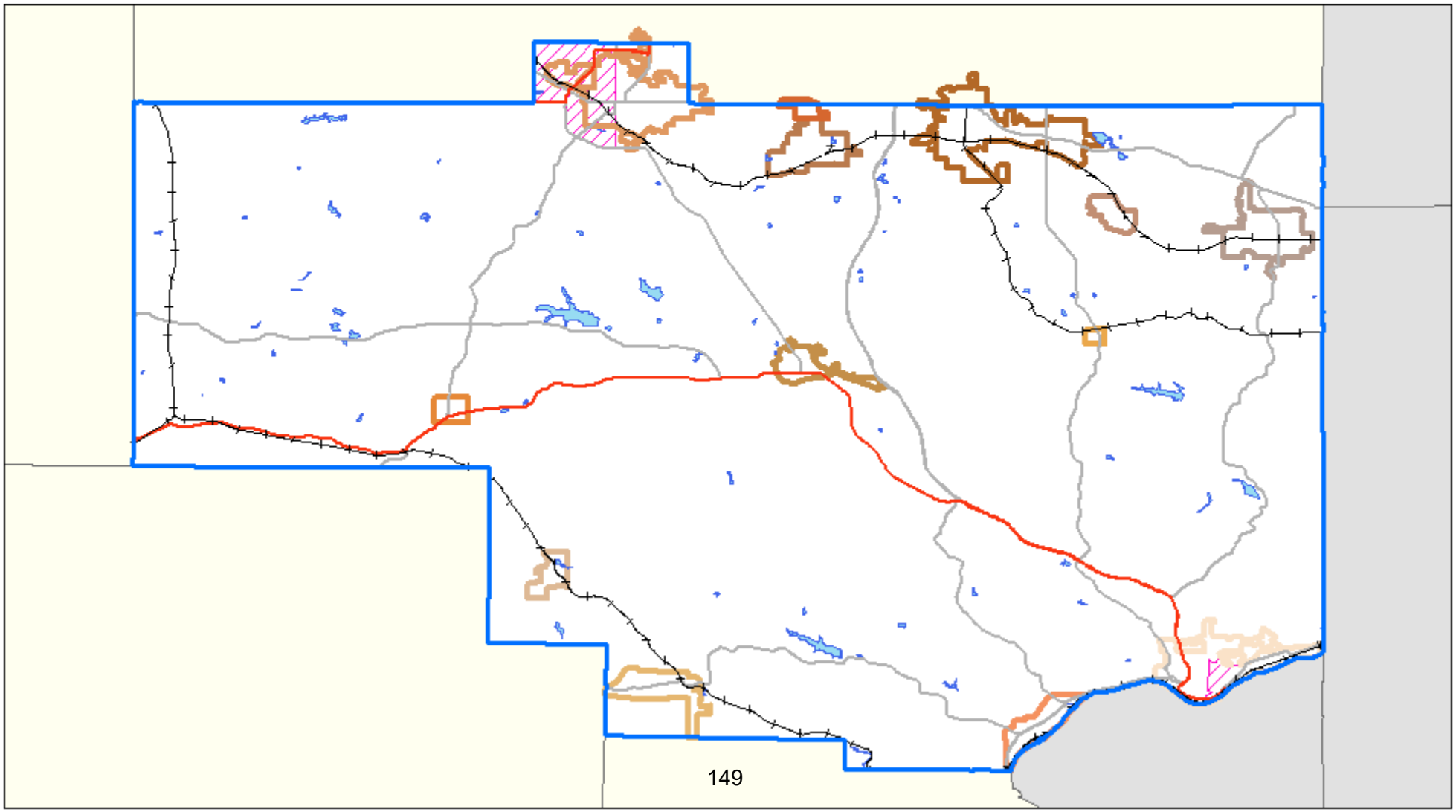
Figure 2.2.4.g: SVI Considerations (Non-Institutional)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Non-Institutionalized Pop. w/ Func./Acc. Needs





Low-income populations are also at an elevated risk. They often live in the most vulnerable housing and lack the resources to undertake mitigation or evacuation measures. Low-income individuals tend to reside in older homes and low- or moderate-income apartments that are not subject to the most advanced building codes. Those who live in rental units depend on landlords for structural loss prevention (Insurance Institute for Business & Home Safety, n.d.).

Previous Occurrences

The Ohio Department of Natural Resources, Division of Geological Survey maintains the Ohio Earthquake Epicenters Database, which lists earthquakes detected in Ohio, some as early as 1776. According to the database, there have been eight earthquakes epi-centered in Columbiana County.

Table 2.2.4.2

Earthquake Epicenters in Columbiana County			
Date	*Location*	*Magnitude*	*MMI Rating*
March 25, 2024	Knox Township	1.8	Null
March 27, 2024	Knox Township	1.6	Null
March 27, 2024	Knox Township	1.3	Null
March 30, 2024	Knox Township	3.2	IV
March 30, 2024	Knox Township	1.9	Null
April 1, 2024	Knox Township	1.4	Null
April 2, 2024	Knox Township	1.6	Null
April 4, 2024	Knox Township	1.1	Null

Loss and Damages

Of the earthquakes epi+centered in Columbiana County, the magnitude 3.2 that occurred on March 30, 2024, in Knox Township was the only one felt by humans. It resulted in only minor damage. Using data from FEMA's National Risk Index (2023), Table 2.2.4.3 estimates losses from earthquakes.

Table 2.2.4.3

Expected Annual Losses, Earthquake (NRI)				
Census Tract	*Exposure (Population)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Total*
39029950100	5,504	3,707	1,260	4,967
39029950200	4,588	4,430	861	5,291
39029950300	5,055	3,393	836	4,228
39029950400	4,205	3,782	1,132	4,914
39029950500	5,965	4,752	1,034	5,785

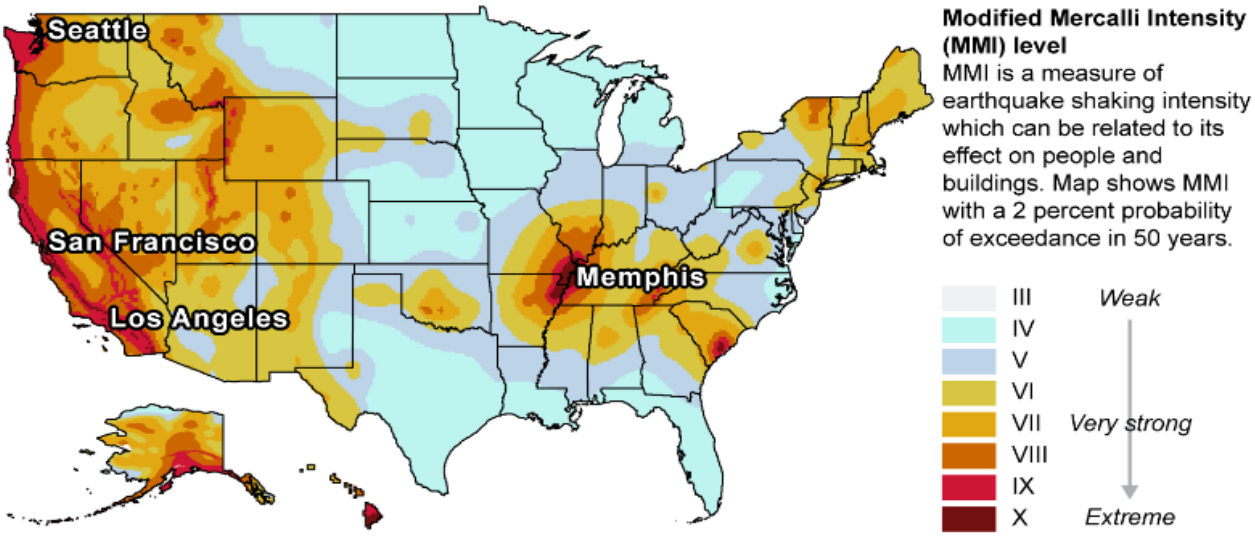
39029950600	4,860	1,461	379	1,840
39029950700	5,174	3,365	739	4,103
39029950800	4,429	4,619	1,629	6,248
39029950900	3,655	6,056	1,572	7,628
39029951000	5,618	5,602	2,014	7,616
39029951100	4,502	4,882	1,598	6,480
39029951200	4,154	4,600	2,045	6,644
39029951300	3,593	2,390	1,079	3,469
39029951401	2,119	2,249	719	2,968
39029951402	4,997	1,544	644	2,188
39029951500	4,627	2,185	502	2,687
39029951600	5,398	2,558	713	3,270
39029951700	4,776	2,395	821	3,217
39029951800	2,842	844	255	1,098
39029951900	3,334	1,775	739	2,514
39029952000	2,702	2,603	578	3,181
39029952100	1,382	1,310	323	1,633
39029952200	1,772	1,056	246	1,302
39029952300	2,703	410	205	615
39029952400	3,923	901	258	1,159
Grand Total	**101,877**	**72,865**	**22,181**	**95,046**

Future Occurrences[1]

According to the USGS, the county has a very low earthquake risk. As such, future occurrences remain a low priority of concern. In a study examining risks to federal buildings, the Government Accountability Office (GAO) included a map illustrating MMI level earthquakes with a 2% probability of exceedance in 50 years. For reference “A 2% in 50-year probability equates to an earthquake recurring and exceeding a given MMI level about every 2,475 years” (GAO, 2016). As can be seen, Columbiana County is within a maximum MMI V level. The USGS indicates that MMI V earthquakes would be felt with potential dishes and/or window damage and an overturning of unstable objects, yet damage would be minimal.

[1] Though earthquake is a natural hazard, it is not as readily connected to climate fluctuations as the other natural hazards considered by this plan. Notably, though, the USGS has noted a correlation between weather and large changes in atmospheric pressure caused by major storms and earthquakes (Buis, 2019).

Figure 2.2.4.h



Source: GAO presentation of U.S. Geological Survey mapping; MapInfo (map). | GAO-16-680

Risk Assessment

This section summarizes the vulnerability of the county to earthquakes. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding earthquakes.

Table 2.2.4.4

Public Sentiment, Earthquake					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Earthquake	21 (33.9%)	29 (46.8%)	10 (16.1%)	2 (3.2%)	62
In the past five years, do you remember this hazard occurring in your community?				8	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 11 (6.36%) indicated being concerned about earthquakes, with one respondent indicating that an earthquake was the hazard that concerned him/her the most.

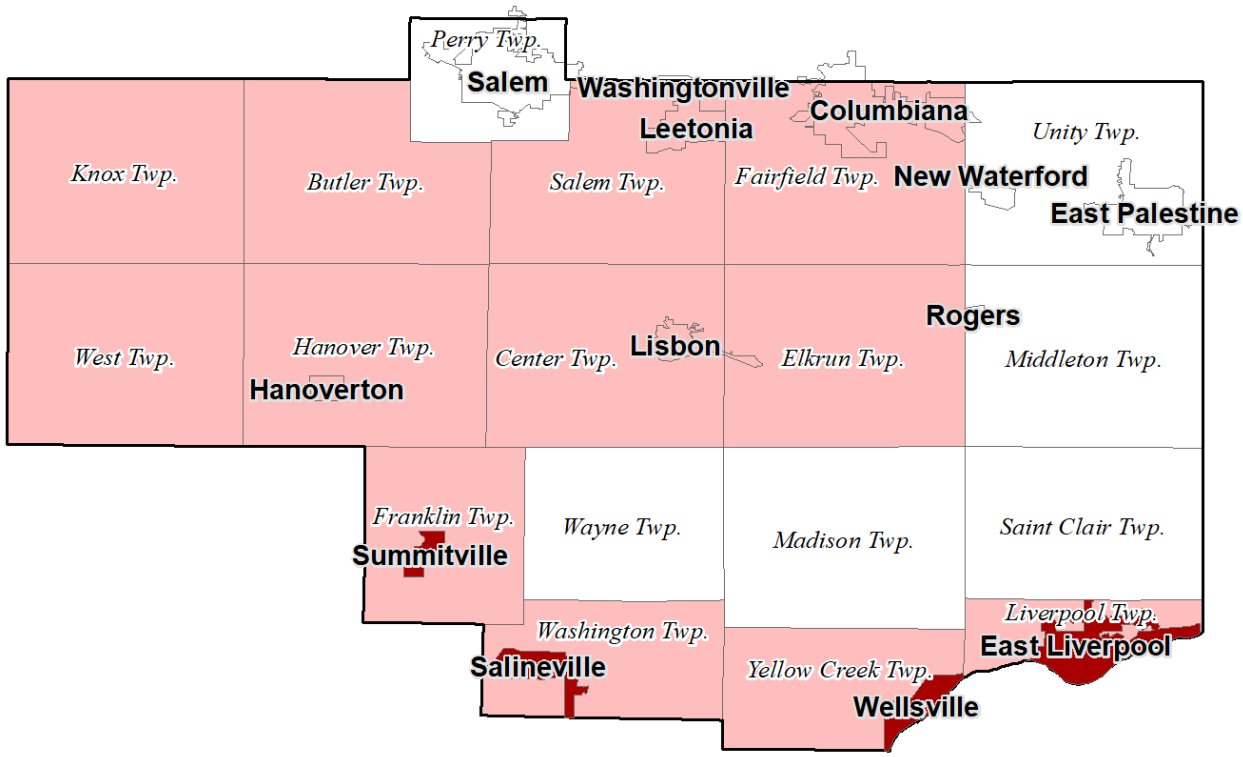
The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

Table 2.2.4.5

Earthquake Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	1	So unlikely that it can be assumed it will not occur in a year	Eight earthquakes occurred in Columbiana County in 2024. These have been small incidents not resulting in damage. Even though these incidents occurred in one year, no other earthquakes occurred for the period covered by available data (i.e., back to 1776 per the Ohio Seismic Network). Planners opted to go with an annual average (i.e., 0.03 per annum), though for the next update of this plan, planners should determine whether 2024 will be a new "typical year" or if occurrences will regress to the mean.
Response	2	1 Day	Historical data indicate that earthquakes have caused little to no damage in Columbiana County; thus, a response would be minimal.
Onset	4	Less than 6 hours	Earthquakes occur with little or no warning.
Magnitude	1	Less than 10% of land area affected	No earthquakes have occurred in Columbiana County; those that have occurred in neighboring counties affected all of Columbiana County but resulted in little to no damage.
Business	1	Less than 24 hours	No historical earthquakes disrupted the county's economy.
Human	1	Minimum/minor injuries	Past earthquakes near Columbiana County have been low magnitude and have not caused any human injuries or deaths.
Property	1	Less than 10% of property affected	Earthquakes near Columbiana County have been low magnitude and caused little to no damage.
Totals	**11**	**Low**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for earthquake. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.4.i



As noted earlier, seismic activity may result from injection of fluids underground; as such, areas in which the ODNR, Division of Oil & Gas Resources identifies as having underground injection control (UIC) and storage wells appear as slightly higher risk, as do the jurisdictions under which the faults run. Significantly, though, even though these jurisdictions are at higher risk, the overall risk remains low.

2.2.5 Extreme Temperatures

Extreme heat often results in the highest number of annual deaths of all weather-related hazards. In most of the United States, extreme heat is defined as a long period (two to three days) of high heat and humidity with temperatures above 90 degrees (Ready.gov, 2023). Extremely cold air comes every winter in at least part of the country and affects millions of people across the United States. The arctic air, together with brisk winds, can lead to dangerously cold wind chill values. People exposed to extreme cold are susceptible to frostbite and hypothermia in a matter of minutes.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time, typically during the middle summer and middle winter months	**Risk Ranking:**	Medium
	Warning Time:	Over 24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur during a year	**Impact:**	Less than 10% of property affected
	Disaster Declarations:	None		

Hazard Overview

Temperatures can vary widely over a year, but each season is associated with general, expected temperature fluctuation. Summer and winter will generally have the highest and lowest temperature ranges, respectively. *Extreme* temperatures are 10 degrees above or below the average high or low temperature for an area. For example, an *extremely* cold temperature for Columbiana County would be below 16.2 º F in January (based on the average minimum January temperature of 26.2º F [NOAA NCEI, 2025]). Those temperatures above 81.2º F in July (per the average maximum of 71.2º F [NOAA NCEI, 2025]) would constitute an *extremely* hot temperature. Ready.gov uses a slightly different definition for extreme heat, identifying it as “a period of high heat *and humidity* with temperatures above 90 degrees *for at least two to three days*” (Ready.gov, 2023, emphasis added). Significantly, this definition adds a time element and the moderating variable of humidity. Duration can be significant in that the inability to get relief from the extreme temperatures contributes to the impact.

The National Weather Service (NWS) chart below shows the various temperatures and humidity levels that can be dangerous to humans and animals. These conditions can also have serious impacts on crops, causing below-average harvests. Repeated years of extreme temperatures can easily cause significant economic impacts on agricultural industries.

Table 2.2.5.1

NOAA's National Weather Service Heat Index																
Temperature (°F)																
	80	82	84	86	88	90	92	94	96	98	10	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										
Likelihood of heat disorders with prolonged exposure or strenuous activity																
	Caution			Extreme Caution			Danger			Extreme Danger						

Extremely cold temperatures are immediately dangerous to both humans and livestock by causing frostbite and hypothermia, which can lead to permanent injury and death. The chart below, again from the NWS, shows how quickly frostbite can occur at different temperatures and wind speeds. In unprotected structures, cold temperatures can freeze water pipes causing them to burst upon thawing, leading to significant damage. Cold snaps during typically warmer weather during the growing season can damage and destroy some crops, depending on their sensitivity to temperature.

Table 2.2.5.2

NOAA's National Weather Service Windchill Chart																			
Temperature (°F)																			
Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
	5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-76	-80	-87
	35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
	Frostbite Times																		
					30 Minutes			10 Minutes			5 Minutes								

Location and Extent

Extreme temperatures can affect all participating jurisdictions throughout the county. The average minimum temperatures, referenced above, taken from data reporting average January low and July high temperatures between 1895 and 2024, are 26.2º F and 71.2º F (NOAA NCEI, 2025). The lowest reported average January temperature from the NOAA NCEI data was 10.4º F (in 1977), and the highest average July temperature was 76.5º F (in 1901).

The National Weather Service, in collaboration with local partners, issues several heat-related products as conditions warrant. Descriptions of those products are in the table below.

Table 2.2.5.3

NWS, Heat-Related Products	
Product	*Description*
Excessive Heat Warning	Issued within 12 hours of extremely dangerous heat conditions. Issued when the maximum heat index temperature is expected to be 105°F or higher for at least two days and nighttime air temperatures will not drop below 75°.
Excessive Heat Watch	Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A watch is used when the risk of a heatwave has increased, but its occurrence and timing are still uncertain.
Heat Advisory	Issued within 12 hours of the onset of extremely dangerous heat conditions. This Advisory is issued when the maximum heat index temperature is expected to be 100°F or higher for at least two days, and nighttime temperatures will not drop below 75°.

NWS, Heat-Related Products	
Product	*Description*
Excessive Heat Outlook	Issued when the potential exists for an excessive heat event in the next 3-7 days. Provides information to those who need considerable lead time to prepare for an event.

A potential variable to consider is the urban heat island. Urban heat islands occur when urbanized areas replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. Urbanized areas experience higher temperatures than outlying rural areas as these buildings, infrastructure, etc. absorb and re-emit the sun's heat. Daytime temperatures in urban areas can be approximately 1° to 1.7° F higher than temperatures in more rural areas, and nighttime temperatures can be between 2° and 5° F higher (USEPA, 2023). These conditions thus exacerbate heat events.

Though Columbiana County does not have urban areas as one thinks of relating to major U.S. cities, portions of the county are more *urbanized* than others. The following graphic estimates areas susceptible to the urban heat island effect in the county. The denser concentration of address points serves as a proxy for "urbanized areas." (Planners conducted an "optimized hot spot analysis" within the ArcMap 10.8.2 GIS software, using address points as the input feature.) As expected, the potential impacts areas center on the three cities. The greater East Palestine and Lisbon areas also show greater density. (Note: The blue and gray areas on the following figure show the least densely-built areas of the county.)

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

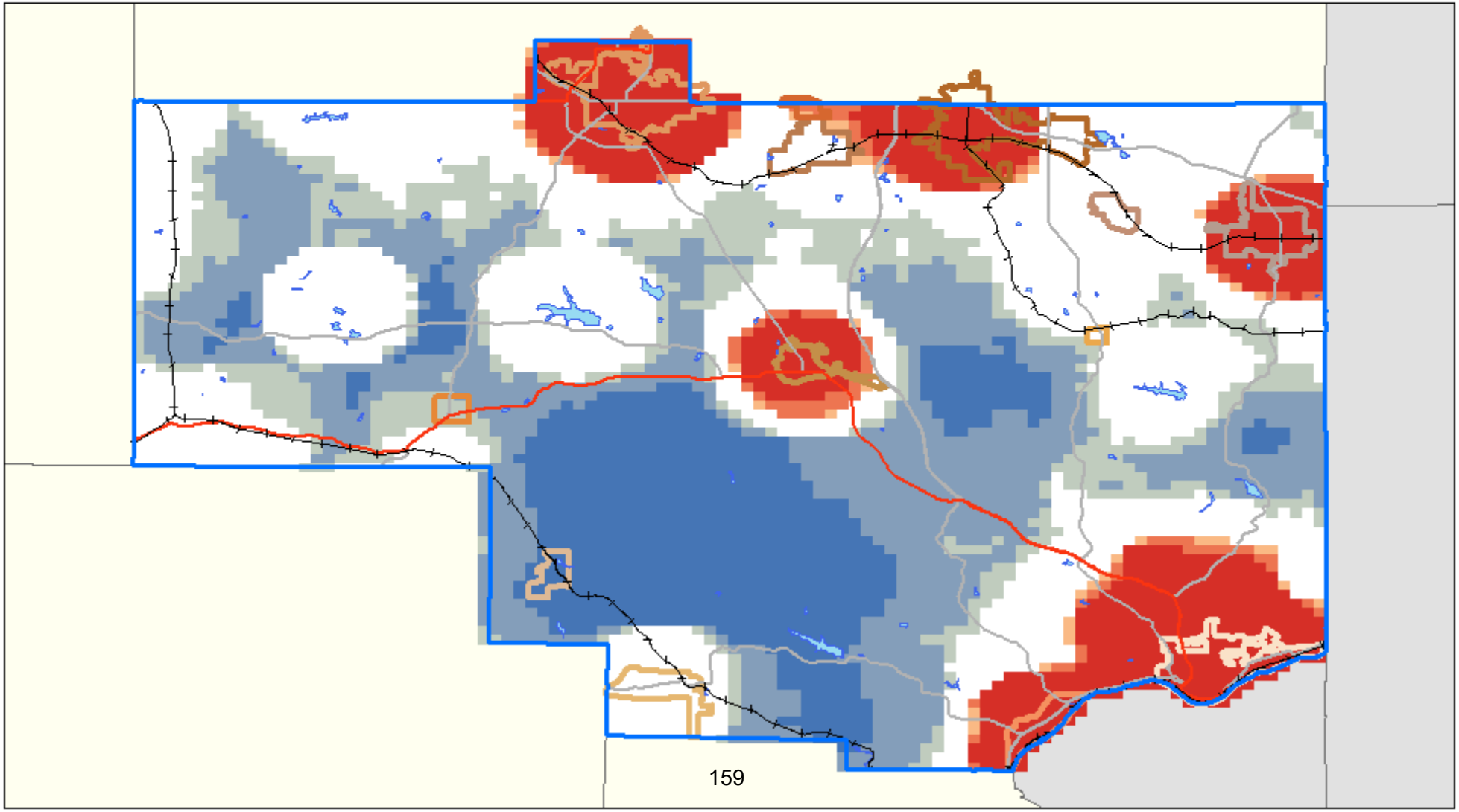
Figure 2.2.5.a: Estimated Urban Heat Island Effect

Data Source(s):
Columbiana County GIS

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

- Cold Spot - 99% Confidence
- Cold Spot - 95% Confidence
- Cold Spot - 90% Confidence
- Not Significant
- Hot Spot - 90% Confidence
- Hot Spot - 95% Confidence
- Hot Spot - 99% Confidence





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

Table 2.2.5.4

NWS, Products Related to Extreme Cold	
Product	*Description*
Frost Advisory	Issued when temperatures, winds, and sky cover are favorable for frost development. This is most likely when temperatures are less than or equal to 36 degrees.
Freeze Watch	Freeze Watches are issued a few days ahead of a cold front in which temperatures are expected to be 29-32 degrees.
Freeze Warning	Freeze Warnings are issued when low temperatures are expected to be 29-32 degrees.
Hard Freeze Watch	Hard Freeze Watches are issued days ahead of a cold front in which temperatures are expected to be 28 degrees or less.
Hard Freeze Warning	Hard Freeze Warnings issued when temperatures are expected to be 28 degrees or less

The elevations throughout the county vary, with areas along streams being approximately 500 ft. lower in elevation than other areas (particularly in the northwestern corner of the county) (topographic-map.com, n.d.). This variance, however, is not likely to yield considerable variation in temperatures.

Impacts and Vulnerability

The impacts of extreme temperatures can affect the population's health rather than structures. The extent of damage to infrastructure would consist of broken pipes, cracks in the pavement due to expansion/contraction, and power outages. Infrastructure systems may be constrained during both hot and cold events, as residents push air conditions (during hot spells) and furnaces (during cold snaps).

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

Table 2.2.5.5

Heat Risks	
Heat Index	*Possible Heat Disorders for People in High-Risk Groups*
80°F-90°F	Fatigue is possible with prolonged exposure to physical activity
90°F -105°F	Sunstroke, heat cramps, or heat exhaustion is possible with prolonged exposure and/or physical activity
105°F -130°F	Sunstroke, heat cramps, or heat exhaustion are likely, and heatstroke is possible with prolonged exposure and/or physical activity
130°F +	Heat/Sunstroke highly likely with continued exposure

Extreme cold conditions also impact human health in several ways. Cold weather acts as a vasoconstrictor, meaning it constricts blood vessels and raises the risk of a heart attack. Prolonged exposure to cold weather can cause cold-related illnesses, which include hypothermia, frostbite, trench foot/immersion foot, and chilblains.

Social Vulnerability Considerations

Extreme temperatures of either type, heat or cold, appear to impact children and the elderly more severely than other population groups. The following map shows concentrations of the elderly (i.e., 65 and over) as well as children (i.e., under 18) in the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.5.b: SVI Considerations (Age)

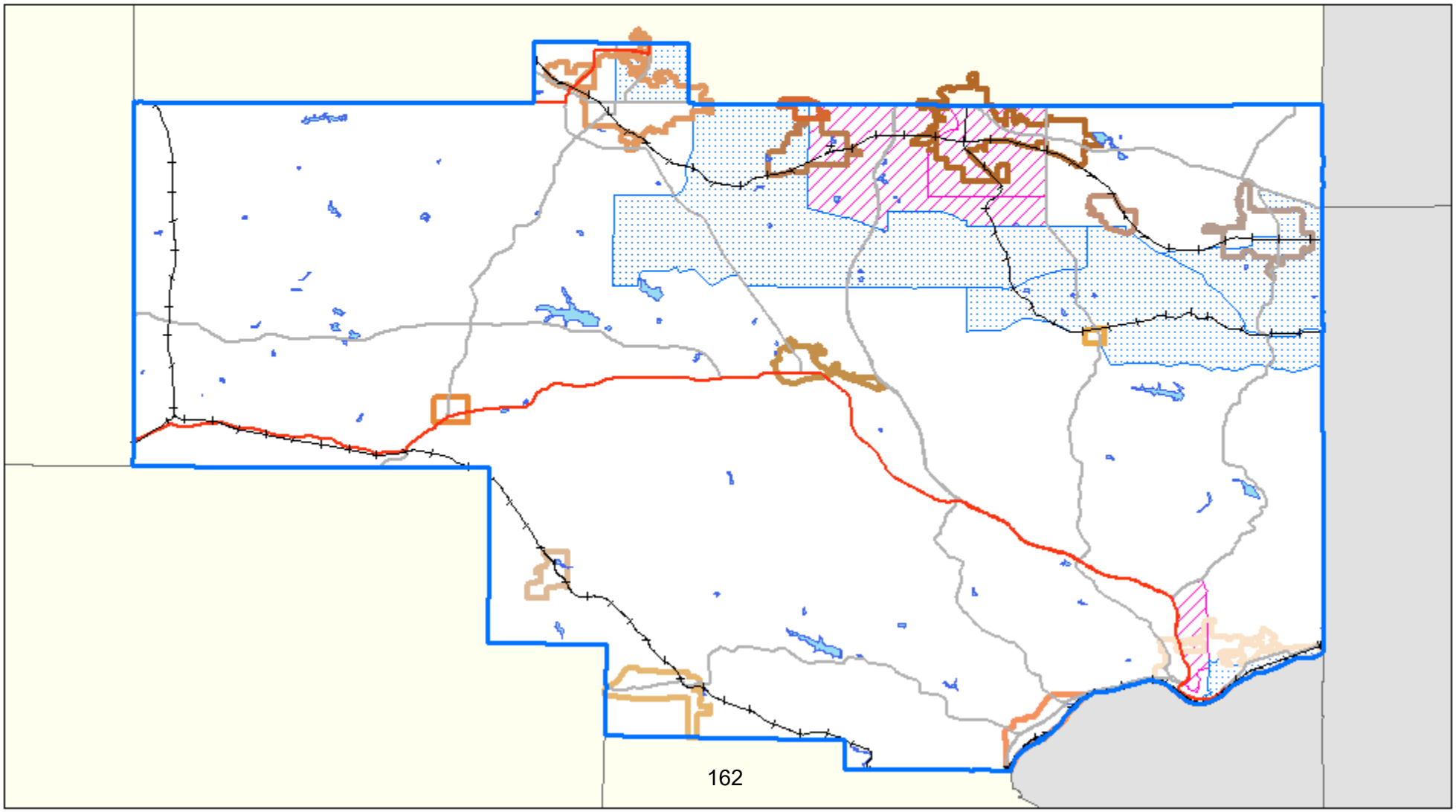
Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, Age 17 & Under

Greater than 25% of Population, Age 65+





Many seniors live alone, isolated from children and other younger family members who established careers and lives in other areas. This problem is potentially acute in areas experiencing a high instance of out-migration. It is difficult to map areas with high concentrations of socially isolated senior citizens, though connections need not be limited to family. Areas with active senior citizens centers, congregate living areas with programs serving seniors, etc., foster community and social capital. Even in areas with high concentrations of elderly populations, this social capital can mitigate the effects of extreme temperatures (Klinenberg, 2015).

Further, elderly populations living in the areas above as potentially susceptible to the urban heat island effect may experience exacerbated severe heat illnesses. Similarly, those living in poverty may find themselves in areas more impacted by the urban heat island effect, and these individuals may not have the resources to contribute toward medical care if they suffer from heat-related illnesses. The following map shows the intersection of Census tracts with greater than 25% of persons living below the poverty line with the estimated urban heat islands.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

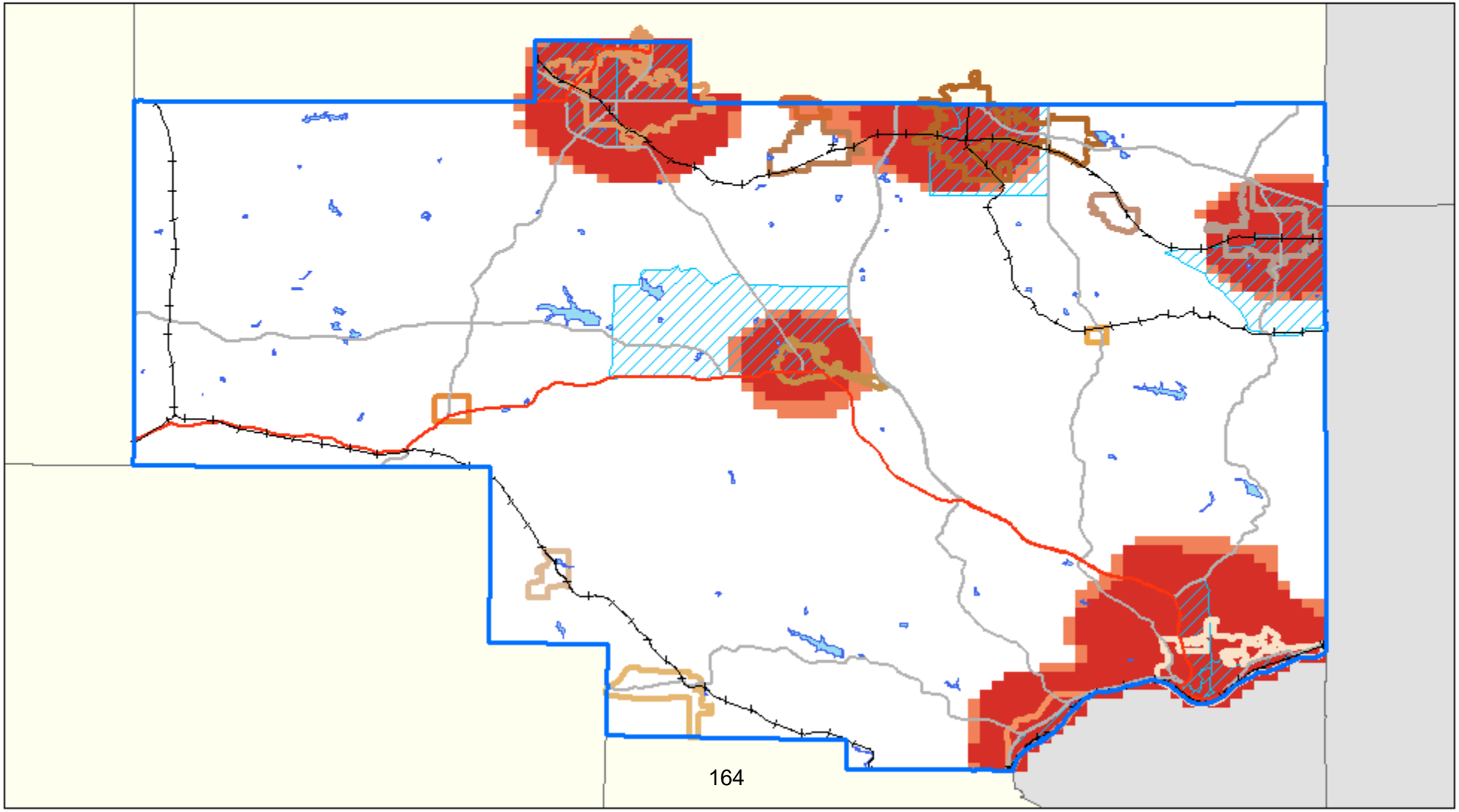
Figure 2.2.5.c: SVI Considerations (Poverty)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, below 150% of Poverty Level





Finally, the homeless population could also be more at risk simply for being exposed to the elements. Many communities in Ohio report that homelessness is becoming more of a problem, with it manifesting not only as people living outdoors of a structure but also those "couch surfing" or staying with friends and acquaintances. These populations are nearly impossible to map, but an awareness of their potential risk is helpful.

Previous Occurrences

According to the NOAA's National Centers for Environmental Information (NCEI) (2024), there have been 12 extreme temperature events in the county since 2009. All the reported events were extreme cold events (an average of 0.8 events per year).

Table 2.2.5.6

Previous Extreme Temperature Events					
Date	*Type*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
01/16/2009	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
01/22/2013	Cold/Wind Chill	0	0	$0.00	$0.00
01/05/2014	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
01/21/2014	Cold/Wind Chill	0	0	$0.00	$0.00
01/27/2014	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
02/14/2015	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
02/19/2015	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
02/24/2015	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
02/13/2016	Cold/Wind Chill	0	0	$0.00	$0.00
12/15/2016	Cold/Wind Chill	0	0	$0.00	$0.00
01/30/2019	Extreme Cold/ Wind Chill	0	0	$0.00	$0.00
12/23/2022	Cold/Wind Chill	0	0	$0.00	$0.00
	Totals	**0**	**0**	**$0.00**	**$0.00**

January 2014 Polar Vortex

Beginning in the early part of the month, arctic air moved over the central and eastern parts of the United States, with the eastern portions dubbed a “polar vortex.” WKBN reported that the high temperature on January 6 in nearby Youngstown was 46° F. When the front passed, temperatures dropped nearly 57 degrees to -11° F by 11:59 p.m. on January 6 (Halicki, 2023).

Despite no events appearing in the NOAA NCEI database, local officials noted there have been periods of high heat in Columbiana County, including portions of the summers of 2024 and 2025. Planners thus searched for sources to validate these experiences. The National Risk Index (2025d) identified five events (though it did not list them specifically) between 2005 and 2021 (a 16-year period). Thus, it calculated an annualized frequency value for "heat wave" of 0.3 events per year.

Loss and Damages

Extreme temperatures can impact all areas and jurisdictions of the county and are typically widespread events. One means of estimating losses is to consider those from past incidents; however, as noted above, none of the incidents resulted in property or crop damages. As such, planners utilized information from FEMA's National Risk Index (2023) to assess extreme temperature impacts.

Table 2.2.5.7

Columbiana County Cold Wave NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$1,092,786,377	5,502	$8,459,036	$147	$20,155	$1,377	$21,680
39029950200	$1,101,451,018	4,588	$2,079,560	$149	$16,807	$339	$17,294
39029950300	$1,095,100,868	5,055	$3,921,349	$148	$18,518	$638	$19,304
39029950400	$1,014,647,687	4,205	$11,199,393	$137	$15,404	$1,823	$17,364
39029950500	$1,445,560,835	5,965	$953,020	$195	$21,851	$155	$22,201
39029950600	$799,781,046	4,860	$231,217	$108	$17,803	$38	$17,949
39029950700	$1,044,895,204	5,174	$539,719	$141	$18,954	$88	$19,182
39029950800	$941,896,273	4,429	$12,272,178	$127	$16,224	$1,998	$18,349
39029950900	$1,003,799,322	3,655	$13,161,720	$135	$13,389	$2,143	$15,667
39029951000	$1,308,621,285	5,618	$18,589,584	$176	$20,580	$3,027	$23,783
39029951100	$957,240,926	4,502	$4,598,937	$129	$16,492	$749	$17,370
39029951200	$985,122,245	4,154	$17,145,512	$133	$15,217	$2,791	$18,141
39029951300	$769,163,744	3,593	$9,373,538	$104	$13,162	$1,526	$14,792
39029951401	$460,325,235	2,119	$3,914,169	$62	$7,762	$637	$8,462
39029951402	$647,807,959	4,997	$6,816,061	$87	$18,305	$1,110	$19,502
39029951500	$804,484,564	4,627	$1,137,236	$108	$16,950	$185	$17,243
39029951600	$1,213,669,268	5,398	$4,185,929	$164	$19,774	$682	$20,619
39029951700	$776,977,175	4,775	$2,409,441	$105	$174,912	$392	$17,989
39029951800	$561,046,056	2,842	$0	$76	$10,411	$0	$10,487
39029951900	$461,347,089	3,332	$72,652	$62	$12,206	$12	$12,280
39029952000	$531,175,420	2,702	$9,744	$72	$9,898	$2	$9,971
39029952100	$535,516,515	1,382	$0	$72	$5,063	$0	$5,135
39029952200	$670,667,180	1,772	$2,282	$90	$6,491	$0	$6,582
39029952300	$344,260,598	2,703	$222	$46	$9,902	$0	$9,948

Columbiana County Cold Wave NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029952400	$625,997,395	3,923	$1,282,765	$84	$14,371	$209	$14,664
Grand Total	**$21,193,341,284**	**101,872**	**$122,355,264**	**$2,858**	**$373,181**	**$19,921**	**$395,959**

Table 2.2.5.8

Columbiana County Heat Wave NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$1,092,786,377	5,502	$8,459,036	$46	$15,945	$145	$16,136
39029950200	$1,101,451,018	4,588	$2,079,560	$46	$13,296	$36	$13,378
39029950300	$1,095,100,868	5,055	$3,921,349	$46	$14,650	$67	$14,763
39029950400	$1,014,647,687	4,205	$11,199,393	$42	$12,186	$191	$12,420
39029950500	$1,445,560,835	5,965	$953,020	$61	$17,287	$16	$17,364
39029950600	$799,781,046	4,860	$231,217	$33	$14,085	$4	$14,122
39029950700	$1,044,895,204	5,174	$539,719	$44	$14,995	$9	$15,048
39029950800	$941,896,273	4,429	$12,272,178	$39	$12,836	$210	$13,085
39029950900	$1,003,799,322	3,655	$13,161,720	$42	$10,593	$225	$10,860
39029951000	$1,308,621,285	5,618	$18,589,584	$55	$16,281	$318	$16,654
39029951100	$957,240,926	4,502	$4,598,937	$40	$13,047	$79	$13,166
39029951200	$985,122,245	4,154	$17,145,512	$41	$12,039	$293	$12,373
39029951300	$769,163,744	3,593	$9,373,538	$32	$10,413	$160	$10,605
39029951401	$460,325,235	2,119	$3,914,169	$19	$6,141	$67	$6,227
39029951402	$647,807,959	4,997	$6,816,061	$27	$14,482	$117	$14,625
39029951500	$804,484,564	4,627	$1,137,236	$34	$13,409	$19	$13,463
39029951600	$1,213,669,268	5,398	$4,185,929	$51	$15,644	$72	$15,766
39029951700	$776,977,175	4,775	$2,409,441	$33	$13,838	$41	$13,912
39029951800	$561,046,056	2,842	$0	$23	$8,236	$0	$8,260
39029951900	$461,347,089	3,332	$72,652	$19	$9,656	$1	$9,677
39029952000	$531,175,420	2,702	$9,744	$22	$7,831	$0	$7,853
39029952100	$535,516,515	1,382	$0	$22	$4,005	$0	$4,028
39029952200	$670,667,180	1,772	$2,282	$28	$5,135	$0	$5,164
39029952300	$344,260,598	2,703	$222	$14	$7,834	$0	$7,848
39029952400	$625,997,395	3,923	$1,282,765	$26	$11,369	$22	$11,417
Grand Total	**$21,193,341,284**	**101,872**	**$122,355,264**	**$887**	**$295,235**	**$2,092**	**$298,214**

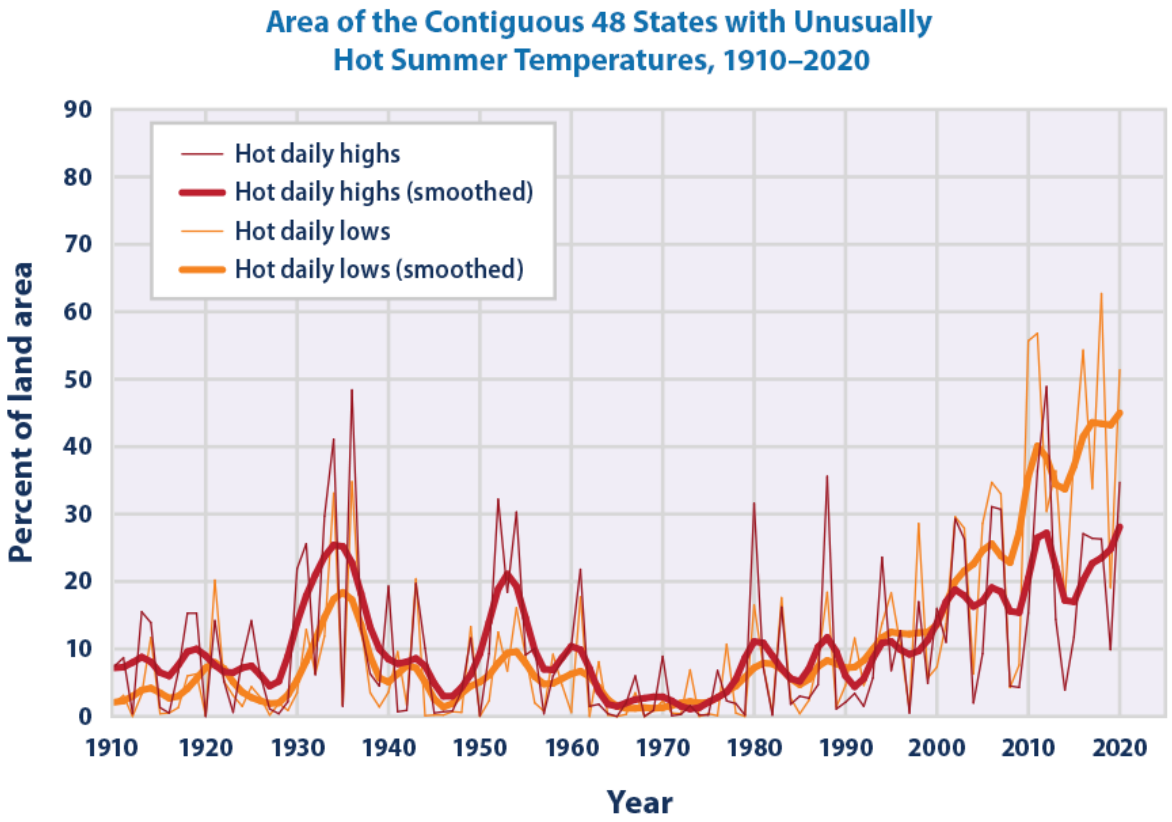
Future Occurrences

The U.S. Environmental Protection Agency notes that extreme weather is likely to become more frequent. Since 1901, average temperatures have continued to rise in the contiguous 48 states with nine of the 10 warmest years having occurred since 1998. Since the 1970s, summer highs and winter lows have become more common and occur at a more frequent rate (2021). As such, participating jurisdictions can expect to see more extreme highs and lows more frequently than in the past.

Future Climate Considerations

The following graphic shows an upward trend in the hot daily lows in the contiguous 48 states (USEPA, 2021). The smoothed line of the hot daily highs is not trending upward as much, but it appears as though the nation is not getting the relief on those hot days that it once did.

Figure 2.2.5.d

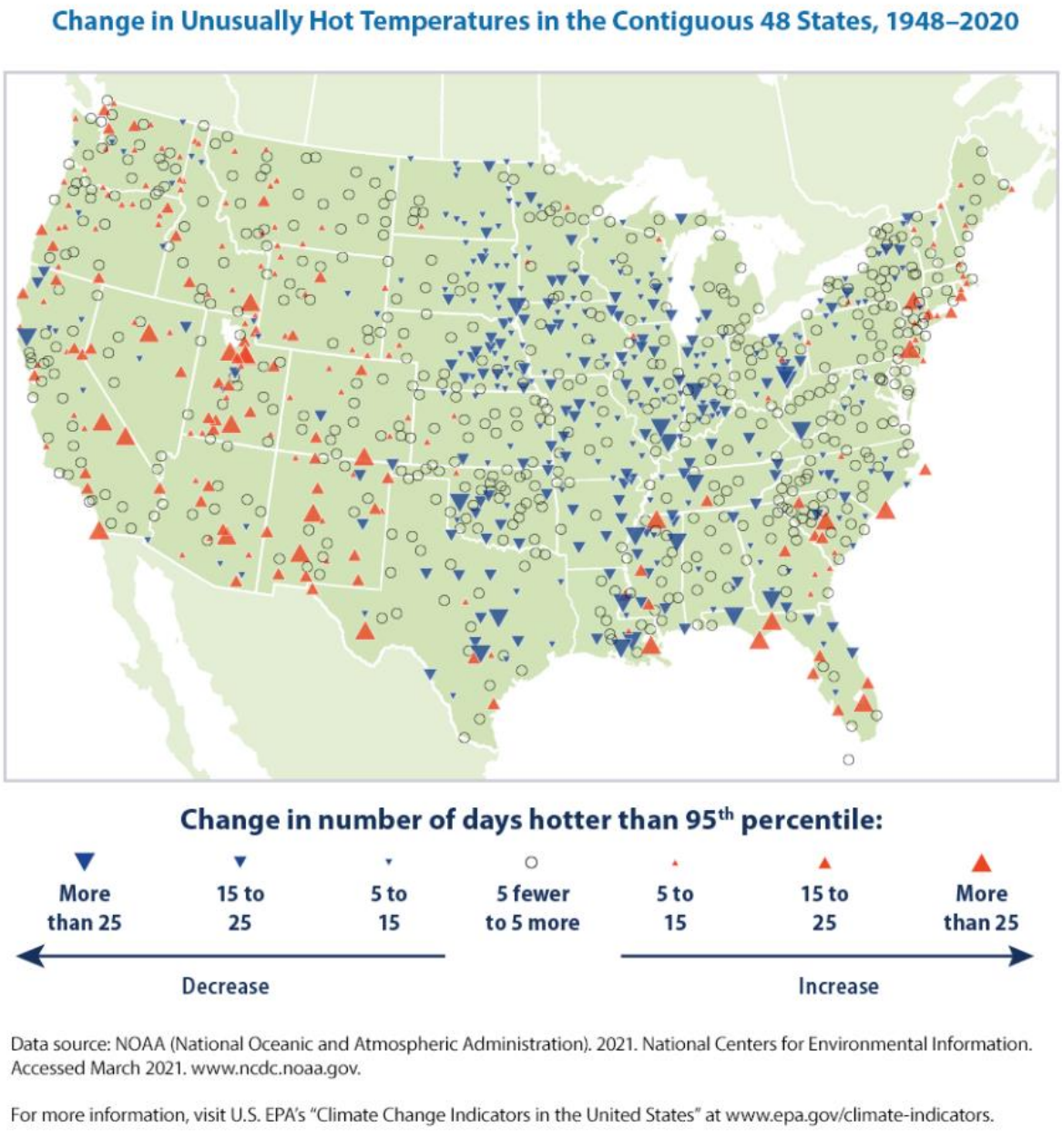


Data source: NOAA (National Oceanic and Atmospheric Administration). 2021. U.S. Climate Extremes Index. Accessed March 2021. www.ncdc.noaa.gov/extremes/cei.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

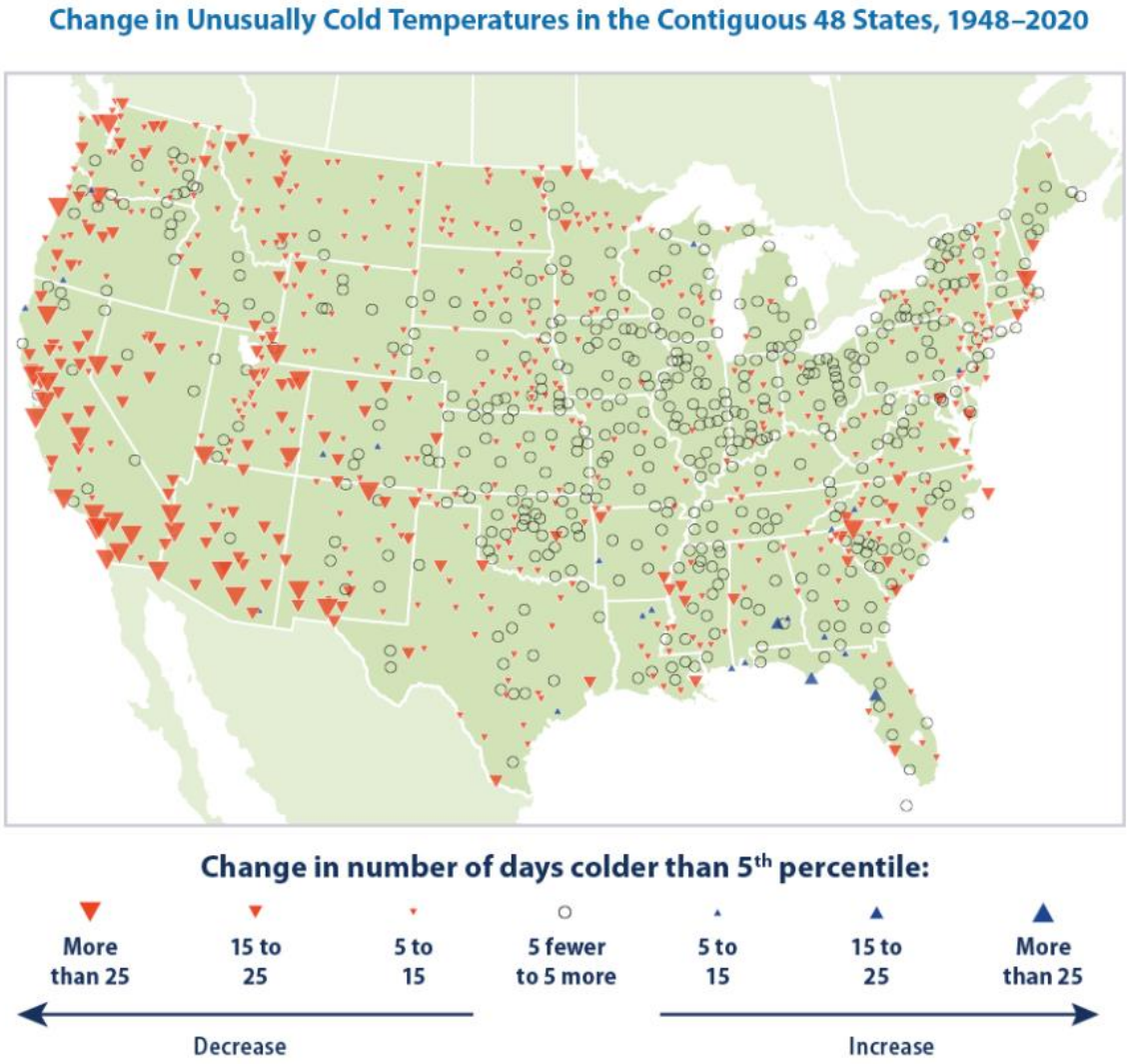
The wider Columbiana County area appears to be an outlier in this trend, as shown in the graphic below (USEPA, 2021). While the county may continue to experience pockets of extreme heat, this graphic shows the heat trends to be more pronounced in the western states, small areas of the south, and along the eastern coast. Most of Ohio is within the five-day change (+/-), though areas just to the south of Columbiana County are in the 15 to 25 (+/-) range.

Figure 2.2.5.e



Ohio has seen, on the whole (and particularly along its eastern border), little change in the number of days colder than the fifth percentile (USEPA, 2021), though there are pockets of areas registering as within the five- to 15-day range.

Figure 2.2.5.f



Data source: NOAA (National Oceanic and Atmospheric Administration). 2021. National Centers for Environmental Information. Accessed March 2021. www.ncdc.noaa.gov.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

While these graphics may suggest that the county should anticipate extreme conditions in the future, this data is purely climatological. It does not consider the interaction between fluctuations in temperatures and vulnerable populations. Despite a trend of out-migration, other evidence suggests that the county's population is aging, which could exacerbate the heat- and cold-related health issues noted above.

Risk Assessment

This section summarizes the vulnerability of the county to extreme temperatures. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding extreme temperatures.

Table 2.2.5.9

Public Sentiment, Extreme Temperatures					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Extreme Temperatures	7 (11.3%)	19 (30.6%)	27 (43.5%)	9 (14.5%)	62
In the past five years, do you remember this hazard occurring in your community?				33	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. For extreme temperatures, heat and cold were presented separately. Of the 173 responses received, 38 (21.97%) indicated concern about cold, while 37 (21.39%) were concerned about heat. For five respondents, extreme cold was the hazard that concerned them the most, while 10 were most concerned about extreme heat.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

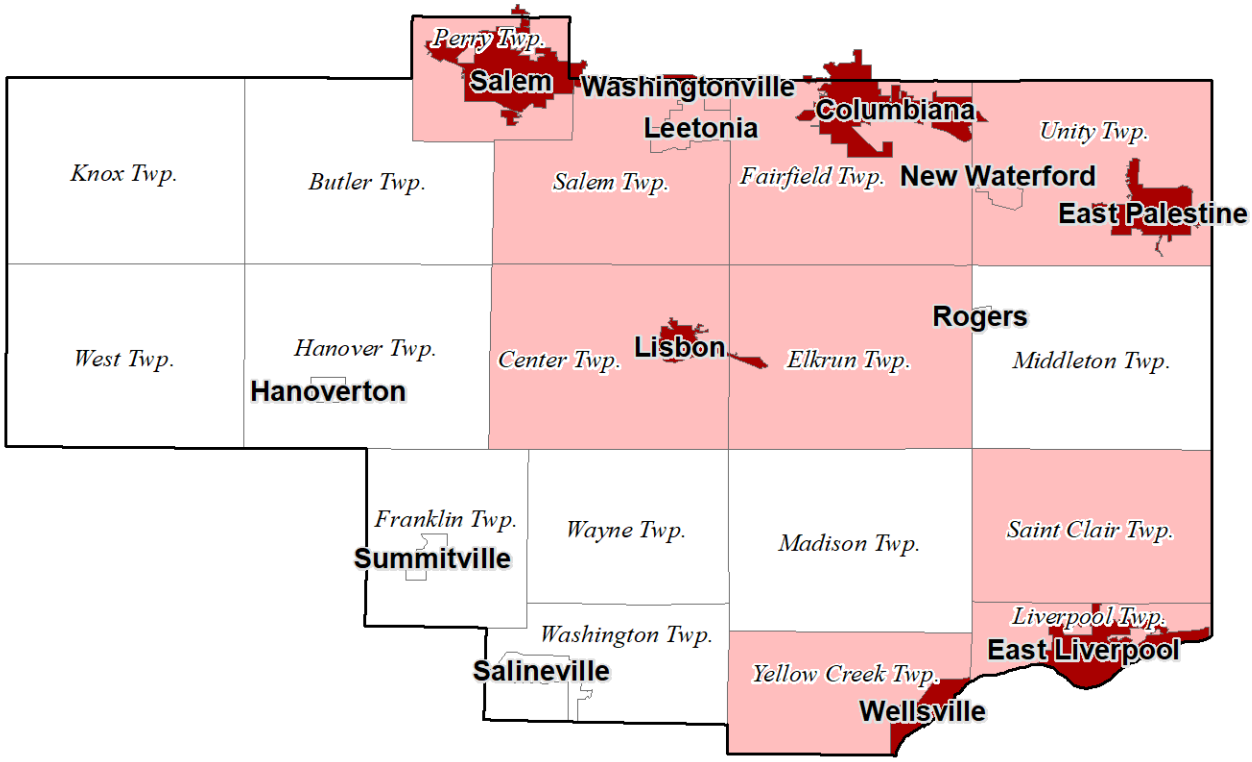
Table 2.2.5.10

Extreme Temperatures Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	There have been 12 extreme cold incidents since 2009, for an average of 0.8 incidents per year. There have been five extreme heat incidents since 2005, for an average of 0.3 incidents per year. In total, there are an average of 0.89 extreme temperature events per year.
Response	2	One day	Most incidents do not require a response, though a few may necessitate the opening of a warming or cooling station. Operations at a warming/cooling station may exceed a single day, but planners used the “one day” criterion as a planning average.
Onset	1	Over 24 hours	Extreme temperature incidents are forecasted ahead of time.

Extreme Temperatures Risk Ranking			
Category	*Points*	*Description*	*Notes*
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term *catastrophic* sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by the front causing the temperature extreme to occur.
Business	1	Less than 24 hours	Extreme temperatures rarely close or otherwise impact the operation of business.
Human	2	Low (some injuries)	Extreme temperatures could cause injury and death (Klinenberg, 2015). Though these incidents could cause injury or death, historical data does not report injuries or deaths attributed to extreme heat or cold. Planners thus selected the "Low" label as a planning average.
Property	1	Less than 10% of property affected	The effects of extreme temperatures typically impact people; thus, planners selected the lowest category for property impacts.
Totals	**16**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for extreme temperatures. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk. Jurisdictions listed with higher risk contain census tracts with higher concentrations of the vulnerable populations noted in Figures 2.2.5.b and c above, particularly as they intersect with the estimated urban heat island effect.

Figure 2.2.5.g


Perry Twp.
Salem
Washingtonville
Leetonia
Columbiana
Unity Twp.
Knox Twp.
Butler Twp.
Salem Twp.
Fairfield Twp.
New Waterford
East Palestine
West Twp.
Hanover Twp.
Hanoverton
Center Twp.
Lisbon
Elkrun Twp.
Rogers
Middleton Twp.
Franklin Twp.
Summitville
Wayne Twp.
Madison Twp.
Saint Clair Twp.
Washington Twp.
Salineville
Yellow Creek Twp.
Liverpool Twp.
East Liverpool
Wellsville

2.2.6 Flooding

A flood is a general or temporary condition of partial or complete inundation of normally dry land areas or the rapid accumulation of runoff surface water from any source. A flash flood is a sudden local flood, typically due to heavy rainfall.				
Risk  HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time, typically after prolonged periods of precipitation	**Risk Ranking:**	Medium
	Warning Time:	12-24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur during a year	**Impact:**	Less than 10% of property affected
	Disaster Declarations:	S4541 (FSA) (2019) S4539 (FSA) (2019) DR-4360-OH (2018) S3934 (FSA) (2015) DR-1097-OH (1996) DR-630-OH (1980)		

Hazard Overview

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

- **Excessive rainfall** is the most common cause of flooding. Water accumulates more quickly than the soil can absorb it, resulting in flooding.
- Flooding from **snowmelt** occurs when the primary source of water is melting snow. Unlike rainfall which can reach the soil almost immediately, the snowpack can store the water for an extended period until temperatures rise above freezing, and the snow melts.
- **Ice or debris jams** are common during the winter and spring along rivers, streams, and creeks. As ice or debris moves downstream, it can get caught in obstructions to the water flow. When this occurs, water can be held back, causing upstream flooding. When the jam finally breaks, flash flooding can occur downstream.
- Flooding can also occur following **dam breaks or a levee failure**. For more information, see Section 2.2.2 Dam & Levee Failure.

Location and Extent

Floods are described by their horizontal extents, the depth of the floodwaters, and the probability of occurrence. Unfortunately, meteorological officials historically have expressed the

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

Figure 2.2.6.a identifies the special flood hazard areas (SFHAs) for Columbiana County. The SFHAs shown include the floodway (the channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation by more than a designated height) and 1% annual chance hazard areas (see the above definition) (FEMA, 2020). This figure provides a quick snapshot of the areas of the county that might most often experience flooding; however, its extent is too great to show detailed impacts. Flood hazard mapping by participating jurisdiction, with community assets identified, appears in Appendix 5.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

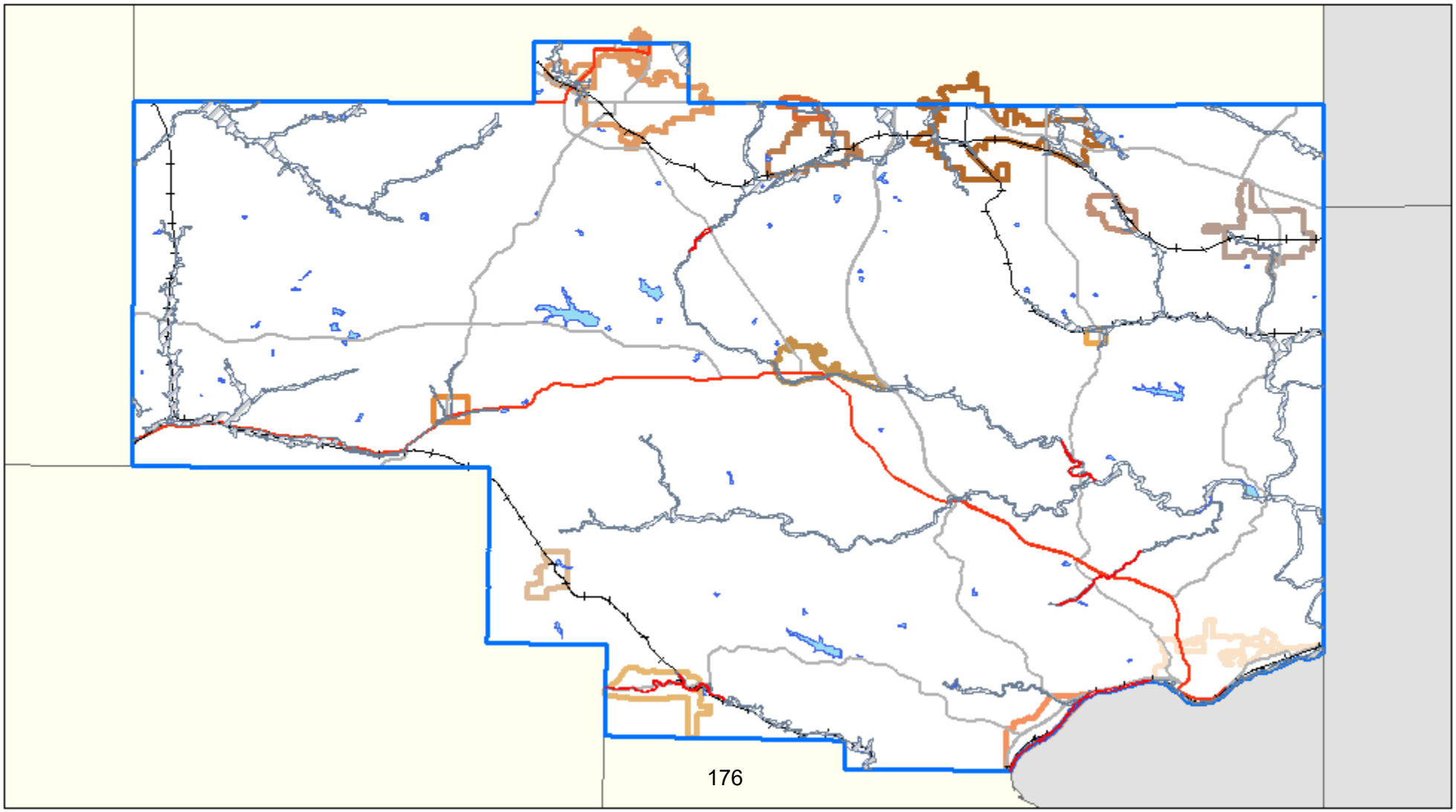
Figure 2.2.6.a: Special Flood Hazard Areas (SFHAs)

Data Source(s):
FEMA

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

Floodway
1% Annual Chance





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

Table 2.2.6.1

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

There are 10 repetitive loss properties in Columbiana County. The table below[1] shows the repetitive loss by county and municipality, where applicable. These 10 properties were the same ones that appeared in the 2019/2020 update to this plan.

[1] Planners derived this table from information provided by the Ohio Emergency Management Agency.

Table 2.2.6.2

Columbiana County Repetitive Loss & Severe Repetitive Loss Structures (Unmitigated)					
Jurisdiction & Occupancy	*Total Structures*	*RL Structures*	*SRL Structures*	*Total Losses*	*Total Paid*
Columbiana County (Unincorp.)					
Single Family Residential	4	4	0	9	$142,664
East Palestine, Village of					
Other Residential	1	1	0	2	$12,355
Hanoverton, Village of					
Other Non-Residential	1	1	0	2	$6,243
Single Family Residential	1	1	0	5	$37,451
Lisbon, Village of					
Single Family Residential	1	1	0	2	$6,949
Wellsville, Village of					
Single Family Residential	2	2	0	6	$17,755
Countywide Total	**10**	**10**	**0**	**26**	**$223,417**

Impacts and Vulnerability

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

Table 2.2.6.3

Effects of Flooding	
Type	*Description*
Primary Impacts	• With higher velocities, streams can transport larger particles as suspended loads. Such large particles include not only rocks and sediment, but, during a flood, could include such large objects as automobiles, houses, and bridges. • Massive amounts of erosion can be accomplished by floodwaters. Such erosion can undermine bridge structures, levees, and buildings causing their collapse. • Water entering human-built structures causes water damage. Even with minor flooding of homes, furniture is ruined, floors and walls are damaged, and anything that comes in contact with the water is likely to be damaged or lost. Flooding of automobiles usually results in damage that cannot easily be repaired. • The high velocity of floodwaters allows the water to carry more sediment as a suspended load. When the floodwaters retreat, velocity is generally much lower and sediment is deposited. After the retreat of the floodwaters, everything is usually covered with a thick layer of stream-deposited mud, including the interior of buildings. • Flooding of farmland usually results in crop loss. Livestock, pets, and other animals are often carried away and drown. • Humans that get caught in the high-velocity floodwaters are often drowned by the water. • Floodwaters can concentrate garbage, debris, and toxic pollutants that can cause the secondary effects of health hazards.

Effects of Flooding	
Type	*Description*
Secondary Impacts	• Drinking water supplies may become polluted, especially if sewerage treatment plants are flooded. This may result in disease and other health effects, especially in underdeveloped countries. • Gas and electrical service may be disrupted. • Transportation systems may be disrupted, resulting in shortages of food and clean-up supplies. In underdeveloped countries, food shortages often lead to starvation.
Long-Term (Tertiary) Impacts	• The location of river channels may change as a result of flooding, new channels develop, leaving the old channels dry. • Sediment deposited by flooding may destroy farmland (although silt deposited by floodwaters could also help to increase agricultural productivity). • Jobs may be lost due to the disruption of services, destruction of business, etc. (although jobs may be gained in the construction industry to help rebuild or repair flood damage). • Insurance rates may increase. • Corruption may result from the misuse of relief funds. • Destruction of wildlife habitat.

In addition to property and structure damage, flood waters pose a risk to human health. Floodwaters can contain downed power lines, human and livestock waste, household, medical, and industrial waste and debris, wild or stray animals, and other contaminants that can cause illnesses (CDC, 2022a).

Flash floods are often the most dangerous floods. Flash flood waters are fast-moving and can destroy buildings and bridges and scour new channels. Occasionally, debris floating in flash floodwaters accumulates at natural or human-made obstructions and restricts the flow of water. This obstruction causes upstream flooding and subsequent downstream flooding if the obstacle suddenly releases.

Flooding impacts include injuries and potential fatalities, damage to property, lost revenue and other economic damage, and increased demand for public safety and infrastructure-related services. Response activities include unplanned overtime for emergency operations center (EOC) activations, evacuations and sheltering of displaced individuals, rerouting traffic destined for impassible roads, bridge and road repairs, and rescue or medical missions related to motorists and isolated individuals. Private property damages to homes and vehicles, as well as land erosion, river channel changes, agricultural damage, and livestock losses resulting in significant rural economic impacts to residents.

Social Vulnerability Considerations

Flooding can impact numerous social vulnerability categories, in both direct and subtle ways. Direct impacts include the following. Flood insurance can be costly, and those living in poverty may not be able to afford coverage. As a result, they forego coverage and feel disproportionate impacts if their home floods. Renters may not be aware that they can purchase flood insurance, and as such, they may face similar impacts when floods occur. Figure 2.2.6.b below shows the Census tracts with more than 25% of their persons living in poverty overlaid by flood hazard data.

In the aftermath of disasters such as Hurricane Katrina in New Orleans and Hurricane Harvey in Houston, Texas, more affluent (often white) impactees chose to purchase or rebuild in less hazard-prone areas, further concentrating lower-income, often racially segregated populations in hazard-prone areas (Craemer, 2010; Olin, 2021). Steering committee members were not aware of this having occurred after previous floods in the county(e.g., 2004), though awareness of the possibility can help to prevent it from occurring (to the extent possible) in the future.

Other direct impacts are related to response capabilities. Households with no vehicle can have trouble evacuating. Figure 2.2.6.c shows the relationship between special flood hazard areas and the Census tracts with the highest percentage of households with no vehicle (i.e., tracts with more than 15% of the households having no vehicle).

Other effects can be more subtle. Frequent flooding (or the potential for frequent flooding) can depress property values in hazard areas, which can (over time) steer lower-income residents into those areas as a matter of what they can afford. These individuals not only have difficulty affording flood insurance premiums (as noted above), but also homeowner's insurance more generally. The lack of insurance hampers their ability to recover when floods occur.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.6.b: SFHAs & Poverty

Data Source(s):
CDC ATSDR (2020), FEMA

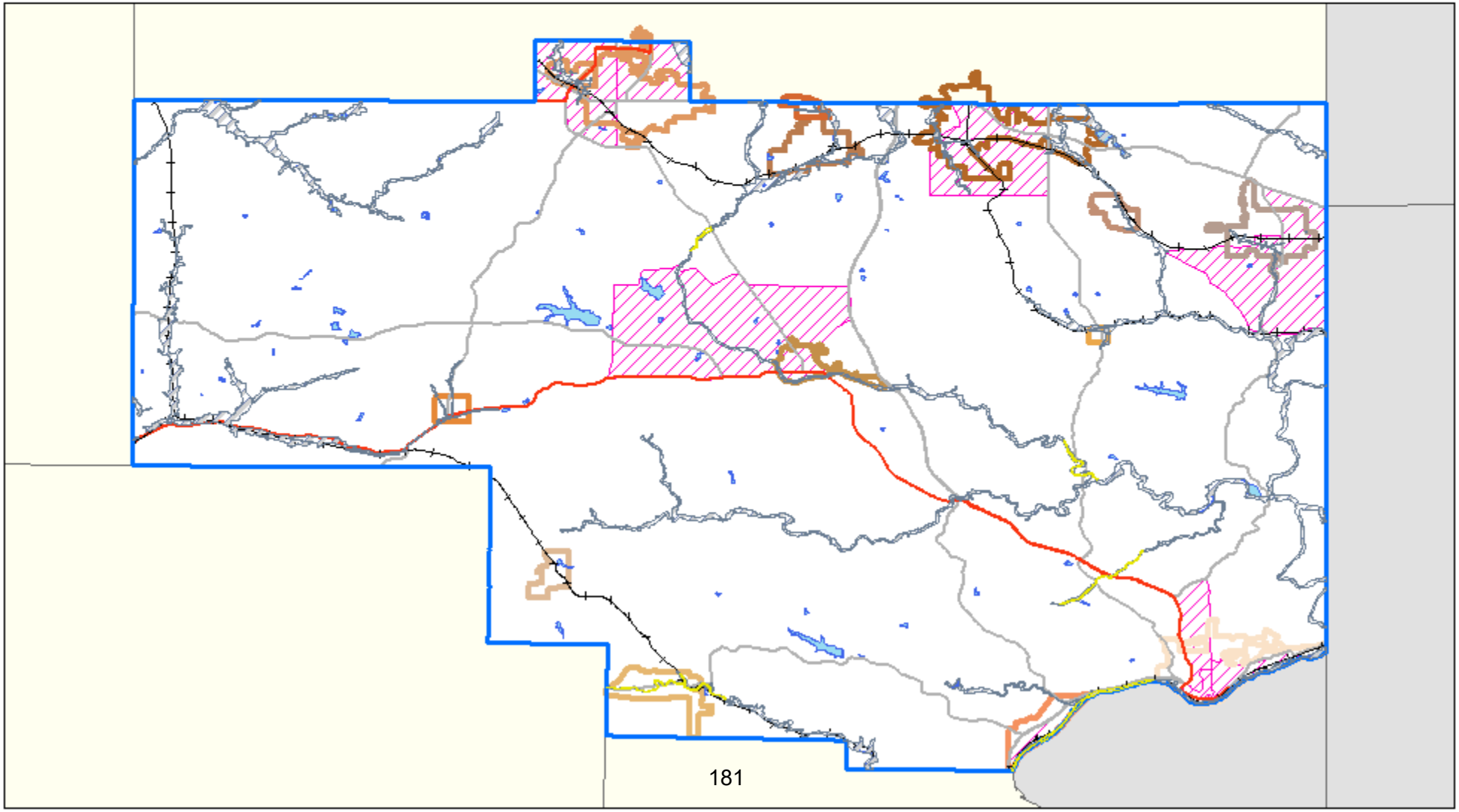
DISCLAIMER: Data is meant for use as reference only. Some sources may be intended to be used at national or regional scales and are thus used beyond their original intent for demonstrative purposes.

Floodway

1% Annual Chance

Greater than 25% of Population, below 150% of Poverty Level





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

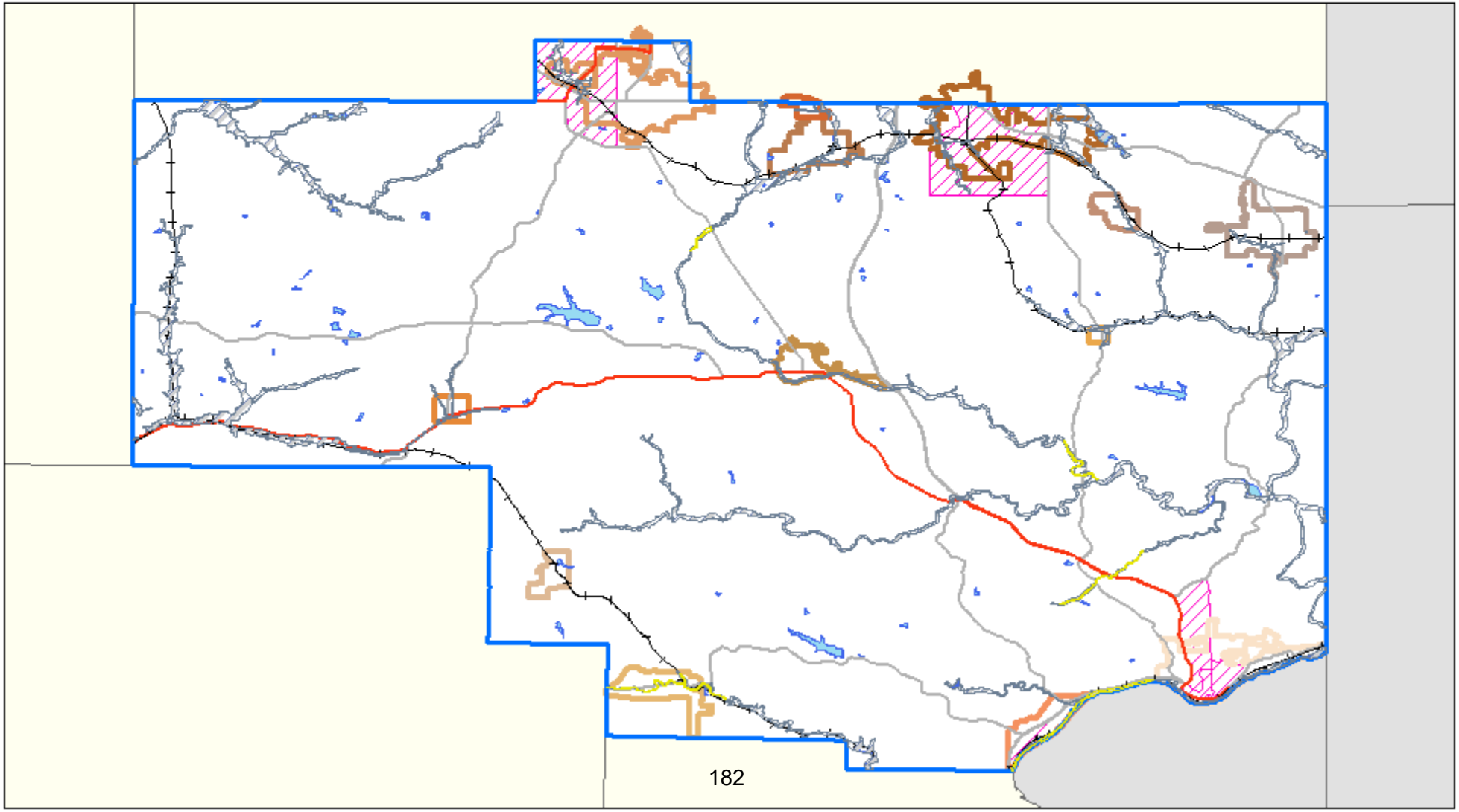
Figure 2.2.6.c: SFHAs & Limited Vehicle Access

Data Source(s):
CDC ATSDR (2020), FEMA

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

Floodway
1% Annual
Greater than 10% of Households w/ No Vehicle





Previous Occurrences

There have been 30 flooding and 47 flash flood incidents in Columbiana County since 1996 (NOAA NCEI, 2024). Some of these events are duplicates (i.e., flooding occurred in multiple areas of the county as a result of the same storm system). As with other weather-related data from the NCEI, it is more accurate to examine the number of unique dates with flooding (i.e., 24) or flash flooding (i.e., 33) to determine the per annum estimate. Doing so yields 0.86 floods and 1.18 flash floods, on average, per year. The table below lists the instances of flooding.

Table 2.2.6.4

Flooding Incidents, Columbiana County, 1996-2024						
Location		*Date*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
Columbiana (Zone)	N/A	1/19/1996	0	0	$440,000	$0
Columbiana (Zone)	N/A	4/14/2002	0	0	$5,000	$0
Columbiana (Zone)	N/A	7/8/2003	0	0	$0	$0
Columbiana (Zone)	N/A	7/28/2003	0	0	$0	$0
Columbiana (Zone)	N/A	1/4/2004	0	0	$0	$0
Columbiana (Zone)	N/A	5/22/2004	0	0	$30,000	$0
Columbiana (Zone)	N/A	9/8/2004	0	0	$300,000	$0
Columbiana (Zone)	N/A	9/17/2004	0	0	$475,000	$0
Columbiana (Zone)	N/A	1/6/2005	0	0	$0	$0
Columbiana (Zone)	N/A	1/7/2005	0	0	$30,000	$0
Columbiana Co.	Summitville	3/4/2008	0	0	$25,000	$0
Columbiana Co.	Wellsville	3/4/2008	0	0	$25,000	$0
Columbiana Co.	Lisbon	3/4/2008	0	0	$10,000	$0
Columbiana Co.	Highlandtown	3/5/2008	0	0	$40,000	$0
Columbiana Co.	Clarkson	3/5/2008	0	0	$50,000	$0
Columbiana Co.	New Garden	6/26/2008	0	0	$50,000	$0
Columbiana Co.	Wellsville	6/2/2010	0	0	$25,000	$0
Columbiana Co.	East Liverpool	2/28/2011	0	0	$75,000	$0
Columbiana Co.	East Palestine	4/16/2011	0	0	$5,000	$0
Columbiana Co.	Clarkson	5/12/2011	0	0	$0	$0
Columbiana Co.	Elkton	5/13/2011	0	0	$10,000	$0
Columbiana Co.	Logtown	5/13/2011	0	0	$10,000	$0
Columbiana Co.	Salem	7/4/2011	0	0	$0	$0
Columbiana Co.	Leetonia	7/4/2011	0	0	$5,000	$0
Columbiana Co.	Columbiana	7/4/2011	0	0	$5,000	$0
Columbiana Co.	Unity	8/19/2011	0	0	$25,000	$0
Columbiana Co.	Wellsville	8/8/2013	0	0	$0	$0
Columbiana Co.	Columbiana	6/30/2015	0	0	$2,000	$0
Columbiana Co.	Salem	1/12/2017	0	0	$0	$0
Columbiana Co.	Summitville	7/7/2019	0	0	$5,000	$0
		Totals	**0**	**0**	**$1,647,000**	**$0**

The table below lists the instances of flash flooding.

Table 2.2.6.5

Flash Flooding Incidents, Columbiana County, 1996-2024						
Location		*Date*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
Columbiana Co.	Salem	1/19/1996	0	0	$20,000	$0
Columbiana Co.	Salem	5/10/1996	0	0	$5,000	$0
Columbiana Co.	Franklin Square	5/11/1996	0	0	$0	$0
Columbiana Co.	Franklin Square	5/11/1996	0	0	$0	$0
Columbiana Co.	New Garden	5/17/1996	0	0	$50,000	$0
Columbiana Co.	Elkton	12/11/1996	0	0	$0	$0
Columbiana Co.	Elkton	12/12/1996	0	0	$0	$0
Columbiana Co.	Salem	5/25/1997	0	0	$1,000	$0
Columbiana Co.	Rogers	6/2/1997	0	0	$0	$0
Columbiana Co.	North Georgetown	6/3/1997	0	0	$0	$0
Columbiana Co.	Columbiana	6/18/1997	0	0	$0	$0
Columbiana Co.	East Portion	1/7/1998	0	0	$0	$0
Columbiana Co.	Salem	6/2/1998	0	0	$0	$0
Columbiana Co.	Lisbon	6/30/1998	0	0	$0	$0
Columbiana Co.	East Liverpool	6/30/1998	0	0	$25,000	$0
Columbiana Co.	Homeworth	4/8/2000	0	0	$0	$0
Columbiana Co.	Gavers	6/12/2000	0	0	$0	$0
Columbiana Co.	Lisbon	7/8/2003	0	0	$150,000	$0
Columbiana Co.	Elkton	7/8/2003	0	0	$100,000	$0
Columbiana Co.	Bayard	7/8/2003	0	0	$100,000	$0
Columbiana Co.	Homeworth	7/27/2003	0	0	$30,000	$0
Columbiana Co.	Hanoverton	8/9/2003	0	0	$0	$0
Columbiana Co.	Salem	8/9/2003	0	0	$0	$0
Columbiana Co.	Washingtonville	5/22/2004	0	0	$0	$0
Columbiana Co.	East Palestine	6/15/2004	0	0	$0	$0
Columbiana Co.	Lisbon	6/17/2004	0	0	$0	$0
Columbiana Co.	Winona	8/27/2004	0	0	$3,200,000	$0
Columbiana Co.	Rogers	7/5/2005	0	0	$0	$0
Columbiana Co.	Salem	8/9/2007	0	0	$25,000	$0
Columbiana Co.	Salem	8/20/2007	0	0	$50,000	$0
Columbiana Co.	Salem	6/17/2009	0	0	$50,000	$0
Columbiana Co.	Leetonia	3/22/2010	0	0	$50,000	$0
Columbiana Co.	Washingtonville	3/22/2010	0	0	$150,000	$0
Columbiana Co.	West Portion	3/22/2010	0	0	$10,000	$0
Columbiana Co.	East Liverpool	7/10/2013	0	0	$75,000	$0
Columbiana Co.	East Liverpool	7/10/2013	0	0	$50,000	$0
Columbiana Co.	East Liverpool	7/10/2013	0	0	$35,000	$0
Columbiana Co.	Homeworth	7/10/2013	0	0	$25,000	$0
Columbiana Co.	Gavers	6/10/2018	0	0	$1,000	$0
Columbiana Co.	Salineville	6/10/2018	0	0	$0	$0

Flash Flooding Incidents, Columbiana County, 1996-2024						
Location		*Date*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
Columbiana Co.	Salineville	6/10/2018	0	0	$2,000	$0
Columbiana Co.	East Liverpool	5/29/2019	0	0	$1,000	$1,000
Columbiana Co.	West Portion	6/20/2019	0	0	$0	$0
Columbiana Co.	Salineville	6/20/2019	0	0	$0	$0
Columbiana Co.	Lisbon	7/11/2019	0	0	$1,000	$0
Columbiana Co.	East Liverpool	7/1/2023	0	0	$250,000	$0
Columbiana Co.	East Liverpool	7/1/2023	0	0	$500,000	$0
		Totals	**0**	**0**	**$4,956,000**	**$1,000**

Loss and Damages

Floods and flash floods have caused $6,604,000 in the county ($6,603,000 in property damage plus $1,000 in crop damage) since 1996 (NOAA NCEI, 2024), which translates to an average loss per year of $235,860 (or $115,860 per event.)

However, these figures likely underestimate actual losses when considering the impacts to infrastructure systems and when accounting for changes in flooding, such as the runoff-related flash flooding from intense precipitation over small geographic areas. Further, these estimates are likely not reliable indicators of future flood-related losses. Information from FEMA's National Risk Index (2023) can shed light on potential loss based on property exposure.

Table 2.2.6.6

Columbiana County Riverine Flooding NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$15,370,919	76	$1	$18,740	$17,869	$5	$36,614
39029950200	$18,623,461	40	$0	$22,706	$9,276	$1	$31,982
39029950300	$57,676,886	145	$0	$70,319	$33,984	$4	$104,307
39029950400	$17,468,052	77	$0	$21,297	$17,991	$3	$39,291
39029950500	$0	0	$0	$0	$0	$0	$0
39029950600	$0	0	$0	$0	$0	$0	$0
39029950700	$6,092,636	13	$0	$7,428	$2,955	$0	$10,384
39029950800	$5,785,896	35	$0	$7,054	$8,294	$2	$15,350
39029950900	$13,127,488	54	$1	$16,005	$12,669	$8	$28,682
39029951000	$52,297,794	274	$2	$63,761	$64,267	$18	$128,047
39029951100	$14,613,960	22	$0	$17,817	$5,075	$0	$22,892
39029951200	$19,970,701	72	$0	$24,348	$16,880	$3	$41,232
39029951300	$9,472,182	47	$0	$11,548	$10,890	$2	$22,440
39029951401	$25,213,162	81	$0	$30,740	$19,011	$3	$49,754
39029951402	$17,532,451	191	$0	$21,375	$44,688	$1	$66,064
39029951500	$88,358,673	422	$0	$107,726	$98,882	$0	$206,609
39029951600	$7,602,593	60	$0	$9,269	$14,062	$1	$23,332

Columbiana County Riverine Flooding NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029951700	$2,778,322	25	$0	$3,387	$5,891	$0	$9,279
39029951800	$13,050,720	10	$0	$15,911	$2,456	$0	$18,367
39029951900	$23,323,865	35	$0	$28,436	$8,103	$0	$36,540
39029952000	$0	0	$0	$0	$0	$0	$0
39029952100	$5,996,718	5	$0	$7,311	$1,202	$0	$8,513
39029952200	$47,976,735	43	$0	$58,493	$10,096	$0	$68,589
39029952300	$0	0	$0	$0	$0	$0	$0
39029952400	$2,436,512	9	$0	$2,971	$2,094	$0	$5,064
Grand Total	**$464,769,728**	**1,737**	**$5**	**$566,643**	**$406,638**	**$52**	**$973,333**

Future Occurrences

Floods can occur at any time but are most likely to occur between March and September. While this trend is expected to continue, intense severe storms at various times in the year may result in floods at uncommon times. The Intergovernmental Panel on Climate Change (IPCC) notes that the most likely impact of climate change on Ohio will be an increase in extreme precipitation (IPCC, n.d.). Interestingly, a secondary impact of that precipitation is a quick-rising flood. Further, the IPCC lists increased flooding as a primary impact in the Midwest (which includes Ohio in the IPCC report) and a significant impact in the Northeast.

Future Climate Considerations

Many climate researchers anticipate periods of heavy rain becoming more common as the future climate changes. The *Fourth National Climate Assessment*[2] suggests that rainfall in the most severe of rain events increased across the United States between 1958 and 2016 (USGCRP, 2018). Hersher (2022) reports that floods have become larger in rivers and streams throughout the Midwest and Northeast, while frequencies have decreased in other parts of the country. FEMA further reports that, generally, floodplain inundation is expected to increase by approximately 45% by the end of the 21st century (AECOM, n.d.).

Researchers have also documented that a warmer atmosphere holds more water, and as such, it can release that water (USGCRP, 2018). Climate assessments often point out potential changes in seasonal patterns, which can influence the number of rain-on-snow events (USGCRP, 2018) that occur. Fluctuations in precipitation, to include more precipitation and increased instances of locally contained heavy downpours may contribute to the runoff flooding noted above.

[2] Researchers released the *Fifth National Climate Assessment* as the 2025 update was unfolding. The next update will include its recommendations.

Risk Assessment

This section summarizes the vulnerability of the county to flooding. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding flooding.

Table 2.2.6.7

Public Sentiment, Flooding					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Flooding	8 (12.9%)	22 (35.5%)	20 (32.3%)	12 (19.4%)	62
In the past five years, do you remember this hazard occurring in your community?				32	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 38 (21.97%) indicated being concerned about flooding, with nine respondents indicating that flooding was the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

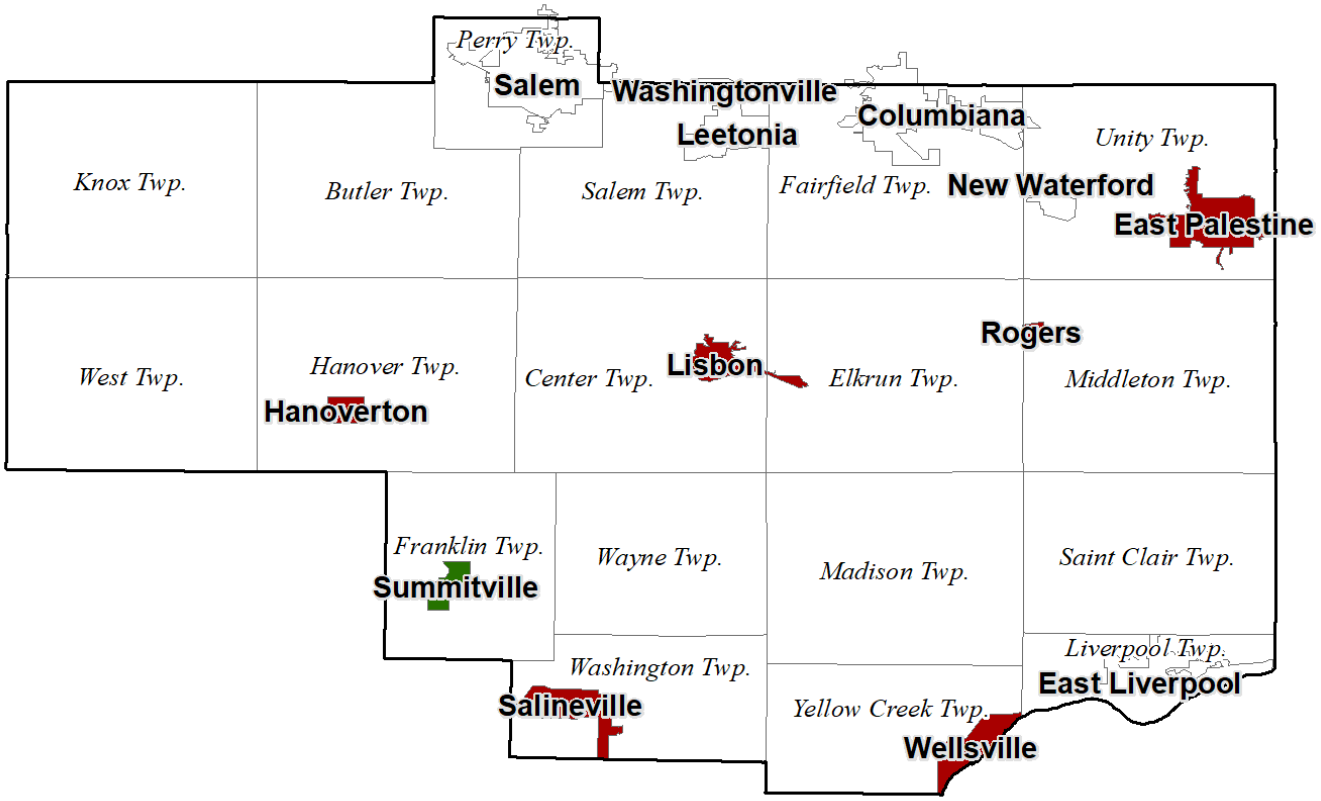
Table 2.2.6.8

Flooding Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	Columbiana County has experienced 77 flood incidents since 1996, for an average of 2.75 occurrences per year.
Response	3	One week	When a significant flood occurs, significant response activities will likely be active for between one day and one week.
Onset	2	12-24 hours	Storm fronts capable of producing flooding can be forecasted in advance. However, whether conditions within a front will converge such that flooding is likely become evident much closer to the front entering the area.
Magnitude	1	Localized (less than 10% of land area affected)	Though floods are damaging, they impact a small portion of the total land area of the county.

Flooding Risk Ranking			
Category	*Points*	*Description*	*Notes*
Business	2	One week	Individual businesses impacted by a flood or flash flood may be closed for extensive periods, but the majority of the county's business community would remain operational. Planners selected "One week" as a planning average.
Human	2	Low (some injuries)	Floods could cause injury or death, but there are no reported injuries or deaths in available historical data. Planners selected the "Low" category as a planning average.
Property	1	Less than 10% of property affected	Historical data reports $6,603,000 in property damages from floods and flash floods. Though this number is significant, it represents 0.10% of the estimated value of the housing stock in the county.
Totals	**16**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for flooding. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.6.d



Summitville is the only jurisdiction in Columbiana County (city, village, or township) that does not include a special flood hazard area (SFHA). As such, it appears less at risk in the image above. All other jurisdictions contain SFHAs, thus establishing a baseline risk for comparison as "having a SFHA." The jurisdictions appearing in red show a larger number of structures at risk of flooding as a function on the overall number of structures within the corporate limits or contain repetitive loss/severe repetitive loss properties.

2.2.7 Hazardous Materials Incident

Hazardous material releases can contaminate air, water, and soils and have the potential to cause injury or death. Dispersion can take place rapidly when transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. When caused by natural hazards, these incidents are known as secondary events.				
Risk  HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time	**Risk Ranking:**	Medium
	Warning Time:	Less than 6 hours	**Type of Hazard:**	Technological
	Probability:	Will occur during a year	**Impact:**	Localized (less than 10% of land area affected)
	Disaster Declarations:	None		

Hazard Overview

According to the National Fire Protection Association (NFPA) 400 (Hazardous Materials Code), a hazardous material is matter or energy that, when released, can create harm to people, the environment, or property, including weapons of mass destruction, as well as any other criminal use of hazardous materials, such as illicit labs, environmental crimes, or industrial sabotage. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. They are in nearly every home and most hospitals and factories.

Incidents involving chemical releases are common and (anecdotally) on the rise. Before World War II, these events primarily affected employees of specific occupations, but the expansion of the chemical industry and increased industrialization has led to danger to people outside work environments. The manufacture, storage, transportation, and utilization of large amounts of varying types of chemicals and growing population densities in areas near chemical manufacturing have contributed to an increase in the exposed population.

Hazardous material incidents can occur because of an industrial accident during production, while in storage, in transportation, during use or disposal, or as part of an intentional attack. They can also occur due to (or in tandem with) natural hazard events, such as earthquakes, floods, windstorms, or winter storms (Planning for Hazards, n.d.). The large-scale release of hazardous materials in combination with natural hazard events can increase the spread

of contamination to large geographic areas and amplify the potential for long-term impacts on human and ecological health.

Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, in 1980 to provide broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for the liability of persons responsible for releasing hazardous wastes at these sites, and established a trust to provide for cleanup when no responsible party can be identified.

The U.S. Environmental Protection Agency's (USEPA) Toxic Release Inventory (TRI) program tracks the management of certain toxic chemicals that pose a threat to human health and the environment. U.S. facilities report the amounts of chemicals released into the environment or managed through recycling, energy recovery, and treatment. Since its inception in 1986, the TRI program has provided citizens with access to information about potentially hazardous chemicals in their communities.

Location and Extent

Hazardous material releases can be localized events, such as minor releases at a fixed site, or regional events, such as radiological incidents. Several factors determine a community's risk of hazardous material releases, including the size of the community, the location and number of sites containing hazardous materials, and the community's proximity to mobile hazardous material risk areas, such as roads and railways.

Regulators classify hazardous materials in several ways. The U.S. Department of Transportation (USDOT) organizes substances into nine classes, as in Table 2.2.7.1 below. Other agencies categorize hazardous materials, but the nine USDOT classifications are consistent across most reporting agencies.

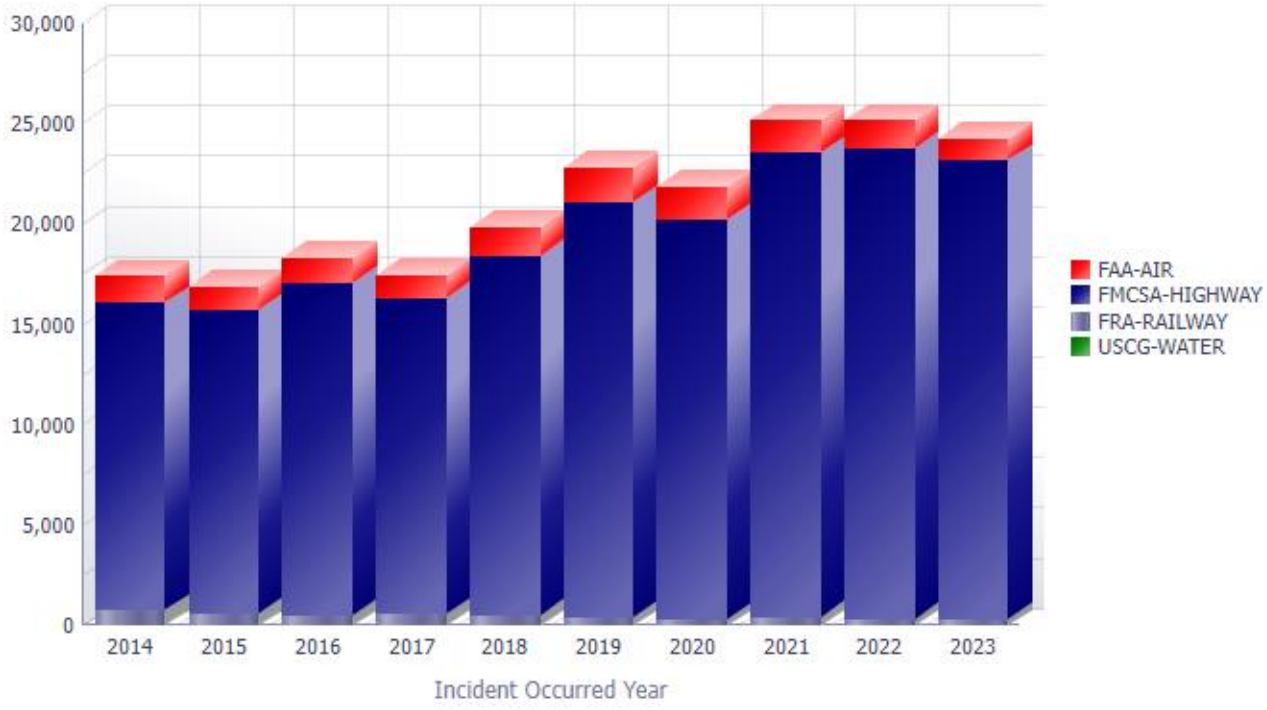
Table 2.2.7.1

U.S. Department of Transportation Hazard Classification System	
Hazard Classification	*Category*
Class 1	Explosives
Class 2	Gases
Class 3	Flammable (and combustible) liquids
Class 4	Flammable solids
Class 5	Oxidizing substances and organic peroxides

U.S. Department of Transportation Hazard Classification System	
Hazard Classification	*Category*
Class 6	Toxic substances
Class 7	Radioactive materials
Class 8	Corrosive substances
Class 9	Miscellaneous dangerous goods, hazardous materials, and articles

The most common mode in which hazardous material incidents occur is highway transport (PHMSA, 2025a). Figure 2.2.7.a shows the breakdown of incidents by mode (between 2014 and 2023).

Figure 2.2.7.a



US 30, US 62, and SR 7 may see the most materials “passing through,” originating at or destined for facilities outside of Columbiana County. Figure 2.2.7.b shows the most likely thoroughfares to see hazardous material traffic. As a spatial reference, it shows a buffer of 1,000’ from these routes that estimates potential isolation areas should an incident occur at any point along these routes. (NOTE: Given the scale of the map that allows for a view of the entire county, the buffer area can be difficult to see.)

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

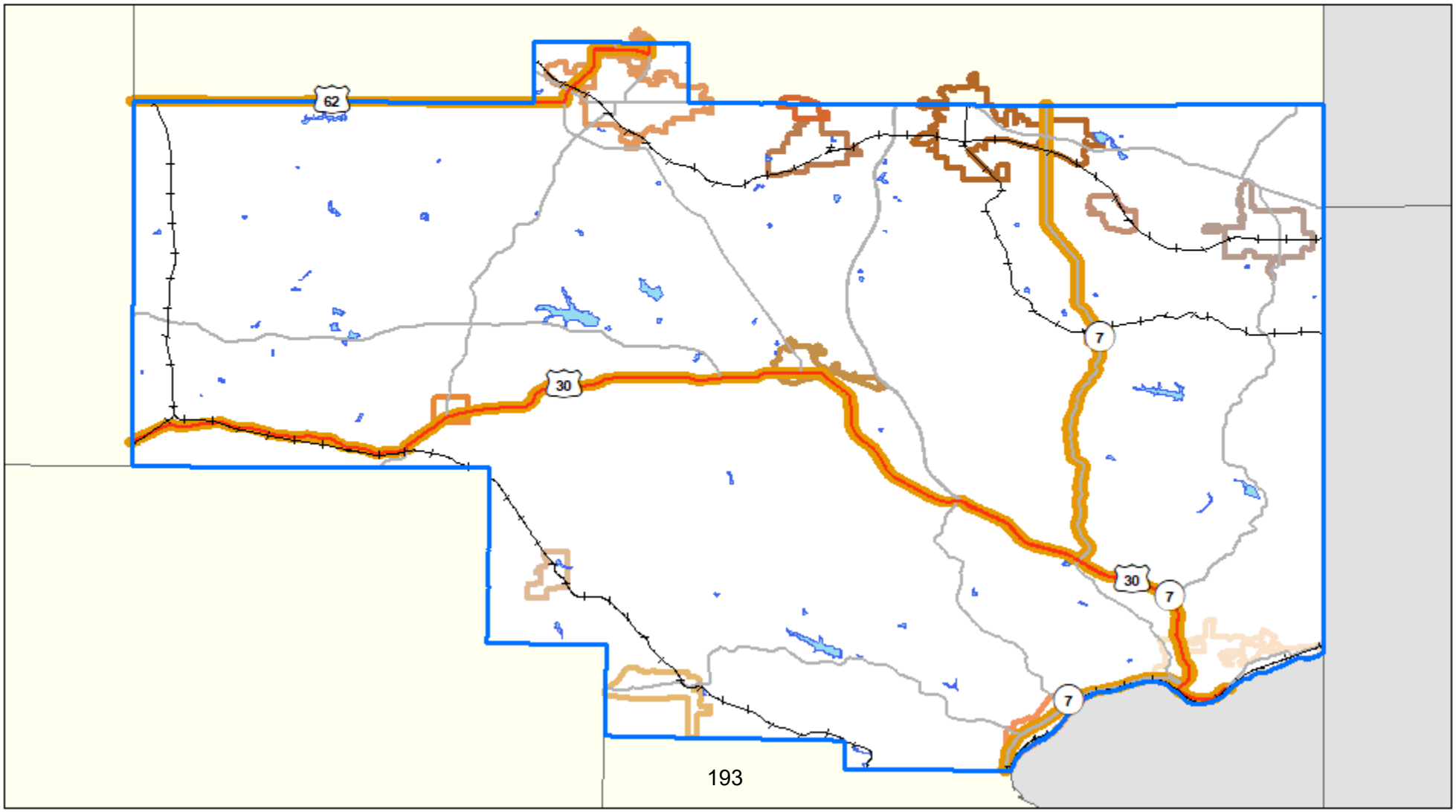
Figure 2.2.7.b: Est. Highway Risk Areas

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

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

Highway Hazmat Risk Areas
US Routes
State Routes





Hazardous material transport via rail has received extensive media coverage since the 2023 East Palestine derailment. Understandably, rail incidents are “top of mind” in the county. When working with committee and municipal representatives for the 2025 update, many participants cited the presence of freight rail lines and the potential for an incident as a significant concern. Norfolk Southern is the primary Class I freight operator in the county. (CSX Transportation has trackage rights for the NS line in the northern half of the county.) The Youngstown and Southeastern Railroad is a Class III short line in the northeastern corner of the county. Figure 2.2.7.c shows the freight rail lines in the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

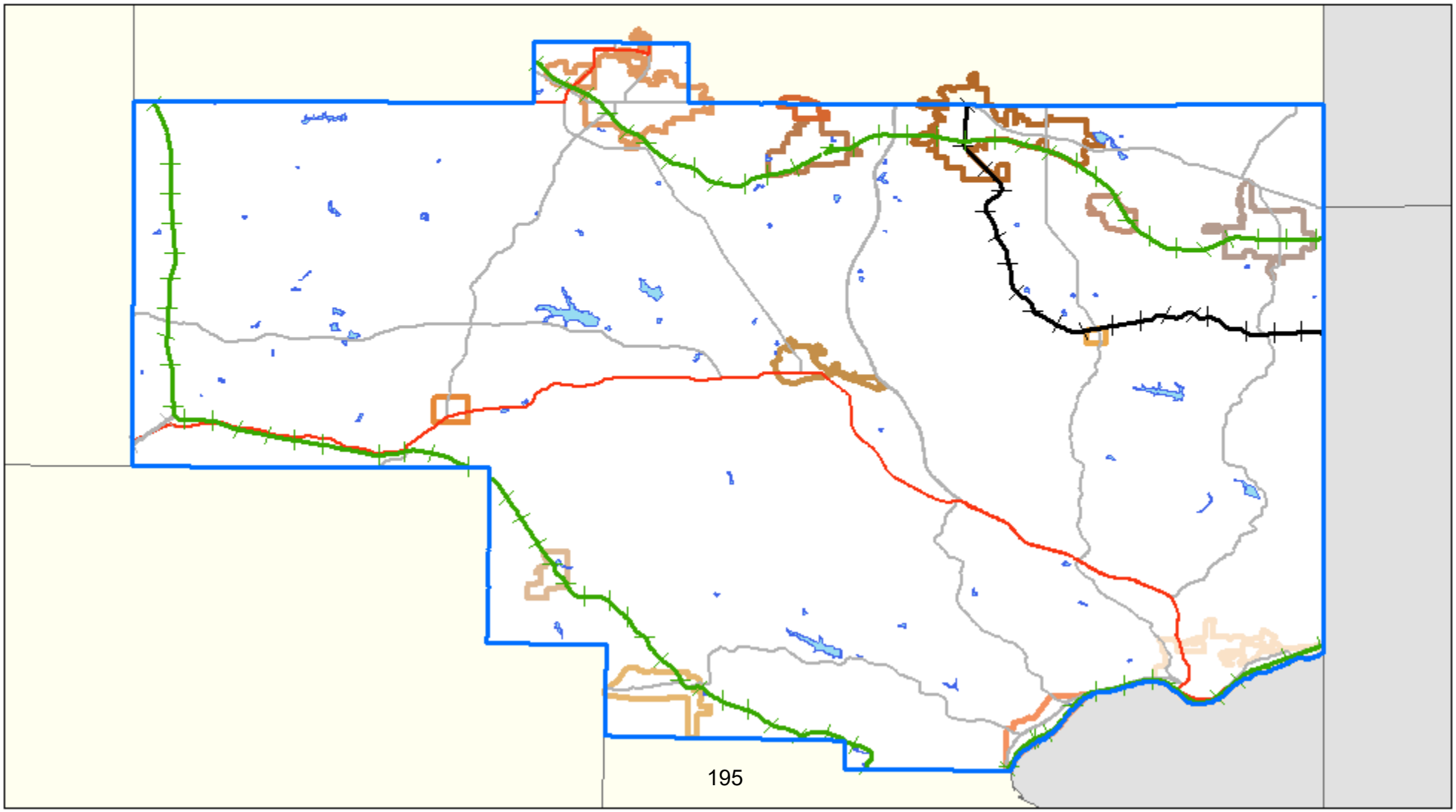
Figure 2.2.7.c: Freight Rail Lines

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

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

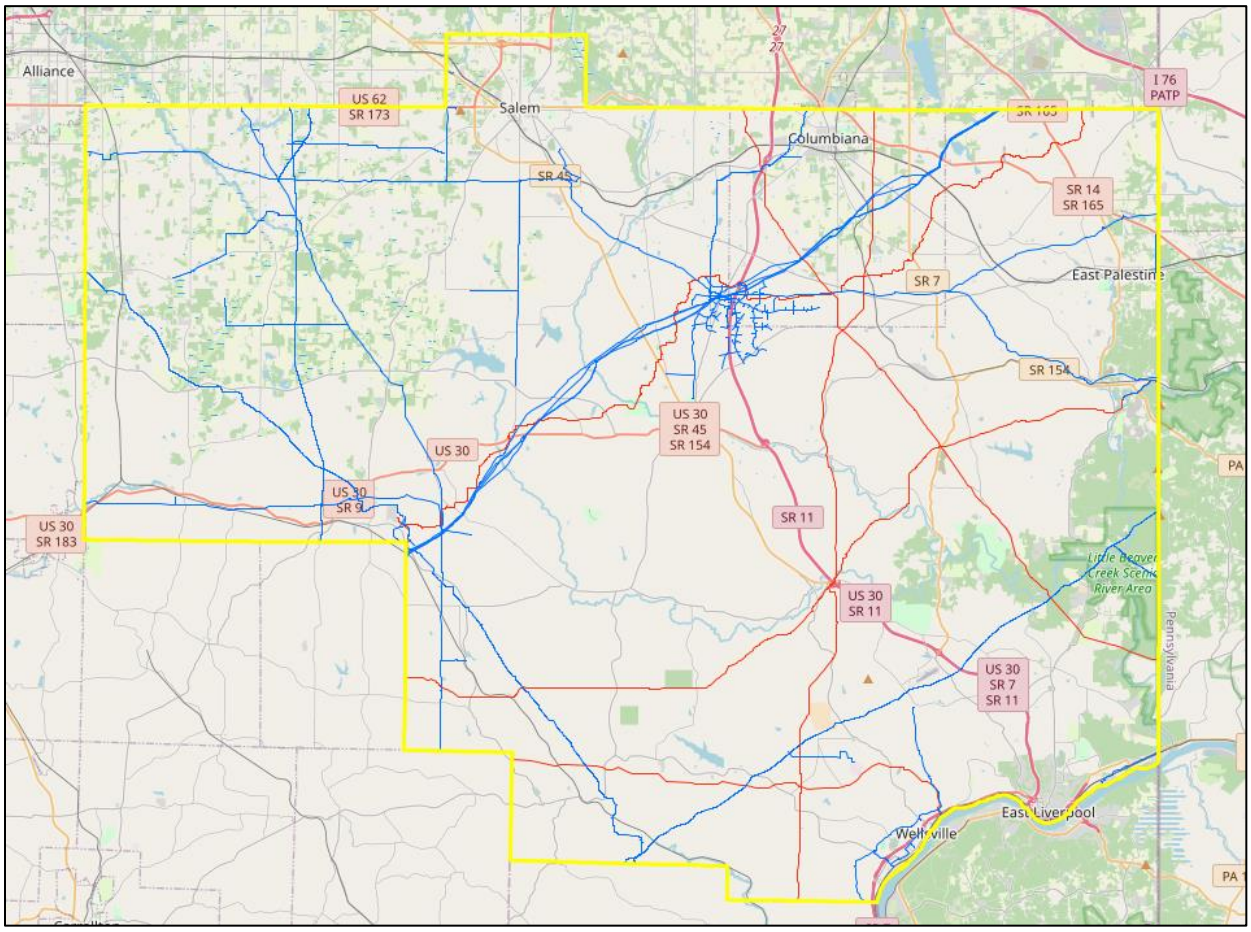
- Norfolk Southern RR
- Ohi-Rail Corp.
- Youngstown & Southeastern RR





Companies also transport hazardous commodities via pipelines. The most recognizable commodity shipped via pipeline is natural gas. According to the USDOT's National Pipeline Mapping System (NPMS), several natural gas transmission lines traverse the region. Figure 2.2.7.d is from the NPMS Public Viewer (PHMSA, 2025b). The blue lines represent natural gas transmission lines, while the thin red lines represent hazardous liquid pipelines. Significantly, the NPMS does not identify distribution and feeder gas lines. According to the NPMS data, materials transported via hazardous liquid pipelines include diesel, gasoline, jet fuel in the Buckeye Partners LP pipeline (running diagonally from between Leetonia and Columbiana City southeast toward the Pennsylvania line above East Liverpool), as well as crude oil, natural gas liquids, and petroleum products throughout the county.

Figure 2.2.7.d



Other common transport modes for hazardous materials include airway and waterway. There are no airports in the county flying significant cargo, but the Ohio River sees significant

waterborne commerce. Most of these shipments are not hazardous as considered by this profile. Table 2.2.7.2 below shows tonnages for all traffic directions on the Ohio River (Pittsburgh to mouth) from 2019-2023 (USACE IWR, 2025). Not all this transport runs past Columbiana County, but it can provide a sense of the types of commodities transported by water and the breakdown of categories of the commodities. As can be seen, "Chemicals and Related Products" comprise approximately 5.64% of the total shipments.

Table 2.2.7.2

Waterborne Commerce, All Traffic (All Directions), Ohio River, 2019-2023 (Tonnages)						
Commodity ID	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	**Totals**
1 Coal, Lignite & Coal Coke	69,207,302	49,348,343	53,112,177	55,037,203	53,776,489	**53,776,489**
2 Petroleum and Petroleum Products	19,917,744	18,612,365	18,486,791	18,619,690	19,238,260	**19,238,260**
3 Chemicals and Related Products	9,144,870	9,256,077	9,614,490	8,740,223	8,201,658	**8,201,658**
4 Crude Materials, Inedible Except Fuels	52,999,415	49,733,941	50,103,496	47,466,004	48,007,222	**48,007,222**
5 Primary Manufactured Goods	8,786,496	7,912,772	8,427,634	8,175,499	8,026,433	**8,026,433**
6 Food and Farm Products	16,970,227	16,792,143	19,335,748	17,846,856	16,732,574	**16,732,574**
7 All Manufactured Equipment, Machinery and Products	9,348	17,024	20,742	17,155	17,106	**17,106**
7 All Manufactured Equipment, Machinery and Products	9,348	17,024	20,742	17,155	17,106	**17,106**
Totals	**177,044,750**	**151,689,689**	**159,121,820**	**155,919,785**	**154,016,848**	**154,016,848**

Within the "Chemicals and Related Products" category, few materials are specifically named. The list of chemical names includes the following.

- Nitrogenous fertilizer
- Phosphatic fertilizer
- Potassic fertilizer
- Fertilizers and mixes (not elsewhere classified)
- Acyclic hydrocarbons
- Benzene and toluene
- Ammonia
- Sodium hydroxide
- Inorganic elemental oxides and halogen salts
- Maticallic salts
- Inorganic chemicals (not elsewhere classified)

- Other hydrocarbons
- Alcohols
- Carboxylic acids
- Nitrogen functional compounds
- Organic compounds (not elsewhere classified)
- Plastics
- Starches, gluten, glue
- Chemical products (not elsewhere classified)
- Organic/inorganic compounds

Hazardous materials incidents may occur at fixed facilities. As noted per the CERCLA paragraphs above, facilities using or storing hazardous materials report to the county's local emergency planning committee (LEPC). Generally, these facilities are located along major transportation routes. The USEPA also monitors and regulates sites that use or produce hazardous materials. The USEPA's Enforcement and Compliance History Online (ECHO) database lists regulated sites. The list is far more extensive than the list of facilities that annually report the LEPC. The ECHO database identifies facilities with permitted discharges, those against whom the USEPA has taken enforcement actions, etc. (USEPA, 2025). There are 452 facilities in Columbiana County that are (or have been) regulated by the USEPA, as shown in Figure 2.2.7.e. The figure also depicts the density of these facilities (i.e., their location within proximity to one another) via heat mapping.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

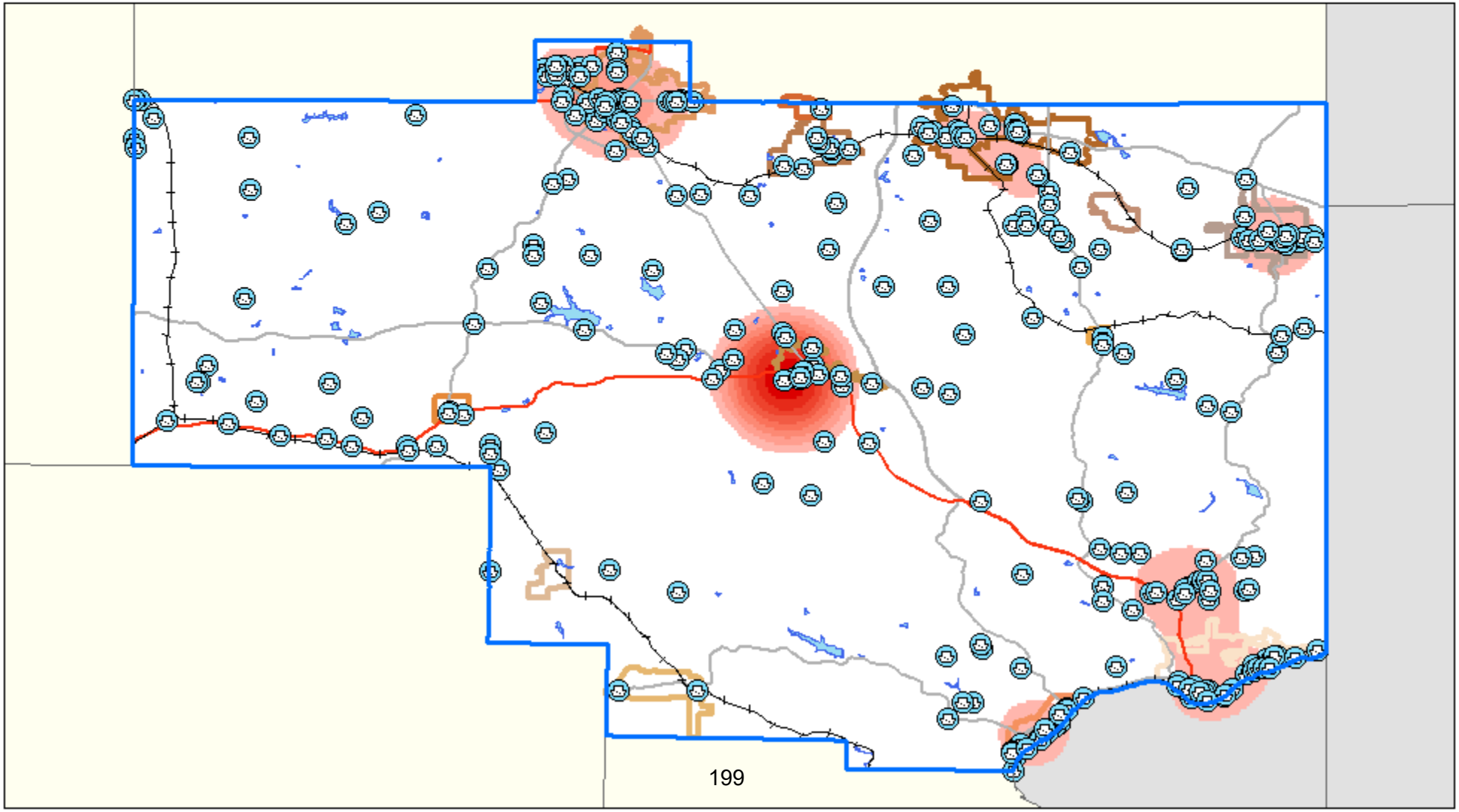
Figure 2.2.7.e: Facilities with Permitted Discharges

Data Source(s):
USEPA ECHO

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

ECHO Facilities





Columbiana County plans extensively for radiological incidents connected with the Beaver Valley Power Station, a nuclear power plant along the Ohio River near Shippingport, Pennsylvania. The eastern portions of the county would be most impacted by an incident at Beaver Valley.

Impacts and Vulnerability

The effects of a hazardous material release on the environment can be devastating. On land or in bodies of water, animals and plants in affected areas can die or experience reproductive complications (USEPA, 2022). Certain hazardous materials have the potential to explode or cause a fire, threatening all organisms close to the incident.

Hazardous materials vary significantly in the health risks they pose to humans. According to the USEPA, hazardous substances may irritate the skin or eyes, make breathing difficult, cause headaches or nausea, or cause other illnesses (USEPA, 2022). Additional health risks include thermal harm, radiological harm, asphyxiation, chemical harm, biological harm, or mechanical harm.

- **Thermal harm** results from exposure to temperature extremes. Thermal injuries can be external (from contact or proximity to a fire or heat source) or internal (from inhaling fumes or heated air). Thermal injuries can also include frostbite from contact with low-temperature hazardous materials.
- **Radiological harm** results from exposure to radioactive materials. Different types of radiation have different energy levels, and not all are dangerous. The radiation that threatens humans is ionizing radiation, which can damage living cells and DNA. Examples of sources of ionizing radiation are medical isotopes used for diagnostic and therapeutic purposes, X-rays, and some survey equipment.
- **Asphyxiation** results from exposure to materials that reduce oxygen levels that may cause suffocation. Asphyxiation can occur in confined spaces or with highly concentrated chemical asphyxiants, such as carbon dioxide and methane. Asphyxiants are generally odorless and tasteless and displace so much oxygen from the atmosphere that the lungs cannot deliver enough oxygen to tissues, and the victim slowly suffocates.
- **Chemical harm** results from chemical exposure, including poisons and corrosives. Injuries and illnesses vary by material.
- **Biological harm** results from exposure to biological materials, including bacteria, viruses, and toxins. Symptoms of biological harm are often delayed because the pathogens require time to multiply sufficiently and cause illness in the person carrying the pathogen.

- **Mechanical harm** results from exposure to, or contact with, fragmentation or debris scattered because of a pressure release, explosion, or boiling liquid expanding vapor explosion (BLEVE) event. Predictable reactions occur during and immediately following an explosion, which routinely injures or kills anyone nearby. The degree of harm closely relates to the size of the blast and proximity to the device. Sources of injury include fragmentation and flying debris, blast overpressure, and secondary blast injuries.

Social Vulnerability Considerations

Social vulnerability concerns with respect to hazardous materials are nuanced. Persons with a lower proficiency in English may not understand regular public outreach from facilities, warnings, or evacuation/shelter-in-place instructions. Households without a vehicle may experience difficulty evacuating. Figure 2.2.7.f overlays the commercial, industrial, and transportation land uses on Census tracts with the largest numbers of persons with lower English proficiency and no vehicle in the county.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

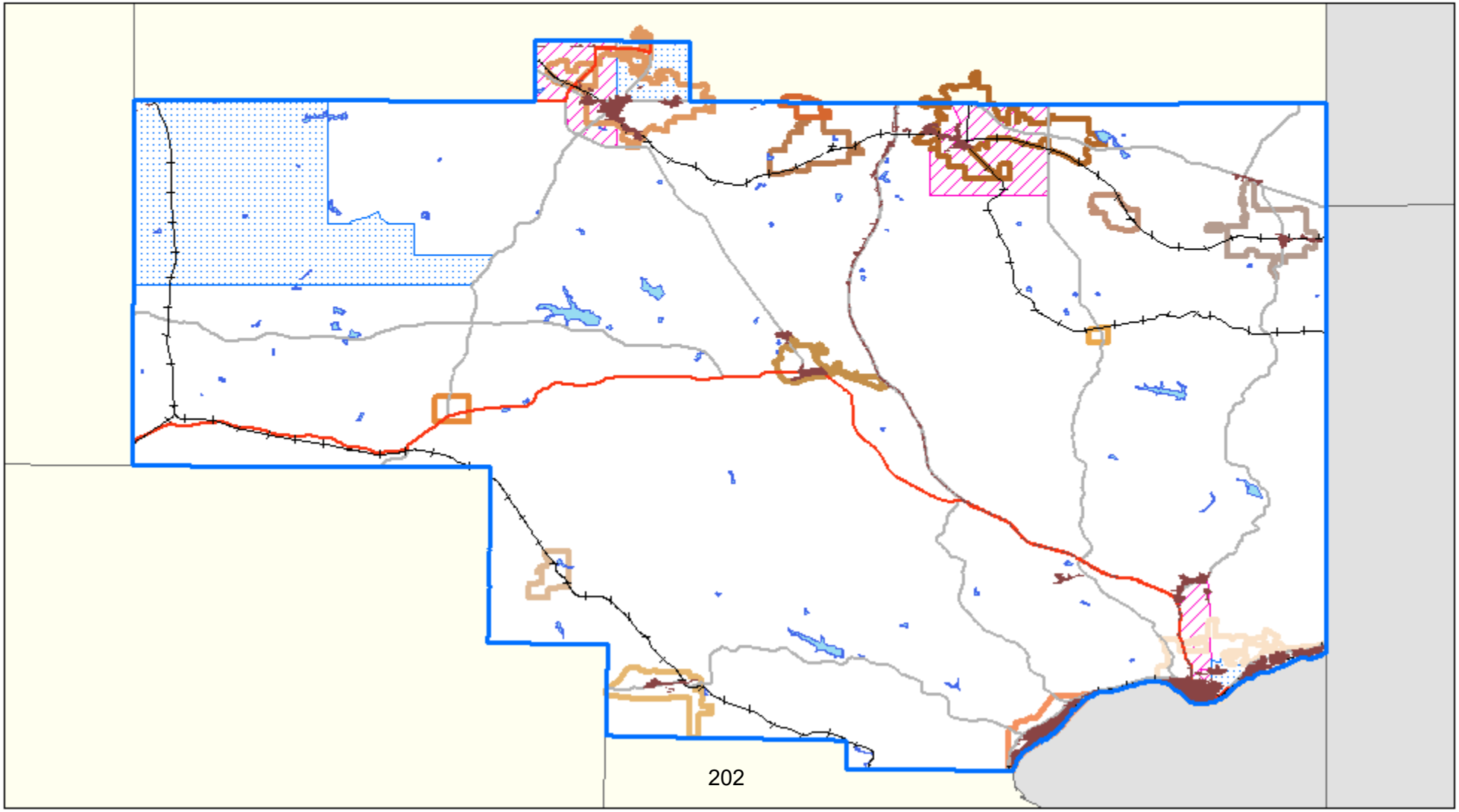
Figure 2.2.7.f: Hazmat Land Uses (Pot.) & SVI Variables

Data Source(s):
CDC ATSDR (2020), USGS NLCD (2021)

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

- Commercial/Industrial/Trans. Land Uses
- Greater than 1% of Persons w/ Lim. English Prof.
- Greater than 10% of Households w/ No Vehicle





Understanding other issues, though, requires longer historical consideration. Numerous studies have shown linkages between higher occupancy of zip codes and communities near landfills, hazardous waste sites, and high numbers of chemical and manufacturing facilities by low-income and minority populations (Abel, 2008; Allen, 2001; Benjamin & Lee, 1987; Chakraborty & Armstrong, 1997; Daniels & Friedman, 1999; Goldman & Fitton, 1994; Kershaw, Gower, Rinner, & Campbell, 2013; Pastor, Morello-Frosch, & Sadd, 2005). Some of these authors posit that de-gentrification occurs, whereby families of means leave those areas over time. Columbiana County has a history of manufacturing activity, particularly in the ceramics and pottery industries, and this history is a source of local pride. To date, committee members noted little experience with this type of de-gentrification in the county, though there has been an economic impact as manufacturing in the county (and wider region) has declined.

Previous Occurrences

The Pipeline and Hazardous Materials Safety Administration (PHMSA) maintains data on the frequency of hazardous materials incidents during rail, air, and highway transport, as does the National Response Center (NRC). Planners queried the PHMSA incident statistics database for all modes; the only results returned were highway incidents. As such, PHMSA reported 396 highway incidents between 1981 and 2024 (2025a). Figure 2.2.7.g shows a breakdown of those incidents by decade or year (to accommodate space on the page).

Figure 2.2.7.g

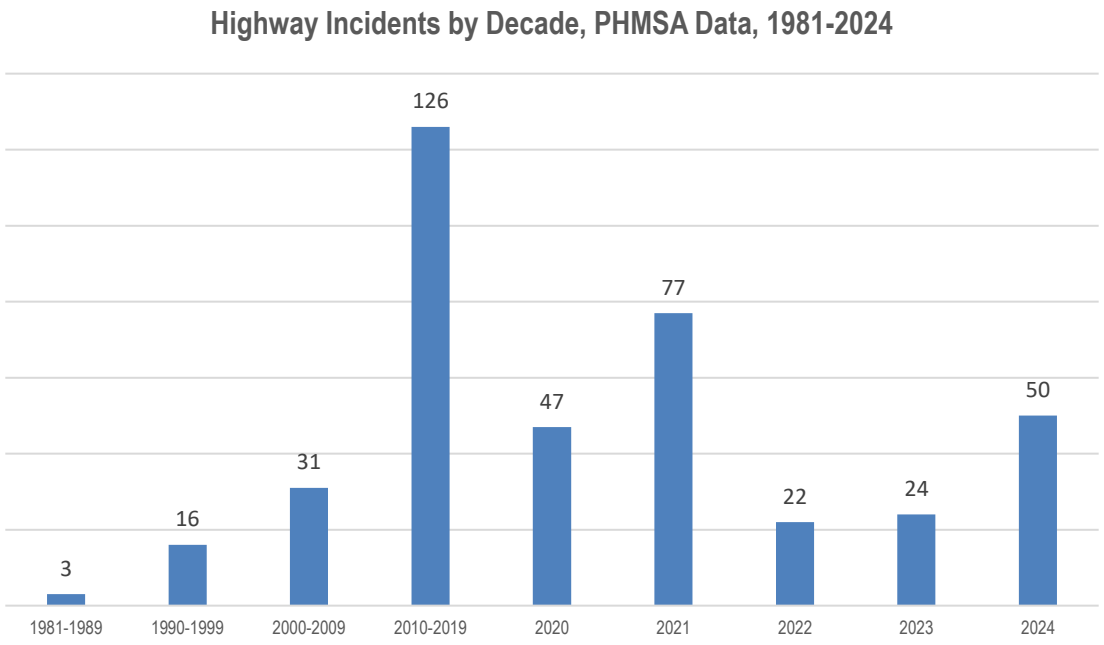


Table 2.2.7.3 shows the data by hazard class involved in the incident, and Table 2.2.7.4 shows the totals by result.

Table 2.2.7.3

Highway Incidents by Decade/Year and Class, PHMSA Data, 1981-2024										
Class	*1981-1989*	*1990-1999*	*2000-2009*	*2010-2019*	*2020*	*2021*	*2022*	*2023*	*2024*	***Totals***
1. Explosives	0	1	0	0	0	0	0	0	0	**1**
2. Gases	1	2	3	0	0	0	1	0	2	**9**
3. Flammable Liquids	0	7	10	77	29	54	12	18	19	**226**
4. Flammable Solids	0	1	4	1	1	1	0	0	1	**9**
5. Oxidizers	0	1	0	4	7	5	1	1	7	**26**
6. Poisons	1	0	0	4	3	2	0	0	0	**10**
7. Radioactives	0	0	0	0	0	0	0	0	0	**0**
8. Corrosives	1	1	10	31	7	14	6	4	18	**92**
9. Miscellaneous	0	3	4	9	0	1	2	1	3	**23**

Table 2.2.7.4

Highway Incidents by Decade/Year and Result, PHMSA Data, 1981-2024										
Class	*1981-1989*	*1990-1999*	*2000-2009*	*2010-2019*	*2020*	*2021*	*2022*	*2023*	*2024*	***Totals***
No Release	0	0	1	0	0	0	0	0	0	**1**
Spillage	3	13	29	126	47	77	22	24	50	**391**
Spillage, Material Entered Waterway/Storm Sewer	0	2	0	0	0	0	0	0	0	**2**
Spillage, No Release	0	1	0	0	0	0	0	0	0	**1**
Vapor (Gas) Dispersion	0	0	1	0	0	0	0	0	0	**1**

The NRC data lists incidents in 12 categories, none of which are highway (though "mobile" generally refers to equipment that can readily move, like trucks, tank cars, etc.) (NRC, 2025). Planners pulled available NRC reports (i.e., 1990-2024), and Table 2.2.7.5 presents the results.

Table 2.2.7.5

Hazardous Materials Incidents per NRC Data, 1990-2024												
Year	*Aircraft*	*Continuous*	*Fixed*	*Mobile*	*Pipeline*	*Platform*	*Railroad*	*RR Non-Release*	*Storage Tank*	*Unknown Sheen*	*Vessel*	*N/A*
1990-1999	0	0	23	13	4	0	4	1	1	29	10	0
2000-2009	0	0	26	18	1	0	8	8	11	8	9	0
2010-2019	0	0	30	10	5	0	11	7	8	11	2	0
2020	0	0	4	0	2	0	1	0	1	0	0	0
2021	0	0	1	0	0	0	0	0	0	0	0	0
2022	0	0	2	0	2	0	0	2	1	0	1	0
2023	0	0	7	3	2	0	1	0	1	0	0	0
2024	0	0	0	2	2	0	0	0	1	0	0	0
Totals	**0**	**0**	**93**	**46**	**18**	**0**	**25**	**18**	**24**	**48**	**22**	**0**

Advantage Tank Lines Accident, March 31, 1998

An Advantage Tank Lines truck was involved in an accident just after noon on March 31, 1998, near Salineville. As a result of the accident, approximately 3,000 gallons of elevated temperature liquid (asphalt), approximately 43% of the tank contents, leaked from damage to the cargo tank. Damage from the incident was reported as $67,000 (PHMSA, 2025a).

Brinker Compressor Station, January 2022

A caller reported a fire on the dehydration system at the Brinker Compressor Station near Leetonia due to an unknown cause. The fire resulted in the release of 44 mcf of natural gas to the atmosphere. Emergency crews extinguished the fire the same day. Damage was contained to the compressor and was estimated at $122,000.

R&L Carriers Accident, July 30, 2024

Hazardous materials incidents may be small, yet yield substantial damage, as was the case in July 2024 near Columbiana. An R&L Carriers truck was involved in an accident that released approximately three gallons of paint-related material, and the accident resulted in $17,500 in damage.

East Palestine Train Derailment

At approximately 8:55 p.m. on February 3, 2023, about 50 cars of a 150-car Norfolk Southern freight train derailed in the Village of East Palestine. Twenty (20) of the derailed cars contained hazardous materials, “including vinyl chloride, ethylene glycol, ethylhexyl acrylate, butyl acrylate and isobutylene” (USEPA, 2024). Primary hazards included some cars on fire and others spilling their contents into a ditch that feeds Sulphur Run. As of the time of this update, the likely cause was a mechanical problem on one of the railcar’s trucks (NTSB, 2024).

On the third day of the response (i.e., February 5), responders noted a temperature change in one of the cars, and crews discovered that a relief valve on a car carrying vinyl chloride had failed. Following an evacuation of the surrounding area, Norfolk Southern emergency crews conducted a controlled release and burn of the five vinyl chloride cars (see Figure 2.2.7.h). Substantial efforts to test air, soil, and water quality have continued since the incident, and despite the results of the testing, concerns remain about the levels of and long-term effects associated with contamination.

Figure 2.2.7.h



A screenshot from video released by the NTSB of the controlled burn (The Times, 2025)

The recovery to the incident has involved a settlement from Norfolk Southern, the funds from which (to local government entities) have contributed to several mitigation, preparedness, and recovery projects. As with any large-scale, high-profile incident, debates and tensions linger.

Loss and Damages

Hazardous material incidents can occur where chemicals are stored or transported. Hazardous material incidents have resulted in $866,198 in damages and cleanup in the county since 1981 (PHMSA, 2025a). Using the total damage divided by the number of incidents in the PHMSA data (i.e., $866,198/396), participating jurisdictions can expect damages of approximately $2,187 per event. Data further indicates the county experiences 16.05 incidents per year (PHMSA, 2025a; NRC, 2025).

Data is also available nationally regarding loading/unloading incidents at fixed facilities. According to a report prepared for the Federal Motor Carrier Safety Administration, the average non-explosion loading/unloading incident results in losses of $5,000 (Battelle, 2001). Though it is difficult to extrapolate that figure to an annualized loss estimate, it provides a site-specific point of reference for future planning.

Future Occurrences[1]

Hazardous material incidents are difficult to predict. While it is safe to assume that incidents will occur, it is impossible to predict precisely when or where they may happen. The property damage, loss of life, or environmental damage of future occurrences depends on the location, the material, and the quantity released.

As noted above, transportation-based hazardous material incidents occur on roadways, which makes the primary thoroughfares (i.e., US 30, US 62, SR 7, etc.) and surrounding areas the most likely to experience a future hazardous material incident. Nationally, Class 3 flammable liquids comprise, by far, the most hazmat shipments (USDOT BTS, 2025) and are involved in most incidents (PHMSA, 2025a).

Risk Assessment

This section summarizes the vulnerability of the county to hazardous materials incidents. The steering committee conducted an online survey for the public to share its thoughts on the

[1] Future climate considerations are not included because hazardous materials incidents are technological hazards.

hazards listed in this plan. The following table presents the results of that survey, specifically regarding hazardous materials.

Table 2.2.7.6

Public Sentiment, Hazardous Materials Incident					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Hazardous Materials Incident	1 (1.6%)	5 (8.1%)	18 (29.0%)	38 (61.3%)	62
In the past five years, do you remember this hazard occurring in your community?				47	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 70 (40.46%) – the second-highest tally in the survey – indicated being concerned about hazardous materials incidents, with 28 respondents indicating that hazmat was the hazard that concerned them the most (also the second-highest tally).

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

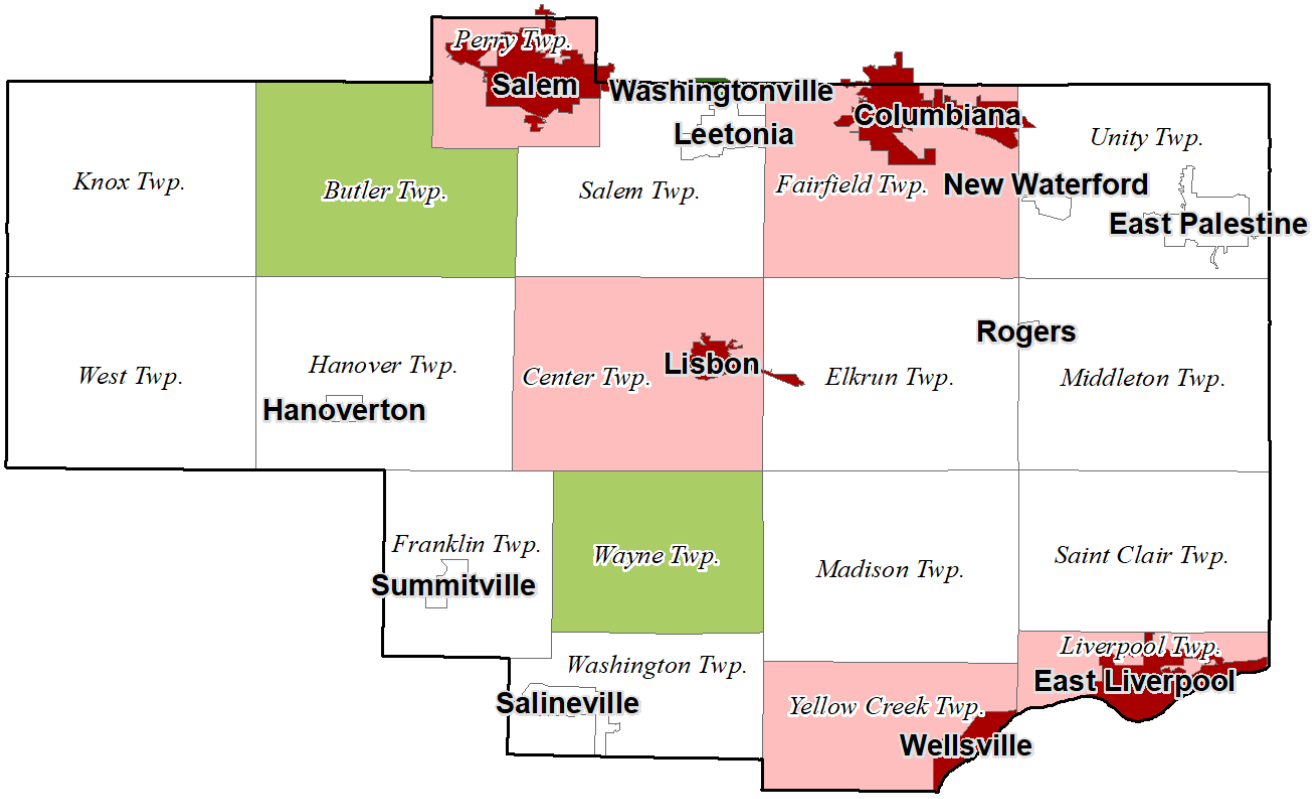
Table 2.2.7.7

Hazardous Materials Incident Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	Data indicates there have been 690 hazardous materials incidents since 1981, for an average of 16.05 per year.
Response	5	More than one month	Most of the incidents that have occurred in Columbiana County have been small and clean up responses have taken a few days or less. However, the East Palestine response was well over one month.
Onset	4	Less than 6 hours	Hazardous materials incidents occur with little or no warning.
Magnitude	1	Localized (less than 10% of land area affected)	Though destructive, individual hazardous materials incidents impact less than 10% of the total land area of the county.
Business	2	One week	Most incidents do not impact business operations, though serious incidents can impact operations. Planners thus selected “One week” as a planning average.

Hazardous Materials Incident Risk Ranking			
Category	*Points*	*Description*	*Notes*
Human	2	Low (some injuries)	Data currently reports no fatalities stemming from historical hazardous material incidents; however, recent events are still under study. Planners selected the "Low" category as a planning average.
Property	1	Less than 10% of property affected	Again, though destructive, individual hazardous materials incidents typically impact less than 10% of the personal property in the county.
Totals	**20**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for hazardous materials incidents. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.7.i



Those jurisdictions in red contain two or more of the primary risk areas identified in the profile above (i.e., a likely highway transport route, a Class I freight railroad, or a cluster of ECHO facilities). The jurisdictions in white contain at least one of the risk area types, representing a "baseline" of hazardous material risk. Those in green have none of the primary risk area types.

2.2.8 Landslides

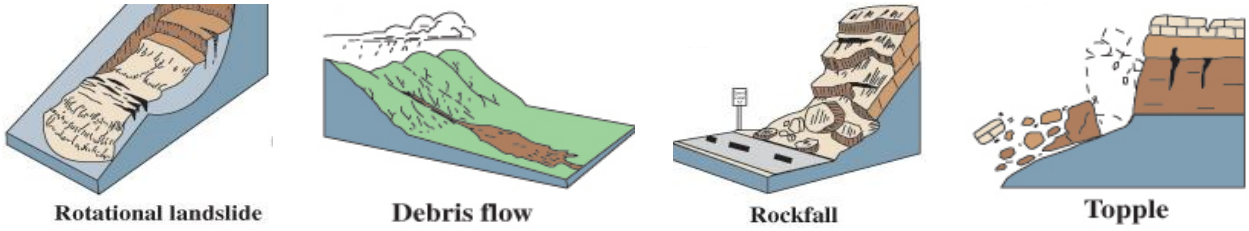
Landslides occur when areas of relatively dry rock, soil, or debris move uncontrollably down a slope.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	On-going; currently, there are 62 active landslide sites and 252 active rockslide sites in the county.	**Risk Ranking:**	Medium
	Warning Time:	12-24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur in a year	**Impact:**	Less than 10% of property affected
	Disaster Declarations:	None		

Hazard Overview

Landslides involve the movement of debris sliding uncontrollably down a slope. Landslides may be localized or massive in size and can move at high rates of speed. In Ohio, landslides are common after heavy rainfall or a snow melt event, and when heavy equipment operates at the top edge of a steep slope. Landslides can involve debris flows, rockfalls, and toppling effects (see Figure 2.2.8.a below). The signs of areas susceptible to landslides include leaning and bent trees or utility poles, seeps and sag ponds (i.e., water-filled depressions), and old or recent landslides where horizontal and vertical movement has occurred. The conditions in the county that contribute to the frequency of landslides include the hilly terrain (particularly in the eastern portions of the county) and a high average annual precipitation.

- **Rotational landslides** occur when areas of relatively dry rock, soil, or debris move uncontrollably down a slope.
- **Mudflows** are water-saturated rivers of earth, rock, and debris. Mudflows develop when water rapidly accumulates in the material, such as during heavy rainfall or rapid snowmelt. Mudflows can develop and move quickly, giving little to no warning.
- **Rock falls or toppling** occur when rocks or other materials detach from a slope or cliff and descend in a freefall, rolling, or bouncing manner. Rock falls can occur naturally, through faults and seismic activity, or as a product of human activity, such as blasting.

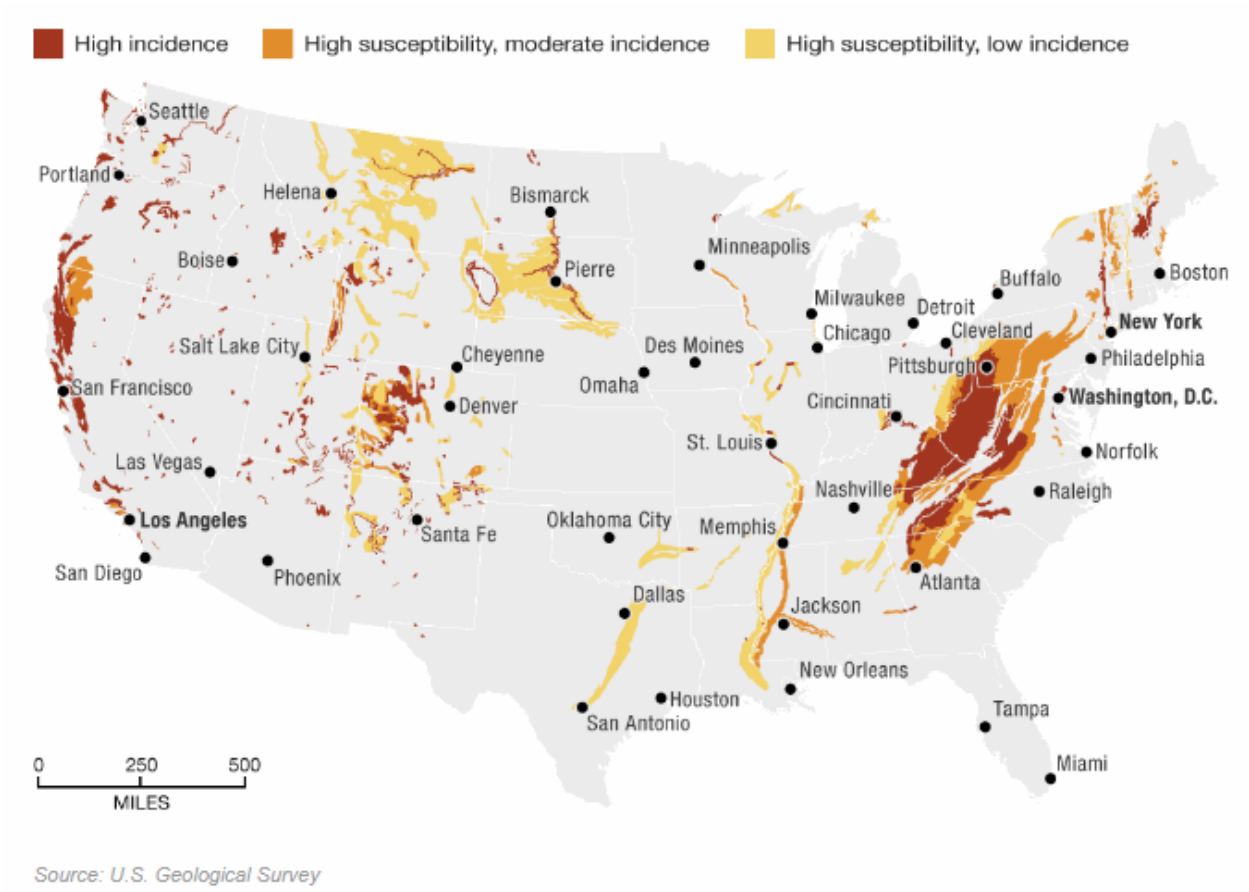
Figure 2.2.8.a



Location and Extent

According to the U. S. Geological Survey (USGS), the eastern-most portions of Ohio are within a high landslide incidence area (Radbruch-Hall, Colton, Davies, Lucchitta, Skipp, & Varnes, 1982). Figures 2.2.8.b depicts these incidence areas.

Figure 2.2.8.b

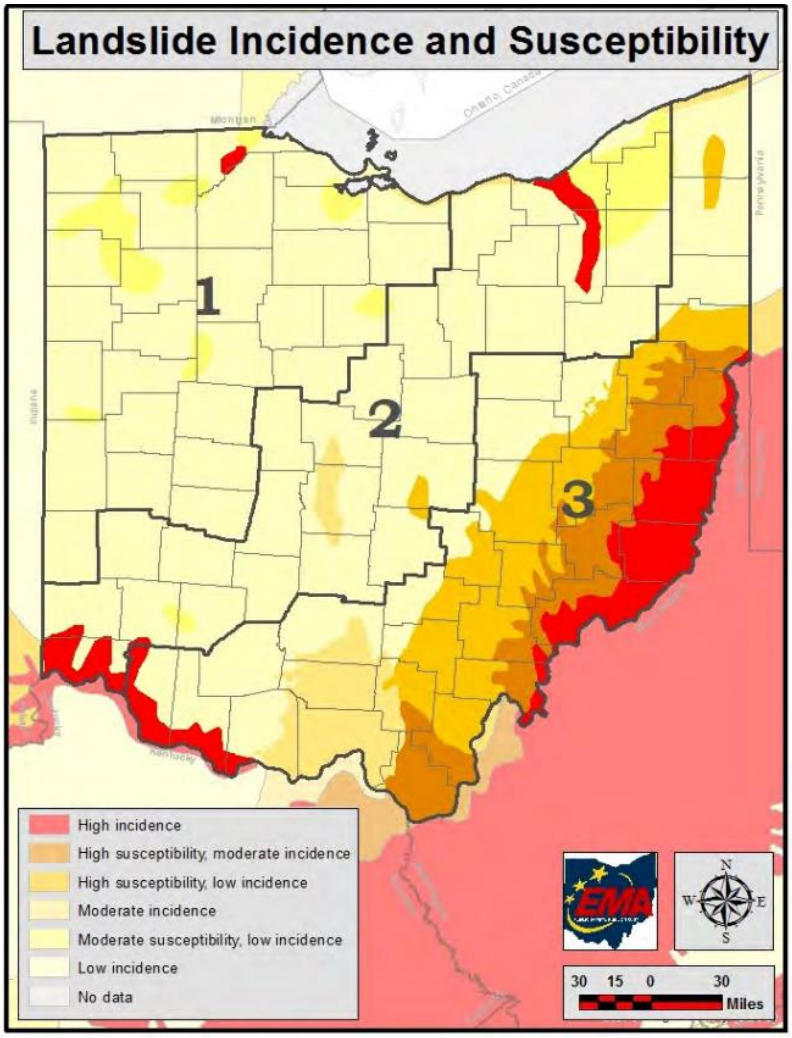


Source: U.S. Geological Survey

The *State of Ohio Hazard Mitigation Plan* (OEMA, 2024) states that a small portions of the southeastern tip of Columbiana County (typically along the Ohio River) are areas of high landslide incidence. The remainder of the southern areas in the county are “high susceptibility with

moderate incidence," while most of the rest of the county appears as "high susceptibility, low incidence." Figure 2.2.8.c (OEMA, 2024, p. 2-83) shows these areas in more detail.

Figure 2.2.8.c



Interestingly, following Hurricane Helene's impacts in western North Carolina, Mahoning Matters published a piece looking at the counties in Ohio where landslides pose the greatest threat. That article listed Columbiana County is Number 26 of the state's 88 counties, with 66.0% of its area (or 352 square miles) as "susceptible" (Stacker, 2025).

The Ohio Department of Transportation (ODOT) maintains the number of geological hazards, including rock slopes, landslides, and abandoned underground mine areas that impact roadways throughout the state on an online dashboard. The following tables illustrate how ODOT determines probability and tier determinations for rock slopes.

Table 2.2.8.1

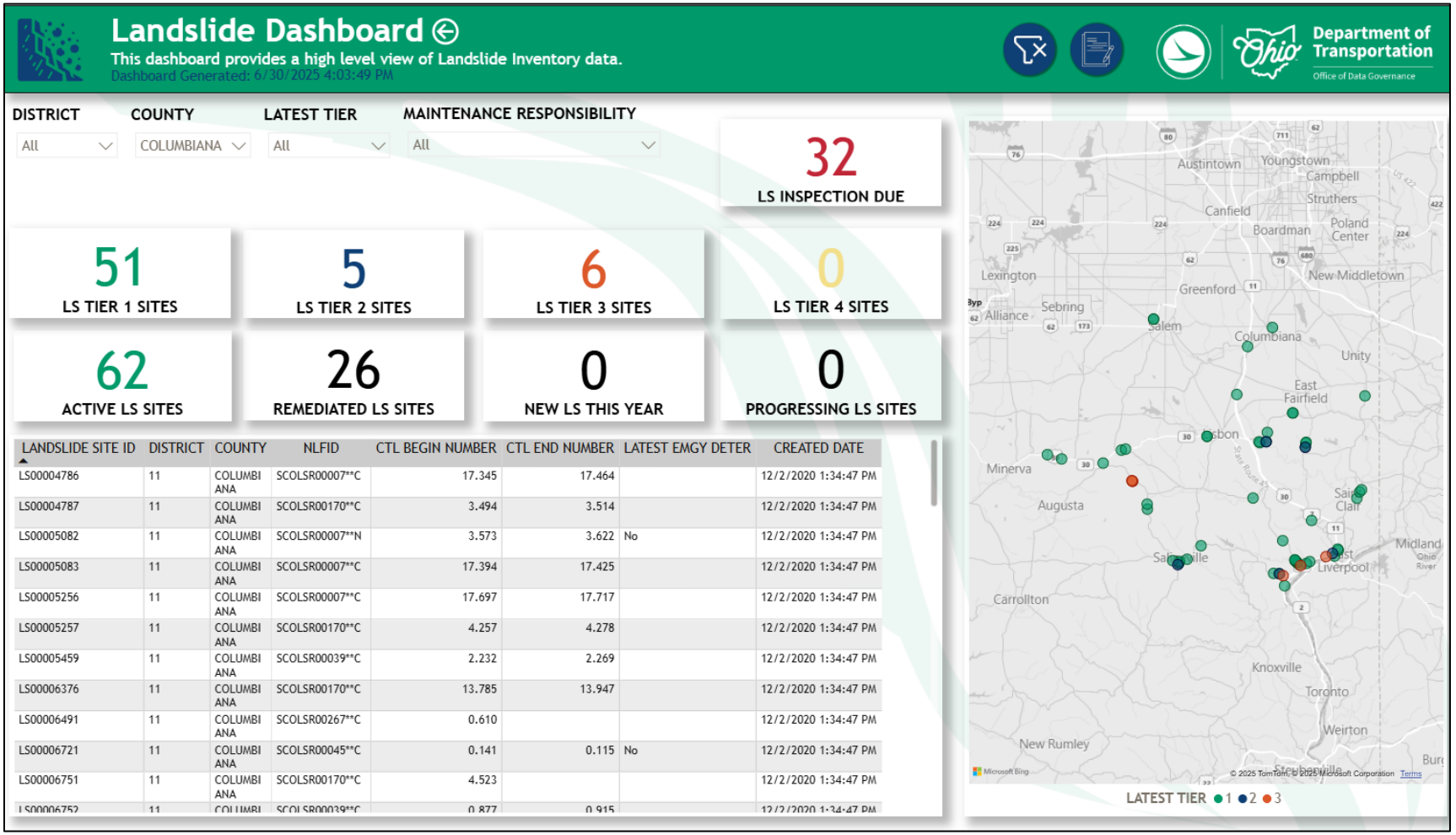
Probability Table – Rock Slope				
Potential of Rockfall Occurrence (A)	*Potential of Rockfall to Impact Roadway (B)*			
	Very High (10)	*High (8)*	*Moderate (4)*	*Low (1)*
Very High (10)	Very High (20)	Very High (18)	High (14)	Moderate (11)
High (8)	Very High (18)	High (16)	High (12)	Moderate (9)
Moderate (4)	High (14)	High (12)	Moderate (8)	Low (5)
Low (1)	Moderate (11)	Moderate (9)	Low (5)	Low (2)

Table 2.2.8.2

Tier Based on Tier Determination Score – Rock Slope	
Tier Determination Score	*Tier Action*
2 to 5	Tier 1 Site – No Detailed Rating Needed
8 to 11	Tier 2 Site – Detailed Rating Needed
12 to 16	Tier 3 Site – Detail Rating Needed
18 to 20	Tier 4 Site – Detailed Rating Needed

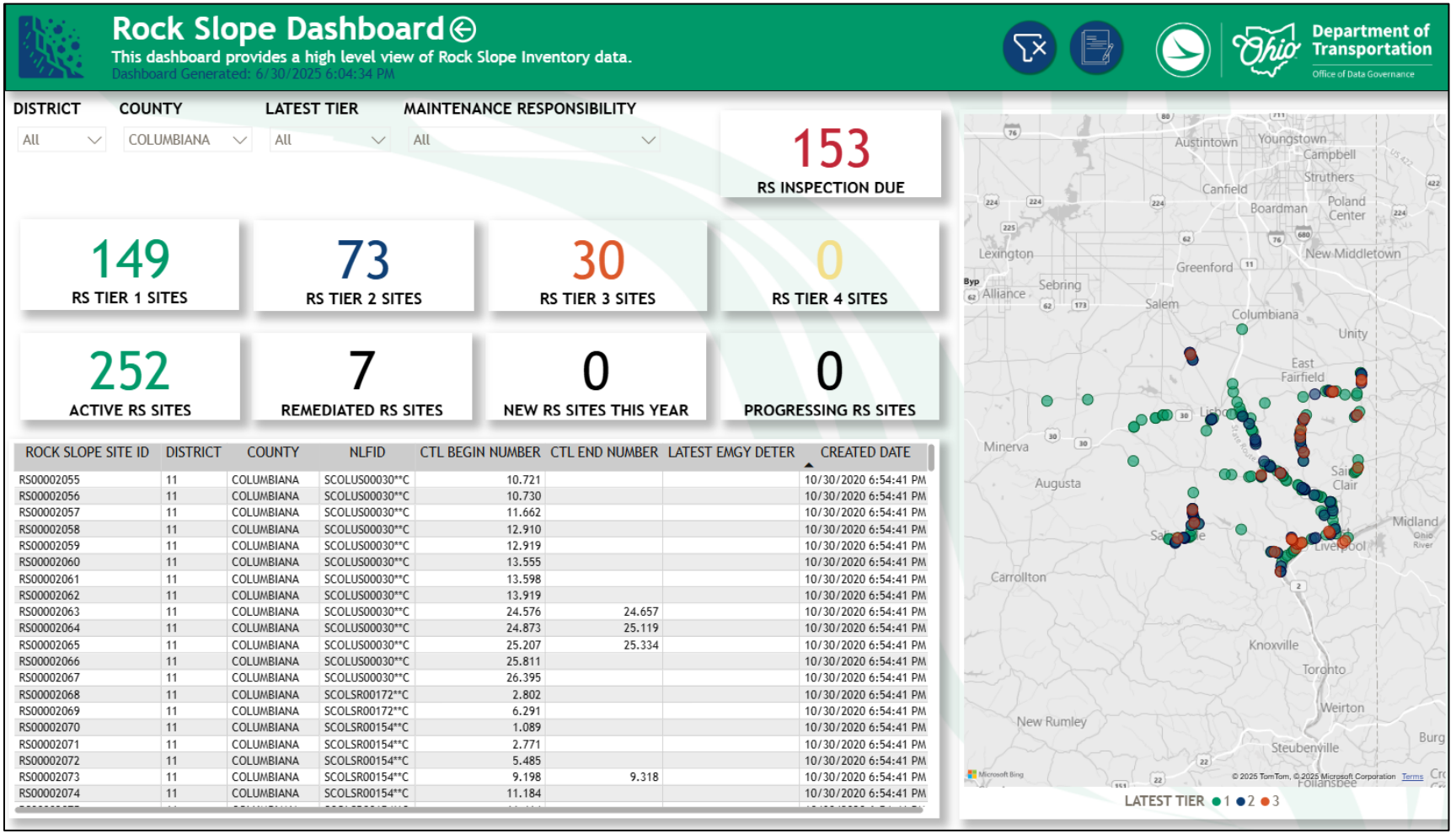
According to ODOT's landslide dashboard, there are 62 active landslide sites in Columbiana County along with 26 remediated sites (ODOT OGE, n.d.). Of the sites, 51 are Tier 1, five are Tier 2, and six are Tier 3. None are Tier 4, the most severe of ODOT's tiers. Figure 2.2.8.d shows the dashboard entry for landslides. The rock slope dashboard lists 252 active rock slopes in the county, with 149 of those being Tier 1 sites. Again, none are Tier 4. Figure 2.2.8.e below shows the same data for rock slopes. Finally, ODOT's Abandoned Underground Mine Inventory and Risk Assessment (AUMIRA) dashboard lists 129 active sites in Columbiana County, with one of them being Tier 4. See Figure 2.2.8.f for the AUMIRA information. Though at wide scales, these images show clusters of each type of geologic hazard, thus informing local officials of areas most at risk.

Figure 2.2.8.d



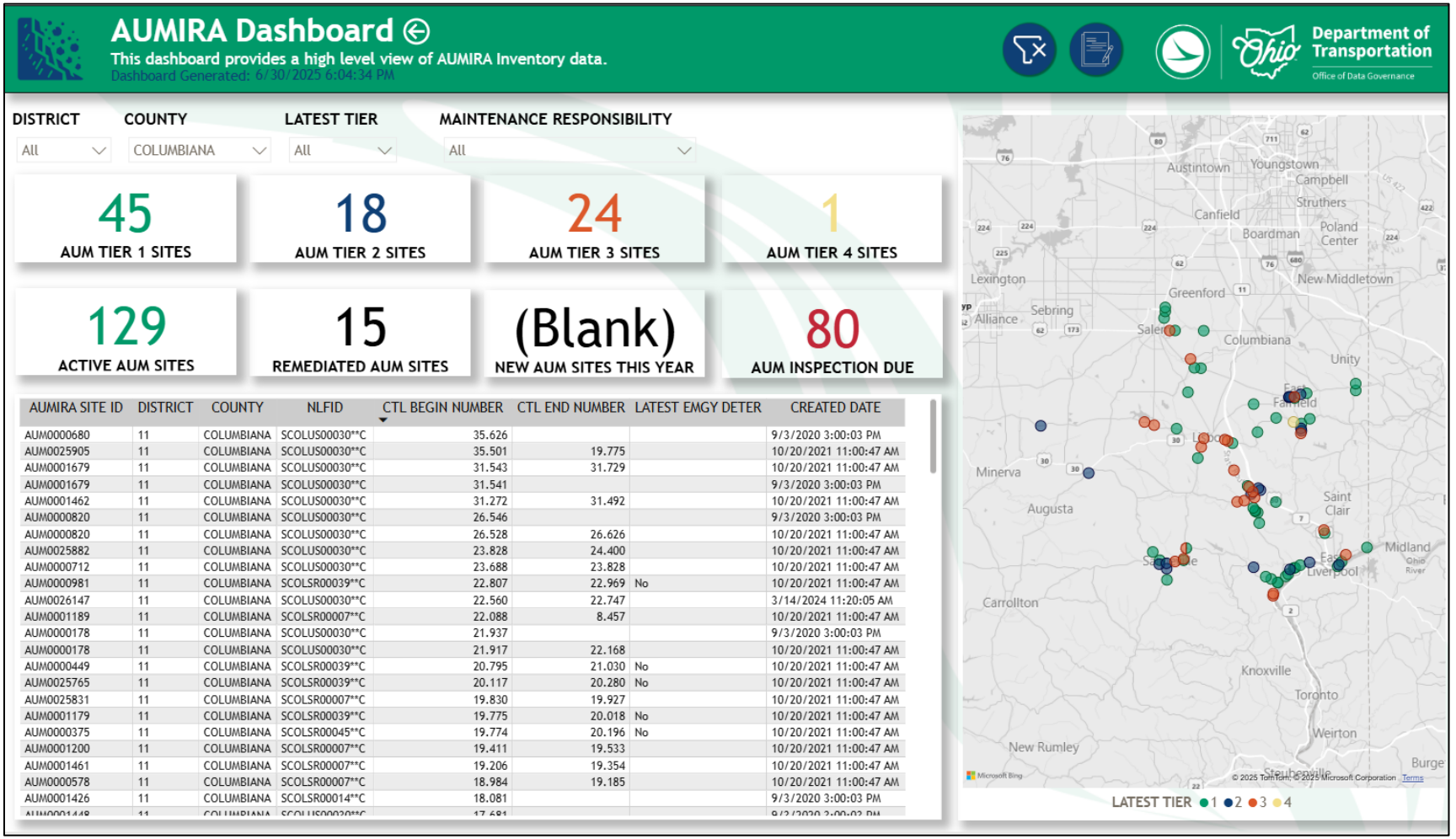
LANDSLIDE SITE ID	DISTRICT	COUNTY	NLFID	CTL BEGIN NUMBER	CTL END NUMBER	LATEST EMGY DETER	CREATED DATE
LS00004786	11	COLUMBIANA	SCOLSR00007**C	17.345	17.464		12/2/2020 1:34:47 PM
LS00004787	11	COLUMBIANA	SCOLSR00170**C	3.494	3.514		12/2/2020 1:34:47 PM
LS00005082	11	COLUMBIANA	SCOLSR00007**N	3.573	3.622	No	12/2/2020 1:34:47 PM
LS00005083	11	COLUMBIANA	SCOLSR00007**C	17.394	17.425		12/2/2020 1:34:47 PM
LS00005256	11	COLUMBIANA	SCOLSR00007**C	17.697	17.717		12/2/2020 1:34:47 PM
LS00005257	11	COLUMBIANA	SCOLSR00170**C	4.257	4.278		12/2/2020 1:34:47 PM
LS00005459	11	COLUMBIANA	SCOLSR00039**C	2.232	2.269		12/2/2020 1:34:47 PM
LS00006376	11	COLUMBIANA	SCOLSR00170**C	13.785	13.947		12/2/2020 1:34:47 PM
LS00006491	11	COLUMBIANA	SCOLSR00267**C	0.610			12/2/2020 1:34:47 PM
LS00006721	11	COLUMBIANA	SCOLSR00045**C	0.141	0.115	No	12/2/2020 1:34:47 PM
LS00006751	11	COLUMBIANA	SCOLSR00170**C	4.523			12/2/2020 1:34:47 PM
LS00006752	11	COLUMBIANA	SCOLSR00039**C	0.877	0.915		12/2/2020 1:34:47 PM

Figure 2.2.8.e



ROCK SLOPE SITE ID	DISTRICT	COUNTY	NLFID	CTL BEGIN NUMBER	CTL END NUMBER	LATEST EMGY DETER	CREATED DATE
RS00002055	11	COLUMBIANA	SCOLUS00030**C	10.721			10/30/2020 6:54:41 PM
RS00002056	11	COLUMBIANA	SCOLUS00030**C	10.730			10/30/2020 6:54:41 PM
RS00002057	11	COLUMBIANA	SCOLUS00030**C	11.662			10/30/2020 6:54:41 PM
RS00002058	11	COLUMBIANA	SCOLUS00030**C	12.910			10/30/2020 6:54:41 PM
RS00002059	11	COLUMBIANA	SCOLUS00030**C	12.919			10/30/2020 6:54:41 PM
RS00002060	11	COLUMBIANA	SCOLUS00030**C	13.555			10/30/2020 6:54:41 PM
RS00002061	11	COLUMBIANA	SCOLUS00030**C	13.598			10/30/2020 6:54:41 PM
RS00002062	11	COLUMBIANA	SCOLUS00030**C	13.919			10/30/2020 6:54:41 PM
RS00002063	11	COLUMBIANA	SCOLUS00030**C	24.576	24.657		10/30/2020 6:54:41 PM
RS00002064	11	COLUMBIANA	SCOLUS00030**C	24.873	25.119		10/30/2020 6:54:41 PM
RS00002065	11	COLUMBIANA	SCOLUS00030**C	25.207	25.334		10/30/2020 6:54:41 PM
RS00002066	11	COLUMBIANA	SCOLUS00030**C	25.811			10/30/2020 6:54:41 PM
RS00002067	11	COLUMBIANA	SCOLUS00030**C	26.395			10/30/2020 6:54:41 PM
RS00002068	11	COLUMBIANA	SCOLSR00172**C	2.802			10/30/2020 6:54:41 PM
RS00002069	11	COLUMBIANA	SCOLSR00172**C	6.291			10/30/2020 6:54:41 PM
RS00002070	11	COLUMBIANA	SCOLSR00154**C	1.089			10/30/2020 6:54:41 PM
RS00002071	11	COLUMBIANA	SCOLSR00154**C	2.771			10/30/2020 6:54:41 PM
RS00002072	11	COLUMBIANA	SCOLSR00154**C	5.485			10/30/2020 6:54:41 PM
RS00002073	11	COLUMBIANA	SCOLSR00154**C	9.198	9.318		10/30/2020 6:54:41 PM
RS00002074	11	COLUMBIANA	SCOLSR00154**C	11.184			10/30/2020 6:54:41 PM

Figure 2.2.8.f



AUMIRA SITE ID	DISTRICT	COUNTY	NLFID	CTL BEGIN NUMBER	CTL END NUMBER	LATEST EMGY DETER	CREATED DATE
AUM0000680	11	COLUMBIANA	SCOLUS00030**C	35.626			9/3/2020 3:00:03 PM
AUM0025905	11	COLUMBIANA	SCOLUS00030**C	35.501	19.775		10/20/2021 11:00:47 AM
AUM0001679	11	COLUMBIANA	SCOLUS00030**C	31.543	31.729		10/20/2021 11:00:47 AM
AUM0001679	11	COLUMBIANA	SCOLUS00030**C	31.541			9/3/2020 3:00:03 PM
AUM0001462	11	COLUMBIANA	SCOLUS00030**C	31.272	31.492		10/20/2021 11:00:47 AM
AUM0000820	11	COLUMBIANA	SCOLUS00030**C	26.546			9/3/2020 3:00:03 PM
AUM0000820	11	COLUMBIANA	SCOLUS00030**C	26.528	26.626		10/20/2021 11:00:47 AM
AUM0025882	11	COLUMBIANA	SCOLUS00030**C	23.828	24.400		10/20/2021 11:00:47 AM
AUM0000712	11	COLUMBIANA	SCOLUS00030**C	23.688	23.828		10/20/2021 11:00:47 AM
AUM0000981	11	COLUMBIANA	SCOLSR00039**C	22.807	22.969	No	10/20/2021 11:00:47 AM
AUM0026147	11	COLUMBIANA	SCOLUS00030**C	22.560	22.747		3/14/2024 11:20:05 AM
AUM0001189	11	COLUMBIANA	SCOLSR00007**C	22.088	8.457		10/20/2021 11:00:47 AM
AUM0000178	11	COLUMBIANA	SCOLUS00030**C	21.937			9/3/2020 3:00:03 PM
AUM0000178	11	COLUMBIANA	SCOLUS00030**C	21.917	22.168		10/20/2021 11:00:47 AM
AUM0000449	11	COLUMBIANA	SCOLSR00039**C	20.795	21.030	No	10/20/2021 11:00:47 AM
AUM0025765	11	COLUMBIANA	SCOLSR00039**C	20.117	20.280	No	10/20/2021 11:00:47 AM
AUM0025831	11	COLUMBIANA	SCOLSR00007**C	19.830	19.927		10/20/2021 11:00:47 AM
AUM0001179	11	COLUMBIANA	SCOLSR00039**C	19.775	20.018	No	10/20/2021 11:00:47 AM
AUM0000375	11	COLUMBIANA	SCOLSR00045**C	19.774	20.196	No	10/20/2021 11:00:47 AM
AUM0001200	11	COLUMBIANA	SCOLSR00007**C	19.411	19.533		10/20/2021 11:00:47 AM
AUM0001461	11	COLUMBIANA	SCOLSR00007**C	19.206	19.354		10/20/2021 11:00:47 AM
AUM0000578	11	COLUMBIANA	SCOLSR00007**C	18.984	19.185		10/20/2021 11:00:47 AM
AUM0001426	11	COLUMBIANA	SCOLSR00014**C	18.081			9/3/2020 3:00:03 PM

Impacts and Vulnerability

Landslides are not random, but also not always predictable. Certain geologic conditions are a prerequisite, and one or more of the following can serve as an alert to geologic issues.

- Joined rocks
- Fine-grained, permeable rock or sediment
- Areas of abandoned underground mines
- Areas with large, buried pipelines

Landslides have the capability of damaging and destroying homes, businesses, utilities, and highways, resulting in annual costs of millions of dollars. These events typically affect residential areas and roadways. Subsidence clean-up and restoration projects can range in cost from $10,000 to $6,000,000. Large-scale or catastrophic landslide events can result in fatalities, numerous injuries, and trauma stemming from suffocation and entrapment. Depending on the location of an event, landslides can damage or destroy critical infrastructure and facilities, and isolate entire communities. Rapid slide or flow movement usually happens without warning, breaking apart house walls, tilting floors, and pulling apart buried water, gas, and sewer lines. Houses are often pushed off their foundations and are occasionally even buried by debris.

Social Vulnerability Considerations

Authors such as Nam, Choi, Copeland, and Kim (2023) have noted a lack of research specifically on how the negative effects of geohazards (like earthquakes, sinkholes, land subsidence, landslides, etc.) impact vulnerable and marginalized groups. In Columbiana County, there are no apparent trends suggesting the population and housing distribution avoids areas prone to subsidence. Other hazard considerations note how those with a lower proficiency in English may not readily understand preparedness messages and warnings, and the same may be true regarding descriptors of the risks associated with subsidence. Low-income populations may not be able to afford structural alterations and retrofits if subsidence impacts their homes.

Previous Occurrences

Several sources confirm numerous previous landslide occurrences, though identifying a specific number is challenging. For instance, Figure 2.2.8.g depicts U.S. Geological Survey (USGS) data of landslides in the county. It shows a small landslide near State Route (SR) 154 outside of Lisbon.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.8.g: USGS Landslide Incidence Data

Data Source(s):
USGS NLSIv2 (2024)

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

NLSI Landslide Occurrence



Additionally, the disaster declaration data for the county includes several incidents that note the presence of landslides and mudslides (though the landslide or mudslide may not have occurred in Columbiana County). Those incidents were as follows. As can be seen, the landslides and mudslides could be a part of a more general naming convention.

- DR-1580-OH: Severe winter storms in 2005 that included mudslides
- S3934: Farm Service Agency (FSA) declaration for flooding in 2015, listing Columbiana County as a primary county with landslides and mudslides as a documented impact
- DR-4360-OH: Flooding in 2018 also listing severe storms, landslides, and mudslides
- DR-4447-OH: A tornado event in 2019 with landslides and mudslides identified

The most reliable estimate of previous occurrences comes from the ODOT data cited above. The figures show 62 active landslides plus 26 remediated, non-active slides, as well as 252 active rockslides plus seven remediated, non-active slides.

Loss and Damages

Columbiana County referred to the National Risk Index (FEMA, 2023) when considering potential loss and damages from landslides. Table 2.2.8.3 depicts the expected annual loss from landslides.

Table 2.2.8.3

Columbiana County Landslide NRI Exposure / Expected Annual Loss (EAL) Estimates					
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Total*
39029950100	$314,866,966	1,860	$3,163	$626	$3,790
39029950200	$130,396	1	$1	$0	$1
39029950300	$269,457,802	1,244	$2,707	$419	$3,126
39029950400	$365,437,284	1,563	$3,671	$526	$4,197
39029950500	$441,434,730	2,572	$4,435	$866	$5,301
39029950600	$65,253,234	150	$656	$51	$706
39029950700	$124,238,463	603	$1,248	$203	$1,451
39029950800	$155,045,849	704	$1,558	$237	$1,795
39029950900	$262,390,547	1,124	$2,636	$379	$3,015
39029951000	$990,600,643	4,339	$9,952	$1,461	$11,413
39029951100	$465,061,625	2,108	$4,672	$710	$5,382
39029951200	$707,980,767	3,101	$7,112	$1,044	$8,157
39029951300	$516,319,954	2,389	$5,187	$805	$5,992
39029951401	$302,521,543	1,320	$3,039	$445	$3,484
39029951402	$448,654,877	3,873	$37,560	$10,869	$48,430
39029951500	$507,168,665	2,809	$5,095	$946	$6,041
39029951600	$860,516,248	3,946	$8,645	$1,329	$9,974

Columbiana County Landslide NRI Exposure / Expected Annual Loss (EAL) Estimates					
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Total*
39029951700	$595,833,472	3,621	$5,986	$1,219	$7,205
39029951800	$550,594,525	2,756	$5,531	$928	$6,460
39029951900	$323,865,352	2,412	$3,254	$812	$4,066
39029952000	$283,412,830	1,353	$2,847	$456	$3,303
39029952100	$534,699,837	1,377	$5,372	$464	$5,835
39029952200	$670,667,180	1,772	$6,738	$597	$7,334
39029952300	$264,400,738	1,995	$2,656	$672	$3,328
39029952400	$431,215,547	2,677	$4,332	$902	$5,234
Grand Total	**$10,451,769,075**	**51,668**	**$138,053**	**$26,965**	**$165,018**

Future Occurrences

Landslides and rock slides are site-specific hazards, and as such, specific locations cannot be predicted with any accuracy over a large area (like Columbiana County). Images above suggest areas that might experience these site-specific slides (i.e., the southern and eastern areas of the county, particularly along the Ohio River). Soils and slopes in these areas are the most conducive in the county to slides.

Future Climate Considerations

Intuitively, one might not ascribe a climate element to landslide risk. Many of the historical occurrences, though, have been related to precipitation events. For instance, heavy rains of three inches over 24 hours led to a landslide of up to half an acre of dirt, rock, and vegetation along SR 45 just outside Wellsville near Hillcrest in June of 2019 (Stone, 2019). WKBN reported a rain-caused landslide along SR 39 near East Liverpool in April 2024 (Sess & Coller, 2024; WKBN, 2024). Similar examples appear in local media dating back to 2018, when torrential rain caused flooding that ultimately led to a hole caused by a landslide off SR 7 in Liverpool Township (Marcel, 2018). Section 2.2.10: Severe Thunderstorms & Hail notes the potential for future high-intensity precipitation, particularly in small, hyper-local areas. This torrential precipitation may increase the probability of slides of the type cited in this paragraph.

Risk Assessment

This section summarizes the vulnerability of the county to landslide. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. That survey, though, closed before the committee decided to add landslide to this risk assessment. Further, “landslide” did not appear on the condensed surveys at food pantries, the county fair, etc. As such, there is no public comment to report.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

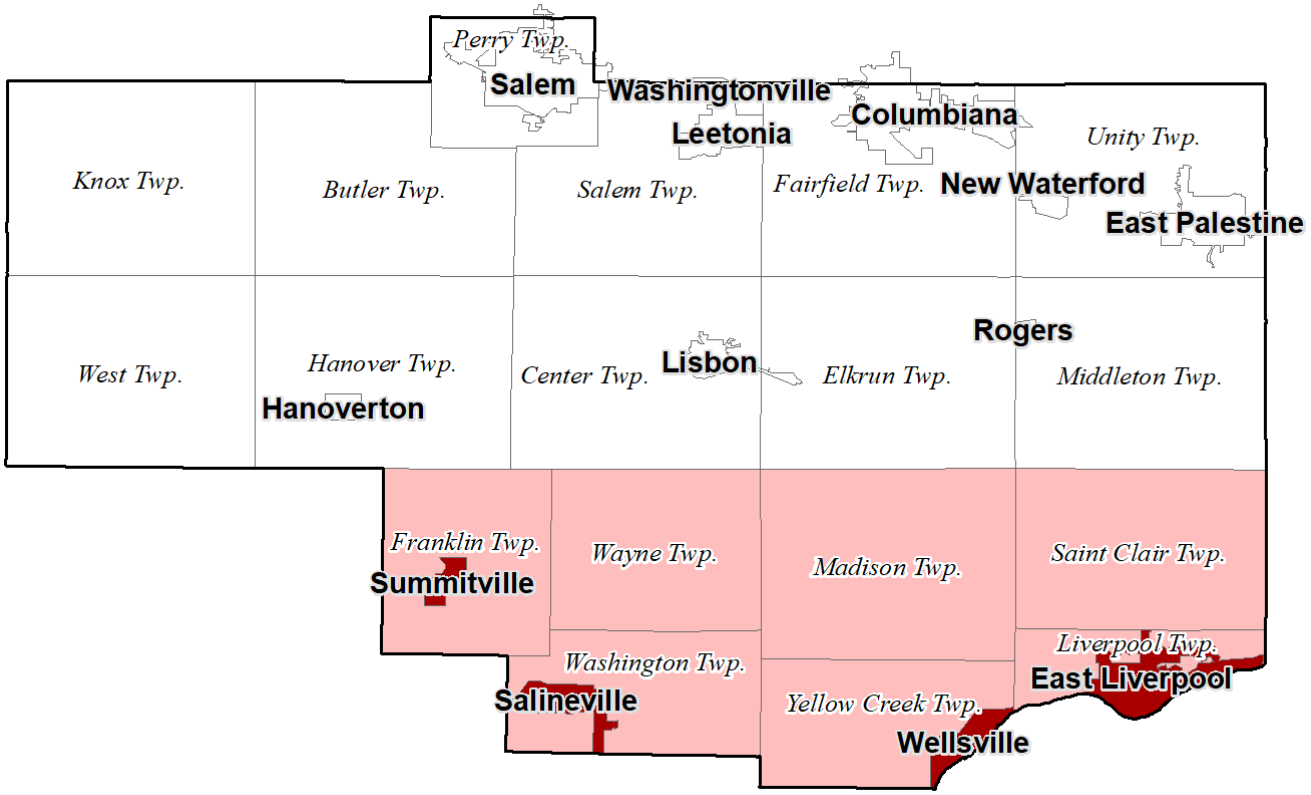
Table 2.2.8.4

Landslide Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	The data above show 62 active landslide sites and 252 active rockslide sites. Within these figures are 36 Tier 3 sites (with high potential impact). These sites are active, meaning "ongoing," and as such, planners noted regular occurrence.
Response	2	One day	Many local media reports indicate one day for opening roadways impacted by landslides and rockslides.
Onset	2	12-24 hours	Landslides and rockslides, particularly those tracked by the ODOT, develop slowly over time (as indicated by inspection frequency based on tier designations, e.g., Tier 4 landslides requiring only annual inspection [ODOT, 2023]). Landslides caused by heavy precipitation, though, develop more quickly. As such, planners utilized the midpoint figure of 12-24 hours for consideration of onset.
Magnitude	4	Catastrophic (more than 50% of land area affected)	As with other hazards that impact the entire county, this category was difficult to rank. Data cited above suggest greater than 60% of the county's land area is susceptible to landslides, but no actual incident would impact that much of the county. Actual incidents would impact far less than 10% of the land area. As such, planners ranked the magnitude category based on susceptibility and the property category (below) lower based on previous occurrences.
Business	1	Less than 24 hours	Generally, landslides would not impact businesses on a grand scale. If a slide were to impact a single business, it would be impacted for more than 24 hours; however, historical data do not show widespread and significant business impacts.
Human	1	Minimum (minor injuries)	Though landslides can damage property in localized areas and disrupt travel, they rarely result in significant injuries.
Property	1	Less than 10% of property affected	As noted in the discussion of magnitude above, despite much of the county being susceptible, actual landslide occurrences impact far less than 10% of the total property in Columbiana County.
Totals	**16**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified

risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for landslide. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.8.h



The townships, cities, and villages in red above are those for which portions lie in areas of higher landslide incidents (see Figure 2.2.8.c above).

2.2.9 Public Health Emergency

A public health emergency is any adverse event (natural or man-made) that compromises the health of the population and has the potential to cause widespread illness.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time	**Risk Ranking:**	High
	Warning Time:	Over 24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur in a year	**Impact:**	High (multiple deaths *possible*)
	Disaster Declarations:	DR-4507-OH (2020) EM-3457-OH (2020)		

Hazard Overview

A public health emergency exists when the occurrence or imminent threat of an illness or health condition, caused by bioterrorism, an epidemic or pandemic disease outbreak, or an infectious agent or biological toxin, poses a substantial risk to humans by either causing a significant number of fatalities or permanent or long-term disability. Public health emergencies are defined as much by their health consequences as by their causes and precipitating events. A situation becomes emergent when its health consequences have the potential to overwhelm routine community capabilities to address them. Potential causes of public health emergencies that lead to widespread illnesses include the following.

- Naturally occurring illnesses such as seasonal flu, or human-caused incidents such as the intentional release of anthrax
- Illnesses amongst the public that may cause a larger number of deaths or serious disabilities
- Illnesses resulting from highly infectious agents that are hard to control
- Illnesses resulting from a chemical attack on the public
- Illnesses resulting from the release of nuclear materials
- Other illnesses that can severely impact public health, whether resulting from natural hazards (i.e., drought, floods, invasive species, etc.) or emerging infectious diseases
- The remainder of this profile does not address the following public health emergencies: bioterrorism, chemical attacks, release of nuclear materials, opioid addiction epidemic, heart disease, or diabetes.

"Since September 11, 2001, and the anthrax attacks that followed, a substantial federal investment has been made to increase our nation's ability to prepare for, and respond to, public health emergencies. Despite anecdotal reports which suggest that progress has been made, it is unclear whether the nation is better prepared to respond to a bioterrorist attack, pandemic influenza, or any other large-scale public health emergency" (Nelson, Lurie, Wasserman, & Zakowski, 2007). Anecdotal evidence from the challenges experienced managing and responding to the Coronavirus Disease of 2019 (COVID-19) pandemic between 2020 and 2023 would suggest that more recent federal dis-investment in public health has harmed the Nation's ability to respond.

Location and Extent

As the COVID-19 pandemic demonstrated, a public health emergency could occur at any time and simultaneously impact the entire county, the state of Ohio, the Nation, and even the entire world. Although the probability of a public health emergency of that magnitude striking Columbiana County is relatively low, the associated vulnerability could be very high.

The most probable causes of a public health emergency in the county would be a naturally occurring illness such as seasonal flu, an illness resulting from an emerging highly infectious disease, or illnesses stemming from the occurrence of a natural disaster (i.e., severe drought, significant flooding, etc.). Instances of these illnesses could be small- or large-scale outbreaks, epidemics, or pandemics. According to the Centers for Disease Control and Prevention (CDC), there are three widely accepted "levels" of disease presence (CDC, 2015).

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

This profile considers epidemic and pandemic situations, as well as those quick and emergent outbreaks of non-novel diseases (e.g., a norovirus outbreak within a school system) because those situations could strain the capabilities of participating jurisdictions to respond. A declaration of a public health emergency can be made by the Secretary of the U. S. Department of Health and Human Services (USHHS) under Section 319 of the Public Health Service (PHS) Act, if it has been determined that a disease or disorder presents a public health emergency, or a public health emergency, including significant outbreaks of infectious disease or bioterrorist attacks, otherwise exists. The declaration lasts for the duration of the emergency or 90 days but may be extended by the Secretary. While USHHS designations would certainly be those with which this profile is interested, smaller situations may also apply.

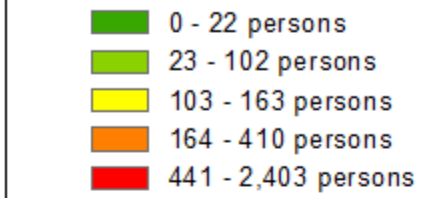
Epidemic outbreaks are more probable in densely populated areas, such as the cities in the county (though other areas with a smaller population may have a higher population density), and especially at facilities containing large numbers of occupants (e.g., multi-unit residential developments, commercial and industrial sites at which a large workforce is employed, nursing homes, hospitals, schools, and large correctional institutions), regardless of location. Figure 2.2.9.a shows the Census tracts with populations in “institutionalized group quarters” (ATSDR, 2022) identified.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

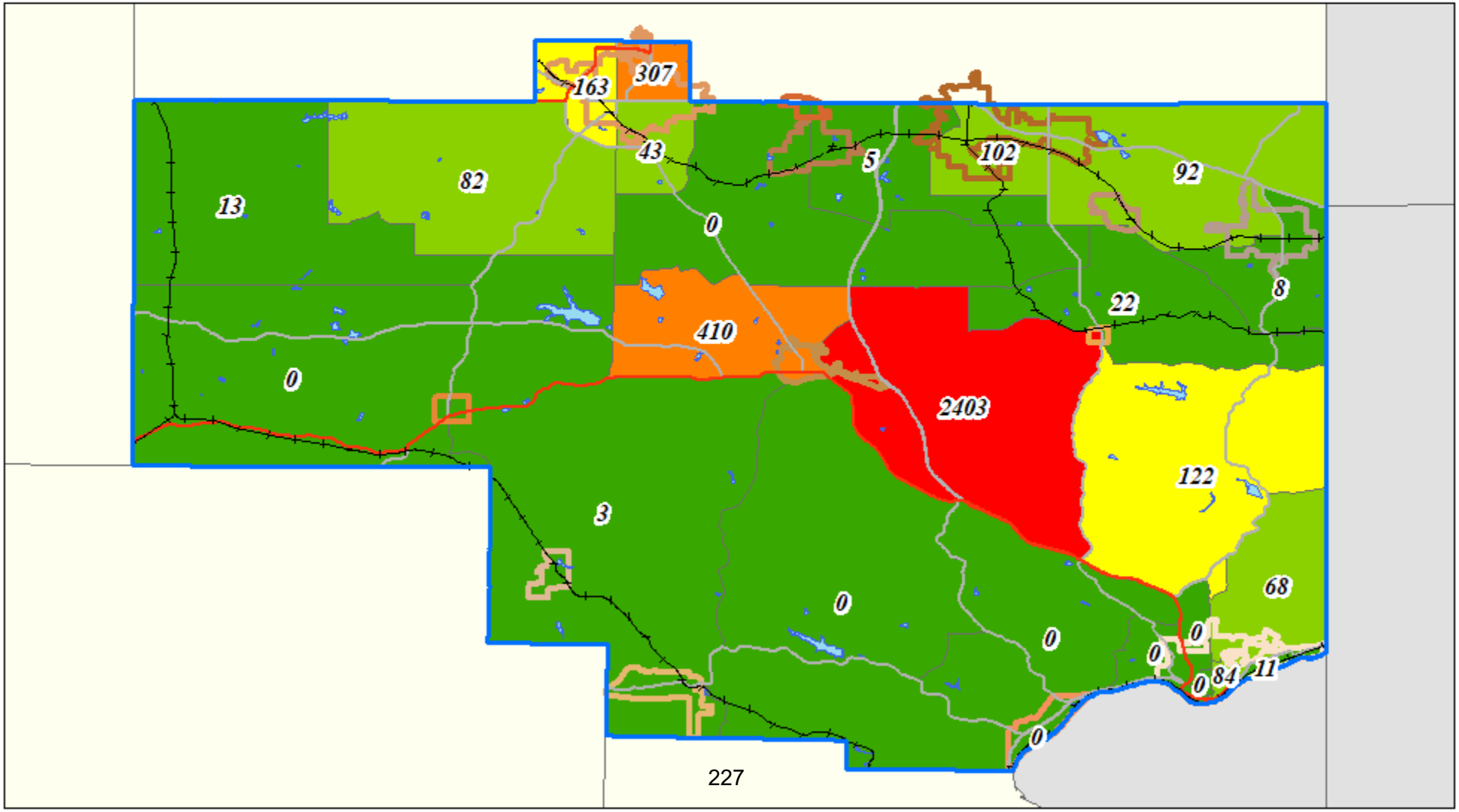
Figure 2.2.9.a: Pop. Distribution by Group Quarters

Data Source(s):
CDC ATSDR (2020)

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







Impacts and Vulnerability

As noted, public health emergencies take on many forms. In these cases, communication among providers, public health officials, and the public is crucial. “Responsibility for the preparedness of a community lies not only with governmental agencies but also with active, engaged, and mobilized community residents, businesses, and nongovernmental organizations” (Nelson, Lurie, Wasserman, & Zakowski, 2007). Major concerns during a public health emergency include the ability of local healthcare providers to give medical attention to everyone who becomes ill, and the ability of health officials to identify the source of illness in the population. The cascading effects of public health emergencies can include:

- Illness or death,
- Civil disturbance,
- Distrust of government,
- Supply chain issues,
- Poor water quality, and
- Temporary loss of income.

An epidemic is a contagious disease that attacks many people at the same time. Epidemics can develop with little or no warning and quickly erode the capacity of local medical care providers. The potential impacts of an epidemic include severe illnesses or fatalities, disruption or closing of schools, and the forced closure of businesses and industrial operations. The extent of illness caused by a communicable or infectious disease depends on both the individual infected and the pathogen infecting them. For example, the influenza virus usually circulates from November to March and affects up to 20% of Americans (CDC, 2022b). Unlike seasonal influenza, pandemic strains of the flu virus are easily circulated and affect healthy individuals (see the table below).

Table 2.2.9.1

Seasonal Flu	Flu Pandemic
Outbreaks occur every year, usually in winter.	This occurs only rarely (only five times since 1918).
Caused by influenza viruses that are similar to those already affecting people.	Caused by a new influenza virus that people have not been exposed to before.
Healthy adults are usually not at risk for serious complications.	Healthy adults may be at increased risk for serious complications.
Hospitals and healthcare providers can usually meet public needs.	Hospitals and healthcare providers may be overwhelmed and difficult to access.

Seasonal Flu	Flu Pandemic
The vaccine is available at the beginning of flu season.	A vaccine would probably not be available in the early stages of a pandemic.
It causes an average of 36,000 deaths each year in the United States.	The number of deaths could be significantly higher. In the 1918 pandemic, approximately 675,000 people died in the United States. The COVID-19 pandemic claimed more than 1,000,000 lives in the United States.
Generally does not have a severe impact on daily life.	May have a severe impact on daily life, including widespread restrictions on travel, closings of schools and businesses, and cancellation of public events.

Public health emergencies can be exacerbated by the fact that healthcare resources can become scarce during an event. An increased number of cases and a reduced number of caregivers can overload jurisdictional or healthcare system abilities to provide medical attention to everyone who becomes ill. Further, preventative measures, such as vaccinations or prophylactic medication, may be in short supply or unavailable in a novel strain of a virus.

Public health emergencies can last several days, extend into several weeks, and in some cases, they can last for several months or years. The Columbiana County General Health District has taken many steps to ensure a base level of preparedness for epidemic and pandemic conditions. Since many county residents travel, the possibility exists for novel strains to be introduced to the local population, thus validating epidemic/pandemic planning efforts.

Social Vulnerability Considerations

The most probable public health emergencies within the county (i.e., naturally occurring illnesses such as seasonal flu, an emerging highly infectious disease) could affect all land areas and jurisdictions equally, but certain sub-sections of the population may be more negatively impacted than others. Those most vulnerable to public health emergencies include children, the elderly, and individuals with pre-existing medical conditions and chronic illnesses. The following maps illustrate the Census block groups with the highest concentrations of those aged 17 and under (i.e., Figure 2.2.9.b) and those over 65 (i.e., Figure 2.2.9.c).

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

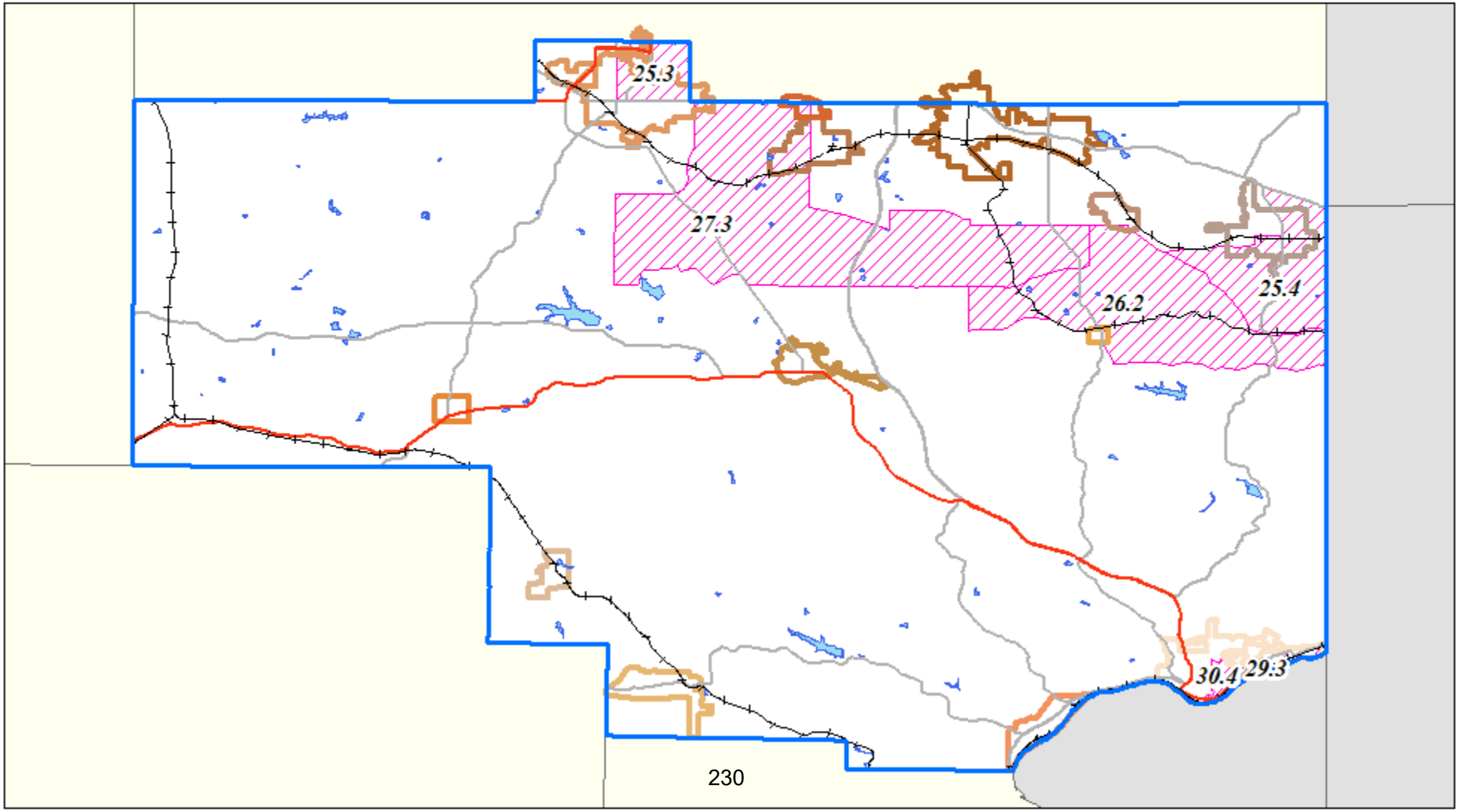
Figure 2.2.9.b: Percentage 17 & Under (by Tract)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, Age 17 & Under





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

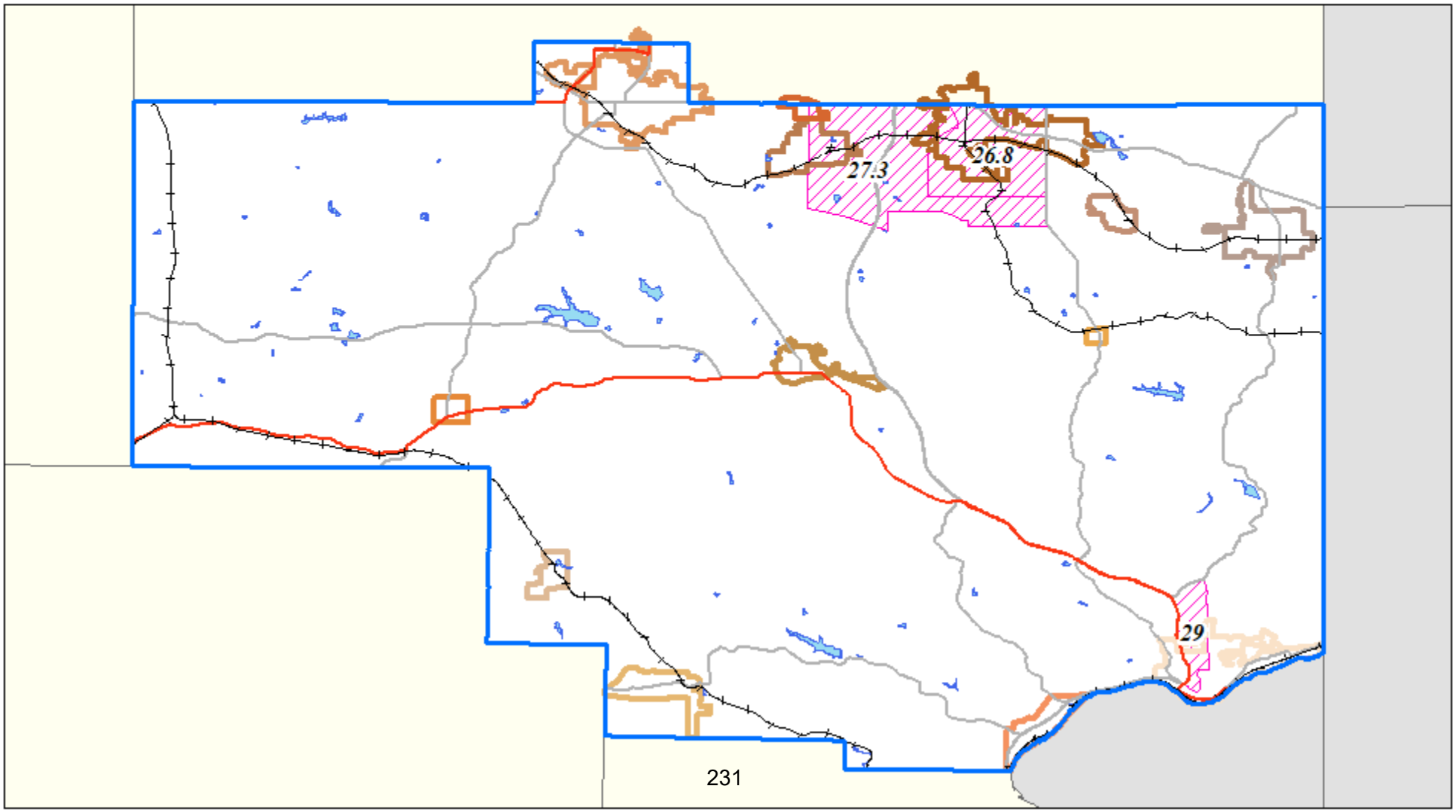
Figure 2.2.9.c: Percentage 65+ (by Tract)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, Age 65+





Though age is a known and critical social vulnerability variable for public health situations, others with chronic conditions may find themselves more at risk. During the COVID-19 pandemic, for example, health officials generated long lists of comorbidities that could amplify the effects of COVID-19 infection. The potentially extensive and changing nature (contingent on the disease in question) makes it difficult to definitively list those at extra risk due to chronic conditions.

Previous Occurrences

According to the Columbiana County General Health District and the Ohio Department of Health (ODH), there are outbreaks of infectious disease every year. The county has experienced several outbreaks of influenza and gastroenteritis in long-term care facilities, pertussis associated with schools and daycares, and influenza at schools and correctional facilities. There have also been foodborne outbreaks involving food service establishments and schools. Specific outbreaks listed by either the ODH or the Centers for Disease Control and Prevention (CDC) appear in Table 2.2.9.2 below.

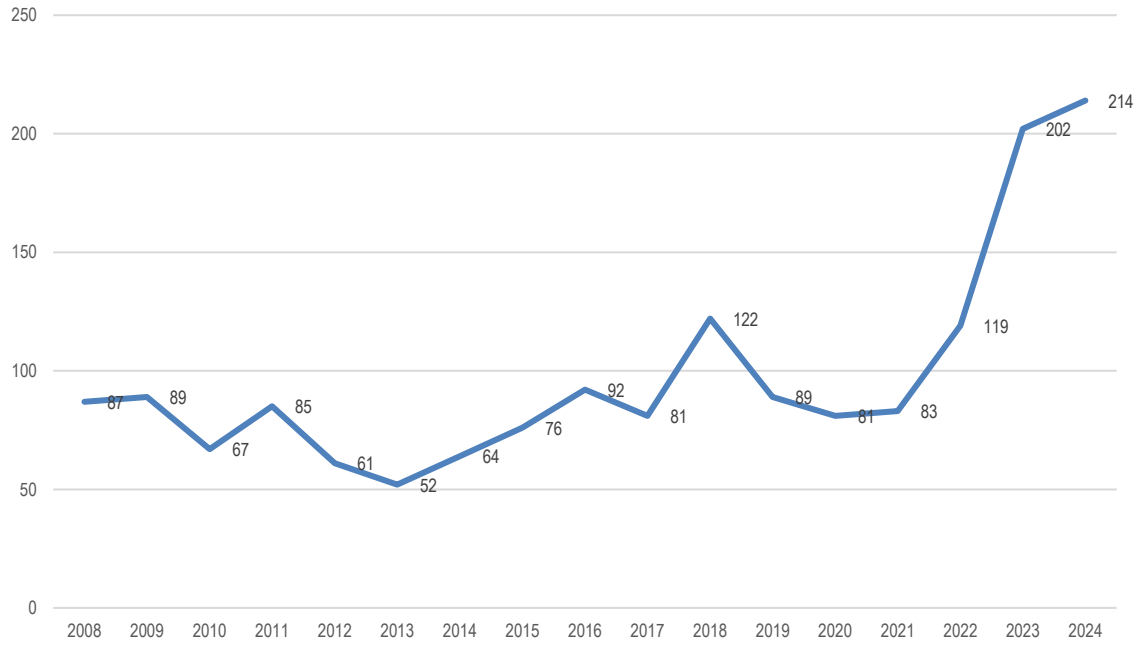
Table 2.2.9.2

Federal and State Outbreaks, 2010-2024		
Year(s)	*Agent*	*Reporting Agency*
2010	*Salmonella*	CDC
2011	*Listeria monocytogenes*	CDC
2012	Meningitis, Fungal	CDC
2012	West Nile Virus	CDC
2012	*E. coli* O145	CDC
2013	Cyclosporiasis	CDC
2013	MERS (Middle East Respiratory Syndrome)	CDC
2014	Ebola virus	CDC
2014-2015	Enterovirus	CDC
2014	Chikungunya virus	CDC
2016-2017	Zika virus	CDC
2017-2018	Hepatitis A	CDC, ODH
2019	Measles	CDC, ODH
2020-2023	Coronoavirus Disease 2019 (COVID-19)	CDC, ODH
2024-Present	Dengue	CDC
2025-Present	Measles	CDC, ODH
2025-Present	*Salmonella* (linked to geckos)	CDC
2025-Present	*Salmonella* (linked to backyard poultry)	CDC
2025-Present	*Listeria* (linked to ready-to-eat foods)	CDC

Federal and State Outbreaks, 2010-2024		
Year(s)	*Agent*	*Reporting Agency*
2025-Present	*Salmonella* (linked to eggs)	CDC
2025-Present	*Salmonella* (linked to pistachio cream)	CDC
2025-Present	*Listeria* (linked to chicken fettuccine alfredo meals)	CDC

Planners collected information regarding reported infectious disease cases from the ODH surveillance records within the DataOhio portal (2025). Figure 2.2.9.d presents a summary of infectious diseases[1] in Columbiana County between 2008 and 2024.

Figure 2.2.9.d



Five pandemic influenza events have occurred in the last century. The 1918 Spanish Influenza outbreak remains the worst-case pandemic on record, with the number of deaths dramatically decreasing with each event, with the exception of the recent Corona Virus, 2019 (COVID-19) pandemic.

[1] Exhibit 2.2.9.A at the end of this profile lists the reportable conditions included in the figures cited in Figure 2.2.9.d.

Table 2.2.9.3

Previous Worldwide Pandemic Events		
Date	*Pandemic Name/Subtype*	*Worldwide Deaths*
1918 – 1920	Spanish Flu / H1N1	50 million
1957 – 1958	Asian Flu / H2N2	1 – 3 million
1968 – 1969	Hong Kong Flu / H3N2	1 million
2009 – 2010	Swine Flu / A/H1N1	25,174
2019 – 2023	Corona Virus 2019 (COVI-19) (SARS)	6.8 million (on-going)

The following four narratives seek to provide context for public health emergencies in the county and wider region. The first two, both pandemics, represent worst-case scenarios (though with a wide variance in severity), while the other two are much smaller in scope, but demonstrate the ongoing nature of public health concerns.

H1N1 Swine Flu Pandemic, 2009

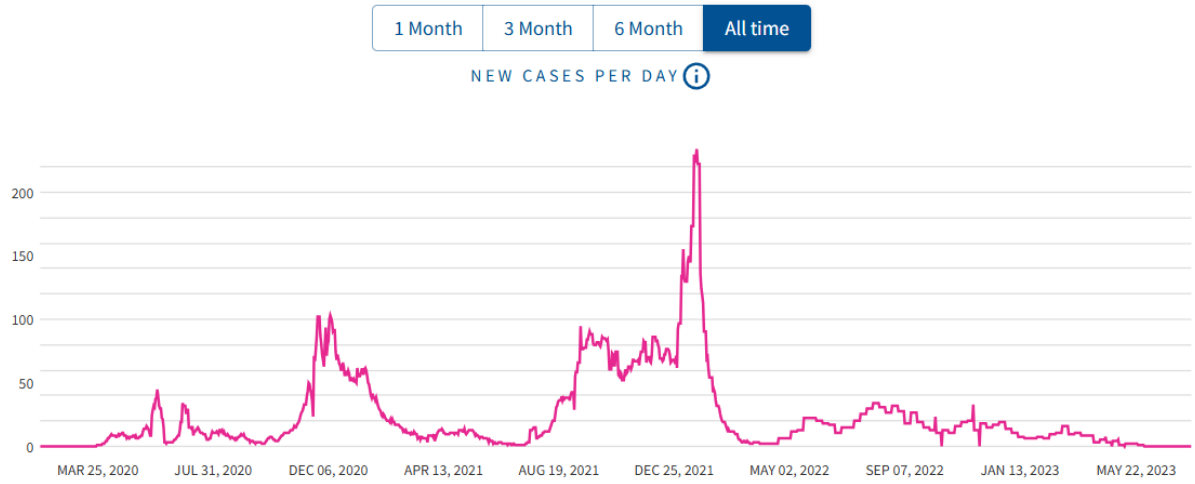
A recent pandemic event was H1N1 (swine flu), discovered in 2009. The CDC monitored the spread of the disease on a near-daily basis. The H1N1 flu was relatively mild for most people, but the virus spread with unprecedented speed; more than 700 schools in the United States closed, and many hospitals quarantined infected individuals. H1N1 was almost entirely responsible for total anomalies resolved as health events for 2009. Ohio reported over 200 cases by late July 2009. Though relatively minor, the H1N1 pandemic was the first event to necessitate activation of many community pandemic response plans (following focused efforts to upgrade said plans in the mid-2000s).

COVID-19 Pandemic

The most recent pandemic to impact the United States was the Coronavirus Disease 2019 (COVID-19), which is a severe acute respiratory syndrome (SARS). The virus is believed to have started spreading as early as 2018, originating from the Wuhan Institute of Virology laboratory in Wuhan, China which experiments with corona viruses. To date, there have been over 778 million confirmed cases of the virus, resulting in over seven million deaths worldwide (WHO, 2025). The virus spread to every country and continent of the world.

As of July 2023, there were approximately 3.5 million confirmed cases and over 42,000 deaths in Ohio as a result of the pandemic. USA Facts noted a total of 30,130 total reported cases of COVID-19 in Columbiana County, with 479 deaths (2025). The highest spike in new cases per day occurred in January 2022, as shown in Figure 2.2.9.e below.

Figure 2.2.9.e



Powassan Virus, 2021 (to Present)

The Columbiana County Health District reported that Ohio's first case of Powassan Virus Disease (POW) was a resident of Lisbon in Columbiana County. At the of the district's release, there had been approximately 100 cases of POW in the United States during the past 10 years (i.e., approximately 2011 to 2021). POW is a tickborne illness that cannot be directly transmitted from person-to-person. Symptoms range from asymptomatic to life-threatening neurological disorders (CCHD, 2021).

Candida Auris (C)

In March 2023, local media reported a case of Candida auris (or C) of Columbiana County. The case in the county was, at that time, the only case in the Mahoning Valley region. Between approximately March of 2022 and 2023, 79 cases were reported in Ohio. There were 285 cases from May 2020 to November 2022. "Hamilton County had the most with 212 cases, followed by Cuyahoga County with 48 between May 2020 and November 2022" (Coller, 2023).

Loss and Damages

Losses based on historic epidemics are difficult to estimate. Epidemics rarely affect structures, but because they affect people, the operations of critical facilities, businesses, and other community assets may be impacted. According to a study, seasonal influenza results in a substantial economic impact, estimated, in part, at $16.3 billion in lost earnings (Molinari et al.,

2007). By population, Columbiana County represents 0.029% of the population of the United States. Since seasonal influenza primarily impacts the human population, using the county's composition in the U.S. as a multiplier (i.e., 0.0002935) and applying it to the potential economic impact, lost earnings in the county could reach $4,784,070 each year. Though that number appears high, it equates to approximately $82.63 per year for each person listed by the U.S. Census Bureau as "in civilian labor force."

Comprehensive estimates of losses associated with the COVID-19 pandemic will inform this discussion in future updates. Still, at the time of this writing, reliable estimates were unavailable. Billings (1997) indicated that the impact of the 1918 pandemic was a 2% drop in the world's gross domestic product. Further, the United States Bureau of Economic Analysis indicates that a community can use its median household income multiplied by its total number of households to determine an approximate Gross Domestic Product (GDP) for its area. As such, the average median household income ($58,474) and number of households (41,375) provided by the Census (U.S. Census Bureau, 2020) estimate a GDP for Columbiana County of $2,419,361,750. Using the 2% figure, the impact on the county could be as much as $48,387,235.

Future Occurrences[2]

Future climate fluctuations may not seem like relevant discussions through the frame of public health crises, but there are subtle connections that one may not realize. Researchers and practitioners associated with the Harvard T. H. Chan School of Public Health note that people living in places with poor air quality can be at elevated risk of various diseases. While those professionals did not directly link pandemics, in this case the COVID-19 pandemic, with climate change, they pointed out that, "(m)any of the root causes of climate change also increase the risk of pandemics" (Harvard T. H. Chan, n.d.). A loss of animal habitats through actions like deforestation can force animals to migrate. Migration into new areas brings those animals into contact with different animals and people, which can yield a sharing of germs (Crist, 2022; Kelland, 2023). Further, large livestock operations can be a source of "spillover of infections from animals to people" (Harvard T. H. Chan, n.d.).

Kelland's article describes climate connections to disease as a sort of "domino effect" (2023) whereby changing environments, due not *just* to warming, combine with other societal trends to contribute to disease spread. Climate change may affect "the distribution, the abundance and the spread of vectors" (Kelland, 2023), and economic, missionary, and other human travel

[2] Though a natural hazard, future climate considerations were not included as a subsection. This profile generally considers the intersection of climatic and public health concerns.

trends help to spread diseases from one part of the world to another part that may not otherwise have occurred.

Risk Assessment

This section summarizes the vulnerability of the county to public health emergencies. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding public health emergencies.

Table 2.2.9.4

Public Sentiment, Public Health Emergency					
	Level of Concern				*Total Respondents*
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	
Public Health Emergency	2 (3.2%)	7 (11.3%)	29 (46.8%)	24 (38.7%)	62
In the past five years, do you remember this hazard occurring in your community?				33	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 42 (24.28%) indicated being concerned about public health emergencies, with six respondents indicating that the hazard was the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

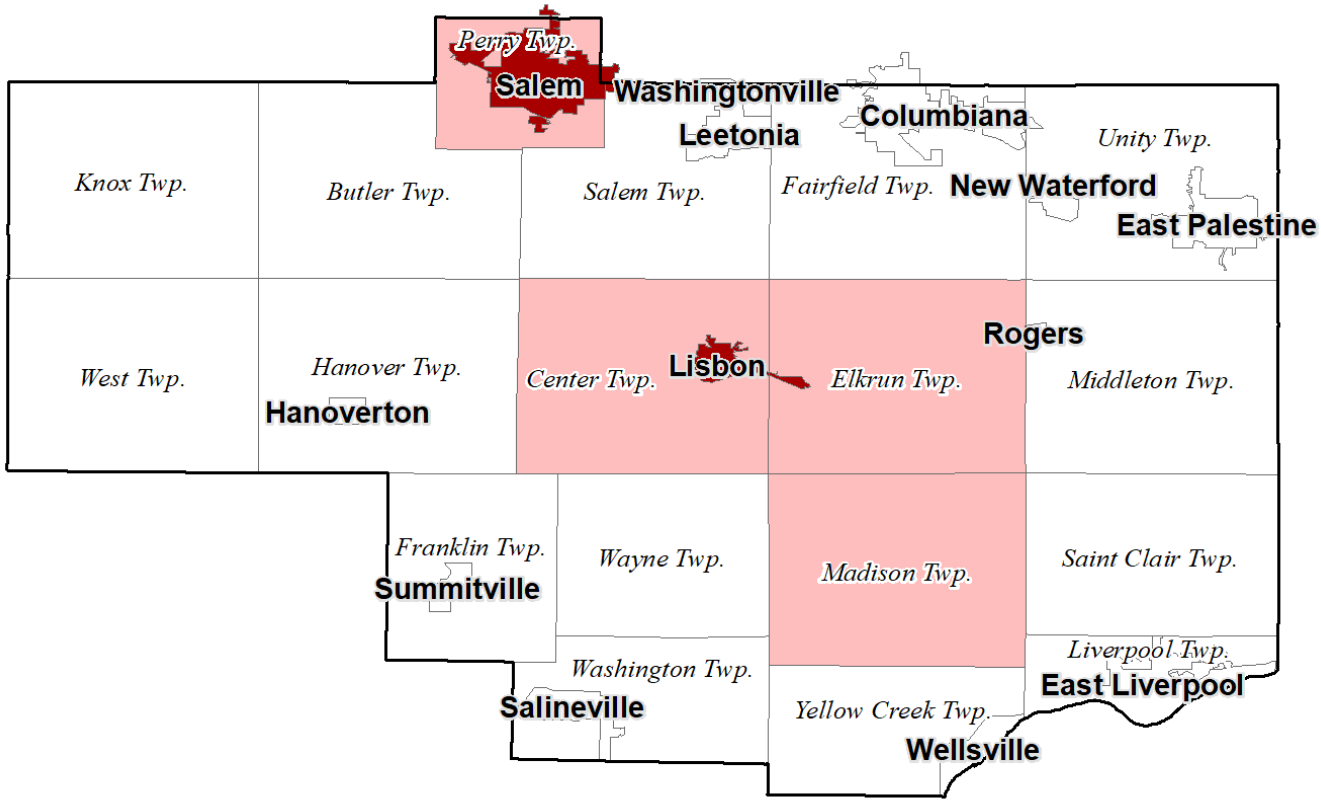
Table 2.2.9.5

Public Health Emergency Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	CDC and ODH data report 3,698 outbreaks from a range of diseases in Columbiana County since 1971 (for an average of 69.77 incidents per annum).
Response	5	More than one month	Significant outbreaks and pandemic operations can extend into months (e.g., H1N1 swine flu pandemic) or years (e.g., COVID-19 pandemic).
Onset	1	Over 24 hours	Though disease onset may be rapid, the development of large-scale impacts develops over time.

Public Health Emergency Risk Ranking			
Category	*Points*	*Description*	*Notes*
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term *catastrophic* sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by (i.e., the entire population could be susceptible to) a public health emergency.
Business	2	One week	Even during the COVID-19 pandemic when businesses shut down, officials worked to identify alternate ways for the population to work, stores to sell their wares, etc. Thus, planners selected "One week" as a planning average.
Human	4	High (multiple deaths)	Historical incidents have resulted in 8,392 hospitalizations and 226 deaths.
Property	1	Less than 10% of property affected	The effects of public health emergencies typically impact people; thus, planners selected the lowest category for property impacts.
Totals	**22**	**High**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for public health emergencies. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.9.f



A public health emergency can generally affect any geographical area of Columbiana County with regard to jurisdictional borders. However, the jurisdictions in red appear as those with a higher number of persons in group quarters (per Figure 2.2.9.a above).

Exhibit 2.2.9.A

Ohio Department of Health

Know Your ABCs:
Alphabetical Order

Effective August 1, 2019

Name	Class
Amebiasis	B
Anthrax	A
Arboviral neuroinvasive and non-neuroinvasive disease	B
Babesiosis	B
Botulism, foodborne	A
Botulism, infant	B
Botulism, wound	B
Brucellosis	B
Campylobacteriosis	B
Candida auris	B
Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)	B
Chancroid	B
Chlamydia trachomatis infections	B
Chikungunya	B
Cholera	A
Coccidioidomycosis	B
Creutzfeldt-Jakob disease (CJD)	B
Cryptosporidiosis	B
Cyclosporiasis	B
Dengue	B
Diphtheria	A
E. coli O157:H7 and Shiga toxin-producing E. coli (STEC)	B
Eastern equine encephalitis virus disease	B
Ehrlichiosis/Anaplasmosis	B
Giardiasis	B
Gonorrhea (*Neisseria gonorrhoeae*)	B
Haemophilus influenzae (invasive disease)	B
Hantavirus	B
Hemolytic uremic syndrome (HUS)	B
Hepatitis A	B
Hepatitis B (non-perinatal)	B
Hepatitis B (perinatal)	B
Hepatitis C (non-perinatal)	B
Hepatitis C (perinatal)	B
Hepatitis D (delta hepatitis)	B
Hepatitis E	B
Influenza A – novel virus	A
Influenza-associated hospitalization	B
Influenza-associated pediatric mortality	B
LaCrosse virus disease (other California serogroup virus disease)	B
Legionnaires' disease	B
Leprosy (Hansen disease)	B
Leptospirosis	B
Listeriosis	B
Lyme disease	B
Malaria	B

Name	Class
Measles	A
Meningitis, aseptic (viral)	B
Meningitis, bacterial	B
Meningococcal disease	A
MERS	A
Mumps	B
Other arthropod-borne diseases	B
Outbreaks: community, foodborne, healthcare-associated, institutional, waterborne, zoonotic	C
Pertussis	B
Plague	A
Poliomyelitis (including vaccine-associated cases)	B
Powassan virus disease	B
Psittacosis	B
Q fever	B
Rabies, human	A
Rubella (congenital)	B
Rubella (not congenital)	A
Salmonella Paratyphi infection	B
Salmonella Typhi infection (typhoid fever)	B
Salmonellosis	B
Severe acute respiratory syndrome (SARS)	A
Shigellosis	B
Smallpox	A
Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)	B
St. Louis encephalitis virus disease	B
Staphylococcus aureus, with resistance or intermediate resistance to vancomycin (VRSA, VISA)	B
Streptococcal disease, group A, invasive (IGAS)	B
Streptococcal disease, group B, in newborn	B
Streptococcal toxic shock syndrome (STSS)	B
Streptococcus pneumoniae, invasive disease (ISP)	B
Syphilis	B
Tetanus	B
Toxic shock syndrome	B
Trichinellosis	B
Tuberculosis (TB), including multi-drug resistant tuberculosis (MDR-TB)	B
Tularemia	A
Varicella	B
Vibriosis	B
Viral hemorrhagic fever (VHF)	A
West Nile virus infection	B
Western equine encephalitis virus disease	B
Yellow fever	B
Yersiniosis	B
Zika virus infection	B

2.2.10 Severe Thunderstorms & Hail

A severe thunderstorm produces a tornado, winds in excess of 58 miles per hour, or hail of one inch in diameter or larger. These storms are accompanied by lightning				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	At any time, but typically during the late spring and summer	**Risk Ranking:**	Medium
	Warning Time:	Over 24 hours	**Type of Hazard:**	Natural
	Probability:	Excessive (Will occur during a year)	**Impact:**	Catastrophic (More than 50% of land area affected)
	Disaster Declarations:	EM-3346-OH (2012) DR-1580-OH (2005) DR-1556-OH (2004) DR-1519-OH (2004)	DR-1478-OH (2003) DR-951-OH (1992) DR-870-OH (1990)	

Hazard Overview

Thunderstorms are local storms accompanied by lightning and thunder capable of producing strong winds, tornadoes, hail, and flash flooding. A thunderstorm is "severe" when it produces a tornado, winds of at least 58 mph, or hail at least one inch in diameter. Hazards associated with severe thunderstorms include lightning, hail, damaging wind, heavy rain, flash flooding, and tornadoes. Thunderstorms are a seasonal hazard and can be expected to occur every year. According to the National Weather Service, the most active thunderstorm season in Ohio is the spring (i.e., typically April through June). There are five types of thunderstorms, each described in detail in the table below.

Table 2.2.10.1

Types of Thunderstorms				
Type	*Description*	*Duration*	*Wind Speeds*	*Hazards*
Single Cell	Uncommon	20-30 minutes	N/A	• Non-damaging hail • Microbursts • Weak tornadoes
Multi-Cell	Common, organized cluster of two or more single cells	Approx. 20 minutes per cell	Downbursts up to 80 mph	• Heavy rainfall • Downbursts • Hail • Weak tornadoes
Mesoscale Convective System	A well-organized system of thunderstorms	Up to 12 hours or more	55 mph or more	• Torrential rainfall • Derechos • Tornadoes

Types of Thunderstorms				
Type	*Description*	*Duration*	*Wind Speeds*	*Hazards*
Squall Line	May extend over 250-500 miles, 10-20 miles wide	30-60 minutes for each cell	N/A	• Significant rainfall • Derechos
Super Cell	Most dangerous, visible with Doppler radars	1-6 hours	Updrafts & downdrafts greater than 100 mph	• Tornadoes • Hail

Lightning is a naturally occurring giant spark of electricity in the air between clouds, the air, or the ground. Air acts as an insulator between the cloud and the ground, but when the charge difference becomes great enough, the insulating capacity breaks down, allowing the rapid discharge of electricity. This electrical discharge is known as lightning. Lighting can reach a significant distance from a storm, up to 25 miles, according to the National Severe Storms Library (NSSL). While lightning is a common occurrence and can be seen in most thunderstorms, only about 20% of the lighting observed in a storm will strike the ground. Lightning strikes occur with no warning and kill between 75 to 100 Americans each year (Haddow, Bullock, & Coppola, 2011).

A hailstorm is an atmospheric disturbance manifested in strong winds and accompanied by precipitation. Hail is a form of precipitation that occurs when updrafts from a thunderstorm carry raindrops into colder temperatures. The drops of water freeze together in the cold upper regions of the thunderstorm clouds. Hailstones grow by colliding with super-cooled water droplets. The stronger the updraft of the storm, the longer the drops of water can freeze together; thus, the larger the hailstone. When a hailstone becomes too heavy for the updraft to support, or the updraft weakens, the stone falls to the ground.

Hailstones less than one inch in diameter typically fall to the ground at nine to 25 mph. Hailstones associated with severe thunderstorms (i.e., 1” to 1 3/4” in diameter) can fall to the ground at 40 mph. The TORRO Hailstorm Intensity Scale (Voss Law Firm, 2023) measures hail, H0 – H10, based on diameter.

Table 2.2.10.2

TORRO Hailstorm Intensity Scale			
TORRO Intensity	*Intensity Category*	*Diameter (mm)*	*Reference Objects*
H0	Hard Hail	5	Pea
H1	Potentially Damaging	5-15	Mothball
H2	Significant	10-20	Marble, Grape
H3	Severe	20-30	Walnut
H4	Severe	25-40	Pigeon’s egg > Squash ball
H5	Destructive	30-50	Golf ball > Pullet’s egg

TORRO Hailstorm Intensity Scale			
TORRO Intensity	*Intensity Category*	*Diameter (mm)*	*Reference Objects*
H6	Destructive	40-60	Hen's egg
H7	Destructive	50-75	Tennis ball > Cricket ball
H8	Destructive	60-90	Large orange > Softball
H9	Super Hailstorm	75-100	Grapefruit
H10	Super Hailstorm	> 100	Melon

Location and Extent

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

Impacts and Vulnerability

The impacts of severe thunderstorms or hail can include widespread property damage, injuries, and even fatalities. Hailstones can be the most damaging part of a severe thunderstorm, inflicting injuries and destroying crops like a giant pummeling machine. Hailstones often damage automobiles and crops; however, structural damage is a possibility in the form of broken windows, damaged gutters, HVAC systems, and siding. In some cases, lightning has ignited fires in structures and open land or forests. A bolt of lightning reaches a temperature of 50,000 degrees Fahrenheit in a split second. Ohio averages less than one death (i.e., 0.5) per year from lightning (Holle, 2025).

Indirectly, severe thunderstorms can impact critical infrastructure that is reliant on electricity, such as health and medical facilities, water and sewer systems, etc. These facilities may have auxiliary power, though if not, prolonged outages could take services offline. Heavy rains can pool water on roadways, which could impact the transportation infrastructure (though not substantially damage it). Rushing water may also wash out fills under or alongside roadways or railways, and these impacts could be more damaging.

Heavy rains and winds can damage agricultural areas and other natural assets like parks and recreational forest areas. Impacts can include downed trees, over-saturated grounds, washouts, etc. Whereas the impacts on critical infrastructure are typically short-lived, some thunderstorms can damage and ruin crop yields for an entire growing season. Though severe thunderstorms and hail can damage historic and cultural assets, damages are typically minor enough that they can be fixed.

Social Vulnerability Considerations

Severe thunderstorms do not discriminate against any geographies they could impact, nor do they select or spare certain populations. Risk, then, is fairly universal. The way the impacts of severe thunderstorms manifest is where communities will see variance with respect to social vulnerability variables. Populations residing in mobile home parks and campgrounds should take particular care to seek adequate shelter with approaching severe weather. Figure 2.2.10.a shows the Census tracts by percentage of mobile homes.

The homeless population is at risk as notification methods used for other populations such as radio, television, and service providers may not be applicable. They also face a lack of transportation and the inability to evacuate an area without assistance (Edgington, 2009). Finally, households below the poverty line are often un- or under-insured. Low-income areas may see a higher concentration of structures built before 1970 when code adoption and enforcement became more common because those older structures are often more affordable. Figure 2.2.10.b below shows the tracts with higher percentages of residents living below the poverty line.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.10.a: SVI Considerations (Mobile Homes)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Housing Units are Mobile Homes



COLUMBIANA COUNTY HAZARD MITIGATION PLAN

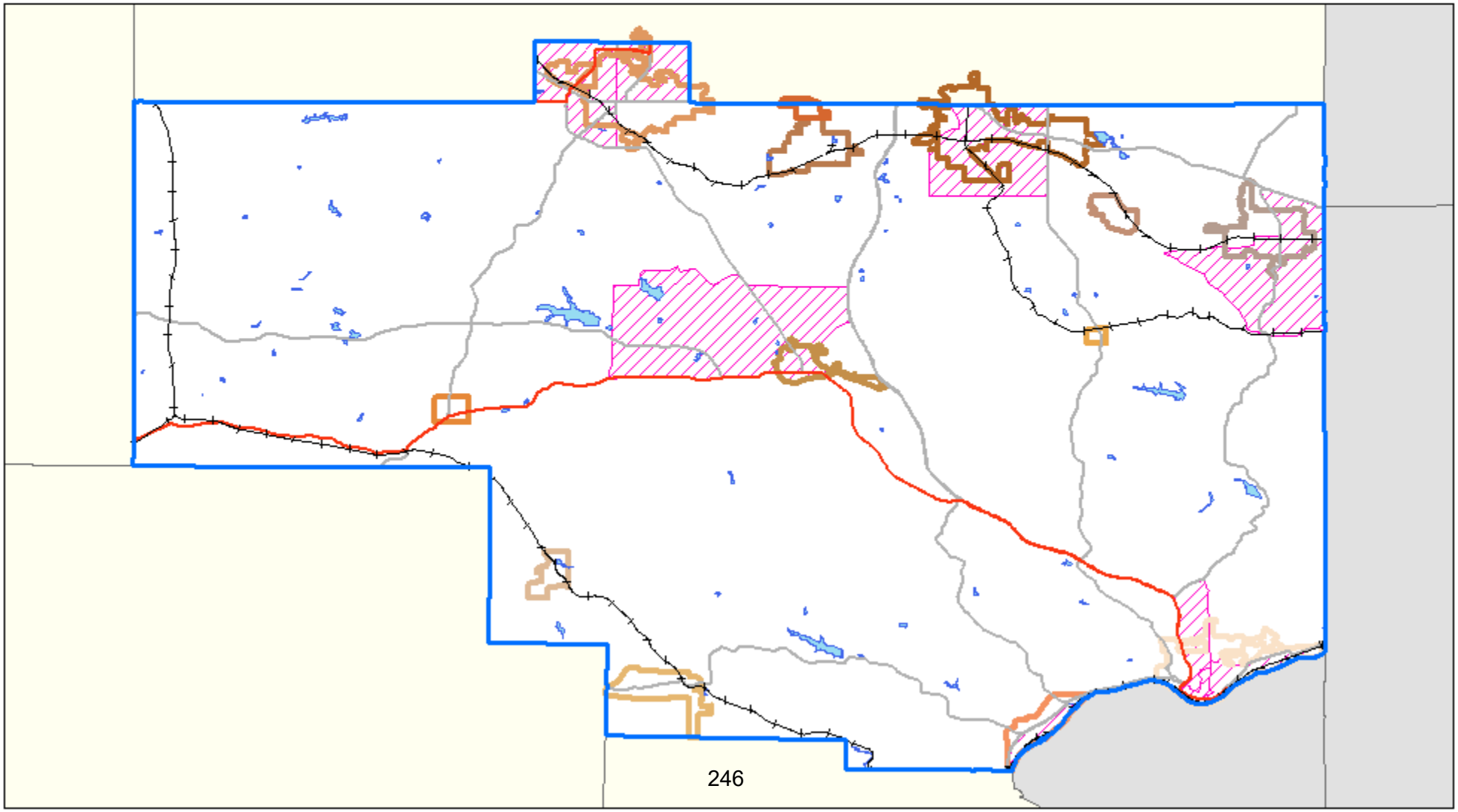
Figure 2.2.10.b: SVI Considerations (Poverty)

Data Source(s):
CDC ATSDR (2020)

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

Greater than 25% of Population, below 150% of Poverty Level





Previous Occurrences

Columbiana County has experienced 430 severe thunderstorms and hail events since 1969, as per the NOAA NCEI Storm Events Database (2024). This rate is an average of 7.96 per annum. Table 2.2.10.3 lists the events by category.

Table 2.2.10.3

Historical Severe Thunderstorm and Hail Occurrences							
THUNDERSTORM WIND (1969 to 2023)							
Total Events	*Areas Affected*	*Area w/ Most Events*	*Avg. Events per Year*	*Injuries*	*Fatalities*	*Damages*	
						Property	*Crop*
291	CW	N/A	5.39	2	0	$3,782,750	$64,000
Highest wind speed during an event = 75 mph in August 2007							
HEAVY RAIN (1996 to 2022)							
Total Events	*Areas Affected*	*Area w/ Most Events*	*Avg. Events per Year*	*Injuries*	*Fatalities*	*Damages*	
						Property	*Crop*
28	CW	N/A	1.07	0	0	$0	$0
Most heavy rain events in one year = 3 in 1998 and 2002							
HAIL (1983 to 2022)							
Total Events	*Areas Affected*	*Area w/ Most Events*	*Avg. Events per Year*	*Injuries*	*Fatalities*	*Damages*	
						Property	*Crop*
111	CW	N/A	2.85	0	0	$550,500	$650,000
Largest diameter hail = 3” in June 1998 and May 2014							
429	**CW**	**N/A**		**2**	**0**	**$4,333,250**	**$714,000**

Severe Storms with High Winds, August 9, 2007

Three separate mesoscale convective systems moved across southeast Ohio, western Pennsylvania, northern West Virginia, and western Maryland. Widespread wind damage, flash flooding, and an EF0 tornado occurred during the event (NOAA NCEI, 2024). NOAA reported the wind speed at 75 mph and estimated property damage at $500,000. Media reporting attributed winds associated with this thunderstorm as causing damage to approximately 200 cars in the parking lot of the Salem Giant Eagle, and the storm knocked over a transformer and power pole (which damaged a propane tank at the store). Additionally, firefighters from throughout northern Columbiana County reported downed trees (Vindy Archives, 2025).

Loss and Damages

Severe thunderstorms and hail can impact all areas and jurisdictions of the county and are typically widespread events. Thunderstorms and hail have resulted in approximately $4.3

million in property damage over 54 years, creating an annual average property damage estimate of just under $80,250. By category, the following list shows historical losses (property plus crop losses) per annum.

- Thunderstorm Wind: $71,236
- Heavy Rain: $0
- Hail: $30,782

However, these figures likely underestimate actual losses when considering the impacts to infrastructure systems (e.g., power lines) during some of the more severe storms. Further, these estimates are likely not reliable indicators of future thunderstorm and hail losses. Information from FEMA's National Risk Index (2023) can shed light on potential loss based on property exposure.

Table 2.2.10.4

Columbiana County Hail NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$1,092,786,377	5,502	$8,459,036	$53,124	$843	$2,513	$56,480
39029950200	$1,101,451,018	4,588	$2,079,560	$56,322	$739	$632	$57,693
39029950300	$1,095,100,868	5,055	$3,921,349	$59,209	$868	$1,280	$61,358
39029950400	$1,014,647,687	4,205	$11,199,393	$54,259	$707	$3,674	$58,640
39029950500	$1,445,560,835	5,965	$953,020	$79,199	$1,031	$319	$80,549
39029950600	$799,781,046	4,860	$231,217	$43,818	$840	$77	$44,735
39029950700	$1,044,895,204	5,174	$539,719	$57,248	$894	$181	$58,322
39029950800	$941,896,273	4,429	$12,272,178	$51,605	$765	$4,108	$56,478
39029950900	$1,003,799,322	3,655	$13,161,720	$54,996	$631	$4,406	$60,034
39029951000	$1,308,621,285	5,618	$18,589,584	$71,697	$971	$6,223	$78,890
39029951100	$957,240,926	4,502	$4,598,937	$52,445	$778	$1,540	$54,763
39029951200	$985,122,245	4,154	$17,145,512	$53,255	$702	$5,718	$59,675
39029951300	$769,163,744	3,593	$9,373,538	$39,427	$575	$2,961	$42,963
39029951401	$460,325,235	2,119	$3,914,169	$22,378	$325	$1,163	$23,865
39029951402	$647,807,959	4,997	$6,816,061	$32,914	$785	$2,097	$35,796
39029951500	$804,484,564	4,627	$1,137,236	$39,109	$709	$338	$40,156
39029951600	$1,213,669,268	5,398	$4,185,929	$59,000	$827	$1,243	$61,071
39029951700	$776,977,175	4,775	$2,409,441	$37,766	$732	$716	$39,214
39029951800	$561,046,056	2,842	$0	$26,100	$416	$0	$26,516
39029951900	$461,347,089	3,332	$72,652	$22,428	$511	$22	$22,960
39029952000	$531,175,420	2,702	$9,744	$25,822	$414	$3	$26,239
39029952100	$535,516,515	1,382	$0	$26,033	$212	$0	$26,245
39029952200	$670,667,180	1,772	$2,282	$32,603	$272	$1	$32,876
39029952300	$344,260,598	2,703	$222	$16,736	$414	$0	$17,150
39029952400	$625,997,395	3,923	$1,282,765	$30,432	$601	$381	$31,414
Grand Total	**$21,193,341,284**	**101,872**	**$122,355,264**	**$1,097,925**	**$16,562**	**$39,594**	**$1,154,081**

Table 2.2.10.5

Columbiana County Lightning NRI Exposure / Expected Annual Loss (EAL) Estimates					
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Total*
39029950100	$1,092,786,377	5,502.00	$60	$39,825	$39,885
39029950200	$1,101,451,018	4,588.00	$62	$34,128	$34,190
39029950300	$1,095,100,868	5,055.00	$61	$37,120	$37,181
39029950400	$1,014,647,687	4,205.00	$65	$35,268	$35,333
39029950500	$1,445,560,835	5,965.00	$92	$49,822	$49,914
39029950600	$799,781,046	4,860.00	$45	$35,740	$35,785
39029950700	$1,044,895,204	5,174.00	$62	$40,189	$40,252
39029950800	$941,896,273	4,429.00	$60	$36,815	$36,874
39029950900	$1,003,799,322	3,655.00	$65	$31,185	$31,250
39029951000	$1,308,621,285	5,618.00	$85	$47,465	$47,550
39029951100	$957,240,926	4,502.00	$63	$39,167	$39,230
39029951200	$985,122,245	4,154.00	$58	$32,368	$32,426
39029951300	$769,163,744	3,593.00	$48	$29,233	$29,281
39029951401	$460,325,235	2,119.00	$27	$16,019	$16,046
39029951402	$647,807,959	4,997.00	$40	$41,807	$41,848
39029951500	$804,484,564	4,627.00	$44	$33,505	$33,549
39029951600	$1,213,669,268	5,398.00	$66	$38,417	$38,484
39029951700	$776,977,175	4,775.00	$47	$37,826	$37,873
39029951800	$561,046,056	2,842.00	$33	$21,679	$21,711
39029951900	$461,347,089	3,332.00	$28	$26,210	$26,238
39029952000	$531,175,420	2,702.00	$30	$20,101	$20,131
39029952100	$535,516,515	1,382.00	$30	$10,328	$10,359
39029952200	$670,667,180	1,772.00	$37	$12,972	$13,009
39029952300	$344,260,598	2,703.00	$20	$20,201	$20,221
39029952400	$625,997,395	3,923.00	$34	$28,391	$28,425
Grand Total	**$21,193,341,284**	**101,872.00**	**$1,263**	**$795,781**	**$797,044**

Future Occurrences

Severe thunderstorms may impact on infrastructure systems like the power grid and stormwater management features. High winds, like those accompanying thunderstorms can affect electricity distribution systems, and as those systems age, they may be more prone to the effects of said weather. (See also Section 2.2.11: Severe Wind & Tornadoes.) Thus, future storms may be accompanied by more frequent (and longer-duration) power outages. These changes may disproportionately impact residents relying on durable medical equipment (and, thus, electricity).

Interestingly, the National Institutes of Health suggests that the number and percentage of the population aged 65 and older is increasing more rapidly in rural areas than in urban areas (Cohen & Greaney, 2023). Whether this trend holds over time is not yet known, as an anecdotal contributing variable is the tendency for younger populations (i.e., Millennials and Generation Z) to prefer more urban areas as they launch their careers and families. The influx of younger individuals into these areas lowers the percentage of those who are aging in those areas. Will

Millennials and Generation Z choose to relocate to more rural communities in retirement? Or will future generations grow to prefer those rural areas at the start of their adult lives? These demographic trends will intersect in interesting ways with the hazards impacting the county.

More intense precipitation compounded by the rapid gathering of increased runoff may strain the ability of aging dams to perform as designed. Further, changes in land use and development may impact on the ways future severe thunderstorms manifest in Columbiana County's communities. Currently, many stormwater management systems are outdated and can be overwhelmed (though several municipalities in the county are upgrading systems). The process by which existing comprehensive plans lay out future development, including the caution with which communities allow large swaths of land to be paved, may contribute to fewer runoff-related impacts. The outlying rural areas better manage rainfall and excess water though, of course, the more densely developed municipal areas would still need to manage the rainfall falling directly in their footprints.

Future Climate Considerations

Data on the impacts of a changing climate suggest that severe summer weather (like thunderstorms and hail) may increase in intensity in the coming years (USGCRP, 2018), rendering loss estimates based on previous occurrences obsolete. As yet, there is no collectively agreed-upon manner of adjusting historical losses to forecast future damage accurately. Significantly, this data-supported conclusion aligns with the lived experience of local officials. Steering committee representatives frequently noted the impacts of thunderstorms as having changed over the past decade. Forecasts have noted heavy precipitation, but local officials have noted much higher totals in small areas of their jurisdictions.

Risk Assessment

This section summarizes the vulnerability of the county to severe thunderstorms and hail. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding severe storms.

Table 2.2.10.6

Public Sentiment, Severe Thunderstorms & Hail					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Severe Thunderstorms & Hail	4 (6.5%)	14 (22.6%)	28 (45.2%)	16 (25.8%)	62
In the past five years, do you remember this hazard occurring in your community?				48	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 65 (37.57%) indicated being concerned about severe thunderstorms and hail (the third-highest tally for the question), with two respondents indicating that thunderstorm was the hazard that concerned them the most. The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

Table 2.2.10.7

Severe Thunderstorms & Hail Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	There have been 430 severe thunderstorm or hail incidents in Columbiana County since 1969, for an average of 7.96 per year.
Response	2	One day	For most incidents, response operations occur over the course of the day that the front moves through the area.
Onset	1	Over 24 hours	Though specific conditions as to the severity of incidents are not available as the system advances, severe thunderstorm incidents can be forecasted.
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term *catastrophic* sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by the front causing severe thunderstorms or hail to occur.
Business	1	Less than 24 hours	Businesses may temporarily close in response to a severe thunderstorm or hail event, but they would not likely remain closed for more than a partial day.
Human	2	Low (some injuries)	Significant injuries or deaths could occur from severe thunderstorms; however, historical data reports two injuries and zero deaths.
Property	1	Less than 10% of property affected	Historical data reports $4,330,250 in property damages from severe thunderstorms and hail. Though this number is significant, it represents 0.10% of the estimated value of the housing stock in the county.
Totals	**16**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. Severe thunderstorms and hail (and lightning), though, are hazards for which it is difficult to identify jurisdictions more or less at risk. There are few, if any, major features in Columbiana County (even including the Ohio River) that would alter risks for thunderstorms or hail. When consulting resources such as FEMA's National Risk Index (2023), there is only marginal fluctuation amongst the Census tracks in the county for hail and lightning. As such, there is no image identifying jurisdictional fluctuation because all participating jurisdictions are assumed to be at similar risk of severe thunderstorms and hail.

2.2.11 Severe Wind & Tornado

Straight-line winds (i.e., derechos, downbursts, macrobursts, microbursts, and gust fronts) are all part of severe wind events. A tornado is a violently rotating column of air extending from a thunderstorm to the ground.				
Risk  	**Period of Occurrence:**	At any time, typically when warm and cold air masses are present together.	**Risk Ranking:**	Severe Wind – Low Tornado – Medium
	Warning Time:	Less than 6 hours	**Type of Hazard:**	Natural
	Probability:	Frequent (Will occur on an annual basis)	**Impact:**	Catastrophic (> 50% of land area affected)
	Disaster Declarations:	DR-4447-OH (2019) DR-1484-OH (2003) DR-738-OH (1985)		

Hazard Overview

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

- Straight-line Wind: Straight-line wind is a term used to define any thunderstorm wind not associated with rotation, used mainly to differentiate from tornadic winds.
- Downburst: Downburst is the general term for all localized strong wind events caused by a strong downdraft within a thunderstorm.
- Macroburst: An outward burst of strong winds at or near the surface with a diameter larger than 2.5 miles that occurs when a strong downdraft reaches the surface.
- Microburst: A small, concentrated downburst that produces an outward burst of strong winds near the surface. Microbursts are small and short-lived, with a diameter less than 2.5 miles and lasting only 5-10 minutes.
- Gust Front: The leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. It is characterized by a wind shift, temperature drop, and gusty winds ahead of a thunderstorm.
- Derecho: A widespread, long-lived windstorm associated with a band of rapidly moving showers or thunderstorms. A typical derecho consists of numerous microbursts and downbursts. An event with wind speeds of at least 58 mph and a diameter of 240 miles is a derecho.

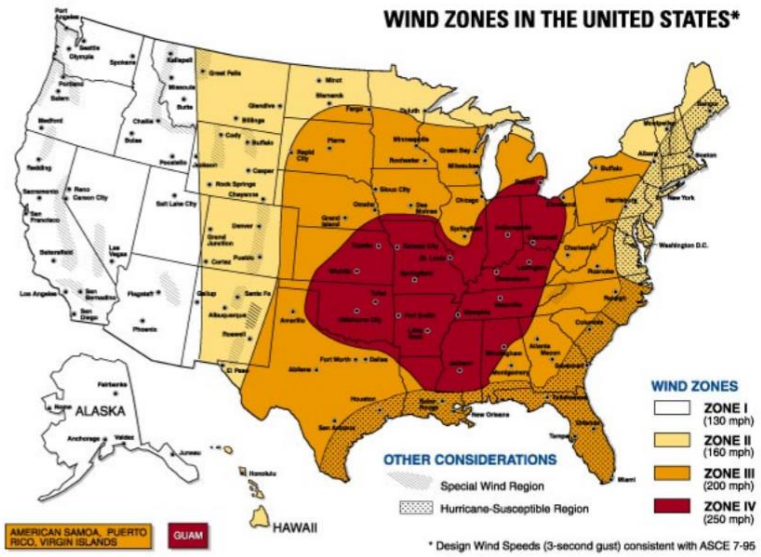
A tornado is a violently rotating column of air extending from a thunderstorm to the ground. Because wind is invisible, it is hard to see tornadoes unless they form a condensation funnel made of water droplets, dust, and debris. Tornadoes originate from rotating thunderstorms called "supercells" or from Quasi-Linear Convective Systems (QLCS). Normally, thunderstorms and associated tornadoes develop in warm, moist air in advance of strong eastward-moving cold fronts in late winter and early spring when warm, humid air collides with cold, dry air. Tornadoes can also occur along a "dryline" which separates very warm, moist air to the east from hot, dry air to the west.

The key atmospheric ingredient for tornado formation is instability, or warm moist air near the ground and cooler dry air higher in the atmosphere, and wind shear. An unstable air mass promotes the development of strong updrafts and promotes the rotation from which tornadoes spawn. Tornadoes can have wind speeds up to 250 miles per hour and a width of approximately 660 feet. They occur in the U.S. more than anywhere else in the world.

Location and Extent

Severe wind events are commonplace phenomenon across the globe. Wind events can impact several jurisdictions at the same time, with varying duration and severity.

Figure 2.2.11.a



The United States experiences approximately 1,200 tornadoes each year, most of which occur east of the Rocky Mountains. Tornado season in the U.S. varies by location, with southern states experiencing peak tornado season from May to June, while the Midwest's peak is from June to July. Though these are typical times tornadoes are more likely to occur, any thunderstorm can potentially produce a tornado.

FEMA's wind zone map of the United States designates wind zones to ensure new construction can withstand winds appropriately. According to the wind zone map (Figure 2.2.11.a above), Columbiana County is located in Zone III, so structures in this area should withstand 3-second gusts of up to 200 miles per hour. 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 largest tornado to occur in Columbiana County was an F3, approximately 250 yards wide, and is still the longest track tornado remaining on the ground for 7.3 miles.

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.

The Beaufort Wind Scale measures wind. This scale characterizes wind using a 0-12 metric based on observation rather than exact measurements. Table 2.2.11.1below outlines the scale in detail.

Table 2.2.11.1

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

Beaufort Wind Scale					
Force	*Wind Speed*		*Description*	*Appearance of Wind Effects*	
	Knots	*MPH*		*On Water*	*On Land*
11	56-63	64-72	Violent Storm	Exceptionally high (37-52 ft.) waves, foam patches cover sea, visibility more reduced	N/A
12	64+	72+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	N/A

Officials also utilize the Enhanced Fujita (EF) Scale to classify tornadoes. This scale uses a rating system based on wind speeds and related damages. The EF scale was adapted from the original Fujita Scale designed by Dr. Theodore Fujita to better estimate wind and storm damage. Table 2.2.11.2 below describes the EF Scale.

Table 2.2.11.2

Enhanced Fujita (EF) Tornado Scale		
EF Rating	*3-second Gust Speed (mph)*	*Possible Damage*
0	**65-85**	**Light Damage.** Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to signboards.
1	**86-110**	**Moderate Damage.** Surface peeled off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
2	**111-135**	**Considerable Damage**. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
3	**136-165**	**Severe Damage**. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off the ground and thrown.
4	**166-200**	**Devastating Damage**. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
5	**201+**	**Incredible Damage**. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly through the air more than 100-yards; trees debarked; incredible phenomena will occur.

The original Fujita Scale is provided below as 70% of the documented tornadoes that have occurred in Columbiana County were measured by utilizing this scale.

Table 2.2.11.3

Fujita Tornado Scale		
Scale	*Wind Estimate (MPH)*	*Typical Damage*
F0	**< 73**	**Light Damage**. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	**73 – 112**	**Moderate Damage**. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	**113 – 157**	**Considerable Damage**. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-objects missiles generated; cares lifted off ground.
F3	**158 – 206**	**Severe Damage**. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.
F4	**207 – 260**	**Devastating Damage**. Wall-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	**261 – 318**	**Incredible Damage**. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 109 yards; trees debarked; incredible phenomena will occur.

Impacts and Vulnerability

Windstorms have the potential to cause significant damage to all residential and agricultural areas in Columbiana County. Residential areas could experience structural damage, including lost roofing, siding, and broken garage doors. Mobile homes are especially at-risk during wind events, as even anchored homes can suffer damage with wind gusts over 80 miles per hour (69 knots).

Severe wind events can cause a variety of secondary and tertiary hazard events. In addition to damaging roofs and other home finishings, wind can cause damage to trees that may interrupt power service or block roadways. Such damages could be widespread and severe, potentially overwhelming the capacity of local responders to address the situation.

While tornadoes are typically short-lived, they are intensely focused and destructive. Tornadoes are the most violent of all atmospheric storms. Damage from tornadoes comes from the strong winds they contain. Wind speed in tornadoes can reach 300 miles per hour; winds at that speed can destroy homes, uproot trees, cause automobiles to become airborne, and turn glass and debris into high-velocity projectiles. Secondary and tertiary impacts from tornadoes include damage to roofs and other home finishings. Additionally, fallen trees can interrupt power service or block transportation access.

Most injuries and fatalities resulting from tornadoes occur due to the victim being struck by solid objects that become airborne, or from a structure collapse. The most common injuries include lacerations, fractures, blunt trauma, and head injuries. Most fatalities occur at the scene and result from trauma such as head, spine, and crushing injuries (Wier, 2000). Many injuries can occur during cleanup efforts following the storm, as inexperienced people use equipment such as chainsaws or electrical tools in standing water. Populations residing in mobile home parks should take particular care to seek adequate shelter with approaching severe weather.

Columbiana County has endured an F3 tornado in the past. An F3 tornado is considered a severe tornado with wind speeds ranging from 158 to 206 mph, and these types of tornadoes 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; structures with weak foundations can be badly damaged. Localized geographic conditions can exacerbate the damages from high winds and cause increases in wind intensity.

Individuals who lack shelter during a tornado or wind event are highly vulnerable. The homeless population and those who may be traveling by vehicle or on foot when an event occurs are at greater risk for injury or death. Those in vehicles are at risk of flying debris, other vehicles being pushed into lanes of traffic, falling trees and utility poles and vehicle such as SUVs, and vehicles pulling trailers are at a high risk of being pushed or flipped over by winds (defensivedriving.com, 2014). The homeless population is at risk as notification methods used for other populations such as radio, television, and service providers, may not be applicable. They also face a lack of transportation and the inability to evacuate an area without assistance (Edgington, 2009).

The ICC 500-2020 is a standard developed by the International Code Council (ICC) and the National Storm Shelter Association (NSSA) that provides requirements for the design and construction of storm shelters. The standard is based on principles that include protecting public safety and health, not increasing construction costs, and not favoring certain materials or methods of construction. According to the standard tornado storm shelters should be designed and constructed to wind stand wind speeds up to 200 mph.

Social Vulnerability Considerations

Social vulnerability variables most pertinent to severe wind events and tornadoes include the ability of individuals to receive and comprehend warnings, their ability to evacuate, as well as those living in mobile homes. The National Weather Service suggests that mobile home residents

are 15 to 20 times *more likely to be killed* by a tornado that strikes the home in comparison to those in stick-built structures. “On average, a total of 72% of all tornado-related fatalities are in homes and 54% of those fatalities include individuals living in mobile homes” (NWS, n.d.). An EF1 tornado, as well as high-end severe thunderstorm winds can severely damage or destroy mobile homes. Figure 2.2.11.b below is a map that illustrates the distribution of mobile homes throughout Columbiana County.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.11.b: SVI Considerations (Mobile Homes)

Data Source(s):
CDC ATSDR (2020)

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

20 to 24% of Housing Units are Mobile Homes

Greater than 25% of Housing Units are Mobile Homes



Previous Occurrences

The National Centers for Environmental Information's Storm Events Database maintains records of tornadoes since 1950, as well as historical occurrences of severs wind events. There have been 18 tornado events in Columbiana County over the past 70 years. Most tornadoes are classified as weak tornadoes, which are those that last for just a few minutes and have wind speeds of less than 100 miles per hour. This has historically held true in Columbiana County as nearly 78% of the tornadoes that have occurred were rated F0 or F1. The average path of these tornadoes was 3.2 miles, with an average width of 115 yards. The magnitude of the tornadoes ranged from EF0 to F3, resulting in 27 injuries and no fatalities. Reported property damage totaled $28,944,750.

Columbiana County has experienced numerous severe wind events. There have been 17 reported severe wind events classified as either high winds or strong winds, since 2002. These severe wind events have resulted $1,373,000 in property damage.

Table 2.2.11.4

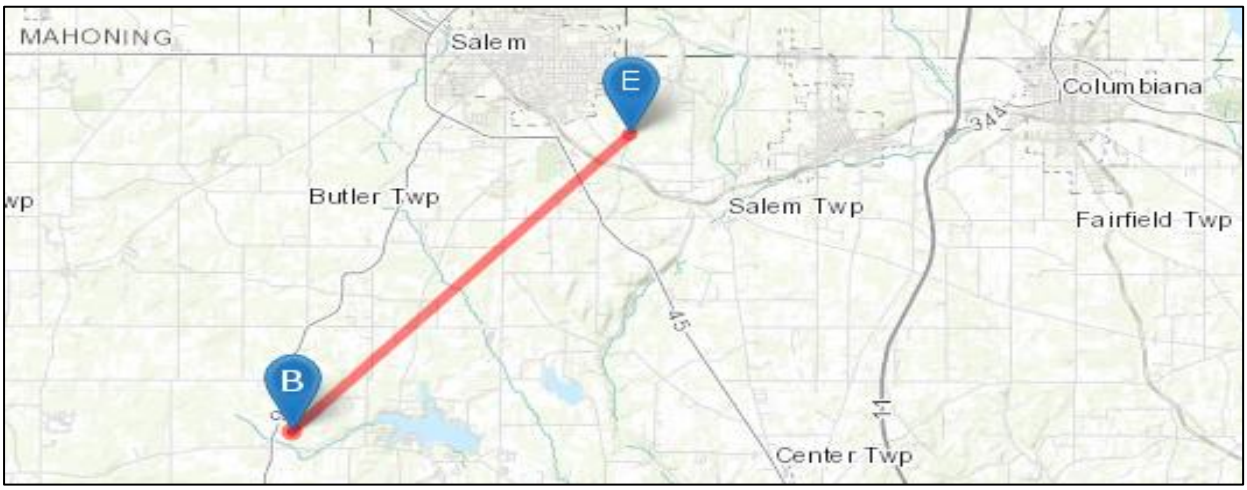
Historical Severe Wind & Tornado Occurrences – Columbiana County							
Location	*Date*	*Event Type*	*Magnitude*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
Columbiana County	3/11/1955	Tornado	F2	0	0	$250,000	$0
Columbiana County	6/13/1967	Tornado	F1	0	0	$2,500	$0
Columbiana County	7/24/1967	Tornado	F2	0	2	$250,000	$0
Columbiana County	6/3/1973	Tornado	F1	0	0	$250	$0
Columbiana County	7/26/1973	Tornado	F1	0	1	$25,000	$0
Columbiana County	10/12/1978	Tornado	F3	0	4	$2,500,000	$0
Columbiana County	6/21/1981	Tornado	F0	0	0	$2,500	$0
Columbiana County	5/31/1985	Tornado	F2	0	20	$25,000,000	$0
Columbiana County	8/9/1987	Tornado	F1	0	0	$25,000	$0
Columbiana County	7/22/1990	Tornado	F0	0	0	$25,000	$0
Columbiana County	7/12/1992	Tornado	F0	0	0	$2,500	$0
Columbiana County	9/21/1992	Tornado	F1	0	0	$250,000	$0
Lacroft	4/15/1993	Tornado	F0	0	0	$500,000	$0
Lisbon	6/21/1995	Tornado	F0	0	0	$2,500	$0
Summitville	7/23/2013	Tornado	EF0	0	0	$5,000	$0
Calcutta	11/5/2017	Tornado	EF1	0	0	$10,000	$0
Glenmoor	4/7/2020	Tornado	EF1	0	0	$0	$0
Union Ridge	4/7/2020	Tornado	EF0	0	0	$0	$0
Hanoverton	6/10/2020	Tornado	EF0	0	0	$50,000	$0
Washingtonville	6/10/2020	Tornado	EF0	0	0	$20,000	$0
			TORNADO TOTAL:	**0**	**27**	**$28,944,750**	**$0**
Columbiana	10/29/2012	Strong Wind	35 kts	0	0	$10,000	$0
Columbiana	12/24/2014	Strong Wind	39 kts	0	0	$2,000	$0
Columbiana	12/23/2022	Strong Wind	40 kts	0	0	$0	$0
Columbiana	12/12/2000	High Wind	52 kts	0	0	$50,000	$0
Columbiana	3/9/2002	High Wind	N/A	0	0	$10,000	$0

Historical Severe Wind & Tornado Occurrences – Columbiana County							
Location	*Date*	*Event Type*	*Magnitude*	*Deaths*	*Injuries*	*Property Damage*	*Crop Damage*
Columbiana	2/12/2003	High Wind	55 kts	0	0	$1,000	$0
Columbiana	3/5/2004	High Wind	50 kts	0	0	$0	$0
Columbiana	12/1/2006	High Wind	55 kts	0	0	$30,000	$0
Columbiana	1/9/2008	High Wind	50 kts	0	0	$35,000	$0
Columbiana	1/30/2008	High Wind	50 kts	0	0	$50,000	$0
Columbiana	9/14/2008	High Wind	50 kts	0	0	$1,000,000	$0
Columbiana	2/12/2009	High Wind	50 kts	0	0	$100,000	$0
Columbiana	12/9/2009	High Wind	50 kts	0	0	$0	$
Columbiana	4/28/2011	High Wind	50 kts	0	0	$75,000	$
Columbiana	2/24/2019	High Wind	50 kts	0	0	$0	$
Columbiana	3/26/2021	High Wind	50 kts	0	0	$10,000	$
Columbiana	3/25/2023	High Wind	50 kts	0	0	$0	$0
SEVERE WIND TOTAL:				**0**	**0**	**$1,373,000**	**$0**

North-Central Columbiana County F3 Tornado, October 1978

On October 12, 1978, an F3 tornado approximately 250 yards wide passed through northcentral Columbiana County. The tornado remained on the ground for approximately seven miles before lifting southeast of Salem. This tornado resulted in approximately $2,500,000 in reported property damages.

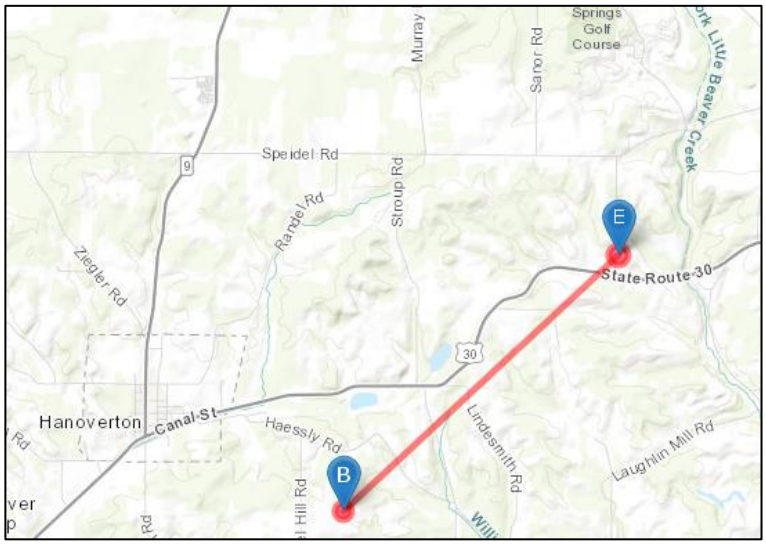
Figure 2.2.11.c



Hanoverton EF0 Tornado, June 2020

On June 10, 2020, an EF0 tornado approximately 150 yards wide passed through Hanoverton. The tornado was on the ground for nearly 2.5 miles. Damages were reported along a discontinuous path that began in an open area southeast of Hanoverton and continued to Richey School Road and Route 30. Concentrated areas of damage were located along Lindesmith Road, where a farmstead was impacted, two 3,000 pound hay wagons were relocated upwind from their prior location, and several trees were snapped off and uprooted. Maximum winds along the path of the tornado were estimated at 75 mph. This tornado resulted in approximately $50,000 in reported property damages.

Figure 2.2.11.d



Countywide Strong Wind, October 2012

The remnants of Hurricane Sandy brought a variety of weather impacts to eastern Ohio as the storm made landfall and interacted with a cold front over the region. Heavy rain and strong winds combined to cause downed trees and powerlines. Reported damages from this wind event in Columbiana County were $10,000.

Countywide High Wind, February 2019

A cold front rushed across the region during the late morning hours, bringing a prolonged period of damaging wind gusts. A very tight pressure gradient allowed for the efficient downward transport of strong wind aloft generating an extended period of 40 to 60 mph wind gusts. There were widespread reports of downed trees, power lines, and structural damage across the entire region. There were approximately 200,000 power outages reported in Ohio. Full restoration took multiple days due to the extent of the damage and unsafe working conditions due to ongoing strong winds. A trained spotter reported several large trees down three miles west of Lisbon and multiple trees blown down and power poles snapped near Hanoverton.

By examining those areas with high concentrations of mobile homes (per the discussion above), local officials can strategically consider the placement of designated tornado shelters, the selection of facilities to serve as weather shelters, etc. Though there is a need for adequate sheltering options in all areas of the county, those areas with higher number of mobile homes may need those options more. The following map compares the location of historical tornado events with the Census tracts with the highest percentage of mobile homes.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

Figure 2.2.11.e: Tornadoes & Mobile Home Density

Data Source(s):
CDC ATSDR (2020), NOAA NCEI

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

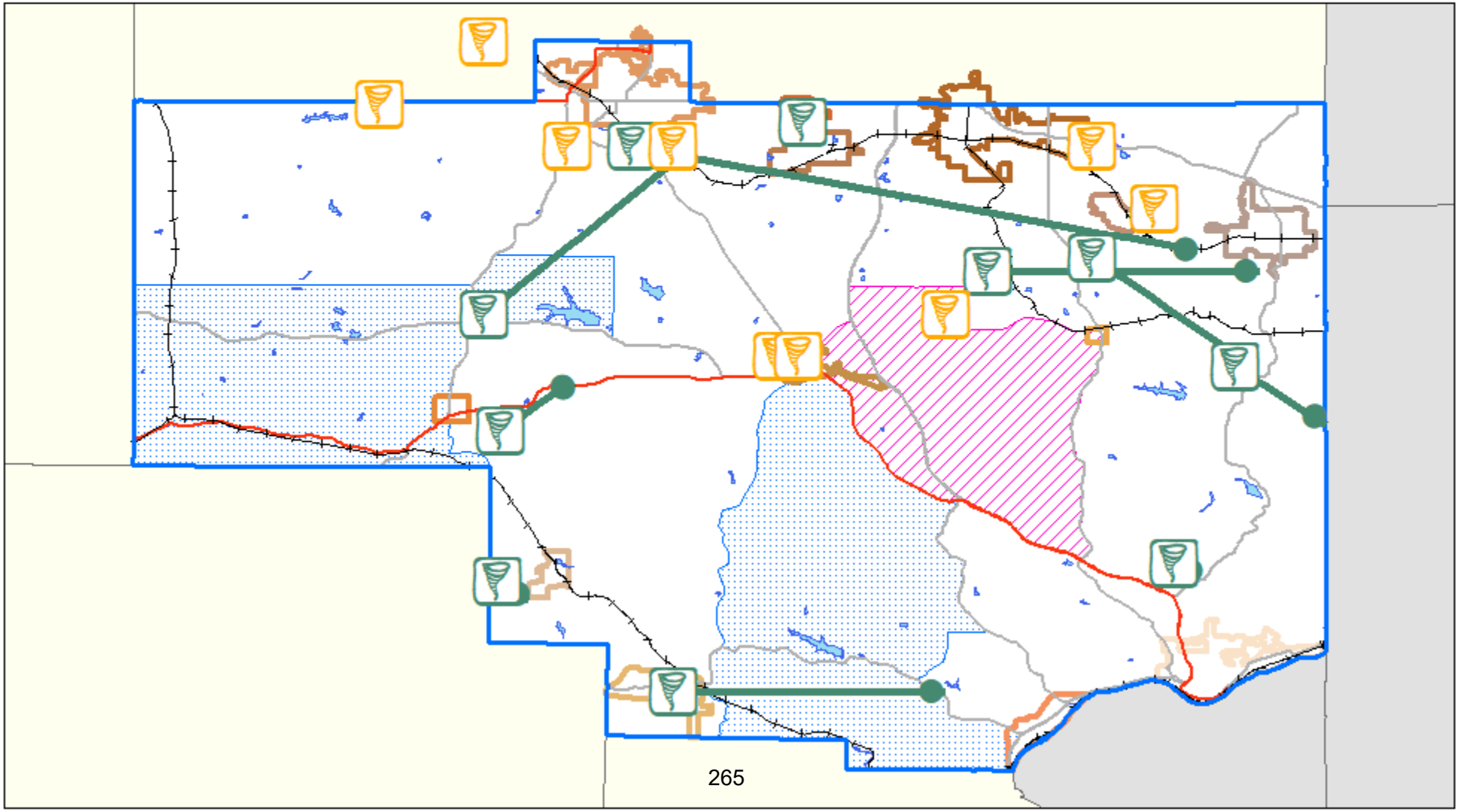
Tornado Touchdowns

Tornado Paths

20 to 24% of Housing Units are Mobile Homes

Greater than 25% of Housing Units are Mobile Homes





Loss and Damages

Since 1955, a total of 18 tornadoes have resulted in 27 injuries and $28,944,750 in reported property damage, for an average of $1,608,042 per event or $419,489 per year. There have also been 17 reported severe wind events since 2012, which have resulted in $1,373,000 in property damage. This creates an average of $80,765 per event or $114,417 per year in reported property damage.

These historical figures, while valuable, may not adequately express potential loss from future events. Information from FEMA's National Risk Index (2023) estimates "expected annual loss" from strong winds and tornadoes, as shown in the tables below.

Table 2.2.11.5

Columbiana County Strong Wind NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$1,092,786,377	5,502	$8,459,036	$9,035	$1,895	$177	$11,107
39029950200	$1,101,451,018	4,588	$2,079,560	$9,526	$1,651	$44	$11,221
39029950300	$1,095,100,868	5,055	$3,921,349	$9,956	$1,928	$89	$11,973
39029950400	$1,014,647,687	4,205	$11,199,393	$9,134	$1,573	$256	$10,963
39029950500	$1,445,560,835	5,965	$953,020	$13,299	$2,286	$22	$15,608
39029950600	$799,781,046	4,860	$231,217	$7,358	$1,863	$5	$9,226
39029950700	$1,044,895,204	5,174	$539,719	$9,613	$1,983	$13	$11,609
39029950800	$941,896,273	4,429	$12,272,178	$8,665	$1,698	$286	$10,649
39029950900	$1,003,799,322	3,655	$13,161,720	$9,235	$1,401	$307	$10,942
39029951000	$1,308,621,285	5,618	$18,589,584	$12,039	$2,153	$433	$14,626
39029951100	$957,240,926	4,502	$4,598,937	$8,807	$1,725	$107	$10,639
39029951200	$985,122,245	4,154	$17,145,512	$8,906	$1,545	$397	$10,848
39029951300	$769,163,744	3,593	$9,373,538	$6,654	$1,283	$207	$8,144
39029951401	$460,325,235	2,119	$3,914,169	$3,806	$730	$82	$4,618
39029951402	$647,807,959	4,997	$6,816,061	$5,571	$1,759	$147	$7,477
39029951500	$804,484,564	4,627	$1,137,236	$6,652	$1,594	$24	$8,269
39029951600	$1,213,669,268	5,398	$4,185,929	$10,035	$1,859	$88	$11,982
39029951700	$776,977,175	4,775	$2,409,441	$6,423	$1,645	$50	$8,118
39029951800	$561,046,056	2,842	$0	$4,455	$938	$0	$5,393
39029951900	$461,347,089	3,332	$72,652	$3,814	$1,148	$2	$4,964
39029952000	$531,175,420	2,702	$9,744	$4,392	$931	$0	$5,323
39029952100	$535,516,515	1,382	$0	$4,428	$476	$0	$4,904
39029952200	$670,667,180	1,772	$2,282	$5,545	$610	$0	$6,156
39029952300	$344,260,598	2,703	$222	$2,846	$931	$0	$3,777
39029952400	$625,997,395	3,923	$1,282,765	$5,176	$1,351	$27	$6,554
Grand Total	**$21,193,341,284**	**101,872**	**$122,355,264**	**$185,369**	**$36,955**	**$2,763**	**$225,088**

Table 2.2.11.6

Columbiana County Tornado NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$1,092,786,377	5,502	$8,459,036	$52,878	$53,088	$148	$106,114
39029950200	$1,101,451,018	4,588	$2,079,560	$53,442	$44,315	$36	$97,793
39029950300	$1,095,100,868	5,055	$3,921,349	$53,307	$48,901	$69	$102,277
39029950400	$1,014,647,687	4,205	$11,199,393	$49,359	$40,657	$201	$90,217
39029950500	$1,445,560,835	5,965	$953,020	$70,419	$57,709	$17	$128,145
39029950600	$799,781,046	4,860	$231,217	$38,959	$47,018	$4	$85,981
39029950700	$1,044,895,204	5,174	$539,719	$50,899	$50,056	$9	$100,964
39029950800	$941,896,273	4,429	$12,272,178	$45,883	$42,849	$216	$88,948
39029950900	$1,003,799,322	3,655	$13,161,720	$48,898	$35,360	$233	$84,491
39029951000	$1,308,621,285	5,618	$18,589,584	$63,752	$54,353	$332	$118,437
39029951100	$957,240,926	4,502	$4,598,937	$46,633	$43,555	$83	$90,271
39029951200	$985,122,245	4,154	$17,145,512	$45,833	$35,850	$313	$81,996
39029951300	$769,163,744	3,593	$9,373,538	$35,565	$31,782	$178	$67,525
39029951401	$460,325,235	2,119	$3,914,169	$22,276	$20,447	$70	$42,793
39029951402	$647,807,959	4,997	$6,816,061	$31,421	$48,240	$129	$79,790
39029951500	$804,484,564	4,627	$1,137,236	$38,927	$44,645	$20	$83,593
39029951600	$1,213,669,268	5,398	$4,185,929	$58,727	$52,085	$81	$110,892
39029951700	$776,977,175	4,775	$2,409,441	$37,581	$46,066	$45	$83,693
39029951800	$561,046,056	2,842	$0	$23,420	$22,217	$0	$45,637
39029951900	$461,347,089	3,332	$72,652	$22,324	$32,150	$1	$54,476
39029952000	$531,175,420	2,702	$9,744	$25,702	$26,071	$0	$51,773
39029952100	$535,516,515	1,382	$0	$25,912	$13,335	$0	$39,246
39029952200	$670,667,180	1,772	$2,282	$32,451	$17,098	$0	$49,549
39029952300	$344,260,598	2,703	$222	$16,658	$26,081	$0	$42,738
39029952400	$625,997,395	3,923	$1,282,765	$30,290	$37,852	$25	$68,167
Grand Total	**$21,193,341,284**	**101,872**	**$122,355,264**	**$1,021,515**	**$971,780**	**$2,212**	**$1,995,507**

Future Occurrences

Future wind and tornado events will affect areas of Columbiana County differently. The agricultural industry would be heavily affected. Fruit, fruit trees, and crops are vulnerable to the effects of windstorms and tornadoes. Residential sections would likely experience structure, tree, and utility damage.

The Intergovernmental Panel on Climate Change (IPCC) suggests that severe weather in Ohio may increase in frequency and intensity (n.d.), and this weather could result in an uptick in tornado occurrences. National Geographic (n.d.) notes the lack of long-term trends in the frequency of tornadoes. Still, there is an apparent recent geographic shift in tornado patterns. The number of tornadoes in the traditional "Tornado Alley" is falling while increasing in Mississippi, Alabama, Arkansas, Missouri, Illinois, Indiana, Tennessee, and Kentucky. Though this data does not mention Ohio specifically, they suggest that hot spots for tornadic activity are not always static.

Risk Assessment

This section summarizes the vulnerability of the county to severe wind and tornadoes. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. Table 2.2.11.7 presents the results of that survey, specifically regarding severe wind and tornadoes.

Table 2.2.11.7

Public Sentiment, Severe Wind & Tornado					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Severe Wind & Tornado	3 (4.8%)	14 (22.6%)	28 (45.2%)	17 (27.4%)	62
In the past five years, do you remember this hazard occurring in your community?				40	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 96 (55.49%) indicated being concerned about severe wind and tornadoes, with 39 respondents indicating that wind and tornado was the hazard that concerned them the most. The severe wind and tornado category received the highest responses of the hazard-related questions on the condensed survey. Tables 2.2.11.8 and 2.2.11.9 below assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

Table 2.2.11.8

Severe Wind Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	4	Likely to occur in a year	Columbiana County has experienced 17 severe wind incidents since 2002, for an average of 0.78 incidents per annum.
Response	3	One week	Most response operations will occur within the 24-hour range of the storm's arrival; however, clean-up operations may take several days (or weeks). Planners used "One week" as a planning average.
Onset	1	Over 24 hours	Though specific conditions as to the severity of incidents are not available as the system advances, severe wind incidents can be forecasted.

Severe Wind Risk Ranking			
Category	*Points*	*Description*	*Notes*
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term *catastrophic* sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by the front causing severe wind to occur. As with the onset category, planners selected the largest plausible impact within the "severe wind" category.
Business	1	Less than 24 hours	Most businesses do not close for more than 24 hours for a windstorm.
Human	1	Minimum (minor injuries)	Historical data indicates no injuries or deaths from severe wind.
Property	1	Less than 10% of property affected	Historical data reports $1,373,000 in property damage from severe winds. Though this number is significant, it represents 0.02% of the estimated value of the housing stock in the county.
Totals	**15**	**Low**	

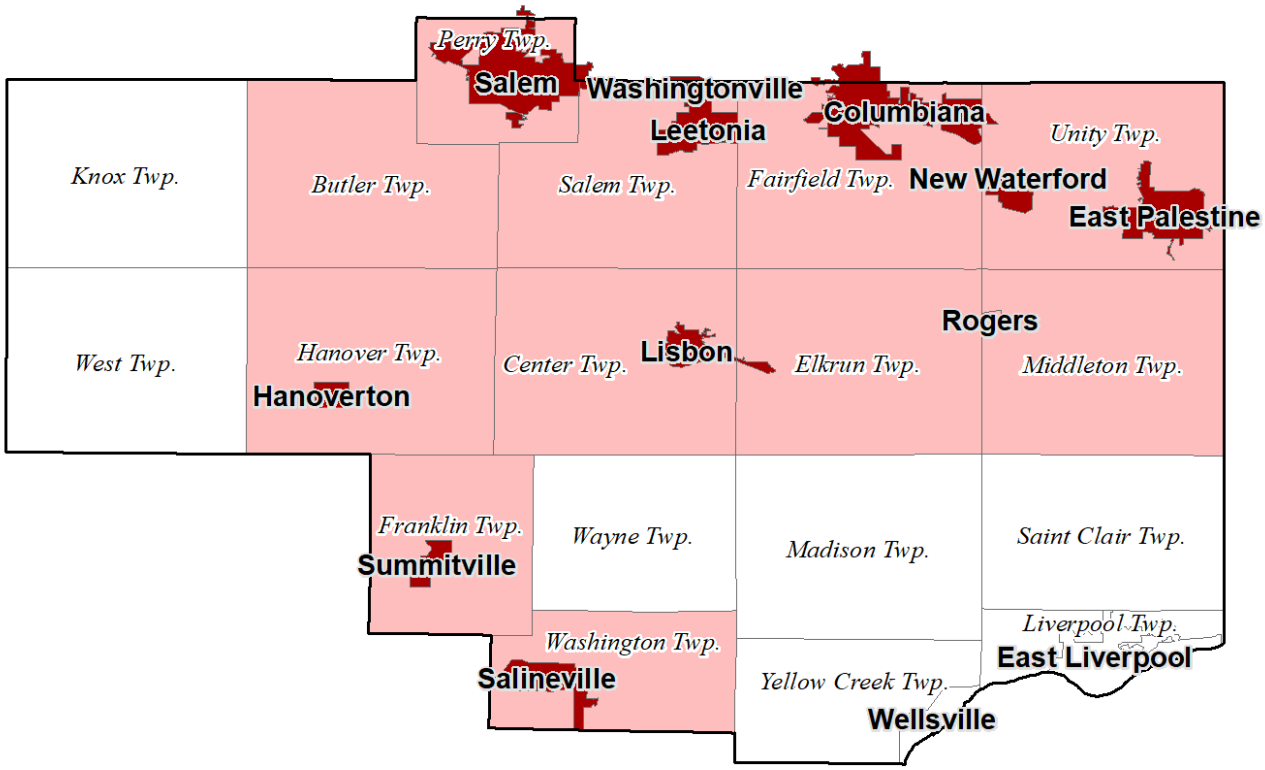
Table 2.2.11.9

Tornado Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	3	May (or may not) occur in a year	Columbiana County has experienced 18 severe wind/tornado incidents since 1955, for an average of 0.26 incidents per annum.
Response	3	One week	Most response operations will occur within the 24-hour range of the storm's arrival; however, clean-up operations may take several days (or weeks). As with severe wind, planners used "One week" as a planning average.
Onset	4	Less than 6 hours	Though the conditions that could produce a tornado (the most destructive of severe wind hazards) can be forecasted in advance, advance notice of a tornado's occurrence is far less than six hours.
Magnitude	1	Localized (less than 10% of land area affected)	Though tornadoes can be incredibly destructive in their paths, these paths comprise less than 10% of the county's total land area.
Business	2	One week	If a business is in the path of a significant tornado, it may experience an extended closure. However, historical tornadoes have been of a magnitude such that structure damage would be minimal. Planners used "One week" as a planning average.
Human	2	Low (some injuries)	Tornadoes can cause injuries and death. Historical data indicates 27 injuries and zero deaths.

Tornado Risk Ranking			
Category	*Points*	*Description*	*Notes*
Property	1	Less than 10% of property affected	Historical data reports $28,944,750 in property damage from tornadoes. Though this number is significant, it represents 0.45% of the estimated value of the housing stock in the county.
Totals	**16**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map (Figure 2.2.11.f) identifies those multi-jurisdictional risks for severe wind and tornadoes. The jurisdictions labeled in white are not more or less at risk of severe wind and tornadoes (based largely on historical occurrences). Those in red are more at risk; those in green are less at risk.

Figure 2.2.11.f



2.2.12 Winter Storm

Severe winter storms include blizzards, heavy snow fall, blowing snow, ice storms, and dangerous wind chills that could threaten life or property.				
Risk HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	Typically occur from November through March.	**Risk Ranking:**	Medium
	Warning Time:	12-24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur on an annual basis	**Impact:**	More than 50% of land area affected
	Disaster Declarations:	EM-3055-OH (1978) EM-3029-OH (1977)		

Hazard Overview

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

- A **winter storm** is a combination of heavy snow, blowing snow, and dangerous wind chills.
- **Heavy snow** refers to snowfall accumulating to 4" or more in 12 hours or less, or snowfall accumulating to 6" or more in 24 hours or less.
- A **blizzard** is a dangerous winter storm that is a combination of blowing snow and wind and results in very low visibility. Heavy snowfall and severe cold usually accompany blizzards, but not always. Sometimes strong winds can pick up fallen snow, creating a ground blizzard. Blizzards are winter storms which produce the following conditions for three hours or longer: (a) sustained winds or frequent gusts 30 knots (35 mph) or greater, and (b) falling and/or blowing snow reducing visibility frequently to less than ¼ mile, on a widespread or localized basis.
- An **ice storm** is a storm that results in the accumulation of at least 0.25" of ice on exposed surfaces. It can create hazardous driving and walking conditions, and tree branches and power lines can easily snap under the weight of the ice.

Table 2.2.12.1

Sperry-Piltz Ice Accumulation Index	
Ice Damage Index	*Damage and Impact Descriptions*
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1-5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5-10 days.
5	Catastrophic damage to entire exposed utility system, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

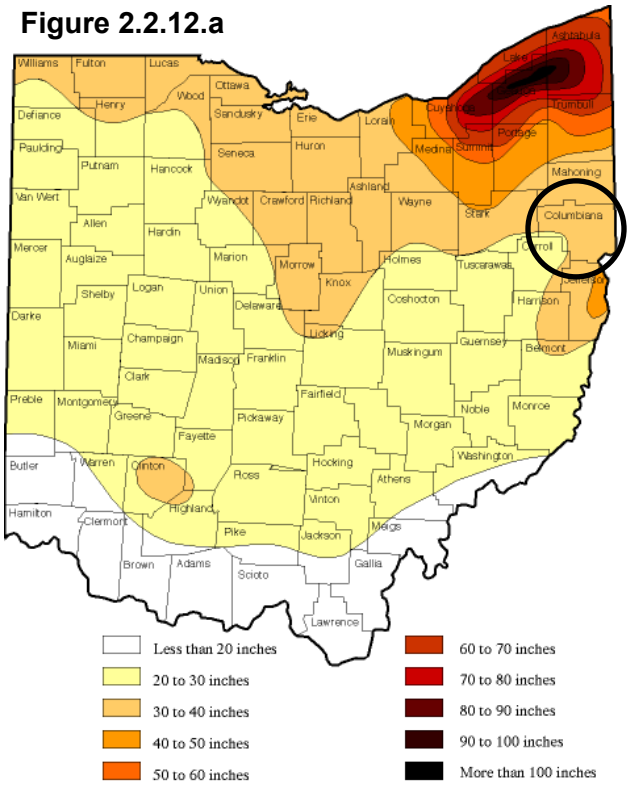
Just like with other storms, the right combination of ingredients is necessary for a winter storm to develop. The three key components of a winter storm are cold air, lift, and moisture.

Location and Extent

The majority of Columbiana County is equally susceptible to winter storms (i.e., blizzards, heavy snow fall, ice storms, and extreme cold temperatures); however, the southwestern corner of the county is less susceptible to heavy snow fall. The highest elevation in Columbiana County is located on Round Knob in Madison Township at 1,446 feet above sea level.

The image on the right, obtained from the Ohio Department of Transportation, illustrates that Columbiana County falls into two different snow fall categories. Most of the county receives less than 30 to 40 inches of snow annually, the southwestern corner of the county (i.e., portions of Hanover, Franklin, Washington, and West townships as well as

Figure 2.2.12.a



Source: Ohio Department of Transportation

the villages of Hanoverton, Salineville, and Summitville) receives 20 to 30 inches of snow annually.

A severe winter storm could affect the entire county at the same time, virtually bringing all county operations to a standstill. This type of hazard creates a difficult emergency response effort; adverse road conditions can impede or prohibit all vehicle movement, including emergency response vehicles. Winter weather affects several jurisdictions simultaneously, yet with varying severity and duration. There is no widely used scale to classify snowstorms, but Paul Kocin and Louis Uccellini from the National Weather Service developed the Northeast Snowfall Impact Scale (NESIS). The NESIS characterizes and ranks high-impact Northeastern snowstorms from "notable" to "extreme." Significantly, the NESIS does not predict the impacts of a forecasted storm; instead, it is a mechanism for rating impacts after a storm occurs.

Table 2.2.12.2

Northeast Snowfall Impact Scale		
Category	*NESIS Value*	*Description*
1	1.0-2.499	Notable
2	2.5-3.99	Significant
3	4.0-5.99	Major
4	6.0-9.99	Crippling
5	10.0+	Extreme

Source: National Weather Service

Impacts and Vulnerability

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

Heavy snow can result in property damage from roof collapses, and extreme cold temperatures can cause waterlines to freeze and bust. Ice accumulation can topple power lines, utility poles, causing electrical power to be lost, which for 10,784 (26.1%) of Columbiana County's residents means a loss of a critical home heating source. The weight of snow load may lead to

roof collapse and/or minor structural damage. The most vulnerable structures to roof collapse include those with large-span roofs and those that are poorly built or are dilapidated. Approximately 12,705 (27.5%) of the residential structures in Columbiana County were constructed in 1939 or earlier (Ohio Development Services Agency, 2024). The resultant disruption in utility services can last several days. Even minimal ice accumulation can pose a serious threat to motorists and pedestrians. Bridges and overpasses are particularly dangerous, as they freeze before other surfaces.

Health hazards generated from severe winter storms include frostbite and hypothermia. Frostbite is a severe reaction to cold exposure that can permanently damage its victims. A loss of feeling and a white or pale appearance in the victim's fingers, toes, nose, and ear lobes are symptoms of frostbite. Hypothermia is a condition brought on when the body temperature drops to less than 55 degrees Fahrenheit. Symptoms of hypothermia include uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness, and exhaustion.

Carbon monoxide poisoning is also a concern. Whether due to a power failure or a heating system being inadequate to warm a structure the need to use a generator and/or fireplace increases the risk of carbon monoxide poisoning and structure fires (CDC, 2015).

Social Vulnerability Considerations

Infants and the elderly are the most susceptible to the cold and wet conditions of a winter storm. Conditions that may be uncomfortable or inconvenient to the general population can easily become life-threatening to them (NOAA, 2017). The homeless have a much higher risk than the general population of developing exposure-related conditions (nationalhomeless.org, 2010). The inability to provide adequate, dry clothing, shelter and heat accompanied by malnutrition, decreased body fat, underlying infection, lack of fitness and fatigue make homeless individuals much more vulnerable to winter storms (O'Connell, 2004).

Low-income individuals are more vulnerable as they are more likely to live in poorly insulated homes and may be unable to afford sufficient heating. These individuals may need to make tradeoffs between proper nutrition, medication, and proper heating expenditures (USGCRP, 2016).

Dugan, Byles, and Mohagheghi (2023) studied social vulnerability with respect to power outages, using a case study for Colorado. This study identified increased health risks, varying (often less) power outage preparedness, and variance in the willingness and means to evacuate amongst an array of socially vulnerable populations. The authors concluded that there is a need to identify these socially vulnerable groups for more targeted information, assistance, and

resource delivery. These findings are particularly relevant to severe winter weather since power outages are common cascading effects from winter storms, and sustained harsh winter weather conditions can make the work that restores power dangerous and difficult.

Previous Occurrences

Columbiana County has experienced 41 severe winter weather events since 1999. This rate is an average of 1.64 severe winter storm events per year. These events appear by category in the table below. There were no records of blizzards in the NCEI Storm Events Database for Columbiana County (NOAA NCEI, 2025).

Table 2.2.12.3

Historical Severe Winter Storm Occurrences								
ICE STORM (2004 to 2024)								
Total Events	*Areas Affected*	*Area w/ Most Events*	*Avg. Events / Year*		*Injuries*	*Fatalities*	*Damages*	
							Property	*Crop*
5	CW[1]	N/A	0.25		0	0	$2,000	$0
Most Ice Accumulation = Over 1/2 inches in 2011								
HEAVY SNOW (1999 to 2024)								
Total Events	*Areas Affected*	*Area w/ Most Events*	*Avg. Events / Year*	*Snow Depth*		*Injuries*	*Fatalities*	*Damages*	
				Avg.	*Highest*			*Property*	*Crop*
15	CW	N/A	0.60	8.5”	18”	0	0	$0	$0
Most heavy snow events in one year = 3 in 2003									
WINTER STORM (1999 to 2024)								
Total Events	*Areas Affected*	*Month w/ Most Events*	*Avg. Events / Year*		*Injuries*	*Fatalities*	*Damages*	
							Property	*Crop*
13	CW	January	0.52		0	3	$5,000	$0
Most winter storm events in one year = 3 in 1999								
WINTER WEATHER (2009 to 2024)								
Total Events	*Areas Affected*	*Month w/ Most Events*	*Avg. Events / Year*		*Injuries*	*Fatalities*	*Damages*	
							Property	*Crop*
8	CW	January	1.8		0	0	$0	$0
Most Winter Weather events in one year = 5 in 2020								
41	**CW**	**January**	**Avg. Events / Year = 1.64**		**0**	**3**	**$7,000**	**$0**

Countywide Ice Storm – January 31, 2011

As a surface low pressure system moved northeast across the Ohio Valley, initial precipitation ahead of the warm front began as light snow before changing to freezing rain. As the low-pressure system approached, a round of heavy precipitation moved over the region with counites north of I-80 changing from snow to freezing rain. Ice accumulations ranged from one quarter (1/4”) to more than one half inch (1/2”) over eastern Ohio. The weight of the ice caused

downed trees and power outages through Carroll, Columbiana, Tuscarawas and Mercer Counties.

Countywide Heavy Snow – February 5, 2010

A large area of low pressure moved across the Ohio Valley producing a historic snowstorm across portions of western Pennsylvania, northern West Virginia, and eastern Ohio. North of Interstate 70, in eastern Ohio, snowfall ranged from 12 to 18 inches. The snow was wet and heavy, bringing down trees and power lines, resulting in several thousands of customers being without electricity for three days. Roads were not passable for two to three days in some locations.

Countywide Winter Storm – November 22, 2014

An upper-level system moved over the Ohio Valley bringing light freezing rain to the area; it resulted in a glazing of ice on untreated surfaces over portions of eastern Ohio. Numerous traffic accidents were reported across the advisory area, including a head-on collision between a car and a school bus in Columbiana County. Three teenagers were killed in this accident; the bus driver sustained minor injuries and no other students on the bus were hurt.

Loss and Damages

Severe winter storms can impact all areas and jurisdictions of Columbiana County and are typically widespread events. Information obtained from FEMA's National Risk Index (2023) was utilized to assess severe winter weather impacts (i.e., ice storms & winter weather) for each participating jurisdiction (see tables below).

Table 2.2.12.4

Columbiana County Ice Storm NRI Exposure / Expected Annual Loss Estimates					
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Expected Annual Loss (Buildings)*	*Expected Annual Loss (Pop. Equivalence)*	*Expected Annual Loss (Total)*
39029950100	$1,067,683,163	5,367	$17	$2,068	$2,085
39029950200	$1,101,451,018	4,588	$17	$1,728	$1,745
39029950300	$1,095,100,868	5,055	$16	$1,842	$1,858
39029950400	$1,001,877,835	4,149	$15	$1,529	$1,544
39029950500	$1,445,560,835	5,965	$21	$2,167	$2,188
39029950600	$799,781,046	4,860	$12	$1,766	$1,778
39029950700	$1,044,895,204	5,174	$15	$1,880	$1,895
39029950800	$941,896,273	4,429	$14	$1,609	$1,623
39029950900	$1,003,799,322	3,655	$15	$1,328	$1,343
39029951000	$1,307,402,955	5,614	$19	$2,040	$2,059

Columbiana County Ice Storm NRI Exposure / Expected Annual Loss Estimates					
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Expected Annual Loss (Buildings)*	*Expected Annual Loss (Pop. Equivalence)*	*Expected Annual Loss (Total)*
39029951100	$941,697,848	4,473	$14	$1,625	$1,639
39029951200	$974,975,298	4,120	$14	$1,365	$1,379
39029951300	$767,176,929	3,580	$12	$1,332	$1,344
39029951401	$460,325,235	2,119	$7	$817	$824
39029951402	$636,082,169	4,950	$10	$1,886	$1,896
39029951500	$804,484,564	4,627	$13	$1,783	$1,796
39029951600	$1,213,669,268	5,398	$19	$2,080	$2,099
39029951700	$735,766,013	4,536	$12	$1,748	$1,760
39029951800	$561,046,056	2,842	$9	$1,136	$1,145
39029951900	$460,788,593	3,327	$7	$1,282	$1,289
39029952000	$530,065,783	2,694	$8	$1,038	$1,046
39029952100	$535,516,515	1,382	$8	$533	$541
39029952200	$670,667,180	1,772	$10	$683	$693
39029952300	$344,260,598	2,703	$5	$1,042	$1,047
39029952400	$620,376,419	3,868	$10	$1,490	$1,500
Grand Total	**$21,066,346,987**	**101,247**	**$319**	**$37,797**	**$38,116**

Table 2.2.12.5

Columbiana County Winter Weather NRI Exposure / Expected Annual Loss Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Pop)*	*Exposure (Agriculture)*	*Exp. Annual Loss (Buildings)*	*Exp. Annual Loss (Pop. Equivalence)*	*Exp. Annual Loss (Ag)*	*Exp. Annual Loss (Total)*
39029950100	$1,092,786,377	5,502	$8,459,036	$45	$657	$21	$723
39029950200	$1,101,451,018	4,588	$2,079,560	$46	$548	$5	$599
39029950300	$1,095,100,868	5,055	$3,921,349	$46	$604	$10	$660
39029950400	$1,014,647,687	4,205	$11,199,393	$42	$502	$28	$572
39029950500	$1,445,560,835	5,965	$953,020	$60	$712	$2	$774
39029950600	$799,781,046	4,860	$231,217	$33	$580	$1	$614
39029950700	$1,044,895,204	5,174	$539,719	$43	$618	$1	$662
39029950800	$941,896,273	4,429	$12,272,178	$39	$529	$31	$599
39029950900	$1,003,799,322	3,655	$13,161,720	$42	$437	$33	$512
39029951000	$1,308,621,285	5,618	$18,589,584	$54	$671	$47	$722
39029951100	$957,240,926	4,502	$4,598,937	$40	$538	$12	$590
39029951200	$985,122,245	4,154	$11,940,114	$41	$496	$43	$580
39029951300	$769,163,744	3,593	$9,373,538	$32	$429	$24	$485
39029951401	$460,325,235	2,119	$3,914,169	$19	$253	$10	$282
39029951402	$647,807,959	4,997	$6,816,061	$27	$597	$17	$641
39029951500	$804,484,564	4,627	$1,137,236	$33	$553	$3	$589
39029951600	$1,213,669,268	5,398	$4,185,929	$50	$645	$11	$706
39029951700	$776,977,175	4,775	$2,409,441	$32	$570	$6	$608
39029951800	$561,046,056	2,842	$0	$23	$339	$0	$362
39029951900	$461,347,089	3,332	$72,652	$19	$398	$0	$417
39029952000	$531,175,420	2,702	$9,744	$22	$323	$0	$345
39029952100	$535,516,515	1,382	$0	$22	$165	$0	$187
39029952200	$670,667,180	1,772	$2,282	$28	$212	$0	$240
39029952300	$344,260,598	2,703	$222	$14	$323	$0	$337

Columbiana County Winter Weather NRI Exposure / Expected Annual Loss Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Pop)*	*Exposure (Agriculture)*	*Exp. Annual Loss (Buildings)*	*Exp. Annual Loss (Pop. Equivalence)*	*Exp. Annual Loss (Ag)*	*Exp. Annual Loss (Total)*
39029952400	$625,997,395	3,923	$1,282,765	$26	$469	$3	$497
Grand Total	**$21,193,341,284**	**101,872**	**$117,149,866**	**$878**	**$12,168**	**$308**	**$13,303**

Future Occurrences

The severity of winter storms may change in the future. For instance, heavy winter precipitation and blizzard conditions can impact power distribution utilities, and as those systems age, weather-related impacts may become more frequent in the form of power outages. The National Climate Assessment identifies a shortened snow season in the Northeast U.S., of which its report considers Ohio to be a part. The report cites an increase in the amount of winter precipitation that falls as rain, resulting from a likely northward shift in the rain-snow transition zone. Despite these trends, the future probability of winter weather events remains highly likely in Columbiana County.

Future Climate Considerations

According to information obtained from the *Fifth National Climate Assessment (NCA5)*, seasons are changing in length and timing in Columbiana County, with earlier springs, delayed falls, and shorter winters. While a more extended frost-free period can benefit some crops or allow for double cropping, it can limit plant diversity, encourage invasive species, and threaten human and ecosystem health; for example, milder winters help more ticks and mosquitos survive the winter.

Earlier springs may also cause trees and flowers to bloom earlier, leading to an extended allergy season. During a “false spring,” warm weather in late winter or early spring can cause crops and plants to grow too early, exposing them to frost. Reduced snow cover from warm winters and longer summers increases the risk of drought.

Severe winter weather is another general label referring to weather phenomena, similar to the Intergovernmental Panel on Climate Change’s (IPCCs) term “extreme precipitation.” Winter precipitation events could thus become more extreme, though they would likely impact the same areas of the county. Recent polar vortex events have yielded discussion that winter weather will include more cold snaps versus precipitation.

Risk Assessment

This section summarizes the vulnerability of the county to winter storms. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding winter storms.

Table 2.2.12.6

Public Sentiment, Winter Storm					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Winter Storm	9 (14.5%)	13 (21.0%)	25 (40.3%)	15 (24.2%)	62
In the past five years, do you remember this hazard occurring in your community?				15	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 56 (32.37%) indicated being concerned about winter storms, with five respondents indicating that winter storm was the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

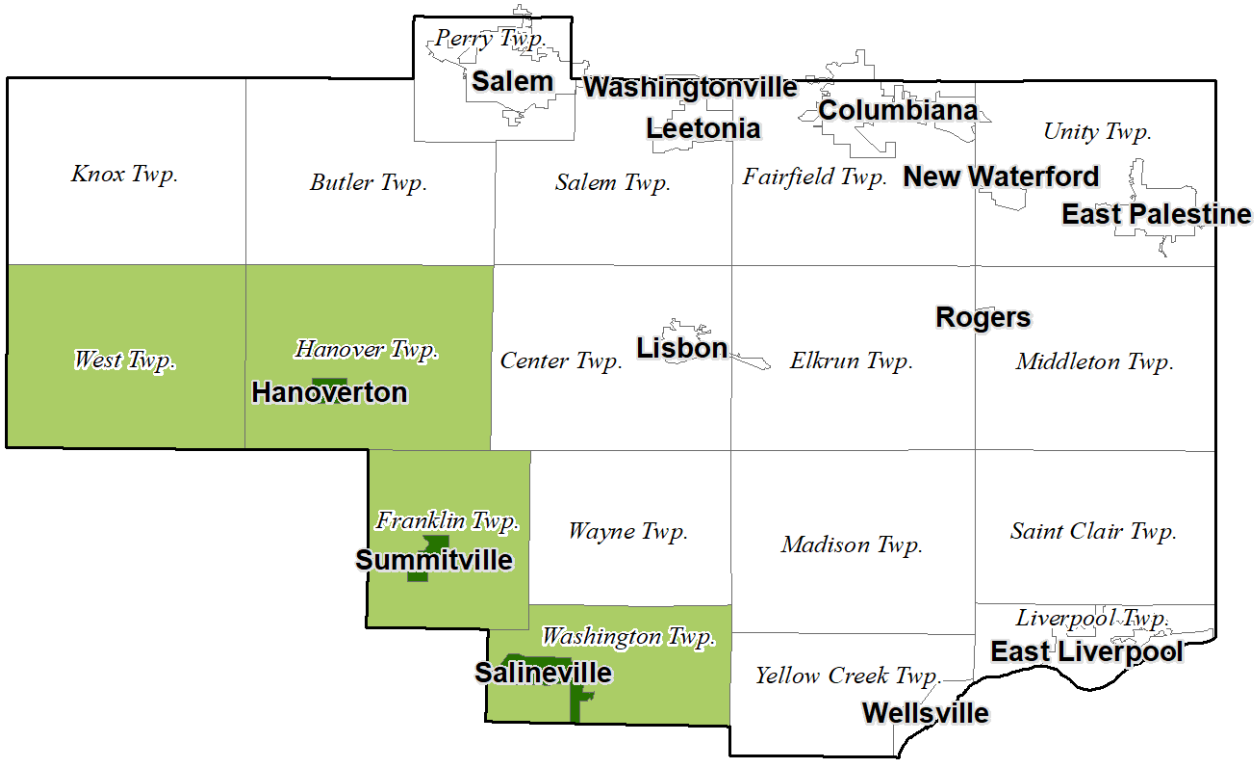
Table 2.2.12.7

Winter Storm Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	Columbiana County has experienced 41 severe winter storm incidents since 1999, for an average of 1.64 per year.
Response	3	One week	Significant winter storm events can necessitate responses exceeding a single day. As such, planners selected “One week,” the next available option, as a planning average.
Onset	1	Over 24 hours	Winter storm events can be forecasted in advance (though precise impacts may not be known until the front gets closer to the county).
Magnitude	4	Catastrophic (more than 50% of land area affected)	Though the term *catastrophic* sounds urgent, in this case, it refers to the reality that the entire county would likely be impacted by the front causing a severe winter storm to occur.

Winter Storm Risk Ranking			
Category	*Points*	*Description*	*Notes*
Business	1	Less than 24 hours	Though operations like schools may close for winter weather, businesses typically do not remain closed for more than 24 hours.
Human	3	Medium (multiple severe injuries)	Several people could be injured in vehicle accidents, and/or suffer heart attacks while shoveling snow.
Property	2	10-25% of property affected	Historical data only indicates $7,000 in property losses. Though this figure is obviously low, the potential for a winter storm event to cause damage in excess of 10% of private property is minimal.
Totals	**19**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for winter storms. The jurisdictions labeled in white are not more or less at risk of winter storms. Those in red are more at risk; those in green are less at risk.

Figure 2.2.12.b



Although severe winter storms can (and often do) impact the entire county, the townships and villages shown in green are (at least) partially located in the snowfall region that receives less snowfall per annum.

2.2.13 Wildfire

Wildfires are uncontrolled fires that spread rapidly though vegetative fuels (i.e., forests, grasslands, and prairies), exposing and possibly consuming structures. These dangerous fires can devastate not only wildlife and natural areas, but also communities.				
Risk  HIGHEST HIGH MEDIUM LOW LOWEST	**Period of Occurrence:**	Most common in spring and fall	**Risk Ranking:**	Medium
	Warning Time:	Sudden, less than 24 hours	**Type of Hazard:**	Natural
	Probability:	Will occur during a year	**Impact:**	Localized (less than 10% of land area affected)
	Disaster Declarations:	None		

Hazard Overview

A wildfire is an unplanned, uncontrolled fire that spreads rapidly through vegetative fuels (e.g., forests and grasslands), exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that is visible for miles. Wildfires can occur at any time of the year but mostly happen during prolonged, dry, hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Human carelessness, negligence, and ignorance cause most wildfires (e.g., debris burning, equipment fires, arson, etc.). In some instances, downed powerlines can precipitate combustion. The Ohio Department of Natural Resources (ODNR), Division of Forestry, estimates that more than 15,000 wildfire and natural fuel fires occur in any given year throughout Ohio, caused mainly by people carelessly burning debris.

Ohio's wildfire seasons occur primarily in the spring (i.e., March, April and May) before vegetation has matured and greened, and the fall (i.e., October and November) when leaf drop occurs. During these times and especially when weather conditions are warm, windy, and with low humidity, vegetation is particularly susceptible to burning.

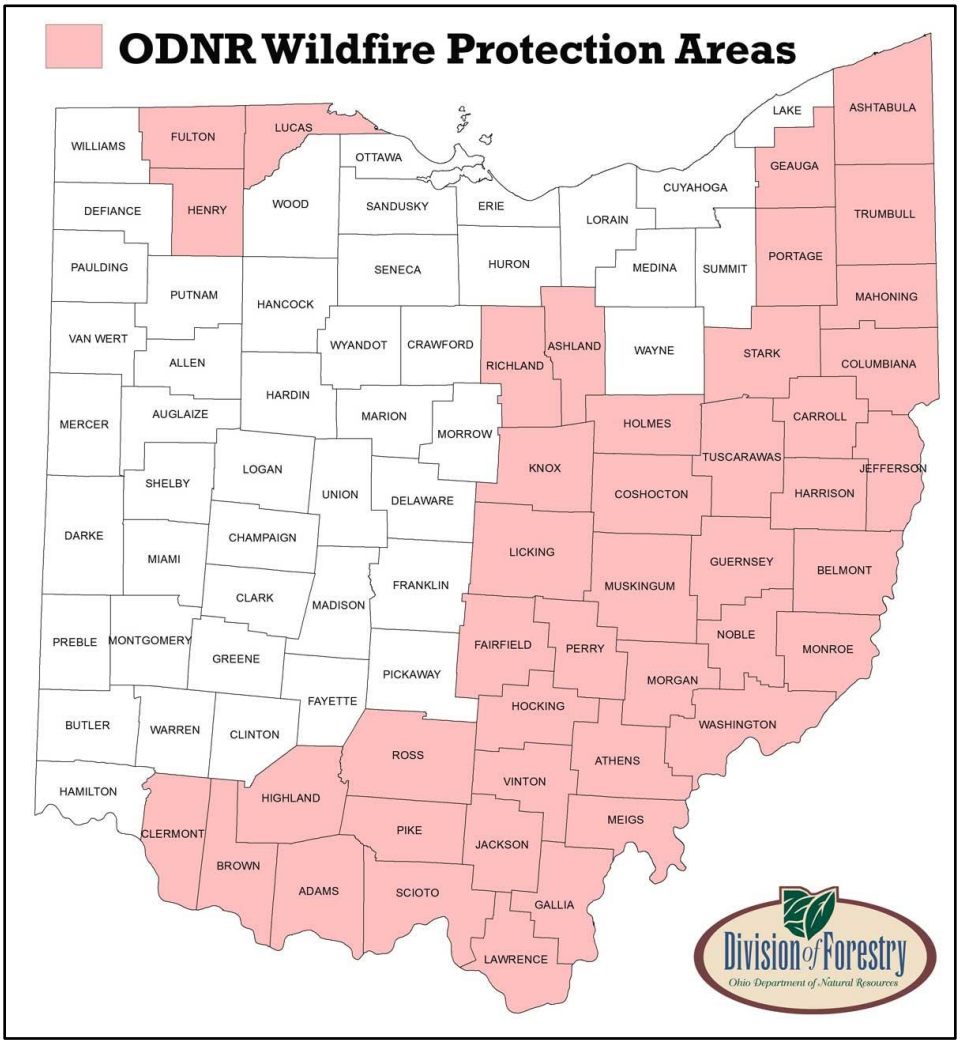
"Wildland fire can be a friend and a foe. In the right place at the right time, wildland fire can create many environmental benefits, such as reducing grass, brush, and trees that can fuel large and severe wildfires and improving wildlife habitat. In the wrong place at the wrong time, wildfires can wreak havoc, threatening lives, homes, communities, and natural and cultural resources" (U.S. Forest Service). Open burning is regulated by state laws and local burning

ordinances. Outside municipal limits, burning is prohibited from 6:00 a.m. through 6:00 p.m. during the months of March, April, May, October, and November.

Location and Extent

Wildfires in Ohio occur most frequently in the southern, southeastern, and eastern parts of the state. Each year, an average of 1,000 wildfires burn 4,000 to 6,000 acres of forest and grassland within ODNR Division of Forestry's forest fire protection district. The protection district includes all 200,000+ acres of Ohio's 21 state forests, as well as all privately-owned lands within the district boundaries. The forest fire protection district corresponds mostly to the state's unglaciated hill country (southern and eastern Ohio), which includes all of Columbiana County.

Figure 2.2.13.a



Though Figure 2.2.13.a identifies all of Columbiana County in a risk area, it can be helpful to identify areas within the county that may be more or less at risk. Figure 2.2.13.b below shows land cover in the county, with deciduous forests, evergreen forests, herbaceous wetlands, urban/recreational grasses, and woody wetlands (i.e., areas with potential fuels) identified. These areas may contain fuels that can help wildland fires spread.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

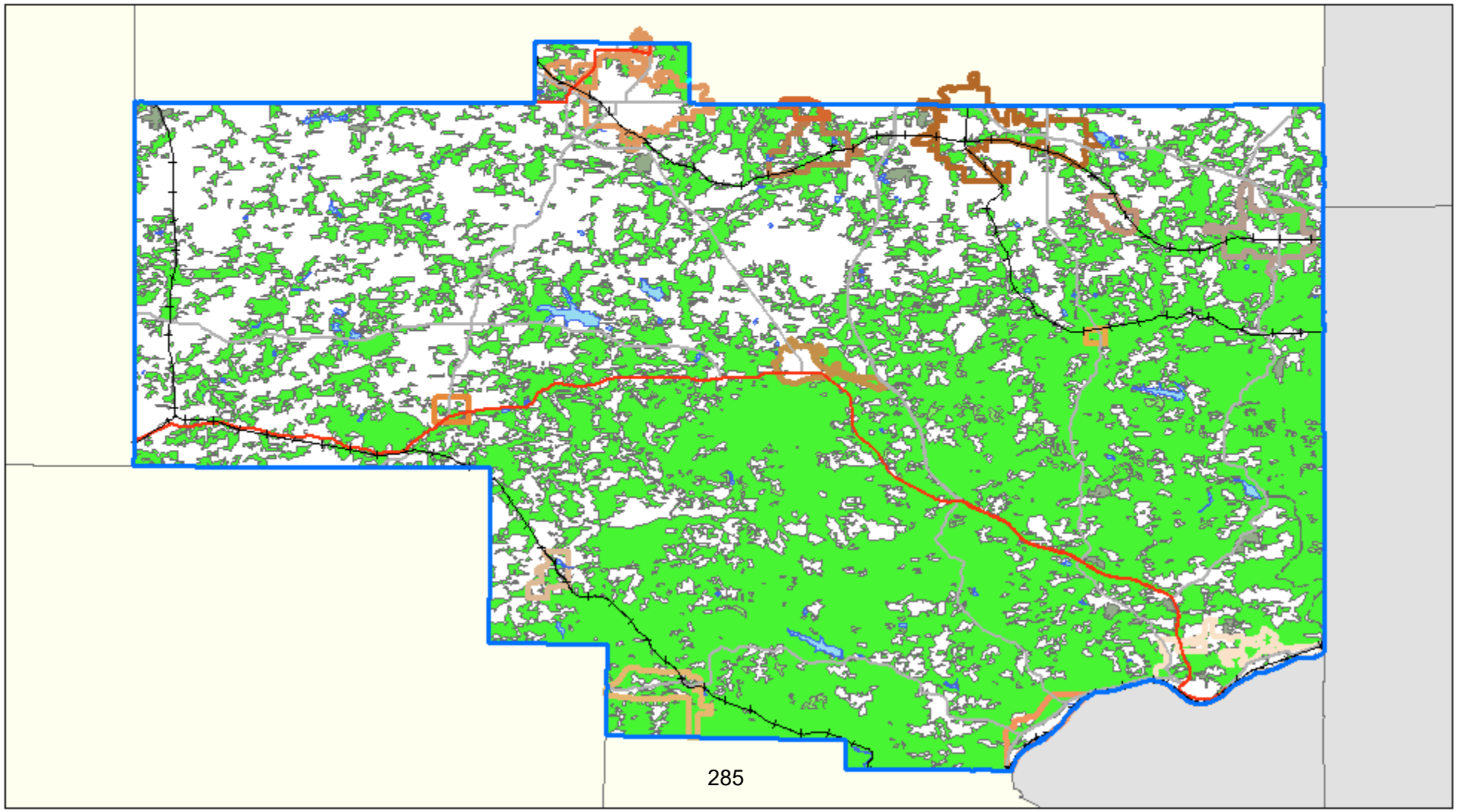
Figure 2.2.13.b: Areas with Potential Wildfire Fuels

Data Source(s):
USGS NLCD (2021)

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

- Deciduous Forest
- Evergreen Forest
- Herbaceous Wetlands
- Urban/Recreational Grasses
- Woody Wetlands





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

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

Impacts and Vulnerability

The number and severity of wildfires depend on external factors such as drought, human activity, wind activity, and the amount of available fuel. Wildfires can burn less than one acre up to thousands of acres of land in a short period of time. These fires can destroy recreational areas, community infrastructure, cultural and economic resources, timber, forage, wildlife habitats, scenic vistas, and watersheds. Secondary effects of wildfires include erosion, increased landslide potential, the introduction of invasive species, and changes in air and water quality. A major cause of forest fires in Ohio is debris burning. These fires typically start small but spread by wind to dead grass and leaves bordering woodlands.

The demographic effects of a wildfire can be high depending on the location of the fire. Scholars refer to an area called the "wildland-urban interface," or WUI, when discussing wildfire risk. Radeloff and colleagues (2005) defined the WUI as "…the area where houses meet or intermingle with undeveloped wildland vegetation" (citing the USDA and USDI, 2001, p. 800). Critically, the WUI does not recognize an area where wildfires are more or less prone to occur. Instead, it identifies areas that can expect higher wildfire-related damages should an incident

occur. It is difficult to understand that the WUI is not a place, per se, but conditions that exist. Thus, the WUI can be a rural subdivision in a wooded or vegetative area or three to four homes on an open range (USFA, 2022).

Radeloff and colleagues' research further asserts that structures within 2.4 kilometers (1.49129 miles) of a woodland fuel source be considered "in the WUI area." According to data from the Ohio Geographically Referenced Information Program (OGRIP), there are 51,910 address points in the county. All the address points in the county are either within a wooded area containing potential fuel (as mapped above) or within the 2.4-kilometer buffer. The orange dots on Figure 2.2.13.c below represent address points *not* within wooded areas with potential fuel, but solely within 2.4 kilometers of these areas. The map illustrates Radeloff et al.'s assertion that the WUI is a set of conditions rather than a place.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

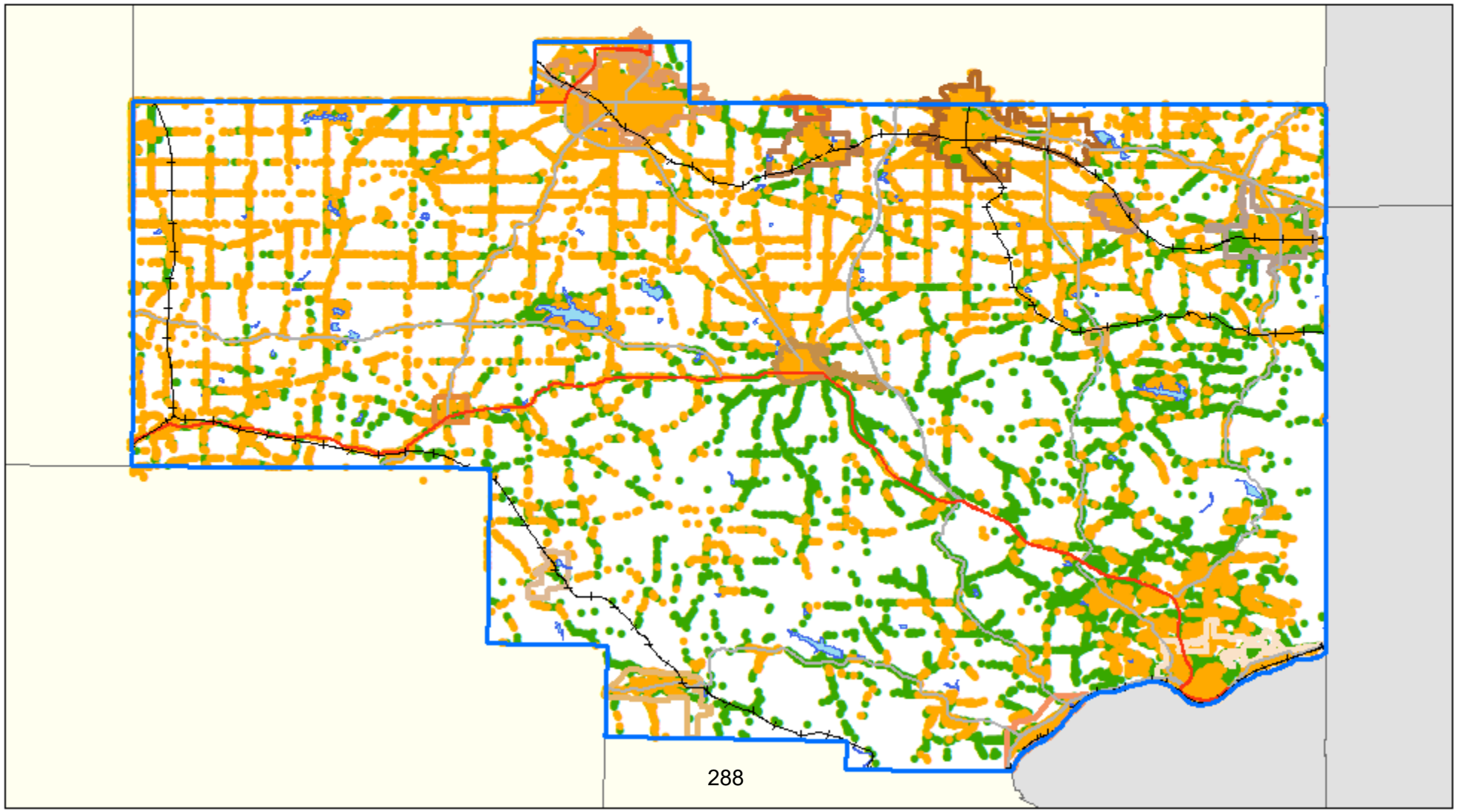
Figure 2.2.13.c: Approximation of the WUI

Data Source(s):
OGRIP, USGS NLCD (2021)

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

- Address Pts. in WUI Only
- Address Pts. w/in Fuel-Laden Areas





Social Vulnerability Considerations

Wigtil and colleagues (2016) studied the intersection of wildfire potential and social vulnerability in the coterminous United States. Their study identified several variables that could be relevant, such as owner-occupied vs. renter-occupied homes, poverty, unemployment, etc. Other social variables, such as land use trends, housing development, vegetative management practices, etc., factored into the overall discussion surrounding wildfires. Ultimately the variables they used to create a custom social vulnerability index included the following.

- Median gross rent
- Median house value
- Median age
- Per capita income
- People per unit
- Percentage of population under 5 and over 65
- Percentage of various minority statuses
- Percentage civilian unemployment
- Percentage of population age 25+ with less than 12th-grade education
- Percentage with English as a second language
- Percentage employment in extraction industries
- Percentage female
- Percentage females in labor force
- Percentage female-headed households
- Percentage mobile homes
- Percentage of housing units w/ no cars
- Percentage of congregate populations
- Percentage poverty
- Percentage renters
- Percentage of households earning $200,000+ annually
- Percentage employment in service industry
- Percentage of households receiving Social Security
- Percentage unoccupied housing units

Their analysis led to the creation of the following graphics. Figure 2.2.13.d illustrates a social vulnerability score (p. 901). Columbiana County received a score of -1.0 to 1.0

Figure 2.2.13.d

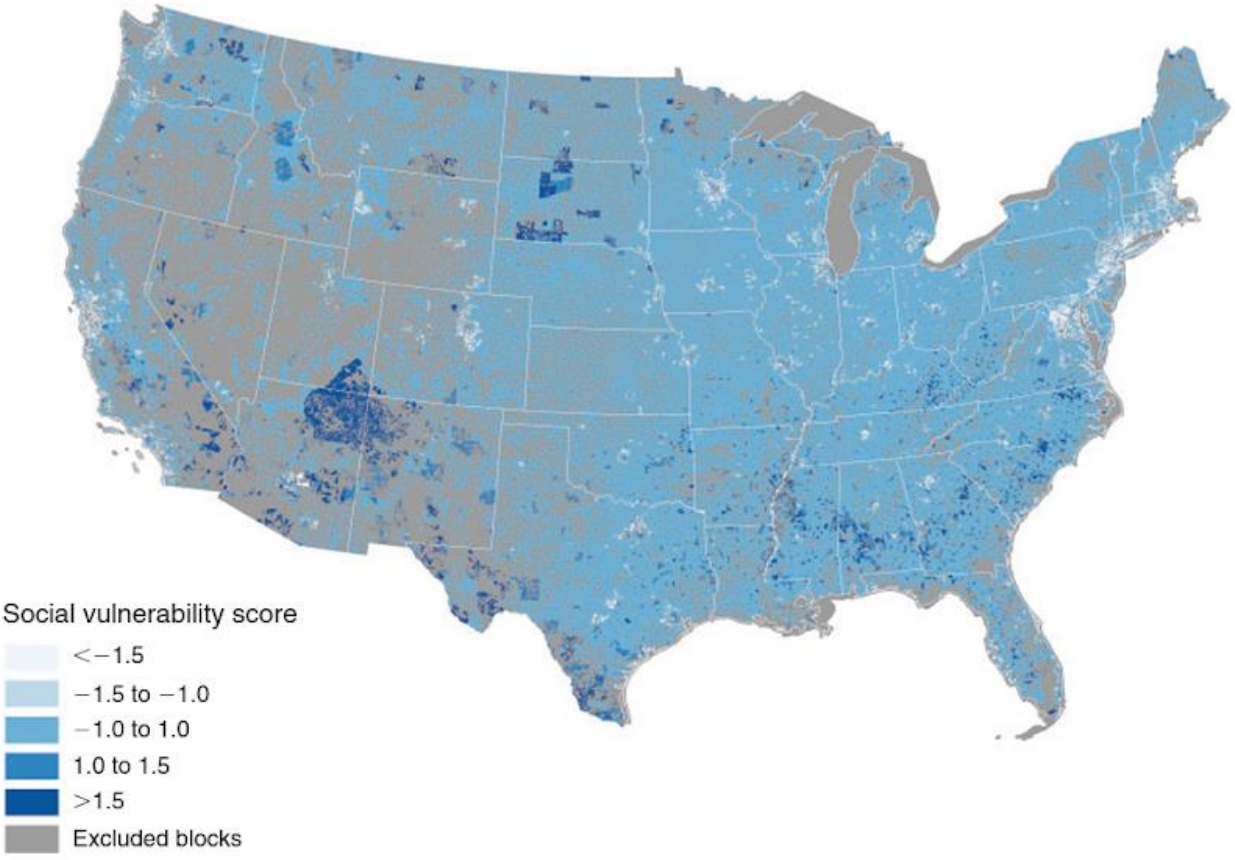


Fig. 1. Social vulnerability scores for the coterminous US.

The second graphic, shown below as Figure 2.2.13.e, integrated the social vulnerability and wildfire potential data (p. 903). Though it is difficult to see, when zooming into the image, there are portions of the map near Columbiana County's location with a slightly brighter pink color, indicating "Moderate" in both wildfire potential and social vulnerability.

Figure 2.2.13.e

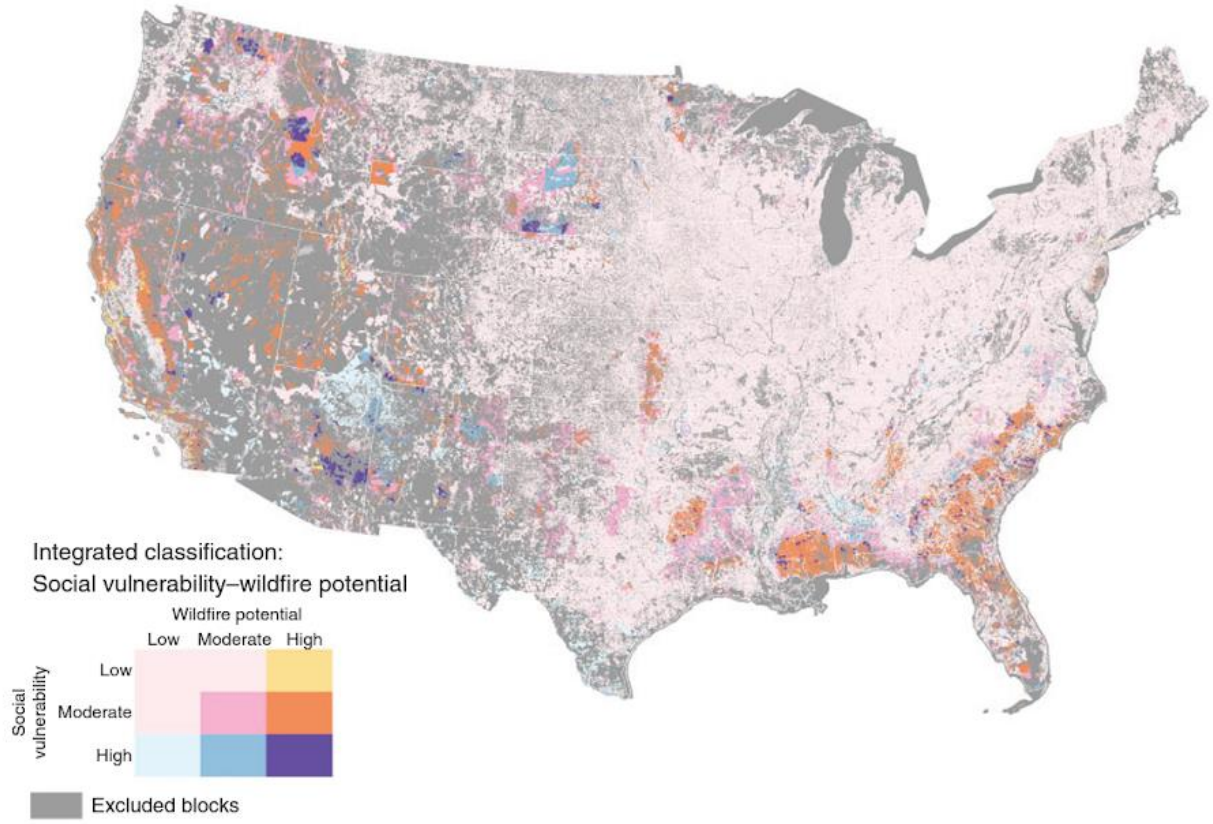


Fig. 4. Intersection of social vulnerability and wildfire potential.

Previous Occurrences

Weather is the primary factor that determines the severity of fall and spring wildfire seasons in Ohio. Drought conditions, combined with windy days create red flag, or extremely high fire danger. Weather conditions leading up to and in 1930 resulted in the worst year to date for wildfires in Ohio, as 15,400 acres burned over the course of the year. The extreme drought in 1950 that continued for the next several years provided for very active wildfire seasons as well. March 27, 1950, is considered the worst fire control day in Ohio's history, as 65 fires burned a total of 5,900 acres. A total of 680 wildfires burned 22,445 acres in the fall of 1952.

According to the *State of Ohio Hazard Mitigation Plan* (OEMA, 2024), Columbiana County had 79 wildfire events from 2018 through 2022; 134 acres burned in that time. There was one reported injury, five structures threatened, and one structure destroyed.

Loss and Damages

Estimating monetary losses to wildfire is difficult as the vast majority of wildfires in Ohio occur in open land or fields and monetary losses are not often recorded. This lack of data may result in inconsistencies if an analysis was based on reported monetary loss. However, from an exposure assumption, the greater the number of people and property in an area, and the greater variables for wildfire severity of that area, the greater the potential loss. The data that is more consistently available is the number of acres burned per event. For this estimate, planners divided the total number of acres burned from January 1, 2018, to December 31, 2022, in Columbiana County by the respective number of events recorded, resulting in an average of 1.70 acres burned per event. Further, according to the National Fire Protection Association (NFPA), the average per-incident loss attributed to wildfire data captured in a ten-year period of large-loss fire was $195,729,342.

Planners also used information obtained from FEMA's National Risk Index (2023) to estimate potential wildfire impacts for each census tract in Columbiana County. Table 2.2.13.1 presents that data.

Table 2.2.13.1

Columbiana County Wildfire NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029950100	$581,290,247	2,876	$4,173,747	$2,325	$202	$1	$2,527
39029950200	$303,756,971	1,640	$751,712	$1,215	$115	$0	$1,330
39029950300	$497,650,239	2,035	$2,024,349	$1,991	$143	$0	$2,134
39029950400	$701,921,879	2,958	$6,363,589	$2,808	$207	$1	$3,016
39029950500	$346,163,325	1,510	$596,888	$1,385	$106	$0	$1,491
39029950600	$232,774,306	1,471	$123,288	$931	$103	$0	$1,034
39029950700	$386,587,265	2,107	$285,155	$1,546	$148	$0	$1,694
39029950800	$642,366,263	3,053	$5,517,337	$2,569	$214	$1	$2,784
39029950900	$571,427,522	2,160	$5,104,819	$2,286	$151	$1	$2,438
39029951000	$822,033,984	3,566	$10,263,041	$3,288	$250	$1	$3,539
39029951100	$400,707,633	1,928	$2,904,092	$1,603	$135	$0	$1,738
39029951200	$708,373,949	2,852	$11,940,114	$2,833	$200	$2	$3,035
39029951300	$601,641,162	2,808	$7,575,899	$2,407	$197	$1	$2,604
39029951401	$288,636,059	1,382	$2,409,367	$1,155	$97	$0	$1,252
39029951402	$466,157,171	3,834	$5,148,632	$1,865	$269	$1	$2,134
39029951500	$218,963,346	1,508	$684,276	$876	$106	$0	$982
39029951600	$757,030,362	3,539	$3,075,987	$3,028	$248	$0	$3,277
39029951700	$501,683,622	3,010	$2,035,287	$2,007	$211	$0	$2,218
39029951800	$7,262,955	58	$0	$29	$4	$0	$33
39029951900	$195,698,530	1,306	$57,374	$783	$92	$0	$874
39029952000	$179,219,997	1,157	$4,458	$717	$81	$0	$798
39029952100	$22,834,570	218	$0	$91	$15	$0	$107
39029952200	$29,705,481	57	$115	$119	$4	$0	$123

Columbiana County Wildfire NRI Exposure / Expected Annual Loss (EAL) Estimates							
Census Tract	*Exposure (Buildings)*	*Exposure (Population)*	*Exposure (Agriculture)*	*EAL Buildings*	*EAL Pop. Equivalence*	*EAL Agriculture*	*EAL Total*
39029952300	$59,324,155	506	$0	$237	$35	$0	$273
39029952400	$337,321,195	2,140	$776,461	$1,349	$150	$0	$1,499
Grand Total	**$9,860,532,191**	**49,680**	**$71,815,987**	**$39,442**	**$3,483**	**$10**	**$42,935**

Future Occurrences

Though officials are working to develop their communities, current development trends are not likely to substantially impact the WUI. With the county situated in the Cleveland-Pittsburgh corridor, the fourth largest market in the country (Ohio Development Services Agency, 2024), officials should remain mindful of the WUI and the potential impacts wildfire may pose for new development.

Future Climate Considerations

Seasons are changing in length and timing in Columbiana County, with earlier springs, delayed falls, and shorter winters (USGCRP, 2018). This seasonal shift could lengthen the fire season. Warmer temperatures mean higher evaporation rates, and thus, things dry out more quickly. Drier vegetation is more likely to burn if something sparks a flame. In many cases, the spark is accidental, but stronger storm events (often attributed to a changing climate) may include more lightning. As such, a changing climate may impact two variables of the fire risk (i.e., drier fuel and potential spark) rather than directly causing fires.

Weather conditions, including extreme heat and drought, can increase the likelihood of fires escalating to the level of “wildfire.” Any fire left unattended or mismanaged has the potential to become a wildfire; however, the likelihood of a fire attaining a significant size and intensity is unpredictable and varies based on environmental conditions.

The ODNR, Division of Forestry suggests that 63% of Ohio wildfires between 1997 and 2007 with a known cause were human-caused in some way (the cause of 36% of these wildfires were reported as other or unknown). As outdoor recreation opportunities develop, human behaviors may ignite more fires that have the potential to escalate into larger wildfires. Additionally, the discussion on the WUI is relative for future considerations. If subdivisions continue to be built on the fringe of more urbanized areas, they may be more susceptible to wildland fires.

Risk Assessment

This section summarizes the vulnerability of the county to wildfire. The steering committee conducted an online survey for the public to share its thoughts on the hazards listed in this plan. The following table presents the results of that survey, specifically regarding wildfire.

Table 2.2.13.2

Public Sentiment, Wildfire					
	Level of Concern				
Hazard	*Very Unconcerned*	*Somewhat Unconcerned*	*Somewhat Concerned*	*Very Concerned*	*Total Respondents*
Wildfire	18 (29.0%)	27 (43.5%)	13 (21.0%)	4 (6.5%)	62
In the past five years, do you remember this hazard occurring in your community?				2	62

The steering committee also solicited public involvement via a condensed survey at food pantries, at the county fair, etc. Of the 173 responses received, 10 (5.78%) indicated being concerned about wildfires, with no respondents indicating that wildfire was the hazard that concerned them the most.

The following table assigns point totals based on the methodology identified in Section 2.2: Describe Hazards above.

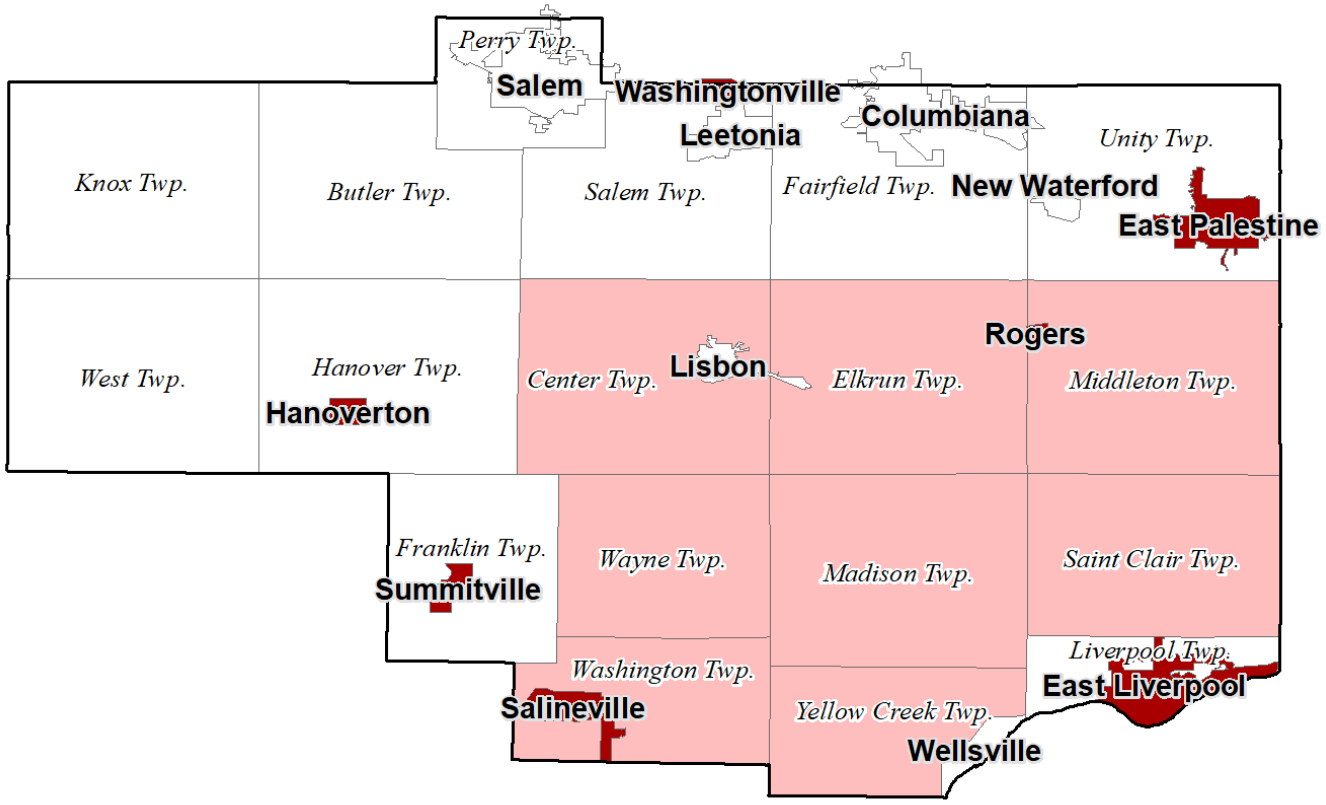
Table 2.2.13.3

Wildfire Risk Ranking			
Category	*Points*	*Description*	*Notes*
Frequency	5	Will occur during a year	Available data do not report historic wildfires; however, local fire departments respond to numerous fires (including brush fires that could escalate into a wildland fire) each year.
Response	3	One week	Attack response operations for fires typically take a day or less; however, wildland fire responses may take longer. Further, response operations exceed a single day as firefighters monitor for rekindles.
Onset	4	Less than 6 hours	Fires are typically underway when responders receive notification of the incident.
Magnitude	1	Localized (less than 10% of land area affected)	Though brush fires have occurred, none have impacted 10% or more of the county's land area. Such a fire could occur, but given the response that would be underway, it is unlikely that an incident would impact 10%.

Wildfire Risk Ranking			
Category	*Points*	*Description*	*Notes*
Business	2	One week	A business directly impacted by a fire would likely close for more than one week; however, all other businesses not impacted by the fire would remain open. Further, First Street's Fire Factor (2024) indicates a moderate risk (i.e., 1,153 out of 4,814 commercial properties) of wildfire in the county. Planners thus selected "One week" as a planning average.
Human	2	Low (some injuries)	Fires, including wildland fires, can cause injury or death. There are no aggregated historical records available to document past injuries or deaths; thus, planners selected "Low" as a planning average.
Property	1	Less than 10% of personal property affected	First Street's Fire Factor (2024) estimates 25.96% of residential properties as at-risk for wildfire (a "moderate" risk). Still, the probability of a single incident impacting 10% or more of personal property is low.
Totals	**18**	**Medium**	

FEMA's *Local Mitigation Planning Handbook* (2025b) directs entities compiling multi-jurisdictional plans to identify any jurisdictions within the planning area for which the identified risks are more or less prevalent as compared to the rest of the planning area. The following map identifies those multi-jurisdictional risks for wildfire. The jurisdictions labeled in white are not more or less at risk of drought. Those in red are more at risk; those in green are less at risk.

Figure 2.2.13.f



The jurisdictions in red have a high portion of land with potential wildfire fuels. Those villages and cities in red may not be in a wider area of potential fuel-laden area, but there are several land areas within their corporate limits with potential fuels.

2.0 RISK ASSESSMENT

2.3 Analyze Impacts

This section of the risk assessment serves to connect the dots drawn throughout the identification and description of hazards impacting Columbiana County to form a better understanding of the potential impacts of those hazards.

General Trends

Local officials must realize that while the profiles in Section 2.2 present an in-depth overview of the hazards in question *at this moment in time*, the county has evolved over the last five years (since the previous adoption of the plan). This section discusses general trends that could influence vulnerability for each hazard. Each section ends with a summary table identifying the changes in development[1] and whether they increase or decrease risk or result in no noticeable change to risk.

Cyber Incidents

Columbiana County's steering committee added cyber incidents to the hazard list for the 2025 update. Members shared an awareness of greater connectivity between various commercial and industrial systems, as well as systems associated with critical infrastructure. The nature of cyber risk has evolved. Previously, risks surrounded the idea of stealing information; however, modern risk includes disrupting functions. For instance, recent attacks on healthcare facilities in Ohio put data at risk, but also significantly disrupted the operation of the facilities. Committee members also recognized the interconnectedness of systems that could be disrupted by cyber incidents. As an example, a cyber incident impacting a water utility *also* impacts all critical facilities relying on service from that utility.

Additionally, committee members shared the assumption that cyber attacks are on the rise. Data from Sentinel One (2025) confirms the presumption, reporting that ransomware attacks increased 84%, phishing attacks by 1,265%, and cloud intrusions by 75% over a one-year period, generally late 2023 through late 2024.

[1] "Changes in development" per FP-206-21-0002 (FEMA, 2025c) mean (a) recent development (e.g., construction completed since the last plan was approved or development planned or under consideration by participating jurisdictions) or (b) conditions that may affect risks and vulnerabilities of jurisdictions (e.g., declining populations vs. projected increases in population, etc.).

Finally, the so-called "digital divide" impacts cyber awareness and capability. The digital divide refers to unequal access to digital technology. For instance, internet connections in more rural areas may not be as robust as connections in urban (or urbanized) areas. As technology and access come online, a learning curve appears. Populations in rural areas or among older residents may have less cybersecurity awareness, creating soft targets for phishing or fraud.

Table 2.3.1

Cyber Incidents Summary	
Recent developments such as digitization and greater adoption of cloud-based technologies have **increased the risk** of cyber incidents.	Other conditions, such as a burgeoning awareness of the range of cyberattacks, potential systems impacted (and their interconnectedness), etc., have also **increased risk** of cyber incidents.

Dam and Levee Failure

Between the 2019/2020 update and this effort, Columbiana County and the Village of Wellsville worked to remove the Wellsville Reservoir, a high-risk impoundment structure in the southeastern portion of the county. The removal of that structure decreases risk in the county. There has been minimal growth immediately downstream of larger structures, but dams and levees are "infrastructure," and as they age, maintenance becomes more of an issue. Though not a major issue for Columbiana County (as of the 2025 update), deferred maintenance could be a trend that might increase future risk.

Many regulated dams, per ODNR data, do not have emergency action plans (EAPs) on file. ODNR, as the regulatory agency, is likely working with dam owners to update plans; however, in the interim, the lack of an EAP increases risk simply because downstream exposure is not adequately communicated. Finally, there are many unregulated dams in Columbiana County. Section 2.2.2 lists 43 regulated dams, while a mapping layer sourced to ODNR shows 184 structures in Columbiana County. Many of the structures in the mapping layer list "Other" as the classification. These "other" structures appear to be small impoundments meant for fishing and other recreational activities, though 41 appear as impoundments with "mining" noted as the type of owner. The presence of these structures does not, by default, add to risk. However, additional information on them would allow local stakeholders to make informed decisions about the risks from these structures their communities face.

Table 2.3.2

Dam & Levee Failure Summary	
Recent development has **decreased the risk** of dam and levee failure thanks to the removal of a high hazard-potential structure.	Missing EAPs, unregulated "other" structures, and the potential for deferred maintenance may **increase risk** to dam and levee failure in the future.

Drought

According to the Ohio Environmental Protection Agency (OEPA), there are 117 active water systems serving Columbiana County (2025). Of those, 17 are community water systems that serve at least 15 connections used by year-round residents (or regularly serves 25 year-round residents). The remaining systems are either non-transient/non-community systems or transient non-community systems. Eleven (11) of the 17 systems pull water from a groundwater source not under the direct influence of surface water (e.g., protected wells), three pull from surface water sources, and three purchase water originating from a surface water source.

Though it has not been a problem to date, new development – agricultural, commercial, industrial, and residential – may place additional pressure on ground water sources, and significant new development may tax aquifers. Sustained drought conditions may also create problems. While authoring the 2025 update, the county experienced a dry latter half of 2024 with drought conditions. Fortunately, those conditions were mediated by precipitation in the winter months and through the first six months of 2025. However, local authorities should be aware of pressure on groundwater aquifers as the county is successful in continued development.

The drought conditions in late 2024 brought drought back to the forethought. Previously, a lack of recent experience led to a general complacency with respect to aggressive drought planning. Residents and, to an extent, local officials recognized it as a potential hazard, but experience with the acute effects of drought was fading from memory. Currently, The Climate Explorer (NEMAC, n.d.) suggests that the number of dry days will remain largely the same through 2080 and days with less than one inch of precipitation will increase slightly through the same period. While these projections offer a useful baseline, they do not fully account for how changing land uses, regional withdrawals, or localized microclimates may influence drought impacts. The inherent uncertainty in long-range models underscores the need to plan for a range of water stress scenarios.

Table 2.3.3

Drought Summary	
Recent development has been steady, but it has not yet taxed groundwater aquifers; thus, recent development has affected **no change** to risk.	Though climate projections (such as those from The Climate Explorer) show a potential for fewer days with at least one inch of rain, those projects suggest little to **no change** with respect to the drought risk.

Earthquake

Despite the relatively low risk of earthquakes for Columbiana County, the county's location with respect to the Southern Great Lakes Seismic Zone means the risk is not zero. Building construction standards and materials can mitigate the negative effects of many of the moderate earthquakes typically of this seismic zone. In Ohio, codes such as the Residential Code of Ohio (Ohio Department of Commerce, 2019), have strengthened masonry construction through reinforcement requirements. These trends decrease potential earthquake risk.

Table 2.3.4

Earthquake Summary	
Recent development (through modern construction techniques and the use of modern materials) has resulted in a **decreased risk** of earthquake damage.	Societal variables, like a perceived low probability of earthquakes, contribute to risk, but those variables are generally unchanged. Thus, for the "other variables" category, there is **no change** to the earthquake risk.

Extreme Temperatures

While the overall exposure to extreme temperatures may not have changed significantly, the increasing proportion of older adults in the population heightens vulnerability. Reduced physiological tolerance, limited mobility, and higher utility costs, particularly for those on fixed incomes (Klinenberg, 2015), can increase the severity of impact during extreme heat or cold events. The percentage of Columbiana County's population 65 and older rose from approximately 11% in 1970 (U.S. Census Bureau, 1970) to approximately 23% in 2020 (U.S. Census Bureau, 2020), an increase in the number of persons despite an overall decline in the county's population.

A lesser realized trend relevant to the extreme temperature discussion is the age of the housing stock. Older homes may not be adequately insulated, thereby offering less protection from extremely cold or hot temperatures. In the summer months, homes without air conditioning may put occupants at greater risk. Fortunately, over 66% of the county's housing stock has been built since 1950, with 11.41% of new housing construction occurring since 2000. On a wider scale,

increased demand for electricity could put the larger grid at risk during long periods of extreme temperatures (especially heat).

Table 2.3.5

Extreme Temperatures Summary	
Recent development (through modern construction techniques and the use of modern materials) has resulted in a **decreased risk** of extreme temperature impacts, though at a much slower pace than other hazards (like the previous earthquake discussion).	Climate projections suggest that the number of days hotter or colder than the fifth percentile will remain reasonably steady (USEPA, 2021) for Columbiana County and the wider region. However, climatological projects typically assume present-day infrastructure and social conditions. As those factors evolve, particularly with an aging housing stock and population, the actual experience of extreme heat or cold may deviate from modeled expectations. This uncertainty in vulnerability possibilities supports the case for building flexible and anticipatory heat and cold response systems.

Flooding

Though anecdotal evidence suggests that development continues in low-lying areas, floodplain management has controlled new construction in special flood hazard areas (SFHAs), slowly decreasing risk in those areas (particularly from riverine flooding) over time. Trends impacting the flood risk more readily have to do with heavy precipitation events. Local officials report intense bouts of rain, with significant quantities falling over relatively small geographic areas. Though difficult to model in such small areas, the increase in these hyperlocal storms aligns with climate science consensus on intensifying precipitation. This heavy precipitation can outpace existing stormwater infrastructure capacity, particularly in areas with older systems. Uncertainty around the timing, location, and magnitude of these events makes stormwater mitigation planning more urgent, not less. Fortunately, many communities in Columbiana County are working to enhance stormwater management systems.

Table 2.3.6

Flooding Summary	
Recent development (through years of ongoing floodplain management) has resulted in a **decreased risk** of riverine flooding impacts.	Increased instances of intense precipitation often outpace stormwater utility systems. Additionally, development may pave over previously permeable surfaces, further increasing runoff during precipitation events. Though there is an emerging understanding of low-impact development and green infrastructure techniques, the combination of changing precipitation patterns and the built environment has resulted in an **increased risk** of flash flooding.

Hazardous Materials Incident[2]

In an area like Columbiana County and its surrounding region, the risk of hazardous materials incidents has been present for some time thanks to a robust legacy industrial base. As the nature of the county's industry has changed, so too has the nature of the hazardous material risk. Fewer industrial operators and decreased production at existing locations loosely equate to a lower risk of fixed facility incidents, and transport of hazardous materials to and from those facilities would also decrease, leading to a lower risk of transportation incidents. Yet, facilities in the county are not the only contributors to the risk.

Transport of materials to and from facilities throughout the region passes through Columbiana County via highway, railway, pipeline, and waterway systems. In many cases, the central business districts of towns grew up along major intersections or rail infrastructure. Some long-term trends, like diverting major roadways away from densely built downtowns, have alleviated congestion as well as the starts, stops, and tight spaces that might contribute to accidents involving hazardous material (highway) shipments. Still, rail infrastructure often passes through municipal areas (e.g., Columbiana, East Palestine, Leetonia, New Waterford, Salem, and Summitville). Downtown structures near rail lines increase exposure due to their location, and older construction materials and techniques may increase vulnerability by reducing the effectiveness of shelter-in-place protections.

Finally, an aging transportation infrastructure may contribute to hazardous material risk. Roadways not designed for the quantities of heavy truck traffic seen today, railways not designed for the length and weight of modern freight trains, aging pipelines, etc., serve as examples.

[2] See Exhibit 2.3.A at the end of this section for a discussion about the East Palestine train derailment.

Table 2.3.7

Hazardous Materials Summary	
Recent development has generally yielded **no change** to the overall hazardous materials risk.	Consideration of other variables is more nuanced. For example, as utility providers upgrade water treatment capabilities, many are moving away from chlorine-based treatment. Safety measures for transport and storage of materials are increasing and improving, as are materials used in the fabrication of containers. These variables suggest a **decreased risk**. Other variables, such as the aging transportation infrastructure and modern technologies allowing vehicles to transport higher quantities, heavier weights, etc., may combine to **increase risks** associated with transport in some areas. Still other variables, such as the ways in which the county's communities interact with transportation systems (through densely built downtowns) at least serve to sustain exposure to the hazardous material risk.

Landslides

Landslides on steep slopes are known risks, and substantial development has largely steered clear of these areas. Changes in precipitation patterns (as in the more intense, localized rainfall cited in the flooding discussion above) can increase slope instability, thereby increasing the risk of landslides.

Table 2.3.8

Landslides Summary	
Recent development has generally dealt with known slippage risks in areas with steep slopes, resulting in **no change** to the overall risk of landslides.	Increased occurrences of intense rainfall can weaken slope stability, and there is evidence of more frequent occurrences of this type of precipitation event. As such, these variables may yield a slightly **increased risk** of landslides.

Public Health Emergency

As in the extreme temperatures discussion above, the aging population trend in Columbiana County impacts the public health emergency hazard. Older populations are more susceptible to various illnesses, including easily spread respiratory ailments. This trend interacts with the access to healthcare variable. As the population ages, its needs for healthcare increase. As the federal government discussed its funding bill in mid-2025, concerns surrounding a loss (or decrease) of Medicare and Medicaid funding brought the issue of sustainability to the fore for

smaller and more rural healthcare facilities. East Liverpool City Hospital was one such facility named as “at risk” (Henry, 2025). Though this discussion is founded on a topic that could shift significantly (i.e., federal funding and political will), it is indicative of the struggle for sustainability that rural healthcare facilities have experienced in recent years.

Table 2.3.9

Public Health Emergency Summary	
Recent developments have had **no change** in the risk of potential public health emergencies.	Other variables have impacted public health emergency risk, though. The county’s aging population increases vulnerability to illness, particularly during outbreaks of respiratory or heat-related health emergencies. Another development worth monitoring is the sustainability of smaller, more rural healthcare facilities. These variables combine to **increase risk** of public health emergencies.

Severe Thunderstorms and Hail

Regarding severe thunderstorms and hail, no developments in the county have influenced risk one way or another. Planners, however, note that this does not mean that the risk is not high. As listed in Section 2.2.10 (i.e., Table 2.2.10.3), the county experiences an average of just over $10,000 damage per thunderstorm wind, heavy rain, and hail event. Roof integrity in older homes (i.e., unrenovated pre-1970 structures) is a vulnerability. In this sense, trends toward more modern construction reduce risk, but that trend has been slowly developing over time and does not suggest substantial risk reduction since the 2019/2020 update of this plan.

Figure 2.2.10.b in the hazard profile for severe thunderstorms and hail identifies Census tracts where greater than 25% of the population is below the poverty level. Lower-income households may forego homeowners’ insurance coverage (as well as auto coverage) because of costs, and these trends would increase vulnerability to thunderstorms and hail through an inability to address damages. As residents age and transition to fixed incomes in retirement, they may face similar decisions about insurance coverage (though not as acutely as those experiencing poverty).

Table 2.3.10

Severe Thunderstorms and Hail Summary	
Recent developments have had **no change** in the risk of severe thunderstorms and hail.	Other trends may impact risk to this hazard. The aging population may have difficulty with affording full coverage insurance policies as it transitions to fixed incomes, which increases vulnerability to long-term financial hardship following storm-related damages. Similarly, residents living in poverty will have difficulty recovering from incidents, even small ones. As such, these variables slightly **increase the risk** of severe thunderstorms and hail. Additionally, as noted elsewhere in this section, intense precipitation accompanying thunderstorms can overwhelm stormwater management infrastructure. Though typically captured as "flash flooding," the changes in precipitation **increase risk** of severe thunderstorms. Fortunately, though, the county and several municipalities are undertaking projects to enhance stormwater management systems. As more of these projects finish, this elevated risk may lessen.

Severe Wind and Tornado

As with severe thunderstorms and hail, there are no significant developments occurring (or that have recently occurred) that reduce or increase exposure to severe wind and tornado risk. Variables such as the presence of mobile homes and manufactured housing (which are more vulnerable to wind-related damage) as well as low-income households unable to address wind-related damage remain present. Similarly, discussions about the increased resilience brought about by modern construction materials and methods apply to considerations of severe wind and tornado risk.

Table 2.3.11

Severe Wind and Tornado Summary	
Recent developments have had **no change** in the risk of severe wind and tornadoes.	As noted under severe thunderstorms and hail, the aging population may have difficulty with affording full coverage insurance policies as it transitions to fixed incomes, thus lessening resilience to address thunderstorm- or hail-related damages. Similarly, residents living in poverty will have difficulty recovering from incidents, even small ones. These variables do not increase the likelihood or geographic extent of wind and tornado events, but they increase the vulnerability of affected populations by reducing their capacity to rebuild or repair.

Severe Winter Storm

Earlier discussions about the age of homes and the county's aging population suggest increasing vulnerability to the effects of winter storms, particularly for households with limited financial resources or inadequate heating systems. No additional developments in Columbiana County are increasing or reducing exposure to winter storm risk.

Wildfire

When people think of wildfire (or "wildland fire"), they often think of devastating incidents occurring in the western United States. Though the available fuels are different, wildfires (likely of a different scale) could happen in Columbiana County and the wider region. Further, as residents build homes in dense wooded areas (or as residential developments encroach on these areas), risk increases as these structures could be impacted if a wildfire were to break out.

Steering committee members also discussed, during the 2025 update, how changing land uses may contribute to wildfire risk. For instance, the committee considered a proposed large-scale solar energy development and noted how important vegetation management and site maintenance would be to mitigate the potential for ignition, especially during dry weather periods when grasses and other fine fuels may accumulate around electrical components. Generally, as land uses in the county evolve, whether through the growth of the energy infrastructure, agricultural practices, or recreational development, new fire risks may emerge, especially in areas with unmanaged vegetation and where combustible materials are concentrated.

Table 2.3.12

Wildfire Summary	
Recent developments have had **no change** in the risk of wildfire, though local officials should carefully consider how proposed developments may alter the fire risk in an area.	Changing climatic conditions (e.g., earlier springs, delayed falls, and shorter winters [USGCRP, 2018]) may yield longer dry periods and increased evapotranspiration. These conditions do not directly **increase risk**, but they can create opportunity spaces for wildfires where they have been historically rare. Importantly, the spatial (i.e., geographical) and temporal (i.e., time-based) variability of these conditions adds a layer of uncertainty that complicates traditional fire risk forecasting.

With these risk profiles established, the next section explores how broader development and land use patterns may shape, and be shaped by, evolving hazards.

Community and Economic Development Trends

§201.6(c)(2)(ii)(C)	[The plan should describe vulnerability in terms of] providing a general discussion of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Section 1.2 above presents information about development trends in the county. This section revisits those trends and applies lessons learned from the hazard profiling activity (i.e., Section 2.2) to the trend discussion.

Proactive mitigation considerations for growth can reduce exposure to various hazards throughout the county. Construction and development can change natural drainage paths and create or increase flood risks. Industrial companies may clear large areas for their operations. Developments of any size may alter drainage paths or change the vegetation available to absorb rainwater. Changes to wetlands and erosion are the other land disturbances that may impact the permeability of areas (and all these changes can impact flooding).

Flash floods from heavy precipitation events (of the kind mentioned by the steering committee) may be a heightened concern as areas of the county develop. New commercial and industrial developments, and even larger residential developments and transportation projects, may pave substantial land areas with impervious surfaces. New buildings, parking lots, and roads (i.e., impervious surfaces) mean less land to absorb excess precipitation, forcing water into places it previously could not reach. The evolving built environment interacts with these changing weather patterns to yield potentially destructive flooding.

Figure 2.3.a identifies the areas of Columbiana County listed as “Developed, High Intensity,” with greater than 80% of the land area consisting of impervious surfaces, as well as “Developed, Medium Intensity,” which have between 50 and 79% of land areas covered with impervious surfaces. The intersections of these areas with special flood hazard areas (SFHAs) may provide local leaders with insights as to where to concentrate hazard mitigation efforts related to stormwater management and flash flooding. The figure also shows an overlay of the SFHAs on the developed areas.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

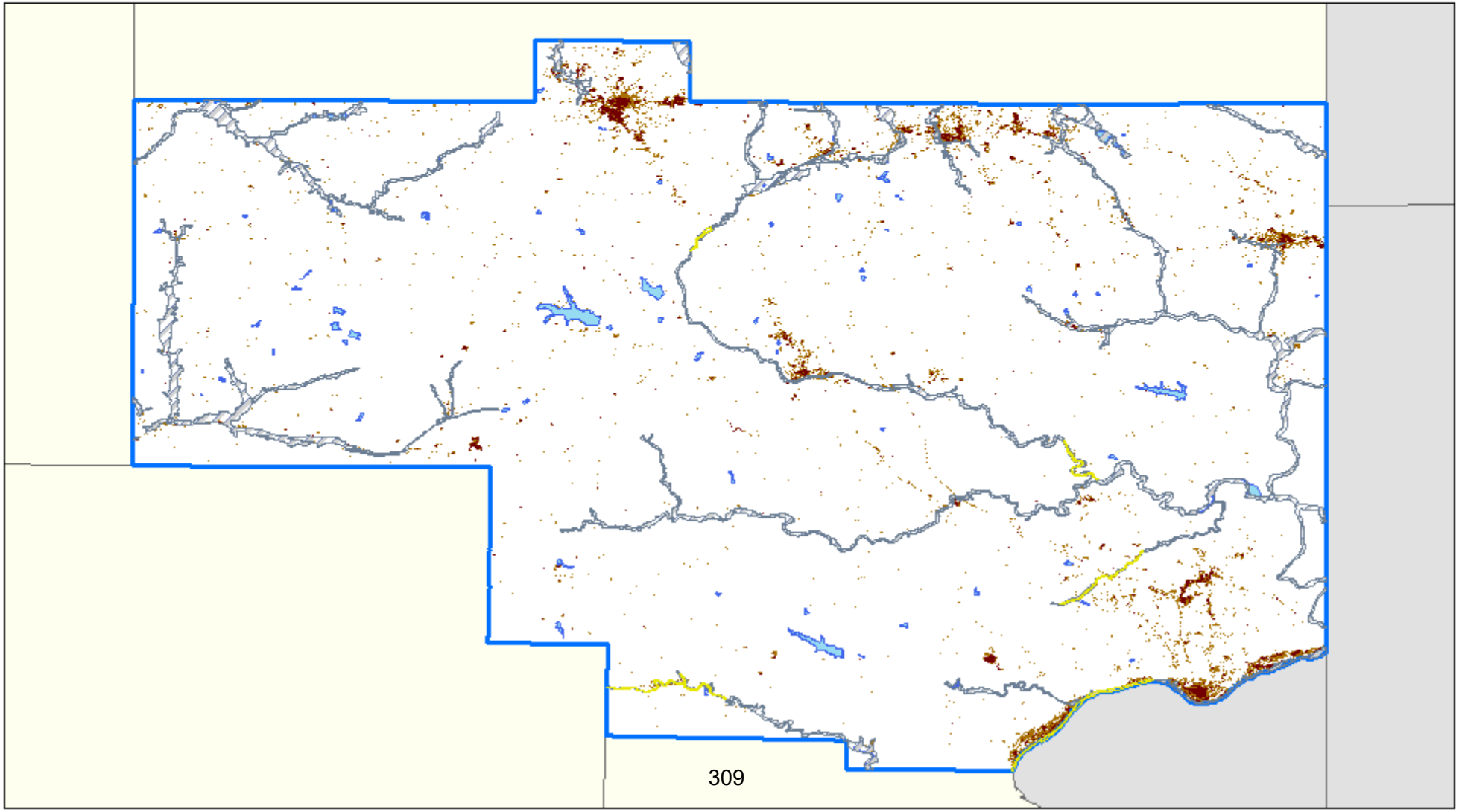
Figure 2.3.a: Impervious Surfaces and SFHAs

Data Source(s):
FEMA, USGS NLCD (2021)

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

- Developed, Medium Intensity
- Developed, High Intensity
- Floodway
- 1% Annual Chance





The narrative above discusses earthquake risk with structures built with unreinforced masonry construction methods. Generally, these structures are those built pre-1950, and that cut-off is not only relevant for earthquakes. Modern construction methods and materials offer protection from severe weather hazards. For instance, anchoring and roof construction methods have made more modern structures (i.e., those built from 1970 forward) more resilient to thunderstorms and winds. Census data (2023) indicates 33.41% of the housing units in the county being built in 1949 or before, with another 23.24% being built between 1950 and 1970. Figure 2.3.b identifies, by tract, the percentage of residences constructed in 1970 or afterward.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

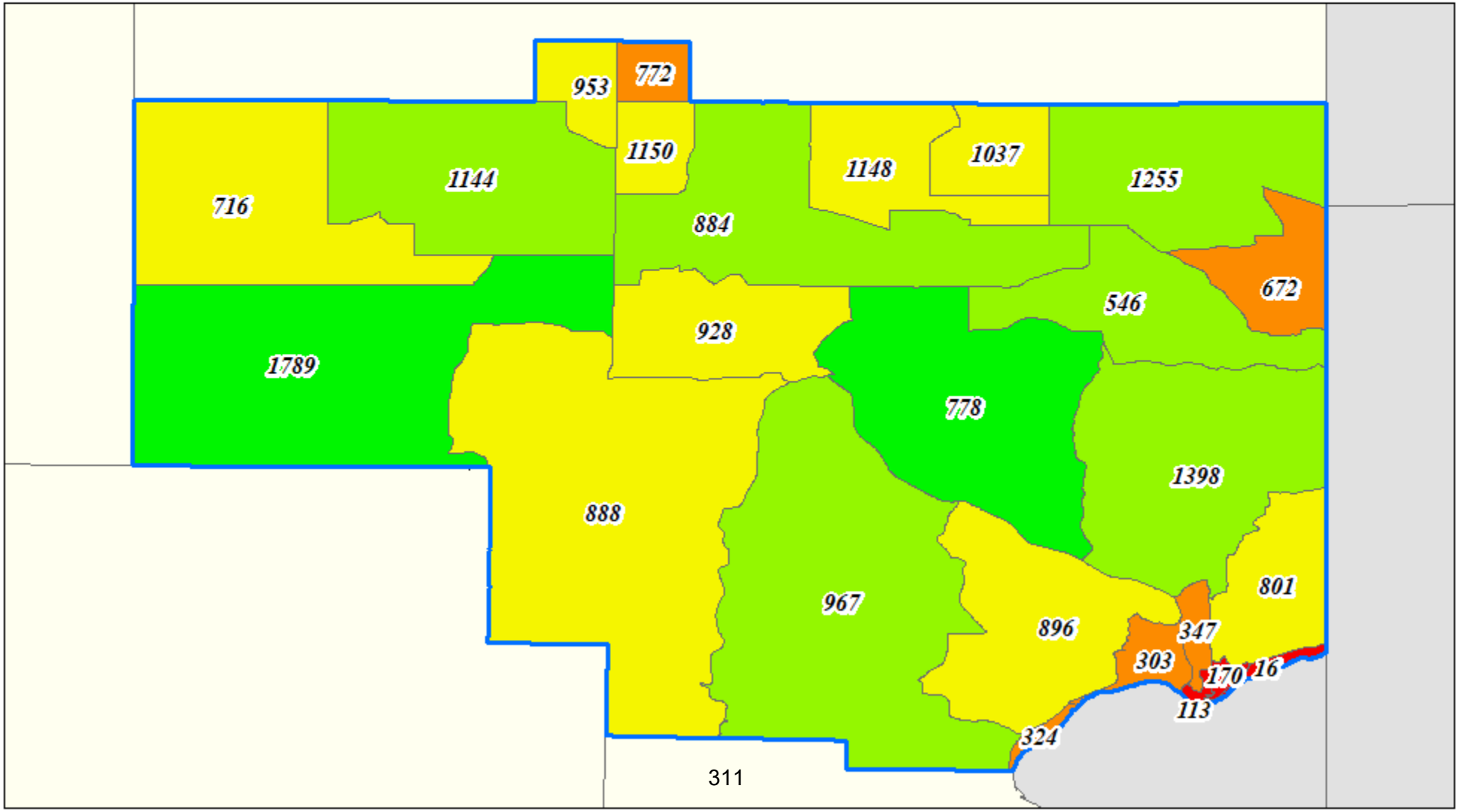
Figure 2.3.b: Residential Structures Built After 1970

Data Source(s):
U.S. Census Bureau (ACS, 2023)

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

- 0 - 15% Res. Structures
- 15.01 - 31.78% of Res. Structures
- 31.79 - 48.09% of Res. Structures
- 48.1 - 62.27% of Res. Structures
- 62.28 - 75% of Res. Structures





Direct, measurable consequences of disasters can include fatalities, injuries, and damage to humans, animals, or property. Disasters do not end there; there are several indirect effects, tangible and intangible, associated with them. Some examples of these include loss of livelihood and income, loss of community and population, mental and psychological impacts, costs of rebuilding, repair or replacement, loss of inventory, wages and tax revenue, etc. (Bullock, Haddow, & Coppola, 2017). All these also have a cost associated with them. Still, it is much more challenging to assign a specific dollar value and quantify them accurately. Often, disasters exacerbate risks already in a community (Comfort et al., 1999; Raker, Arcaya, Lowe, Zacher, Rhodes, & Waters, 2020). For instance, in areas where poverty is a concern, a disaster makes the challenges faced by those living in poverty much more difficult. In areas where access to public services is a concern, disasters may highlight how segments of the population cannot access assistance. Local leaders in areas where public trust in governmental systems is low may have difficulty rallying residents to follow the community's response strategy.

Throughout the county, Census tracts with socially vulnerable populations (e.g., persons below 150% of the poverty rate, persons speaking English "less than well," households with no vehicle available, etc.) exist; all participating jurisdictions have them. Local officials should remain mindful of the challenges these populations face regarding access to information and resources as well as participating in community initiatives. Ensuring their ability to participate in decision-making about risk reduction will be crucial to keeping the community inclusive, responsive, and resilient. During the 2025 update, Columbiana County deliberately engaged under-represented populations in public outreach (see Section 1.1 above), hoping to elevate the voices of these populations.

FEMA’s Resilience Analysis and Planning Tool (RAPT) utilizes Community Resilience Challenges Index (CRCI) scores at the Census tract level (FEMA, 2025e). The scores provide granular data across 22 indicators. The RAPT also assigns a CRCI percentile to counties (labeled as “X out of 100”). Regarding climate change, the hazard profiles in Section 2.2 contain a narrative that identifies future climate considerations for all the natural hazards considered by this risk assessment. Those sections are hazard-specific, but they serve as contextual extensions of the conversation. Climate change appears here as a sort of summary discussion. Further, the profiles discuss social vulnerability variables. Social vulnerability and climate change impacts often intersect. Table 2.3.13 presents the highest CRCI percentiles for tracts in the county. Figures 2.3.c, 2.3.d, and 2.3.e provide additional details as to the locations of the tracts.

Table 2.3.13

Resilience Scores per FEMA Tools (for Reference)			
	CRCI	The Climate Explorer Neighborhoods at Risk Project	
County	Percentile	# of Tracts	General Location
Columbiana	43	5	3 tracts in and around East Liverpool 1 tract covering Wellsville 1 tract covering the northeastern portions of Salem and Perry Township

Four of those five tracts are considered as "medium-high challenges" with resilience challenges in the 70th – 85th percentiles. The tract covering downtown East Liverpool is listed as "high challenges" with resilience challenges between the 85th and 95th percentiles. Another highly publicized FEMA tool for assessing resilience is the Community Disaster Resilience Zone (CDRZ) concept. None of Columbiana County's communities are designated CDRZs (FEMA, 2025a).

Figure 2.3.c

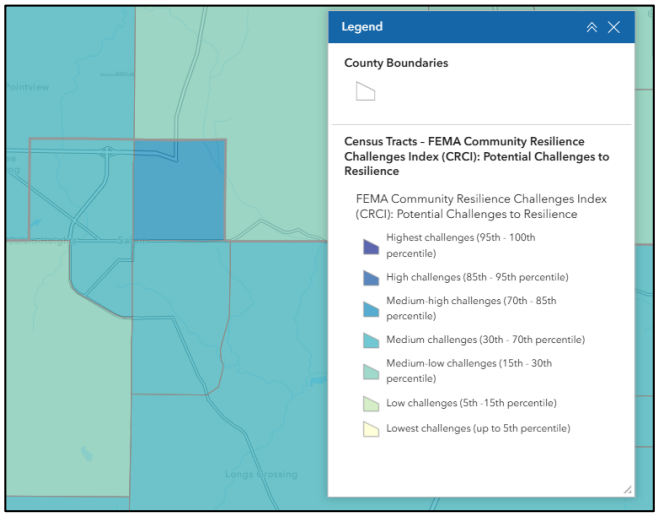


Figure 2.3.d

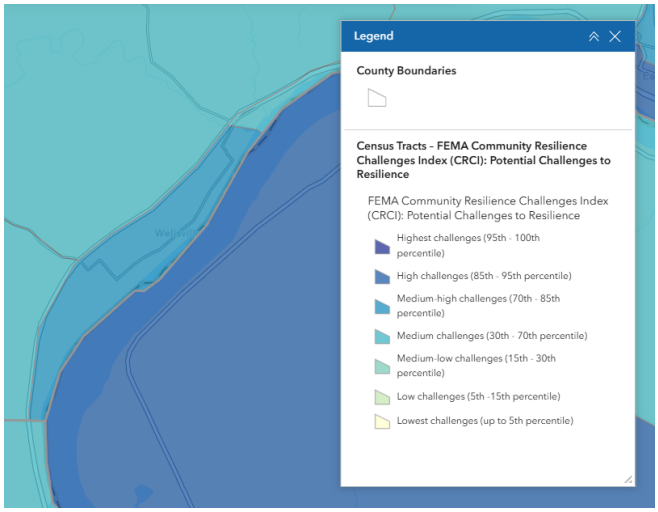
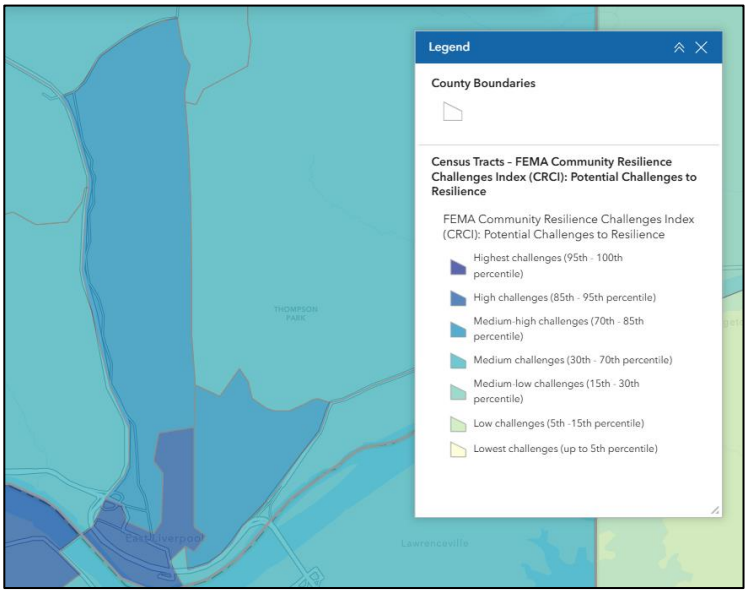


Figure 2.3.e



Throughout this update, planners referenced models and other research-based information regarding changes in temperature, precipitation, and seasonal dynamics. This information, while helpful, understandably cannot fully anticipate the compound effects of demographic shifts, infrastructure aging, or land use transformation, particularly in a specific small area (like a county). For this reason, the uncertainty itself can be a risk factor, one that planning processes (including this one) should explicitly acknowledge and incorporate through flexible strategies.

Countless instances of the hazards identified in Section 2.2 could disrupt critical infrastructure systems throughout the county. Loosely related variables, often considered *cascading hazards*, can complicate some events. For example, high winds may cause sporadic damage but usually do not become a significant countywide concern until many residents are without power. In addition to weather-related power outages, cascading hazards in the county could include (but not be limited to) the following.

- Damage to infrastructure (i.e., roads, bridges, pipelines, utility poles, etc.) and residences following flooding
- Flooding of downstream or protected areas in the event of a dam or a levee failure
- Drinking water supply shortages and contamination following severe and prolonged drought conditions or floods
- Power outages, ruptured gas lines, etc. following severe weather
- Public health concerns following flooding conditions

- Permanent or temporary population displacement before, during, or after an event

Exhibit 2.3.A

A brief consideration of the February 2023 derailment in East Palestine as it relates to development trends…

The February 2023 Norfolk Southern train derailment in East Palestine drew national attention to hazardous materials transportation risk in Columbiana County and beyond. Several other train derailments at around the same time (e.g., a Union Pacific derailment in Nebraska [February 21, 2023] and the collision between freight and passenger trains in Tempi, Greece [February 28, 2023]) reinforced the need to consider the risk. The East Palestine incident was singular in scope, but it has indeed prompted local and regional conversations about long-term resilience, infrastructure safety, and emergency response preparedness (to include private sector involvement in response). The East Palestine incident, though, does not constitute a trend in and of itself; rather, it highlights the trends discussed above (e.g., aging transportation infrastructure, modern usage exceeding design standards of infrastructure, etc.).

The enhanced attention brought about by the incident has elevated the hazardous materials risk in the discourse and has improved thoughtful consideration of managing the risk. Exposures in industrial and rail-adjacent parcels have been re-evaluated, and these efforts have extended into areas along heavily traveled highway corridors. East Palestine and other communities in Columbiana County have invested funds received as a result of the incident in resilient projects, such as relocating the East Palestine municipal building further away from the rail line. Ongoing environmental monitoring by local, state, and federal agencies continues in the area of the derailment, with attention to soil, water, and air quality metrics. Though at times contentious, these efforts support long-term risk management and public confidence in relation to future development in the area.

When observed from afar, these efforts may seem to have elevated the risk of hazardous materials incidents; however, *they have elevated the collective understanding of the hazardous materials risk*. In fact, increased awareness and understanding is a suitable first step to reducing risk in the long term.

The above narrative presents a substantial amount of information, and this information suggests that development patterns in the county since the last update have contributed to a rather mixed risk landscape. Therefore, Table 2.3.14 offers a summary (non-exhaustive) of key points woven through the above narrative.

Table 2.3.14

Key Development Influences on Risk in Columbiana County		
Development Trend	*Hazard Implication*	*Risk Direction*
Modern residential construction using reinforced materials	Earthquake, Wind, Winter Storm	↓ Decreased vulnerability
Removal of Wellsville Reservoir	Dam Failure	↓ Decreased exposure
Expansion of impervious surfaces in urbanizing areas	Flash Flooding, Severe Storms	↑ Increased exposure
Aging transportation infrastructure	Hazmat (Rail, Highway), Flooding	↑ Increased vulnerability and exposure

Key Development Influences on Risk in Columbiana County		
Development Trend	*Hazard Implication*	*Risk Direction*
Persistent legacy housing stock (pre-1950)	Severe Wind, Winter Storms, Shelter-in-Place Hazmat	↑ Increased vulnerability
Growing adoption of digital infrastructure	Cyber, Interdependency Cascades	↑ Increased complexity
Development in or near steep slopes	Landslide	→ Minimal change (managed)
Shifting industrial footprint with fewer fixed facilities	Hazmat (fixed site)	↓ Decreased exposure
Aging population and pockets of poverty	Extreme Temps, Public Health, Insurance Gaps	↑ Increased vulnerability
Solar and energy infrastructure in open lands	Wildfire, Hazmat (battery)	↑ Conditional exposure (requires vegetation mgmt)
Improved public awareness post-East Palestine derailment	Hazmat, Emergency Preparedness	↓ Increased risk awareness (potential long-term reduction)

2.0 RISK ASSESSMENT

2.4 Summarize Vulnerability

Section 2.2: Describe Hazards provides the foundation for estimating hazard probability and severity in Columbiana County. The individual profiles in Section 2.2 calculate the probability and severity of the hazards in question. The following table summarizes that data and presents a ranked list of anticipated hazard impacts.[1]

Table 2.4.1

Summary of Risk Rankings									
Hazard	*Raw Ranking*	***Total***	*Frequency*	*Response*	*Onset*	*Magnitude*	*Business*	*Human*	*Property*
Public Health Emergency	High	**22**	5	5	1	4	2	4	1
Cyber Incidents	High	**21**	5	5	4	1	4	1	1
Hazardous Materials Incidents	Medium	**20**	5	5	4	1	2	2	1
Severe Winter Storm	Medium	**19**	5	3	1	4	1	3	2
Wildfire	Medium	**18**	5	3	4	1	2	2	1
Extreme Temperatures	Medium	**16**	5	2	1	4	1	2	1
Flooding	Medium	**16**	5	3	2	1	2	2	1
Landslides	Medium	**16**	5	2	2	4	1	1	1
Severe Thunderstorm & Hail	Medium	**16**	5	2	1	4	1	2	1
Tornado	Medium	**16**	3	3	4	1	2	2	1
Severe Wind	Low	**15**	4	3	1	4	1	1	1
Drought	Low	**14**	2	5	1	2	2	1	1
Earthquake	Low	**11**	1	2	4	1	1	1	1
Dam & Levee Failure	Lowest	**8**	1	1	1	1	1	2	1

The Federal Emergency Management Agency (FEMA) created the National Risk Index (NRI) in 2021 to illustrate risk in the communities of the United States from a dataset of 18 natural hazards (FEMA, 2023). The tool is an interactive online map ranking risk variables such as expected annual loss (as shown in several of the profiles above), social vulnerability (also shown in the profiles), and community resilience, which produce an aggregated risk score. While the methodologies used for the hazard profiles were meant to inform project-level mitigation decision-making and the NRI is better suited for evaluating systemic community vulnerabilities, a

[1] The profile scoring yielded one set of ties. *Extreme temperatures*, *flooding*, *landslides*, *severe thunderstorm and hail*, and *tornado* all scored 16. In Figure 2.4.1, the hazards with the same score were alphabetized.

comparison of the rankings in the preceding table with NRI risk index scores can help to triangulate and validate the findings of this risk assessment. The hazards in both the NRI and this plan are as follows.

- Earthquake
- Extreme temperatures (as "heat wave" and "cold wave")
- Flooding (as "riverine flooding")
- Landslide
- Severe thunderstorms and hail (as "hail" and "lightning")
- Severe wind (as "strong wind")
- Severe winter storm (as "ice storm" and "winter weather")
- Tornado
- Wildfire

Table 2.4.2 below compares the NRI-derived risk index scores[2] and the hazard profile rankings and ranks them from lowest to highest. The far-right column describes the change in numerical hazard rank position based on the profile results.

Table 2.4.2

NRI and Hazard Profile Rankings Comparison					
Hazard	*Risk Index (Avg. of Scores)*	*Numerical NRI Ranking Position*	*Hazard Profile Scoring*	*Raw Hazard Profile Ranking*	*Change (from Raw Hazard Profile Ranking Placement)*
Severe Thunderstorm & Hail	92.3	1	Medium (16)	Tie-6	↑ 5
Landslide	90.7	2	Medium (16)	Tie-6	↑ 4
Extreme Temperatures	77.8	3	Medium (16)	Tie-6	↑ 3
Tornado	38.3	4	Medium 16	Tie-6	↑ 2
Flooding	67.9	5	Medium (16)	Tie-6	↑ 1
Wildfire	51.9	6	Medium (18)	5	↓ 1
Earthquake	43.3	7	Low (11)	13	↑6
Severe Wind	36.7	8	Low (15)	11	↓ 3
Severe Winter Storm	30.3	9	Medium (19)	4	↓ 5

[2] In order to compare one score (from the NRI) to one score (derived from hazard profiles), planners averaged NRI scores where two or more hazards in the NRI represented the hazard as described by this plan. As such, averaging risk index scores for "cold wave" (82.9) and "heat wave" (72.7) produced an *extreme temperatures* risk score of 77.8; averaging "hail" (91.1) and "lightning" (93.5) derived a *severe thunderstorm and hail* risk score of 92.3; and averaging "ice storm" (41.6) and "winter weather" (18.9) yielded a score for *severe winter storm* of 30.3.

When scanning Table 2.4.2, one quickly sees variance between the NRI and the hazard profiles; as such, additional consideration is helpful. First, the methodologies considered different hazards. As an example, this document considered extreme cold and heat side-by-side while the NRI considered them separately. Further, each calculation (the NRI and the hazard profile) considered different variables. Comparisons are, thus, for planning context only, and given the various focal points created by the variables of data considered, some fluctuation should be expected. In lay terms, though Table 2.4.2 compares similar items, it does not represent an "apples-to-apples" comparison.

Second, the NRI includes only natural hazards, while Columbiana County's hazard profiles included technological and human-caused hazards. As such, the raw rank ordering would change if the technological and human-caused hazards were removed from consideration. Doing so brings the variance between the NRI and hazard profiles more into focus.

- Severe Thunderstorm and Hail: Tied as the 4th ranked natural hazard by profile risk ranking
- Landslide: Tied as the 4th ranked natural hazard by profile risk ranking
- Extreme Temperatures: Tied as the 4th ranked natural hazard by profile risk ranking
- Flooding: Tied as the 4th ranked natural hazard by profile risk ranking
- Severe Wind: 9th ranked natural hazard by profile risk ranking
- Tornado: Tied as the 4th ranked natural hazard by profile risk ranking
- Wildfire: 3rd ranked natural hazard by profile risk ranking
- Earthquake: Lowest-ranked natural hazard by profile risk ranking
- Severe Winter Storm: 2nd ranked natural hazard by profile risk ranking

Two of the top three rankings via the profile methodology were technological hazards not considered by the NRI; thus, all absolute rankings for the natural hazards shifted. As a note, the highest-ranked hazard via the profile methodology (i.e., public health emergency) is not present in the NRI. The adjusted change values (column: *Change (from Raw Hazard Profile Ranking Placement)*) are as follows.

- Severe Thunderstorm and Hail: Up 3
- Landslide: Up 2
- Extreme Temperatures: Up 1
- Tornado: Same
- Flooding: Down 1
- Severe Wind: Down 1
- Wildfire: Down 3
- Earthquake: Up 4
- Severe Winter Storm: Down 7

Discussion of Key Variances

Severe thunderstorm/hail, landslide, and severe winter storm are the hazards that warrant the most discussion after comparing the two analyses. For severe thunderstorm/hail, one must consider the methods planners used to generate a composite score to approximate a hazard not explicitly listed in the NRI. Hailstorms occur frequently (i.e., 2.85 per year as noted in Section 2.2.10) *and* often result in insurance claims or other documented losses. Lightning is common, though severe strikes are relatively rare. Severe thunderstorms, as described by the hazard profile, occur frequently (i.e., 5.39 per year), yet many result in little damage or injury. Though the frequency variable in the profile calculation was high, other variables related to damage and human impacts were much lower. It is possible that considering the frequent, though not often damaging thunderstorms "pulled down" the scored vulnerability ranking in the hazard profile analysis.

In contrast, the NRI considers each sub-hazard independently and does not apply downward adjustments due to low-impact events. This paradigmatic difference may account for this discrepancy.

The difference in scoring for severe winter storm illustrates how resilience metrics influence risk scoring. The hazard profiles emphasize probability and severity. Though the NRI's "expected annual loss" and "social vulnerability" are probability and severity measures, it includes "community resilience" as a capability dimension. Though winter storms are frequent and can be severe, they are expected seasonal events. This familiarity and residents' collective adaptability may have elevated the county's resilience score, thus decreasing the overall NRI risk index.

Landslides offer an opposite case. They are frequent and impact socially vulnerable and non-vulnerable populations. Probability and severity are high. The response capability, however, is relatively limited. Unlike winter storms, few residents have the infrastructure or resources to mitigate landslide threats independently, which may have kept the NRI risk index higher.

Finally, planners recognize the presence of tie scores resulting from the hazard profile methodology. Rather than applying artificial weighting to force separation, the steering committee accepted ties. Given the intent of the assessment (i.e., to inform decision-making about mitigation projects), an ordinal rank structure would not add meaningful value. As an example, consider the landslide hazard. It was the second-highest score in the NRI ranking. When considering only the hazards that overlap (between the hazard profiles and the NRI), landslide was the fourth-highest score resulting from the profile analysis, a much more consistent result with the NRI. This reinforces that the hazard is serious, and that minor differences in rank order do materially change planning priorities.

Conclusion

Columbiana County acknowledges the variance in the hazard profiles and the NRI but considers both tools valuable for informing mitigation planning. The differences illustrate the importance of combining quantitative data with local knowledge and steering committee input. Together, they support a more nuanced and actionable understanding of community vulnerability.

3.0 MITIGATION STRATEGY

§ 201.6(c)(3)	A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

According to FEMA, “The heart of the mitigation plan is the mitigation strategy” (2025b, p. 82). This section contains the three required elements of the mitigation strategy for Columbiana County: goals, actions, and the action plan. It describes the updated goals and objectives for this mitigation plan, it outlines the action items (or projects) for each participating jurisdiction within the county, and each project identifies the agency responsible for completing the project as well as a general timeline for completion.

3.0 MITIGATION STRATEGY

3.1 Mitigation Goals and Objectives

Columbiana County's committee loosely addressed mitigation goals at several planning meetings. The committee elected to keep the five goals from the previous version of the plan consistent, though the language used for them have been revised. Additionally, the committee added objectives for each of the goals. Table 3.1.1 presents the goals and objectives.

Table 3.1.1

Mitigation Goals and Objectives	
Number	*Description*
GOAL 1	**Sustain the health and safety of first responders and the general population in Columbiana County before, during, and after emergency incidents.**
Obj. 1.1	Increase the capabilities of the individuals and agencies that may respond to incidents.
Obj. 1.2	Increase potable water and sanitary sewer capabilities throughout the county.
GOAL 2	**Maximize partnership with key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.**
Obj. 2.1	Increase the data available to support risk reduction decisions.
Obj. 2.2	Increase the capabilities available to support risk reduction activities.
GOAL 3	**Protect vulnerable populations from the negative effects of hazards.**
Obj. 3.1	Increase the visibility of potential impacts to historically vulnerable populations.
GOAL 4	**Minimize death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazardous incidents.**
Obj. 4.1	Decrease the number of stormwater management issues throughout the county.
Obj. 4.2	Reduce structure exposure in known hazard-prone areas.
Obj. 4.3	Reduce downstream risk exposure from dam or levee failures.
GOAL 5	**Support the livelihoods of Columbiana County residents and businesses through risk reduction activities.**
5.1	Increase the resilience of critical facilities and economic assets throughout the county.

3.0 MITIGATION STRATEGY

3.2 Mitigation Actions

§ 201.6(c)(3)	A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.
§ 201.6(c)(3)(ii)	[The mitigation strategy shall include] a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
§ 201.6(c)(3)(iii)	[The mitigation strategy shall include] an action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects and their associated costs.

This section serves as a mitigation action plan to reduce the losses and other impacts that may result from the hazards included in Section 2.0. Mitigation actions are “measures, projects, plans or activities proposed to reduce or eliminate current and future vulnerabilities described in the risk assessment” (FEMA, 2025b, p. 82).

Types of Mitigation Actions

Four primary types of mitigation actions can reduce long-term vulnerability: local plans and regulations, structure and infrastructure projects, natural systems protection and nature-based solutions, and education and outreach activities (FEMA, 2025b, pp. 85-87).

- Local Plans and Regulations: Actions that include government authorities, policies, or codes that influence the way land and buildings are developed and built. Examples include the following.
  - Comprehensive plans
  - Land use ordinances
  - Subdivision regulations
  - Development review
  - Building codes and enforcement

- National Flood Insurance Program (NFIP) and the Community Rating System (CRS)
- Capital improvement programs
- Open space preservation
- Stormwater management regulations and master plans

- Structure and Infrastructure Projects: These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. These projects could apply to public or private structures as well as critical facilities and infrastructure. Examples include the following.
  - Acquisitions and elevations of structures in flood-prone areas
  - Utility undergrounding
  - Structural retrofits
  - Floodwalls and retaining walls
  - Detention and retention structures
  - Culverts
  - Safe rooms

- Natural Systems Protection and Nature-Based Solutions: These actions can include green infrastructure and low impact development, nature-based solutions, engineering with nature, and bioengineering to incorporate natural features or processes into the built environment. Examples include the following.
  - Sediment and erosion control
  - Stream corridor restoration
  - Forest management
  - Conservation easements
  - Wetland restoration and preservation
  - Land conservation
  - Greenways
  - Rain gardens
  - Living shorelines

- Education and Outreach Activities: These actions keep residents informed about potential natural (or human-caused) disasters. Many of these types of actions are eligible for

funding through FEMA hazard mitigation assistance programs. Examples include the following.

- Radio or television spots
- Social media outreach
- Websites with maps and information
- Real estate disclosure
- Presentations to school groups or neighborhood organizations
- Mailings to residents in hazard-prone areas.
- Targeted outreach to under-represented communities and socially vulnerable populations
- Outreach materials in languages other than English

These mitigation techniques have pros and cons, and some work better for specific hazards than others. Table 3.2.1 below suggests project types for the hazards included in above.

Table 3.2.1

Mitigation Action Types Suitable for Profiled Hazards				
Hazard	*Local Plans & Regulations*	*Structure & Infrastructure Projects*	*Natural Systems Protection / Nature-Based Solutions*	*Education & Outreach Activities*
Cyber Incidents				X
Dam & Levee Failure	X	X		X
Drought	X	X	X	X
Earthquake	X			X
Extreme Temperatures			X	X
Flooding	X	X	X	X
Hazardous Materials Incident	X	X		X
Landslides	X	X	X	X
Public Health Emergency	X			X
Severe Thunderstorm & Hail	X	X	X	X
Severe Wind & Tornado	X	X		X
Severe Winter Storm	X	X		X
Wildfire	X		X	X

Project Prioritization

Prioritizing projects helps to define the types of action that local leaders should pursue first. There is a recognition, however, that communities may implement projects out of a prioritized order based on the availability of funding. Columbiana County's steering committee defined eight criteria by which to score actions. To enable consistent scoring across all participating jurisdictions, the committee devised a yes/no scoring mechanism to enable the county's consultant to consistently score mitigation actions. At its final planning meeting, the committee ranked the eight criteria by order of "importance" and ensured that each criterion appears as a Yes/No question. The consultant then averaged the *Importance Rankings* of all attendees. Table 3.2.2 lists the criteria in ranked order of importance.

Table 3.2.2

Columbiana County Prioritization Criteria		
Criteria	*Committee Scoring*	*Prioritization Points Available*
The action addresses more than one hazard.	Sum = 67; **Rank 2**	7 pts.
The action aims to protect the most vulnerable populations.	Sum = 59; **Rank 3** (Std. Dev. = 1.72)	6 pts.
The action protects the environment.	Sum = 44; **Rank 5**	4 pts.
Jurisdictions in the county have administrative capabilities in place to undertake and manage the action.	Sum = 40; **Rank 7** (Std. Dev. = 2.46)	2 pts.
The action is already scheduled to start or is in process.	Sum = 24; **Rank 8**	1 pt.
The action promotes partnerships within the county.	Sum = 40; **Rank 6** (Std. Dev. = 1.49)	3 pts.
The action attempts to reduce the negative impacts of one of the top three most damaging hazards impacting the county (as per the risk assessment ranking: [1] public health emergency, [2] cyber incidents, [3] hazardous materials incidents).	Sum = 69; **Rank 1**	8 pts.
The action attempts to reduce the negative impacts of one of the top three most concerning hazards as per public perception (based on the results of the public surveys: [1] severe wind and tornado, [2] hazardous materials incidents, [3] cyber incidents).	Sum = 59; **Rank 4** (Std. Dev. = 2.19)	5 pts.

To score a mitigation action for any of the eight criteria, a planner should ask if the mitigation action answers the question affirmatively. If, for example, the criterion under consideration is "The action address more than one hazard" and the answer for an action is "Yes," then the action would receive the allotted points for the criterion. Point values range from 0

(corresponding to a "No" response) to eight (a "Yes" response to the highest-ranked, most "important" criterion per the committee's ranking).

A Note About Dam-Related Mitigation Projects

The mitigation actions designed to reduce risk associated with dams are evaluated by the same methodology as described above, the role of ODNR Dam Safety should be recognized in this process. ODNR Dam Safety works closely with dam owners in identifying deficiencies and developing strategies to address those deficiencies. As such, those actions brought forth by ODNR dam safety would be strongly considered as high-priority mitigation actions.

Updated Jurisdictional Project Lists

The following tables list the active hazard mitigation projects for Columbiana County and the participating jurisdictions. There is a unique table for each participating jurisdiction. In addition to the action itself, the tables identify, to the extent possible, the following information.

- Project Number: An identifier to enable quick referencing; planners attempted to continue numbering from the 2020 plan, and as such, gaps in the numbering represent completed, deleted, or deferred projects
- Action Type: The associated mitigation technique category (i.e., local plans and regulations, structure and infrastructure projects, natural systems protection, education and outreach projects)
- Implementation Schedule: An approximate timeframe for completion, if known
- Estimated Cost: An informal cost estimate or credible source from which to develop a cost estimate
- Potential Funding Source(s): The program(s) or agencies/entities that could fund the action
- Lead Agency or Department: The coordinating agency (along with, in some cases, support agencies)
- Hazard(s) Addressed: Hazards whose risks may be mitigated by the action
- Goal/Objective Alignment: An identification of the goals/objectives (from Section 3.1) that the action supports
- Priority: The prioritization calculation for the action, based on the methodology noted above

- Status: As applicable, the status of the action (particularly if it appeared in the previous version of the plan)

Participating jurisdictions focused attention on the projects that appeared in the previous version of the plan; however, all of them considered a comprehensive range of mitigation actions relative to the hazards they may face. It is particularly noteworthy that while all participating jurisdictions did their best to consider a "comprehensive range of actions," several jurisdictions in the county have minimal capability to undertake extensive hazard mitigation. (See Section 1.3.) To ensure a comprehensive, yet practical range of actions is in place for the jurisdictions, participating jurisdictions may partner in the completion of mitigation actions or take advantage of multi-jurisdictional action implementation for hazards applicable to them (e.g., a countywide education effort).

The 2025 update marked the first time this plan had been reviewed following the U.S. Department of Homeland Security/FEMA's release of the "community lifelines" (FEMA, 2024b) as a tool for framing preparedness and response. The eight community lifelines are as follows.

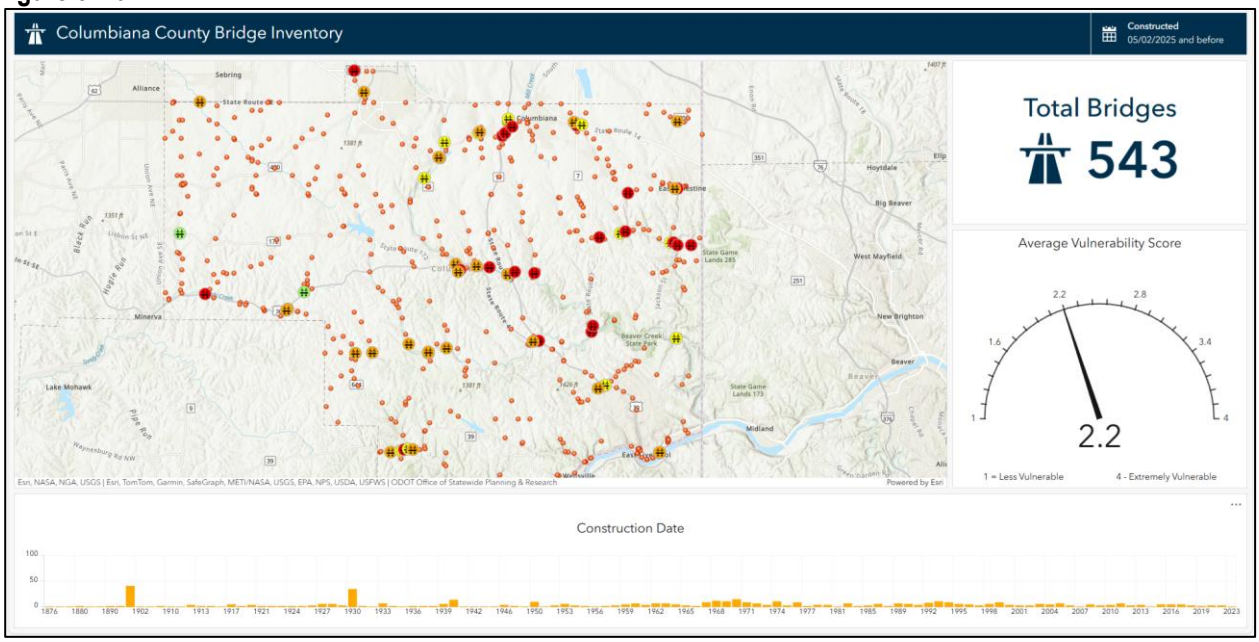
- Safety & Security: This lifeline covers responder and survivor safety, continuity of government, and community safety (including basic services, firefighting, and law enforcement).
- Food, Hydration, Shelter: This lifeline covers not only traditional feeding and hydration services, which are routinely paired with sheltering, but it also includes agricultural infrastructure.
- Health & Medical: This lifeline covers all aspects of medical services required during an incident, including survivor care, fatality management, public health, and the medical chain.
- Energy: This lifeline is focused on electricity and fuel as well as natural gas, which can be essential to a response operation.
- Communications: This lifeline covers all types of communications necessary to effectively respond to various incidents to help survivors, in addition to banking and electronic payment needs.
- Transportation: This lifeline covers all forms of transportation of people and resources to and from incidents.
- Hazardous Material: This lifeline covers the management (including containment and removal) of all hazardous materials.

- Water Systems: This lifeline focuses on potable water infrastructure and wastewater management.

Though not *mitigation* in the strictest sense, considering how an action supports resilience for community lifelines is helpful to link this plan with other preparedness efforts. The following tables identify the community lifeline with which each action best aligns.

Table 3.2.3

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
HAZARD: FLOODING		
4.3.1	**Integrate site-specific disaster mitigation issues into stormwater planning initiatives, including efforts to eliminate combined sewer overflows (CSOs).** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Municipal utilities departments Support Agency(ies): Columbiana County Engineer's Office Timeframe: 5 years (as funding is available) Potential Funding Source(s): CDBG, SWCD Watershed Program, Clean Water Action Section 319(h) Grants, Surface Water Improvement Fund, Alternative Stormwater Infrastructure Loan Program, Water Pollution Control Load Fund, Local funding Community Lifeline: Water Systems Priority: **11**	**ON-GOING** The county is continuing with replacements of culverts and bridges. County engineering continues to run HEC-RAS as part of the planning/design of a culvert or bridge. Replacement decisions are generally made as per a "vulnerability measure" show in Figure 3.2.a below.

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
Figure 3.2.a 		
4.5.1	**Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Municipal utilities departments Support Agency(ies): Columbiana County Engineer's Office Timeframe: 5 years (as funding is available) Potential Funding Source(s): CDBG, SWCD Watershed Program, Clean Water Action Section 319(h) Grants, Surface Water Improvement Fund, Alternative Stormwater Infrastructure Loan Program, Water Pollution Control Load Fund, Local funding Community Lifeline: Water Systems Priority: **11**	**ON-GOING** The county commissioners recently funded three projects: (a) to implement the study for Hampton Court and Kingsridge Court in Liverpool Township, (b) to implement the study for Painter Road in Perry Township (using ARPA funds), and (c) to implement the study for Countrywide Estates in West Township (also using ARPA funds).

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
4.6.1	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Columbiana County SWCD Support Agency(ies): (a) CCEMA, (b) Participating jurisdictional administrators Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **13**	**ON-GOING** This action remains viable when and if funding is available. Since the 2020 planning cycle, the county completed a residential mitigation project involving one home in Wellsville.
HAZARD: SEVERE WIND & TORNADO		
7.2.2	**Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.** Goal/Objective Alignment: 5.1 Increase the resilience of critical facilities and economic assets throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: CCEMA Support Agency(ies): Participating jurisdictional administrators Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Energy Priority: **3**	**ON-GOING** Completed projects since the 2020 planning cycle include the Highlandtown Volunteer Fire Department. The county donated a generator to the fire department that was originally provided to CCEMA. As needs and resources arise, the county will continue to identify auxiliary power needs.
7.2.5	**Construction/installation of community and residential safe rooms. Support efforts in all jurisdictions. As an immediate action item, identify the code requirements for public buildings and determine whether portions of those facilities would serve the same purpose.** Goal/Objective Alignment: 2.2 Increase the capabilities to support risk reduction activities. Action Type: Structure & Infrastructure Projects Coordinating Agency: Code enforcement of all local governments Support Agency(ies): Ohio Facilities Construction Commission Timeframe: 5 years (as funding is available) Potential Funding Source(s): Reviewing codes and identifying facilities should require little to no additional funding. Community Lifeline: Safety & Security Priority: **6**	**ON-GOING** The county did not construct any safe rooms between 2020 and 2025. As such, the committee requested a revision to the project pertaining to code requirements for public buildings (to see if there are existing options to serve as safe rooms).

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
HAZARD: SEVERE WINTER STORM		
8.2.1	**Maintain a list of sites that could be used as emergency shelters or points of distribution (PODs) throughout Columbiana County.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Local Plans & Regulations Coordinating Agency: CCEMA Support Agency(ies): (a) Columbiana County Health District, (b) American Red Cross Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Health & Medical Priority: **3**	**ON-GOING** The CCEMA continues to work with the American Red Cross regarding potential shelters, while the CCHD maintains lists of POD sites as well as three trailers ready to equip POD sites. Since the 2020 cycle, the health district added the fairgrounds as a POD site based on the effectiveness of that location during the COVID-19 response.
HAZARD: DAM & LEVEE FAILURE		
1.1.5	**Share information provided by dam owners with jurisdictions downstream of high-hazard dams.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Education & Outreach Activities Coordinating Agency: CCEMA Support Agency(ies): ODNR Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **10**	**ON-GOING** The committee added this project in 2020, and since then, the CCEMA and ODNR have begun working with dam owners to schedule tabletop exercises with first responders.

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1.1.6	**Support rehabilitation projects, as and if necessary, at high-hazard dams.** **Per information from the ODNR, the following dams in Columbiana County are eligible to be sub-applicants for the HHPD program:** • **Guilford Lake Dam (ODNR File Number 0606-001, Owner: ODNR, Division of Parks & Watercraft)** • **Highlandtown Lake Dam (ODNR File Number 0505-001, Owner: ODNR, Division of Wildlife)** • **Lake Tomahawk Dam (ODNR File Number 0604-001, Owner: Lake Tomahawk Property Owners Assoc.)** • **Salem Reservoir, South Embankment (ODNR File Number 0606-002, Owner: City of Salem)** Goal/Objective Alignment: 4.3 Reduce downstream risk exposure from dam or levee failures. Action Type: Structure & Infrastructure Projects Coordinating Agency: CCEMA Support Agency(ies): ODNR DPW, ODNR DWR, Lake Tomahawk Property Owners Association, City of Salem Timeframe: On-going Potential Funding Source(s): HHPD, ODNR DWR Community Lifeline: Safety & Security Priority: **5**	**ON-GOING** The Wellsville Reservoir Dam, noted as a high-hazard dam in the 2020 plan, has been removed; addressing that facility is a completed project. The Highlandtown Lake Dam was under rehabilitation at the time of the 2025 update, and the Guilford Lake Dam is scheduled for rehabilitation in 2025 or 2026.
HAZARD: HAZARDOUS MATERIALS INCIDENT		
5.1.1	**Conduct a commodity flow study to determine what materials are shipped through the county.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Local Plans & Regulations Coordinating Agency: Columbiana County LEPC Support Agency(ies): CCEMA Timeframe: 5 years (as funding is available) Potential Funding Source(s): PUCO, Local funding Community Lifeline: Hazardous Material Priority: **8**	**ON-GOING** The LEPC regularly applies for funding for hazardous material planning projects. The committee does not have a current commodity flow study, though it remains a worthwhile project.

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
5.1.2	**Continue testing and monitoring in the East Palestine area.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Education & Outreach Activities Coordinating Agency: CCHD Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Hazardous Material Priority: **2**	**NEW** The committee added this project in the 2025 update to capture on-going monitoring efforts following the train derailment in East Palestine.
HAZARD: DROUGHT		
2.1.2	**Using a collaborative approach between preparedness partners (e.g., CCEMA, CCHD), periodically push preparedness information specific to drought conditions via social media outlets.** Goal/Objective Alignment: 2.2 Increase the capabilities available to support risk reduction activities. Action Type: Education & Outreach Activities Coordinating Agency: CCEMA Support Agency(ies): CCHD Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **9**	**ON-GOING** This project became noteworthy in 2024 (while the 2025 update was underway) because of dry, drought-like conditions. As such, the public better understands the potential for drought conditions and feels a greater need for this type of information.

Columbiana County Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
MISCELLANEOUS / MULTIPLE HAZARDS		
7.1.1	**When received from the NWS, use the countywide mass notification system to push weather alerts to residents for all hazards (and particularly weather-related hazards). Ensure additional notification when watches ascend to warnings.** Hazard(s) Addressed: Drought, Extreme Temperatures, Severe Thunderstorm & Hail, Severe Wind & Tornado, Severe Winter Storm, Wildfire Goal/Objective Alignment: 2.2 Increase the capabilities to support risk reduction activities. Action Type: Education & Outreach Activities Coordinating Agency: CCEMA Support Agency(ies): (a) Columbiana County LEPC, (b) CCHD, (c) Other emergency response organizations, and (d) Participating jurisdictional administrators Timeframe: On-going Potential Funding Source(s): Local funding (for maintenance of subscription to program) Community Lifeline: Communications Priority: **6**	**ON-GOING** The county now has an electronic notification system that links with NWS. IPAWS is also sending out NWS tornado, severe weather, and winter storm alerts and warnings.
10.5.1	**Extend potable water and sanitary sewer service into currently under-served areas. Specific projects, at the time of the 2025 update, include water and sewer to the Elkton area and the sanitary sewer project for Hanoverton (which would eliminate approximately 200 septic systems).** Hazard(s) Addressed: Drought, Wildfire Goal/Objective Alignment: 1.2 Increase potable water and sanitary sewer capabilities throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Columbiana County Commission Support Agency(ies): (a) City/Village councils, (b) Participating jurisdictional administrators, (c) OMEGA Timeframe: 5 years (contingent on funding) Potential Funding Source(s): ARPA, CDBG, Local funding Community Lifeline: Water Systems Priority: **1**	**NEW** The committee added this project in 2025, both to include it as a need and to acknowledge efforts currently underway at the time of the update. The county was aggressive at extending service into various areas using post-COVID ARPA funds.

Table 3.2.4

Columbiana Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1A.1.2	**Continue storm sewer improvements throughout the city to help mitigate site-specific flooding when heavy rains occur.** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): (a) Columbiana County Commissioners, (b) OMEGA Timeframe: 5 years Potential Funding Source(s): CDBG, Critical infrastructure grant, Local funds Community Lifeline: Water Systems Priority: **1**	**ON-GOING** The city continues to do stormwater work. Over the past several years, the city has received multiple grants to redo stormwater infrastructure. Completed projects include the West Salem stormwater project that utilized HMGP funds in partnership with the CCEMA. Also, the Beverly-Ray Avenue and Prospect Street stormwater projects went out to bid while writing the 2025 update.
1A.1.3	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The city will continue to consider this project when/if funding is available. It did not mitigate any properties between 2020 and 2025. The city had a BRIC-funded project on tap for 2026 until those funds were canceled.
1A.1.4	**Replace the city's elevated 500,000-gallon water tank.** Goal/Objective Alignment: 1.2 Increase potable water and sanitary sewer capabilities throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Water Department Support Agency(ies): (a) OMEGA, (b) Columbiana County Engineer's Office Timeframe: 5 years (as funding is available) Potential Funding Source(s): CDBG, Local funding Community Lifeline: Water Systems Priority: **3**	**NEW** The city added this project as part of the 2025 update.

Table 3.2.5

East Liverpool Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1B.1.1	**Promote flood insurance educational materials via social media.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Education & Outreach Activities Coordinating Agency: City Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The city revised the wording of this project (which formerly read, "Consider elevating critical flood-prone structures above the 100-year flood level'). The current version is more consistent with efforts city officials are doing.
1B.1.4	**Demolish blighted structures that could contribute to hazard risk.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): CDBG, Local funding Community Lifeline: Safety & Security Priority: **1**	**ON-GOING** The city added this project as part of the 2020 update. It is currently underway and represents a wider effort at area revitalization.
1B.1.5	**Replace the flood gauge that used to be on Jennings Randolph Bridge.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): (a) ODOT, (b) WVDOT Timeframe: 5 years Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **3**	**NEW** The city added this project as part of the 2025 update.

Table 3.2.6

East Palestine Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1D.1.2	**Encourage residents to adhere to current floodplain regulations in effect. To do this effectively, the village needs a map of its current floodplain and topology.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Education & Outreach Activities Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): N/A Community Lifeline: Safety & Security Priority: **3**	**ON-GOING** This project is not new, and it is underway by default. The village elected to leave it in the plan and add the current focus, which is obtaining a current set of flood maps.
1D.1.1	**Encourage the residents of East Palestine to maintain required flood insurance.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Education & Outreach Activities Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): N/A Community Lifeline: Safety & Security Priority: **3**	**ON-GOING** This project is not new, and it is underway by default. The village elected to leave it in the plan.
1D.1.4	**Repair the spillway on the East Palestine lake dam.** Goal/Objective Alignment: 4.3 Reduce downstream risk exposure from dam or levee failures. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) CCEMA, (b) ODNR Timeframe: 5 years Potential Funding Source(s): HHPD, ODNR DWR, Local funding (for maintenance) Community Lifeline: Safety & Security Priority: **5**	**ON-GOING** The project remains in the village's five-year strategic plan, but it has not yet been completed. The cost is prohibitive, and funding remains a concern.

East Palestine Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1D.1.5	**Construct an all-hazard first responder training center to facilitate hands-on training locally.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Education & Outreach Activities Coordinating Agency: Village Council Support Agency(ies): CCEMA Timeframe: 3 years Potential Funding Source(s): Derailment settlement, Local funding Community Lifeline: Safety & Security Priority: **1**	**NEW** The village added this project as part of the 2025 update. The facility would target multiple response capabilities, not just fire and hazardous materials.
1D.1.6	**Relocate the municipal complex to a site that is further away from the rail line than the existing facility.** Goal/Objective Alignment: 5.1 Increase the resilience of critical facilities and economic assets throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: 3 years Potential Funding Source(s): Derailment settlement, Local funding Community Lifeline: Safety & Security Priority: **2**	**NEW** The village added this project in the 2025 update. The construction documents are in process, and the project is expected to go live at the end of 2028.

Table 3.2.7

Hanoverton Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1E.1.1	**Upgrade the village's capability to notify its residents by partnering with the county on the mass notification system.** Goal/Objective Alignment: 2.2 Increase the capabilities available to support risk reduction activities. Action Type: Education & Outreach Activities Coordinating Agency: Village Council Support Agency(ies): CCEMA Timeframe: 2 years Potential Funding Source(s): Local funding Community Lifeline: Communications Priority: **1**	**ON-GOING** The village added this project as part of the 2020 update. As of the 2025 update, it had not been completed, though the mayor noted a need to connect with CCEMA.

Hanoverton Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1E.1.2	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The village will continue to consider this project when/if funding is available. It did not mitigate any properties between 2020 and 2025.

Table 3.2.8

Leetonia Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1F.1.2	**Expand and improve the village's stormwater system.** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): OMEGA Timeframe: On-going Potential Funding Source(s): CDBG, Local funding Community Lifeline: Water Systems Priority: **3**	**ON-GOING** The village added this project as part of the 2020 update. The current system is undersized and does not cover the entire village.
1F.1.3	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **4**	**ON-GOING** The village will continue to consider this project when/if funding is available. It did not mitigate any properties between 2020 and 2025.

Leetonia Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1F.1.4	**Expand green infrastructure and low-impact development throughout the village. This project will first be conducted as a promotional effort (e.g., when development occurs in the village, when stormwater upgrades are undertaken, etc.).** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Street Department Support Agency(ies): Water/Sewer Department Timeframe: On-going Potential Funding Source(s): CDBG, HMGP, Local funding Community Lifeline: Safety & Security Priority: **1**	**NEW** The village added this project as part of the 2025 update.
1F.1.5	**Purchase a vacuum truck to help clean and maintain the stormwater system.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Structure & Infrastructure Projects Coordinating Agency: Street Department Support Agency(ies): (a) Water/Sewer Department (b) Village Administration Timeframe: On-going Potential Funding Source(s): HMGP, Local funding Community Lifeline: Water Systems Priority: **5**	**NEW** The village added this project as part of the 2025 update
1F.1.6	**Consider a village-specific continuity of operations plan to look at redundancy of communications and access to information that is primarily in the cloud.** Goal/Objective Alignment: 5.1 Increase the resilience of critical facilities and economic assets throughout the county. Action Type: Local Plans & Regulations Coordinating Agency: Mayor/Administrator Support Agency(ies): CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Communications Priority: **1**	**NEW** The village added this project as part of the 2025 update.

Table 3.2.9

Lisbon Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1G.1.1	**Increase the use of the countywide mass notification system.** Goal/Objective Alignment: 2.2 Increase the capabilities to support risk reduction activities. Action Type: Education & Outreach Activities Coordinating Agency: Village Council Support Agency(ies): CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Communications Priority: **1**	**ON-GOING** The village revised the wording of this project (which formerly read, "Increase the coverage and use of NOAA Weather Radios"). The current version recognizes the importance of notification and warning, and it aligns the village's efforts with those of other county agencies.
1G.1.3	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The village will continue to consider this project when/if funding is available. It did not mitigate any properties between 2020 and 2025.

Table 3.2.10

New Waterford Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1H.1.2	**Encourage property owners to control and secure debris, yard items, or stored objects in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.** Goal/Objective Alignment: 2.1 Increase the data available to support risk reduction decisions. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **1**	**ON-GOING** The village revised the wording of this project (which formerly read, "Control and secure debris…"). The current version recognizes the role of individual property owners yet maintains the village's opinion on the importance of the project.

New Waterford Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1H.1.3	**Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Water Systems Priority: **2**	**ON-GOING** The village added this project as part of the 2020 update. Discussions regarding equipment sharing/borrowing are underway.

Table 3.2.11

Rogers Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1I.1.1	**Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Natural Systems Protection & Nature-Based Solutions Coordinating Agency: Village Council Support Agency(ies): Columbiana County SWCD Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The village elected to keep this project in the plan. Though funding is not often available, local officials believe it would be helpful in reducing flooding.
1I.1.2	**Improve storm drainage throughout the village.** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Water Systems Priority: **2**	**ON-GOING** The village added this project as part of the 2020 update. Village officials are currently replacing catch basins, drain boxes, resetting pipe, and clearing drains.

Rogers Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1I.1.3	**Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Water Systems Priority: **1**	**ON-GOING** The village added this project as part of the 2020 update. Discussions regarding equipment sharing/borrowing are underway.

Table 3.2.12

Salem Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1C.1.3	**Consider rehabilitation of the Salem Reservoir (South Embankment).** Goal/Objective Alignment: 4.3 Reduce downstream risk exposure from dam or levee failures. Action Type: Structure & Infrastructure Projects Coordinating Agency: City Council Support Agency(ies): ODNR Timeframe: On-going Potential Funding Source(s): HHPD, Local funding Community Lifeline: Safety & Security Priority: **1**	**ON-GOING** The city kept this project in the plan, but revised it slightly to match language included in the ODNR's December 2023 letter indicating the structure would be HHPD eligible.

Table 3.2.13

Salineville Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1J.1.2	**Address continued slippage in the village along Route 39.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) Columbiana County Engineer, (b) ODOT Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Transportation Priority: **2**	**ON-GOING** The village added this project as part of the 2020 update. It corresponds to a priority concern in the village.
1J.1.3	**Maintain and, as necessary, upgrade the Salineville Reservoir Dam (which is physically located in Carroll County).** Goal/Objective Alignment: 4.3 Reduce downstream risk exposure from dam or levee failures. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): (a) ODNR, (b) Carroll County EMA Timeframe: On-going Potential Funding Source(s): HHPD, ODNR DWR, Local funding Community Lifeline: Safety & Security Priority: **1**	**ON-GOING** The village added this project as part of the 2020 update.

Table 3.2.14

Summitville Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1K.1.1	**Clean and maintain creeks and streams, clearing log jams, trees, and sediment bars that prevent water from flowing freely.** Goal/Objective Alignment: 2.2 Increase the capabilities available to support risk reduction activities. Action Type: Natural Systems Protection & Nature-Based Solutions Coordinating Agency: Village Council Support Agency(ies): (a) ODOT, (b) Columbiana County SWCD Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **3**	**ON-GOING** The village elected to keep this project in the plan. Though funding is not often available, local officials believe it would be helpful in reducing flooding. For the 2020 update, the village broadened the scope of the project to include all creeks and streams in the village. Village officials are currently working with the state to clean out a large culvert that plugs with debris from the creek and floods roadways.
1K.1.2	**Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Water Systems Priority: **2**	**ON-GOING** The village added this project as part of the 2020 update. Discussions regarding equipment sharing/borrowing continue.
1K.1.3	**When reviewing the village's building ordinance, and when considering the creation of a zoning ordinance, consider provisions that promote resilience to the weather hazards impacting the village.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Local Plans and Regulations Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **1**	**NEW** This village added this project as part of the 2025 update.

Table 3.2.15

Washingtonville Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1L.1.2	**Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): (a) Participating jurisdictional administrators, (b) CCEMA Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Water Systems Priority: **1**	**ON-GOING** The village added this project as part of the 2020 update. Discussions regarding equipment sharing/borrowing continue.
1L.1.3	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The village will continue to consider this project when/if funding is available. It did not mitigate any properties between 2020 and 2025.

Table 3.2.16

Wellsville Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1M.1.2	**Continue to collect the floodwall fee from citizens for maintenance of the levee (e.g., mowing, etc.).** Goal/Objective Alignment: 1.1 Increase the capabilities of the individuals and agencies that may respond to incidents. Action Type: Local Plans & Regulations Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **2**	**ON-GOING** The village continues to collect its floodwall fee and uses these funds for maintenance like mowing. The village removed "cutting trees" as an example of maintenance because the USACE does not allow the cutting of trees.
1M.1.3	**Upgrade pumps associated with the levee structure. To operationalize this project, strengthen the relationship with the U.S. Army Corps of Engineers (USACE).** Goal/Objective Alignment: 5.1 Increase the resilience of critical facilities and economic assets throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Village Council Support Agency(ies): N/A Timeframe: On-going Potential Funding Source(s): Local funding Community Lifeline: Safety & Security Priority: **3**	**ON-GOING** There are seven total pumps along the levee; the village confirmed four of those pumps as operational at the time of the 2025 update. The village recognized the need to strengthen the relationship with the USACE and revised the wording of the strategy accordingly.
1M.1.5	**Acquisition, demolition, and/or retrofit of flood prone properties.** Goal/Objective Alignment: 4.2 Reduce structure exposure in known hazard-prone areas. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): (a) CCEMA, (b) Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **4**	**ON-GOING** The village worked with the county to mitigate one residential property between 2020 and 2025.

Wellsville Mitigation Actions, 2025-2030		
Project Number	*Mitigation Project*	*Status*
1M.1.6	**Upgrade the drainage system off the 10th Street Extension.** Goal/Objective Alignment: 4.1 Decrease the number of stormwater management issues throughout the county. Action Type: Structure & Infrastructure Projects Coordinating Agency: Mayor/Administrator Support Agency(ies): Columbiana County SWCD Timeframe: 5 years (as funding is available) Potential Funding Source(s): HMGP, Local funding Community Lifeline: Safety & Security Priority: **1**	**NEW** The village added this project as part of the 2025 update. Village officials reported that a 6" pipe collapsed. If that pipe clogs, it may cause flooding in parts of Wellsville. Village officials also reported a sinkhole in a property owner's yard in this area.

4.0 PLAN MAINTENANCE AND INTEGRATION

Monitoring, evaluating, and updating this plan is critical to maintaining its value and ensuring the success of Columbiana County's hazard mitigation efforts. Effective implementation of mitigation activities creates momentum in the planning process and gives direction for future value. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities, including a description of how the public will have the opportunity to participate on a continuous basis.

4.0 PLAN MAINTENANCE AND INTEGRATION

4.1 Monitoring, Evaluating, and Updating the Plan

§201.6(c)(4)(i)	[The plan maintenance process shall include a] section describing the method and schedule of the monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

For the 2025 update, the steering committee elected to streamline the process for plan maintenance as compared to the previous version of the plan. "Streamlining" includes not only simplifying discussion points for periodic reviews but also enabling the start of the next formal update earlier in the cycle. Fortunately, the latest version of FEMA's *Local Mitigation Planning Handbook* (USDHS FEMA, 2025b) includes helpful resources, the most applicable of which appear herein (with modifications for local specificity).

For the 2025-2030 planning cycle, **the Columbiana County Emergency Management Agency (CCEMA) will continue to be the custodial agency for the county's mitigation plan**. In this role, CCEMA will be responsible for maintaining the document, including making it available to participating jurisdictions and the public as well as coordinating with the steering committee and convening periodic review meetings. The update process for the next cycle is consistent with FEMA's "mitigation planning wheel" (see Figure 4.1.a). In Year 1, CCEMA will support the adoption process with all jurisdictions in Columbiana County. **Years 2, 3, and 4 provide opportunities to track the progress/status of the mitigation actions identified in Section 3.0 and to evaluate the overall effectiveness of the plan**. In Years 2, 3[1], and 4, CCEMA will work with the county's local emergency planning committee (LEPC) to include the mitigation plan on an agenda for the purpose of reviewing the document. The questions posed in



Figure 4.1.a

[1] In Year 3, CCEMA will begin working with the Ohio Emergency Management Agency (OEMA) to identify and secure funding for the next formal update.

Worksheet #10 below (USDHS FEMA, 2025b, pp. 206-208) will serve as a framework for the mitigation discussion, ensuring that not only do players discuss topics like project status (see Table 4.1.1 below), but also evaluate the plan for its effectiveness.

Planning Process

- How have jurisdictions, communities, and agencies helped to carry out mitigation actions?
- Could anything from the initial planning process be more efficient?
- Have there been any changes in public support or priorities about hazard mitigation?
- Is there anything else, process-wise, we should consider?

Public Involvement

- Has the public been actively involved in the plan's implementation?
- How can public participation improve?

Risk Assessment

- Have there been any recent disaster events? If so, how did they impact the county (and the wider region)?
- Should the list of hazards addressed in the plan be updated? How so?
- Have there been any new issues with hazards in areas of the county?
- Are any new data sources available (e.g., studies, reports, maps, etc.)?
- Do any new critical facilities or infrastructure need to be added to the asset lists?
- Have any changes in development occurred that could create additional risks?
- Does any new development reduce risk?

Mitigation Strategy

- Have jurisdictions adopted new policies, plans, regulations, or reports that could support the plan?
- Are there different or new education and outreach programs and resources available for mitigation activities?
- Has NFIP participation changed in any participating jurisdictions?
- Is the mitigation strategy being implemented as expected? What types of issues have communities encountered?
- Are there new projects to consider?

- Should existing mitigation actions be revised or removed from the plan?
- Are there new funding sources to consider?
- Have parts of the plan been worked into other planning mechanisms?

Tracking the status of mitigation actions can be not only daunting (if a jurisdiction has a long project list) but also confusing if jurisdictions are not aware of what information (about actions) is helpful. To that end, Worksheet #9 from the *Local Mitigation Planning Handbook* (USDHS FEMA, 2025b, pp. 204-205) can be useful for tracking the *progress* of mitigation actions, both those that a jurisdiction completes and those that have not yet begun. Table 4.1.1 reproduces the table from the handbook.

Table 4.1.1

Project Status/Evaluation Worksheet	
Category	*Notes*
Progress Report Period:	
Describe the action or project.	
Who is responsible for the action?	
Project status:	□ Complete □ In progress, anticipated completion date: _____ □ Not started □ Cancelled
Has there been any progress with this project so far?	
Are there any obstacles or challenges with this action so far?	
What steps do you need to take to complete this project?	

Project Status/Evaluation Worksheet	
Category	*Notes*
Other comments:	

Many members of the steering committee also sit on the county's LEPC, which is why the committee opted to keep an LEPC meeting as a venue for the annual hazard mitigation plan review. The LEPC compiles minutes of its meetings, and thus the annual mitigation discussions will be documented. To ensure a thorough review can occur, the CCEMA will ensure that any steering committee member not on the regular LEPC membership roster receives an intivation to the appropriate LEPC meeting.

4.0 PLAN MAINTENANCE AND INTEGRATION

4.2 Implementation through Existing Programs

§201.6(c)(4)(ii)	[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

To date, local policies have not hindered hazard mitigation efforts. The county and several of the participating jurisdictions have utilized a variety of funding sources to complete mitigation projects, including the hazard mitigation grant program (HMGP), pre-disaster mitigation (PDM) program, the Building Resilience Infrastructure in Communities (BRIC) program, and other related programs such as the community development block grant (CDBG) and the emergency management performance grant (EMPG). Five primary existing mechanisms support mitigation in Columbiana County: (a) floodplain management, (b) stormwater management, (c) transportation planning, (d) community and economic development, and (e) emergency operations planning. When comparing the 2020 version of the plan with this update, it is noteworthy that the inclusion of objectives (see Section 3.1) is an example of integrating the ideas of this section from that previous update into the mitigation plan. Tables 4.2.1 through 4.2.5 below describes the potential integration of these elements with hazard mitigation in detail. Where applicable, the tables will refer to specific plans or programs listed in Section 1.3 above.

Perhaps the most directly relevant program is the local effort to comply with the National Flood Insurance Program (NFIP). The county, along with all but one participating city and village (i.e., Summitville) participate in the NFIP, which helps to regular the development that occurs in flood hazard areas. As of October 2024, no Columbiana County communities participate in FEMA's Community Rating System (CRS) (FEMA, 2024c). Though this has historically been the case (with the intersection of administrative requirements and in-house capabilities as a barrier), CRS participation remains an opportunity to enhance flood preparedness and mitigation.

Table 4.2.1

Implementation through Existing Programs: Floodplain Management		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Floodplain Management	Goal 4, Objective 4.2: Reduce structure exposure in known hazard-prone areas.	• Special flood hazard area (SFHA) mapping identifies tiered risk areas • Enables strategic decision-making in known risk areas • See Table 1.3.5 in Section 1.3 above
Specific Integration Action(s) Ensure floodplain ordinances are up to date. APPLICABLE JURISDICTIONS: Columbiana County, all participating cities, all participating villages (less Summitville) When publicizing the requirements associated with the NFIP and floodplain ordinances, use the discussions from this plan to add information about the damage and losses that have been lessened or avoided because of local NFIP compliance. APPLICABLE JURISDICTIONS: Columbiana County, all participating cities, all participating villages (less Summitville) STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle		

As weather systems change and continue to dump hyper-local heavy precipitation, runoff and its impacts become a critical concern. As such, stormwater management planning can be a force multiplier for risk reduction, particularly in developed (or developable) areas.

Table 4.2.2

Implementation through Existing Programs: Stormwater Management		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Stormwater Management	Goal 4, Objective 4.1: Decrease the number of stormwater management issues throughout the county.	• Address flash flooding during heavy rain events • Provide justification of need to address stormwater runoff
Specific Integration Action(s) Track stormwater upgrade projects and assess whether runoff-related flooding decreases in those areas. APPLICABLE JURISDICTION(S): Columbiana County, all participating cities, all participating villages		

Transportation planning can support risk reduction through the identification of projects designed to eliminate recurrent damage caused by hazard occurrences. Transportation planning

can also recognize the potential impacts of infrastructure projects, like runoff generated by paving, etc.

Table 4.2.3

Implementation through Existing Programs: Transportation Planning		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Transportation Planning	Goal 4, Objective 4.2: Reduce structure exposure in known hazard-prone areas.	• Designated road projects in plans may increase or maintain access to the county's communities • Projects may address slips and other hazard-related issues • Justify additional (i.e., safety) reasons for bridge/culvert replacements • Transit options may be a vital means of access and capability for vulnerable populations

Specific Integration Action(s)
Utilize the social vulnerability discussions in Section 2.0 above as the basis for conversations about extending public transit service (or scheduling special routes, when safe, during emergencies).
APPLICABLE ENTITY(IES): Community Action Association (CAA) of Columbiana County
APPLICABLE PLANS: OMEGA Regional Transportation & Development Plan
STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle

Consider potential blockages of key arterial routes (per dam/levee failures, flooding, landslides, and severe storms) when selecting road or bridge upgrade projects.
APPLICABLE ENTITY(IES): Columbiana County Engineer, OMEGA, Ohio Department of Transportation (ODOT)
APPLICABLE PLANS: OMEGA Long-Range Transportation Plan 2025-2050, OMEGA Regional Transportation & Development Plan, Columbiana County GIS Bridge Inventory
STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle

Consider potential blockages of key arterial routes (per dam/levee failures, flooding, landslides, and severe storms) as a variable in the calculation of the vulnerability score for county bridge update projects.
APPLICABLE ENTITY(IES): Columbiana County GIS Department
APPLICABLE PLANS: Columbiana County GIS Bridge Inventory
STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle

Like transportation planning, standard community and economic development efforts are opportunities for developing a resilience mindset.

Table 4.2.4

Implementation through Existing Programs: Community & Economic Development		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Community Development	Goal 1, Objective 1.2: Increase potable water and sanitary sewer capabilities throughout the county. Goal 2, Objective 2.1: Increase the data available to support risk reduction decisions.	• Align efforts to reclaim abandoned mine lands with hazard mitigation conversations • Create space for conversations about how green space can contribute to risk reduction • See Table 1.3.2 in Section 1.3 above
Specific Integration Action(s) Broaden conversations about infrastructure (as they pertain to risk reduction or creation) to include not only water, sewer, and stormwater, but also communications (radio and cellular) and high-speed internet. Consider mapping areas not currently served adequately by communications or high-speed internet and use maps when discussing potential mitigation actions, impacts to vulnerable populations, etc., while implementing this plan. APPLICABLE ENTITY(IES): Columbiana County OECD, Columbiana County Port Authority, OMEGA, Columbiana County, all participating cities, all participating villages APPLICABLE PLANS: East Liverpool Downtown Vision Plan, Envision East Palestine, Salem Area Sustainable Comprehensive Plan, Wellsville Strategic Plan STATUS: Implementation in comprehensive plans not directly addressed *as a result of this plan*; in fact, including this opportunity here is an example of integrating the comprehensive plans into the mitigation planning effort		
Economic Development	Goal 5, Objective 5.1: Increase the resilience of critical facilities and economic assets throughout the county.	• Opportunity to identify potential risks facing areas targeted for development • Contributes data to business/industry recruiting as to developing in a resilient way • Ensure opportunity for consistency between resilience and business development (e.g., through the Region 166 Loan Program, etc.) • See Table 1.3.2 in Section 1.3 above
Specific Integration Action(s) Share information from Section 2.0 with economic development entities and encourage them to make the information available, as appropriate, to prospective developers and businesses. This information may inform data-based decisions about property development, continuity measures, etc. APPLICABLE ENTITIES: Columbiana County EMA, Columbiana County OECD, Columbiana County Port Authority, OMEGA APPLICABLE PLANS: Columbiana County OECD Community Profiles, Columbiana County Port Authority Sites and Facilities (as additional information) STATUS: Implementation <u>not</u> previously done; represents an opportunity for the 2025-2030 planning cycle		

Finally, as a FEMA-centric effort, many local leaders look at the mitigation planning process as an emergency management effort, which leads to a natural tendency to consider risk reduction through preparedness initiatives. Preparing for a more efficient response can reduce hazard-related losses like property damage (by more quickly stabilizing an incident), injuries and deaths (by responders being better trained to assess and identify problems), etc. In these senses, participating jurisdictions can integrate elements of the risk assessment and mitigation strategy into emergency operations and business continuity planning mechanisms. As an example, the Columbiana County EMA utilizes data from the HAZUS models that appear in the flooding and earthquake profiles in the county's emergency operations plan.

Table 4.2.5

Implementation through Existing Programs: Emergency Operations Planning		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Emergency Operations Planning	Goal 1, Objective 1.1: Increase the capabilities of the individuals and agencies that may respond to incidents.	• Method for sharing updated risk data for preparedness purposes • Quantify potential impacts of hazards profiled in this plan (that may necessitate a response)

Specific Integration Action(s)

When sponsoring updates to emergency operations plans, add brainstorming for risk reduction along with designing response measures.

APPLICABLE ENTITIES: Columbiana County EMA, whole community partners
APPLICABLE PLANS: Columbiana County Emergency Operations Plan
STATUS: Columbiana County EMA previously included HAZUS data from this plan in its emergency operations plan; with the shift to using data from the National Risk Inventory, the CCEMA can integrate that data (at the tract level) into the emergency operations plan beginning in the 2025-2030 planning cycle

Bring information relevant to other preparedness phase discussions (e.g., Tier II filings for hazardous materials, function and access needs registries, etc.) to discussions about implementing this plan.

APPLICABLE ENTITIES: Columbiana County EMA, Columbiana County LEPC
APPLICABLE PLANS: Columbiana County Hazard Mitigation Plan (i.e., 2030 update)
STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle

Implementation through Existing Programs: Emergency Operations Planning		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Public Health Emergency Preparedness (PHEP) Planning	Goal 1, Objective 1.1: Increase the capabilities of the individuals and agencies that may respond to incidents. Goal 2, Objective. 2.2: Increase the capabilities available to support risk reduction activities.	• Ensure consistency with risk assessments and response guidelines maintained by the health district • Ensure consistency with primary preparedness, response, and recovery measures for public health emergencies
Specific Integration Action(s) Continue to utilize information for this plan as a resource for the health department's jurisdictional risk assessment. APPLICABLE ENTITY(IES): Columbiana County Health District APPLICABLE PLANS: CCHD Jurisdictional Risk Assessment STATUS: During the 2025 update, the county's consultant provided a summary of the risk ranking from Section 2.0 to the CCHD for inclusion in its jurisdictional risk assessment		

Other agencies in and around Columbiana County also support mitigation initiatives, typically under the heading of resilience or as part of community or economic development projects. For instance, the Great Lakes Community Action Partnership is developing a climate resiliency plan for Columbiana (City), East Palestine, and Lisbon. This plan seeks to identify risk reduction projects related to a changing climate.

For the 2025 update, Columbiana County deliberately sought to identify previously under-represented populations and invite them to participate in the planning process. The Way Station served as a key member of the steering committee in this regard, helping to distribute information through its programmatic reach and assisting in survey administration (along with the Columbiana County EMA) at local food pantries. Often, vulnerable populations are under-represented in planning processes, and the committee's actions, with The Way Station guidance, helped to eliminate barriers to participation for those groups. It remains important to incorporate those most vulnerable to the impacts of the hazards profiled in Section 2.0. Social service entities and nonprofit organizations can serve as valuable additions to the planning process throughout the maintenance of the document and in future updates.

Section 1.3: Capabilities also provides valuable insight into the integration of mitigation activities through existing programs. Zoning codes can be controversial, but in the most basic sense, they simply separate land use into various zones that describe what to build and where (Planetizen, n.d.). Rather than *restrict* all construction on certain parcels, communities may use

fundamental zoning concepts to identify *the types of development* that may be suitable for certain tracts of land. Such an approach may not eliminate a risk, but it could lessen the number of properties exposed to a risk. The designation of specific areas as "industrial parks" is an example. Co-locating industrial facilities yields efficiency benefits for infrastructure access and contains common industrial-centric risks to a relatively small area.

Table 4.2.6

Implementation through Existing Programs: Zoning		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Zoning Codes	Goal 4, Objective 4.2: Reduce structure exposure in known hazard-prone areas.	• Communicate potential risk • Suggest implications of being located within risk areas • See Table 1.3.3 in Section 1.3 above
Specific Integration Action(s) Consider whether a basic land classification process would yield a benefit by communicating risks, risk areas, etc. APPLICABLE JURISDICTION(S): Columbiana County, Columbiana (City), East Liverpool, East Palestine, Leetonia, New Waterford, Salem, Wellsville STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle		

Similarly, additional consideration of the building codes of several participating jurisdictions may offer opportunities to strengthen the actual deployment of mitigation ideas. Simply having a building code in place does not automatically ensure that a community will fare better when a high-probability hazard occurs. Thus, by integrating the data from this plan into the building code conversation, communities may have an opportunity to reduce risk by strengthening elements of a code that would harden structures to the type(s) of damage caused by the county's most probable hazards.

Table 4.2.7

Implementation through Existing Programs: Building Codes		
Planning Initiative	*Mitigation Goal/Objective Alignment (see Section 3.1)*	*Relevance*
Building Codes	Goal 2, Objective 2.1: Increase the data available to support risk reduction decisions. Goal 5, Objective 5.1: Increase the resilience of critical facilities and economic assets throughout the county.	• Provide parameters for and tangible examples of "resilient construction" • Justify the need for and benefit of resilient construction • See the "Building Codes" discussion in Section 1.3 above

Specific Integration Action(s)
Review opportunities to address high-potential impact hazards.
APPLICABLE JURISDICTION(S): Columbiana County, Columbiana (City), East Liverpool, East Palestine, Leetonia, New Waterford, Salem, Summitville, Wellsville
STATUS: Implementation not previously done; represents an opportunity for the 2025-2030 planning cycle

4.0 PLAN MAINTENANCE AND INTEGRATION

4.3 Continued Public Involvement

§201.6(c)(4)(iii)	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

All adopting jurisdictions maintain copies of this plan. Citizens can review the plan and provide comments at any city or village hall. Citizens may also access the plan through the CCEMA. The CCEMA will maintain a copy of the document on its website (see the "Columbiana County Hazard Mitigation Plan" link at https://www.ccoema.org/). Though the plan is available at these locations, citizens may not be aware of that availability or understand the nature and purpose of a hazard mitigation plan. As such, additional means of public education and involvement are important.

The CCEMA elected to utilize the county's LEPC as an administrative and participative vehicle throughout the five-year planning cycle. LEPC meetings are advertised and open to the public; thus, the public can participate in mitigation planning at times when the LEPC discusses this plan.

Additionally, in Year 3 of the cycle, the CCEMA will re-engage the public by distributing an online public survey via websites and social media. During that third year, CCEMA will also offer to deliver presentations to community groups to garner greater public involvement in future updates. The following box includes the base material for that survey (which mimics the "condensed survey" used to gather additional public comment during the 2025 update).

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
ANNUAL PUBLIC SURVEY

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

Hazard	Not At All Concerned	Somewhat Concerned	Concerned	Very Concerned
Cyber Incidents	☐	☐	☐	☐
Dam & Levee Failure	☐	☐	☐	☐
Drought	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐
Extreme Temperatures	☐	☐	☐	☐
Flood	☐	☐	☐	☐
Hazardous Materials Incident	☐	☐	☐	☐
Public Health Emergency	☐	☐	☐	☐
Landslide	☐	☐	☐	☐

Severe Thunderstorms & Hail	☐	☐	☐	☐
Severe Wind & Tornadoes	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐

Of these hazards, which one concerns you the most? _____

Why does this hazard concern you the most? _____
_____
_____
_____

Should we consider any hazards not on the above list? Why? _____
_____
_____
_____

The following call-out box contains sample press release language the CCEMA may use to draw attention to the Year 3 public survey.

FOR IMMEDIATE RELEASE

Columbiana County Looking for Input on Reducing Hazard Risks throughout the County

The Columbiana County Emergency Management Agency, which is compiling annual updates to the county's hazard mitigation plan, wants residents to know that their voice matters when it comes to risk reduction. That's why the agency is conducting a survey to find out what hazards concern the public the most.

The hazard mitigation plan outlines projects that the cities, villages, and townships in Columbiana County can undertake to reduce or eliminate the losses their communities could face should a hazard occur. Losses could be structural, like damage to homes or businesses, or they could include severe injuries. But before local officials can identify projects, they must know what hazards could be most damaging.

The county's existing plan contains a risk assessment that lays out potential impacts from 13 distinct hazards (most of which are naturally occurring). Even though this assessment outlines how frequently these hazards occur and how much damage they've caused in the past, knowing which ones *also significantly concern the public* helps to prioritize the selection and implementation of projects, particularly when funding is limited.

USE THIS SPACE TO ADD ANYTHING RELEVANT TO THE PROCESS AND SPECIFIC TO THE YEAR THIS IS RELEASED.

Residents may take the survey online at ADD LINK. For those residents who do not have reliable internet access or would like to request additional accommodation, please call 330-424-9725 or visit the EMA office at 215 South Market Street in Lisbon. Residents may also view the existing hazard mitigation plan on the emergency management agency's website at https://www.ccoema.org/.

5.0 APPENDICES

Appendix 1: Planning Process Involvement

This appendix documents the process initiated by the Columbiana County Emergency Management Agency for the 2025 mitigation plan update. It includes copies of meeting minutes and relevant correspondence.

MEETING 1

Jeffery Harvey <jharvey@jhcpreparedness.com>

Mitigation Plan Update Kick Off Meeting

1 message

Lisa Elliott <Lisa.Elliott@ccoema.org> Mon, Jan 22, 2024 at 8:57 AM
To: Bill Jones <wjones4@primehealthcare.com>, Brian Rutledge <Brian.Rutledge@ccoema.org>, Chaney Nezbeth <chaneynezbeth@gmail.com>, Jeff Christopher <jchris51@kent.edu>, Jeffrey Harvey <jharvey@jhcpreparedness.com>, Kayla Hamilton <khamilton@columbiana-health.org>, Lance Willard <lwillard@columbianaohio.gov>, Lisa Elliott <Lisa.Elliott@ccoema.org>, Marcy Patton <mpatton@ccmhrsb.org>, Peggy Clark <Peggy.Clark@ccoema.org>, Penny Traina <ptraina@ccpa-ohioriver.com>, Pete Wilson <lisbonmayorpeterwilson@gmail.com>, Tad Herold <therold@columbianacodev.org>, Troy Graft <tgraft@cceng.org>, "Troy K. Rhoades" <troy.rhoades@firstenergycorp.com>, Wayne Chamberlain <wachamb@hotmail.com>

Good morning,

It is time for the update to the County Mitigation Plan. Please plan on attending the Mitigation Plan Update Kick Off Meeting on Friday, February 16, 2024 at 10:00am at the Columbiana County EMA, 215 S. Market St., Lisbon 44432. Would like to see all attend. If you are unable to attend, please delegate representation to someone else in your agency, and please let us know who that person will be. If you have any questions, please give us a call at (330) 424-9725.

Thank you.

Lisa J. Elliott

Administrative Assistant

lisa.elliott@ccoema.org

Columbiana County EMA

215 South Market Street

Lisbon, Ohio 44432

Phone: (330) 424-9725 ext. 1806

Fax: (330) 424-9267

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invite.ics
4K

Jeffery Harvey <jharvey@jhcpreparedness.com>

Meeting February 16, 2024 @10am

1 message

Lisa Elliott <Lisa.Elliott@ccoema.org> Fri, Feb 9, 2024 at 9:43 AM
To: Bill Jones <wjones4@primehealthcare.com>, Brian Rutledge <Brian.Rutledge@ccoema.org>, Chaney Nezbeth <chaneynezbeth@gmail.com>, Jeff Christopher <jchris51@kent.edu>, Jeffrey Harvey <jharvey@jhcpreparedness.com>, Kayla Hamilton <khamilton@columbiana-health.org>, Lance Willard <lwillard@columbianaohio.gov>, Lisa Elliott <Lisa.Elliott@ccoema.org>, Marcy Patton <mpatton@ccmhrsb.org>, Peggy Clark <Peggy.Clark@ccoema.org>, Penny Traina <ptraina@ccpa-ohioriver.com>, Pete Wilson <lisbonmayorpeterwilson@gmail.com>, Tad Herold <therold@columbianacodev.org>, Troy Graft <tgraft@cceng.org>, "Troy K. Rhoades" <troy.rhoades@firstenergycorp.com>, Wayne Chamberlain <wachamb@hotmail.com>

Good morning, hope this finds you well and your Friday off to a good start for your weekend.

We are sending out this reminder for the Mitigation Plan Kick Off Meeting (agenda attached) for next Friday, February 16th at 10am, here at the EMA, 215 S. Market St. Lisbon, 44432.

Not all has RSVP, for those of you that have not please let me know if you are or not attending or another representative from your agency will be. If any questions, please call us at (330) 424-9725.

Thank you for your time and support, have a great weekend.

Take care and stay safe,

Lisa J. Elliott

Administrative Assistant

lisa.elliott@ccoema.org

Columbiana County EMA

215 South Market Street

Lisbon, Ohio 44432

Phone: (330) 424-9725 ext. 1806

Fax: (330) 424-9267

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CCHMP-Mtg1_Agenda-02162024.pdf
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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE

STEERING COMMITTEE MEETING #1

AGENDA

Date: February 16, 2024
Time: 10:00 a.m.
Duration: Approximately 90 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon, OH 44432

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1. Welcome & Introductions
2. Overview of the Mitigation Planning Process
   - Mitigation 101
   - Participating jurisdictions, plan scope, overview of meeting topics
   - Steering committee responsibilities

3. Mitigation Goals and Objectives
   - See attached for goals and objectives from the previous version of the plan.
   - Additions or deletions?
   - Revisions to aid in measurement

4. Hazards List
   - See attached for hazards appearing in the previous version of the plan.
   - Additions, deletions, or changes?

5. Outreach Plan
   - General public
   - Under-represented populations
   - Participating jurisdictions

6. Q & A
7. Adjournment

Goals from 2020 Plan

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

Hazards List from 2020 Plan

- Dam and levee failure
- Drought
- Earthquake
- Extreme temperatures (heat and cold)
- Flooding
- Hazardous materials incident
- Public health emergency
- Severe thunderstorm and hail
- Severe wind and tornado
- Severe winter storm

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #1
MINUTES

Date: February 16, 2024
Time: 10:00 a.m.
Duration: Approximately 75 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon, OH 44432
Attendees: See the attached sign-in sheet.

On February 16, 2024, the Columbiana County Emergency Management Agency (CCEMA) convened a steering committee to begin the formal update to the county's hazard mitigation plan, last adopted in 2020. The meeting was at the CCEMA's office in Lisbon, and it began promptly at 10:00 a.m. (lasting approximately 75 minutes).

Following a welcome message from CCEMA Director Peggy Clark, the county's consultant (represented by Jeffery Harvey) provided an overview of the hazard mitigation planning process, including the role of steering committee members. During the overview, the committee discussed the plan scope as well as participating jurisdictions.

- Regarding scope, the committee decided to focus on natural hazards, though not exclude the consideration of primary technological and human-caused hazards. (See the discussion regarding hazards below.)
- The committee agreed to keep the adoption of the plan at the county, city, and village levels[1]. Township officials will have the opportunity to participate, and their input will be valued.

The discussion about the hazards to include in this update was robust. Generally, the steering committee elected to keep the hazards that appeared in the previous version, which include the following.

[1] Following the meeting, the CCEMA reviewed files from the previous update. Townships did adopt the previous version of the plan (despite falling under the county project list). For consistency, the CCEMA would like to ask them to adopt this version as well.

- Dam and levee failure
- Earthquake
- Flooding
- Public health emergency
- Severe wind and tornado
- Drought
- Extreme temperatures (heat and cold)
- Hazardous materials incident
- Severe thunderstorms and hail
- Severe winter storm

Commissioner Tim Weigle suggested the consideration of fires and other hazards that may occur as a result of development in the county (specifically the development of a large commercial solar energy field). With a solar field, panels may overheat, which could ignite a fire in the grasses around the panels. A fire may also damage lithium-ion batteries. In Columbiana County, a large solar field is in the permitting phase, and this project could nearly surround a municipality (potentially cutting it off in the event of an incident). In addition to being an excellent discussion about cascading hazards, talking about the solar project outlined the intersection of risk and development.

The fire aspect of this discussion noted that the solar project (i.e., the development) was not a hazard, but a new and different opportunity for fires resulting from that development could be a hazard. That distinction appealed to steering committee members because wildfires were not included in the previous version of the plan. As such, committee members requested its inclusion in this update. Also, Director Clark noted that cyber incidents are quickly becoming priority concerns amongst local government entities, businesses, medical facilities, schools, etc. These entities work on plans and other protective measures regularly. As a result, attacks are more and more sophisticated. Committee members agreed and asked the consultant to add cyber incidents.

To close the hazards discussion, the steering committee briefly considered how to organize the hazards *Severe Thunderstorms and Hail* and *Severe Wind and Tornado*. Many of the historical occurrences under the thunderstorm hazard appear as “thunderstorm winds,” leading Jeff to ask if committee members would prefer to eliminate the thunderstorm hazard (or reduce it down to simply “Hail”) and move the historical occurrences to the wind profile. Several committee members noted the damaging effects of hail, thereby recommending it remain in the plan along with, perhaps, lightning. While the winds associated with thunderstorms present challenges and consolidating those historical occurrences under “severe wind” would seemingly make sense, the committee felt there were enough unique impacts associated with thunderstorms and hail to keep the hazard as it currently appears. Jeff further agreed to look through the historical “thunderstorm winds” events to see if there was a way to identify the

impacts of those events, and then move those that are predominantly wind-related to the *Severe Wind and Tornado* hazard (while keeping the thunderstorm-centric impacts under the *Severe Thunderstorm and Hail* heading).

Troy Rhoades, representing First Energy, asked about how the hazards would be presented in the plan. He is also assisting Mahoning County with their update, and in that process, the county is ranking hazards. Jeff replied that each of the hazard profiles will conclude with a scoring methodology (with criteria such as speed of onset, magnitude of impacts, etc.). Those hazard-specific scores will be ranked in the final subsection of the hazard identification and risk assessment (HIRA), allowing the users of Columbiana County's plan to see how the hazards compare to one another. The ranking criteria provide detailed overviews of how the hazards might impact Columbiana County, as a such, various entities may consider using the HIRA section of the mitigation plan as justification for funding requests (because the risk assessment might show quantifiable ways that the project could address risk and vulnerability). Significantly, though the mitigation plan will include a *mitigation* project list (i.e., projects that could reduce or eliminate the impacts and losses from known hazards), the HIRA section could support funding requests for preparedness projects (i.e., those that bolster capabilities to respond to the hazards in question).

Jeff quickly introduced ideas for an outreach plan before adjourning the meeting. The general public must have the opportunity to participate, both during plan development and when a draft is available. Jeff suggested using online surveys for input as the plan is developed and public meetings to offer draft reviews. Drawing on updated FEMA guidelines, Jeff explained that the steering committee will need to identify "under-represented populations" in the county and devise an outreach strategy for them. This topic will be a primary point of discussion during Meeting #2. Jeff also explained that dam regulators and owners will need to have the opportunity to participate, which will also be on the Meeting #2 agenda.

Following an opportunity for general questions and answers[2], the meeting adjourned at 11:17 a.m.

For reference, the following list outlines the primary topics for upcoming mitigation plan steering committee meetings.

- Meeting 2: Asset inventory review, jurisdictional capabilities survey, present hazard research compiled to date, review and approve surveys and other outreach tools

[2] The steering committee skipped over an agenda item to review the goals and objectives from the existing (i.e., 2020) plan. Several attendees needed to leave to attend a Presidential visit in East Palestine.

- Meeting 3: Discuss hazard rankings, present the results from the outreach plan, discuss the implications of that outreach for the action plan
- Meeting 4: Review the mitigation goals from the previous plan (and update accordingly), review existing projects and prioritization criteria
- Meeting 5: Discuss the plan maintenance process, review drafts compiled to date

Attachments

- Sign-in Sheet
- Slide Deck (Corrected)

Mitigation Planning Meeting
February 16, 2024 10:00am

	NAME/Township	PHONE	EMAIL
1	Jim Weigle		TWEIGLE@CCCOMMISSIONERS.ORG
2	JEFFERY HARVEY	304-473-1009	jharvey@jhcpreparedness.com
3	Peggy Clark		peggy.clark@ccoema.org
4	Kayla Hamilton	234 352 8592	khamilton@columbiana-health
5	Gabe Durrant	330-715-8281	gdurrant@columbianacodav.org
6	Tom Farley	330-717-0904	tfarley@columbianaohio.gov
7	WAYNE CHAMBERLAIN	330-424-2931	Wachamb@hotmail.com
8	Lori Colian	330-424-0995	Lcolian@ccmhrsb.org
9	Chaney Nezbeth	330-398-7555	chaneynezbeth@gmail.com
10	[illegible]	330 268 1178	pesek1313@gmail.com
11	TROY GRAFT	330 424-1740	TGRAFT@CCENG.ORG
12	Penny Traina	330-424-1886	ptraina(AT)ccpa-ohio.org
13	Troy Rhoades	330-720-1259	troy.rhoades@fiestaberryyeasp.com
14	JEFF CHRISTOPHER	330-337-4121	jchris51@kent.edu
15	Brian Rutledge	330.424.9725	Brian.rutledge@CCOEMA.org
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COLUMBIANA COUNTY
HAZARD MITIGATION PLAN UPDATE

Steering Committee Meeting #1
February 16, 2024 ~ 10:00 a.m.

WELCOME AND INTRODUCTIONS



AGENDA

1. Welcome & Introductions
2. Overview of the Hazard Mitigation Planning Process
3. Mitigation Goals and Objectives
4. Hazards List
5. Outreach Plan
6. Q&A
7. Adjournment

Overview of the Mitigation Planning Process

HAZARD MITIGATION 101



Federal Emergency Management Agency (FEMA) – Region V

- Oversees process at the local, regional, state, and national levels
- Defines mitigation as, “the effort to reduce loss of life and property by lessening the impact of disasters” (FEMA.gov, 2016)



HAZARD MITIGATION 101

Ohio Emergency Management Agency (OEMA)

- Oversees the hazard mitigation process at the state levels
- Ensure jurisdictional participation
- Ensure alignment with state project and funding strategies



PLANNING PROCESS

DMA2K ~ Stafford Act, Section 322 ~ 44 CFR 201.6

The Hazard Mitigation Plan

- Planning Process
- Description of the Planning Area
- Risk Assessment
- Action Plan
  - Goals
  - Strategies (projects/actions)
- Plan Maintenance
- Appendices

HAZARD MITIGATION 101

Participating Jurisdictions, Plan Scope, Meeting Topics

Plan Scope

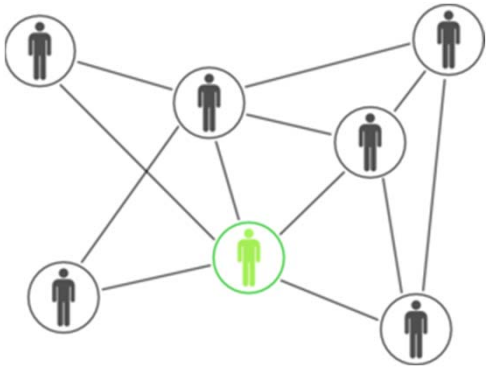
- Natural hazards (required)
- Technological / human-caused (?)

Meeting Topics

- Meeting 1: Goals, hazards, outreach
- Meeting 2: Assets, jurisdictional capabilities survey
- Meeting 3: Results from outreach, implications for action plan
- Meeting 4: Projects review & prioritization
- Meeting 5: Plan maintenance process, draft review

HAZARD MITIGATION 101

Steering Committee Responsibilities



Mitigation Goals and Objectives

Mitigation Goals from 2020 Plan	
1.	Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.
2.	Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.
3.	Protect vulnerable populations from negative effects of hazards in Columbiana County.
4.	Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazards events or incidents.
5.	Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.

Hazards List

Hazard	Occurrences	Notes
Dam & Levee Failure	7 (since 1996) Source: NPDP	37 dams in the NID, 1 levee system in the NLD Of seven: • 6 related to “inadequate spillway capacity” • 1 related to “concrete deterioration” • No catastrophic failures No levee failures reported in Ohio
Drought	2 (since 1999) Source: NCEI	Both historical events were in 1999 (listed as August and September) No reported losses
Earthquake	0 (since 1999) Source: OH Seismic Network	Though no epicenters have been recorded in Columbiana County, there have been epicenters in Carroll, Jefferson, and Mahoning Counties.
Extreme Temperatures (Heat & Cold)	12 (since 2009) Source: NCEI	Cold/Wind Chill = 5 (no reported losses) Excessive Heat = 0 Extreme Cold/Wind Chill = 7 (no reported losses) Heat = 0
Flooding	57 (since 1996) Source: NCEI	Flash Flood = 33 • 0 deaths / 0 injuries / $4,956,000, property losses / $1,000, crop losses Flood = 24 ($1,647,000, property losses)

Hazard	Occurrences	Notes
Hazmat Incident	342 (since 1980) Source: PHMSA	Includes highway, railway, waterway, and air; all 342 were listed as highway; dataset did not include East Palestine derailment No dollar losses, injuries, or fatalities in PHMSA dataset Will likely find additional data in NRC reports
Public Health Emergency	3,698 (since 1971) Source: CDC, ODH	Covers outbreaks from a range of diseases (i.e., not necessarily just a pandemic) Within these outbreaks: • 106,337 illnesses / 8,392 hospitalizations / 226 deaths
Severe Thunderstorm & Hail	304 (since 1969) Source: NCEI	Hail = 83 • 0 deaths / 0 injuries / $550,050, property losses / $650,000, crop losses Heavy Rain = 15 (no reported losses) Thunderstorm Wind = 206 • 0 deaths / 2 injuries / $3,783,000, property losses, $64,000, crop losses

Hazard	Occurrences	Notes
Severe Wind & Tornado	36 (since 1955) Source: NCEI	Funnel Cloud = 1 (no reported losses) High Wind = 14 ($1,361,000, property losses) Strong Wind = 3 ($12,000, property losses) Tornado = 18 • 0 deaths / 27 injuries / $28,945,000, property losses / $0, crop losses
Severe Winter Storm	60 (since 1999) Source: NCEI	Blizzard = 0 Frost/Freeze = 0 Heavy Snow = 15 (no reported losses) Ice Storm = 5 ($2,000, property losses) Winter Storm = 13 ($5,000, property losses) Winter Weather = 27 (no reported losses)

Outreach Plan

OUTREACH PLAN

General Public
- Meetings
- Surveys

Under-Represented Populations

Dam Safety / Dam Owners
- Survey
- Specific meeting

Participating Jurisdictions



ADJOURNMENT

MEETING 2



Jeffery Harvey <jharvey@jhcpreparedness.com>

Save the date and time for the next Mitigation meeting

1 message

Lisa Elliott <Lisa.Elliott@ccoema.org> Wed, Mar 6, 2024 at 2:16 PM
To: Bill Jones <wjones4@primehealthcare.com>, Brian Rutledge <Brian.Rutledge@ccoema.org>, Chaney Nezbeth <chaneynezbeth@gmail.com>, Gabe Durrant <gdurrant@columbianacodev.org>, Jeff Christopher <jchris51@kent.edu>, Jeffrey Harvey <jharvey@jhcpreparedness.com>, Kayla Hamilton <khamilton@columbiana-health.org>, Keith Drabick <k.a.drabick@eastpalestine-oh.gov>, Lance Willard <lwillard@columbianaohio.gov>, Lisa Elliott <Lisa.Elliott@ccoema.org>, Marcy Patton <mpatton@ccmhrsb.org>, Peggy Clark <Peggy.Clark@ccoema.org>, Penny Traina <ptraina@ccpa-ohioriver.com>, Pete Conkle <pete.conkle@oh.nacdnet.net>, Pete Wilson <lisbonmayorpeterwilson@gmail.com>, Tad Herold <therold@columbianacodev.org>, Tim Weigle <tweigle@cccommissioners.org>, Troy Graft <tgraft@cceng.org>, "Troy K. Rhoades" <troy.rhoades@firstenergycorp.com>, Wayne Chamberlain <wachamb@hotmail.com>

Good afternoon, hope all is well and your Wednesday is going good.

Please save Thursday, April 11, 2024 for the next mitigation meeting at 10am, should be till about 11am. This meeting will be virtual and the meeting link and agenda will be sent as it get closer to the date of meeting.

Thank you for your support and time, have an enjoyable afternoon/evening.

Take care and stay safe,

Lisa J. Elliott

Administrative Assistant

lisa.elliott@ccoema.org

Columbiana County EMA

215 South Market Street

Lisbon, Ohio 44432

Phone: (330) 424-9725 ext. 1806

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Jeffery Harvey <jharvey@jhcpreparedness.com>

Virtual- Mitigation Plan Meeting

1 message

Lisa Elliott <Lisa.Elliott@ccoema.org> Mon, Apr 8, 2024 at 2:38 PM
To: Glenda Schafer <gschafer@ccpa-ohioriver.com>, Bill Jones <wjones4@primehealthcare.com>, Brian Rutledge <Brian.Rutledge@ccoema.org>, Chaney Nezbeth <chaneynezbeth@gmail.com>, Gabe Durrant <gdurrant@columbianacodev.org>, Jeff Christopher <jchris51@kent.edu>, Jeffrey Harvey <jharvey@jhcpreparedness.com>, Kayla Hamilton <khamilton@columbiana-health.org>, Keith Drabick <k.a.drabick@eastpalestine-oh.gov>, Lance Willard <lwillard@columbianaohio.gov>, Lisa Elliott <Lisa.Elliott@ccoema.org>, Marcy Patton <mpatton@ccmhrsb.org>, Peggy Clark <Peggy.Clark@ccoema.org>, Penny Traina <ptraina@ccpa-ohioriver.com>, Pete Conkle <pete.conkle@oh.nacdnet.net>, Pete Wilson <lisbonmayorpeterwilson@gmail.com>, Tad Herold <therold@columbianacodev.org>, Tim Weigle <tweigle@cccommissioners.org>, Troy Graft <tgraft@cceng.org>, "Troy K. Rhoades" <troy.rhoades@firstenergycorp.com>, Wayne Chamberlain <wachamb@hotmail.com>

Good afternoon, hope this finds you well and your Monday is off to a good start.

This is just a reminder of the Mitigation Plan Meeting on Thursday, April 11th at 10:00am, this meeting is **VIRTUAL.** I have attached the agenda, the virtual meeting info is included in the agenda at the very beginning. If you are unable to attend please have another representative from your office sit in on the meeting. This meeting should only run about an hour. Please let us know if you are attending or if someone else will be present in your place.

Have a great day and Happy Solar Eclipse Day!

Take care and stay safe,

Lisa J. Elliott

Administrative Assistant

lisa.elliott@ccoema.org

Columbiana County EMA

215 South Market Street

Lisbon, Ohio 44432

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE

STEERING COMMITTEE MEETING #2

AGENDA

Date: April 11, 2024

Time: 10:00 a.m.

Duration: Approximately 60 minutes

Location: Virtual (via Google Meet)

Link: https://meet.google.com/fzq-gswc-szh

Or dial: (US) +1 252-491-3099 PIN: 381 290 472#

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1. Welcome & Introductions
2. Hazard Research Review
3. Outreach Plan
    - Under-represented populations (see below)
    - Public survey
    - Public meetings
    - Dam owners, regulatory entity

4. Municipal Data Collection and Participation
    - Capabilities “survey”
    - Municipal meetings as vehicle for “survey” data collection

5. Asset Inventory Review (see below)
    - Overview, use and presentation in the plan
    - Standard categories
    - Update from 2020 version

6. Q & A
7. Adjournment

Examples of Under-Represented Populations

1. Rural communities
2. Those with disabilities
3. Age (very old or very young)
4. Minority populations
5. Socioeconomic status (e.g., high poverty)
6. Limited/no access to personal transportation
7. Limited English language skills

Asset Inventory from the 2020 Plan

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
GOVERNMENTAL FACILITIES					
Columbiana County Courthouse	203 South Market St., Lisbon, OH	X			
Columbiana City Hall	28 West Friend Street, Columbiana, OH	X			
East Liverpool City Hall	126 West Sixth St., East Liverpool, OH	X			
East Palestine Village Offices	144 North Market Street. East Palestine, OH	X			
Hanoverton Village Offices	Hanoverton, OH	X			
Salem City Hall	231 South Broadway Ave., Salem, OH	X			
Salineville Village Offices	34 Washington Street, Salineville, OH	X			
Wellsville Village Offices	1200 Main Street, Wellsville, OH	X			
Leetonia Village Offices	300 East Main Street, Leetonia, OH	X			
Lisbon Village Offices	203 North Market Street, Lisbon, OH	X			
New Waterford Village Offices	3760 Park Drive, New Waterford, OH	X			
Washingtonville Village Offices	415 South County Road, Washingtonville, OH	X			
Elkrun Township Hall	41725 State Route 154, Lisbon, OH	X			
Fairfield Township Hall	3062 Fairfield School Road, Columbiana, OH	X			
Madison Township Hall	13011 State Route 45, Lisbon, OH	X			
Salem Township Hall	37638 Old State Route 558, Leetonia, OH	X			
TRANSPORTATION INFRASTRUCTURE					
Bridges	Columbiana County	X			
Highways	Columbiana County	X			
Railroads	Columbiana County	X			
Columbiana County Airport	15606 County Airport Rd, East Liverpool, OH	X		X	
Columbiana County Port Authority	7860 Lincole Place, Lisbon, OH 44432	X		X	
PUBLIC UTILITIES					

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
East Liverpool Water Works	2220 Michigan Ave., East Liverpool, OH	X			
East Palestine Sewer and Water	166 Park Drive, East Palestine, OH	X			
Leetonia Water Board	300 Main St., Leetonia, OH	X			
Salem Sewage Plant	1600 Pennsylvania Ave., Salem, OH	X			
Salineville Water Plant	11271 Salineville Rd NE, Salineville, OH	X			
Washingtonville Water and Sewer	415 Boston St., Washingtonville, OH	X			
Wellsville Filtration Plant	17547 SR 45, Wellsville, OH	X			
Wellsville Sewage Disposal	100 16th St., Wellsville, OH	X			
Buckeye Water District	P.O. Box 105, Wellsville, OH 43968	X			
Columbiana City Water Works/Sewer Dept.	Lisbon, OH 44432	X			
Leetonia Sewage Plant	300 Main Street, Leetonia, OH 44431	X			
Lisbon Village Water Department	8077 State Route 164, Lisbon, OH 44432	X			
New Waterford Water / Waste Water Plant	P.O. Box 287, New Waterford, OH 44445	X			
Salineville Sewer Plant	39 State Street, Salineville, OH 43945	X			
EMERGENCY SERVICES					
Columbiana County Sheriff	8473 Countyhome Road, Lisbon, OH	X			
Columbiana County EMA	215 South Market Street, Lisbon, OH 44432	X			
Columbiana County 911 Center	105 South Market Street, Lisbon, OH 44432	X			
Columbiana PD	28 South Vine Street, Columbiana, OH	X			
East Liverpool PD	126 West Sixth Street, East Liverpool, OH	X			
East Palestine PD	75 East Main Street, East Palestine, OH	X			
Leetonia PD	300 East Main Street, Leetonia, OH	X			
Lisbon PD	203 North Market Street, Lisbon, OH	X			
Liverpool Township PD	353 Adam Avenue, East Liverpool, OH	X			
New Waterford PD	3700 Village Park Drive New Waterford, OH	X			
Ohio State Highway Patrol	9423 state Route 45, Lisbon, OH	X			
Perry Township PD	2198 North Ellsworth Avenue, Salem, OH	X			
Salem PD	397 Columbia Street, Salem, OH	X			
Salineville PD	34 Washington Street, Salineville, OH	X			
St. Clair Township PD	15442 Pugh Road Suite 1, Calcutta, OH	X			
Washingtonville PD	415 South County Road,	X			

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
	Washingtonville, OH				
Wellsville PD	1200 Main Street, Wellsville, OH	X			
Calcutta FD	15455 Pugh Road, Calcutta, OH	X			
Columbiana FD	28 West Friend Street, Columbiana OH	X			
East Liverpool FD	626 St. Clair Ave., East Liverpool, OH	X			
East Palestine FD	67 East Clark Street, East Palestine, OH	X			
Franklin Township VFD	32046 Spruce Street, Summitville, OH	X			
Hanoverton VFD	Hanoverton, OH	X			
Guilford Lake FD	32120 Sunset Ave., Hanoverton, OH	X			
Highlandtown VFD	18371 Steubenville Pike Rd., Salineville, OH	X			
Homeworth VFD	4354 Middle Street, Homeworth, OH	X			
Leetonia FD	330 East Main Street, Leetonia, OH	X			
Lisbon FD	Lisbon, OH	X			
Dixonville FD	1181 Anderson Blvd., East Liverpool, OH	X			
Lacroft VFD	2360 Sherwood Ave., East Liverpool, OH	X			
Negley VFD/EMS	Negley, OH	X			
New Waterford FD	3766 East Main St., New Waterford, OH	X			
North Georgetown VFD	North Georgetown, OH	X			
Perry Township VFD	2198 North Ellsworth Avenue, Salem, OH	X			
Rogers Village FD	7580 Farr Street, Rogers, OH	X			
Salem FD	260 South Ellsworth Ave., Salem, OH	X			
Salineville VFD	34 Washington Street, Salineville, OH	X			
Wellsville VFD	1202 Main Street, Wellsville, OH	X			
West Point FD	West Point, OH	X			
Winona FD	Winona, OH	X			
Glenmoor VFD	16320 Annesley Rd., East Liverpool, OH	X			
Air Evac Lifeteam 81	15620 County Airport Rd., East Liverpool, OH	X			
EMT Ambulance	383 North Lincoln Ave., Salem, OH	X			
Lifeteam EMS Inc.	740A Dresden Ave., East Liverpool, OH	X			
KLG Ambulance / MICU	1516B South Lincoln Ave., Salem, OH	X			
North Star Critical Care	16356 SR 267, East Liverpool, OH	X			
Maple-Cotton Funeral Home and EMS	11009 SR 644, Kensington, OH	X			

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
Ambulance Service Inc.	231 Webber Way, East Liverpool, OH	X			
Columbiana EMS	28 West Friend Street, Columbiana, OH	X			
Leetonia EMS	300 Main Street, Leetonia, OH 44431	X			
New Waterford EMS	3766 West Main Street, New Waterford, OH 44445	X			
East Palestine EMS	67 East Clark Street, East Palestine, OH	X			
HOSPITALS AND NURSING HOMES					
East Liverpool City Hospital	East Liverpool, OH	X	X		
Salem Regional Medical Center	Salem, OH	X	X		
Parkside Healthcare Center	930 East Park Ave., Columbiana, OH		X		
Continuing Health Care Solutions	100 Vista Dr., Lisbon, OH		X		
Blossom Nursing and Rehab. Center	109 Blossom Ln., Salem, OH		X		
Calcutta Healthcare Center	48444 Bell School Rd, Calcutta, OH	X			
The Orchards of East Liverpool Convalescent Center	709 Armstrong Ln., East Liverpool, OH		X		
Valley Oaks Care Center	500 Selfridge St., East Liverpool, OH		X		
Salem West Health Care	2511 Bentley Dr., Salem, OH		X		
Salem East Health Care	250 Continental Dr., Salem, OH		X		
Salem North Health Care	230 Continental Dr., Salem, OH		X		
Auburn Skilled Nursing and Rehab	451 Valley Rd., Salem, OH		X		
Circle of Care	1985 East Pershing Street, Salem, OH		X		
Assisted Living Ministry Services	650 St. Clair Ave., East Liverpool, OH		X		
Crossroads at Beaver Creek	13280 Echo Dell Rd., East Liverpool, OH		X		
Grace Woods Senior Living	1166 Benton Rd., Salem, OH		X		
The Renaissance at Vista	100 Vista Dr., Lisbon, OH		X		
Brookdale Salem	1916 South Lincoln Ave., Salem, OH		X		
Whispering Pines Village	937 East Park Ave., Columbiana, OH		X		
St. Mary's Alzheimer's Center	1899 Garfield Road, Columbiana, OH 44408		X		
Great Trail Care Center	400 Carolyn Center, Minerva, OH 44657		X		
Twin Oaks Retirement Center	1166 Benton Road, Salem, OH 44460		X		
Covington Skilled Nursing & Rehab Center	100 Covington Drive, East Palestine, OH 44413		X		
American Health Care	107 Royal Birkdale Drive, Columbiana, OH 44408		X		
Harmony Village	901 S Main Street, Columbiana, OH 44408		X		
Courtyard at Lexington	2345 Lexington Ave., Salem, OH 44460		X		

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
Century House of Salem	1171 East State Street, Salem, OH 44460		X		
Columbiana County Mental Health	40722 State Route 154, Lisbon, OH 44432		X		
SCHOOLS AND EDUCATIONAL FACILITIES					
Beaver Local HS	46090 Bell School Rd., East Liverpool, OH 43920		X		
Beaver Local MS	46090 Bell School Rd., East Liverpool, OH 43920		X		
Buckeye ES	1200 Buckeye Ave., Salem, OH		X		
Beaver Local ES	46090 Bell School Rd., East Liverpool, OH 43920		X		
Columbiana Co. Career and Technical Center	9364 SR 45, Lisbon, OH		X		
Columbiana HS	700 Columbiana-Waterford Rd., Columbiana, OH		X		
Crestview ES	3407 Middleton Rd., Columbiana, OH		X		
Crestview MS/HS	44100 Crestview Rd., Columbiana, OH		X		
David Anderson Jr/Sr HS	260 West Pine St., Lisbon, OH		X		
DAW MS	929 Center Street, Wellsville, OH		X		
East ES	1417 Etruria Street, East Liverpool, OH		X		
East Liverpool Jr./Sr. HS	100 Maine Ave., East Liverpool, OH		X		
East Palestine ES	195 West Grant Street, East Palestine, OH		X		
East Palestine MS	320 West Grant Street, East Palestine, OH		X		
East Palestine HS	360 West Grant Street, East Palestine, OH		X		
Garfield ES	1600 Lincoln Ave., Wellsville, OH		X		
Joshua Dixon ES	333 North Middle St., Columbiana, OH		X		
Lacroft ES	2460 Boring Lane, East Liverpool, OH		X		
Leetonia K-12	450 Walnut Street, Leetonia, OH		X		
Mckinley ES	441 East Chestnut St., Lisbon, OH		X		
North ES	90 Maine Blvd., East Liverpool, OH		X		
Reilly ES	491 Reilly Ave., Salem, OH		X		
Salem Jr./Sr. HS	1200 East Sixth St., Salem, OH		X		
South Side MS	720 Columbiana-Waterford Rd., Columbiana, OH		X		
Southeast ES	2200 Merle Rd., Salem, OH		X		
Southern Local K-12	38095 SR 39, Salineville, OH		X		
United K-12	8143 SR 9, Hanoverton, OH		X		

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
Wellsville HS	1 Bengal Blvd., Wellsville, OH		X		
Westgate MS	810 West Eighth St., East Liverpool, OH		X		
Act 1 Education Center Jr. HS	9955 Union Ridge Rd., Rogers, OH		X		
East Liverpool Christian School	46682 Florence St., East Liverpool, OH		X		
Heartland Christian School K-12	28 Pittsburgh St., Columbiana, OH		X		
St. Aloysius ES	335 West Fifth St., East Liverpool, OH		X		
St. Paul ES	925 East State St., Salem, OH		X		
COMMERCIAL AND INDUSTRIAL					
American Standards Brands	605 South Ellsworth Ave., Salem, OH 44460			X	
Flex-N-Gate/Ventra Salem	Salem, OH 44460			X	
Fresh Mark, Inc.	1735 South Lincoln Ave., Salem, OH 44460			X	
Wal-Mart Stores, Inc.	16280 Dresden Ave., East Liverpool, OH 43920			X	
Pioneer Pottery Inc	761 Dresden Ave., East Liverpool, OH 43920			X	
Zarbana Industries	P.O. Box 46, Columbiana, OH 44408			X	
Miller Casting	1648 Lower Elkton Road, Columbiana, OH 44408			X	
Columbiana Foundry Company	Lisbon Road, Columbiana, OH 44408			X	
POST OFFICES					
Kensington PO	11011 SR 644, Kensington, OH	X			
Summitville PO	15521 SR 644, Summitville, OH	X			
Columbiana PO	149 South Main St. Ste. 2, Columbiana, OH	X			
New Waterford PO	3818 West Main St., New Waterford, OH	X			
Calcutta PO	15713 SR 170, East Liverpool, OH	X			
Winona PO	32036 Winona Rd., Winona, OH	X			
Homeworth PO	4434 Middle St., Homeworth, OH	X			
East Liverpool PO	700 Dresden Ave., East Liverpool, OH	X			
East Palestine PO	269 North Market St., East Palestine, OH	X			
East Rochester PO	24781 US 30, East Rochester, OH	X			
Hanoverton PO	29959 Market St., Hanoverton, OH	X			
Rogers PO	7529 Depot St., Rogers, OH	X			
Salem PO	275 Penn Ave., Salem, OH	X			
Salineville PO	37 West Main St., Salineville, OH	X			

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
Negley PO	7560 Commerce St., Negley, OH	X			
North Georgetown PO	27416 Main St., North Georgetown, OH	X			
Leetonia PO	235 Main St., Leetonia, OH	X			
Lisbon PO	7983 Dickey Dr., Lisbon, OH	X			
Elkton PO	42188 SR 154, Elkton, OH	X			
Washingtonville PO	195 East Main St., Washingtonville, OH	X			
Wellsville PO	1075 Main St., Wellsville, OH	X			
PUBLIC LIBRARIES					
Carnegie Public Library	219 East Fourth St., East Liverpool, OH	X			
Columbiana Public Library	322 North Middle St., Columbiana, OH	X			
East Palestine Memorial Public Library	309 North Market St., East Palestine, OH	X			
Leetonia Community Public Library	181 Walnut St., Leetonia, OH	X			
Lepper Library	303 East Lincoln Way, Lisbon, OH	X			
Salem Public Library	821 East State St., Salem, OH	X			
Wellsville Public Library	115 Ninth St., Wellsville, OH	X			
HISTORICAL FACILITIES					
Hiram Bell Farmstead	43628 State Route 517				X
Burchfield Homestead	867 E. 4th Street, Salem, OH				X
Richard L Cawood Residence	2600 St. Clair Ave., East Liverpool, OH				X
Cherry Valley Coke Ovens	Butcher Road, Leetonia, OH				X
Church Hill Road Covered Bridge	State Route 154				X
Diamond Historic District	Market & E. 6th Street, East Liverpool, OH				X
East Liverpool Historic District	East Liverpool, OH				X
East Liverpool Pottery	2nd and Market Street, East Liverpool				X
Nicholas Eckis House	High Street, Fairfield, OH				X
Elks Club	139 W. 5th Street, East Liverpool, OH				X
Sandy and Beaver Canal District	Beaver Creek State Forest				X
Godwin Knowles House	422 Broadway, East Liverpool, OH				X
Hanna-Kenty House	251 East High Street, Lisbon, OH				X
Hanoverton Canal Town District	U.S. Route 30, Hanoverton, OH				X
Franklin Harris Farmstead	3525 Depot Road, Salem, OH				X
Daniel Howell Hise House	1100 Franklin Ave., Salem, OH				X
Hostetter Inn	32901 State Route 172, Lisbon, OH				X
Ikirt House	200 6th Street, East Liverpool, OH				X
Homer Laughlin House	414 Broadway, East Liverpool, OH				X

COLUMBIANA COUNTY ASSET INVENTORY					
Name or Description of Asset	*Address and Jurisdictional Location*	*Built Environment*	*People*	*Economy*	*Natural Environment*
Lisbon Historic District	U.S. Route 30, Lisbon, OH				**X**
Daniel McBean Farmstead	18709 Fife Coal Rd. Wellsville, OH				**X**
Odd Fellows Temple	120 W. 6th Street, East Liverpool, OH				**X**
Mary A. Patterson Memorial	E. 4th Street, East Liverpool, OH				**X**
Potters National Bank	Broadway and 4th St., East Liverpool, OH				**X**
Salem Downtown Historic District	Salem, OH				**X**
Charles Nelson Schmick House	110 Walnut Street, Leetonia, OH				**X**
John Street House	631 N. Ellsworth Ave., Salem, OH				**X**
Teegarden-Centennial Covered Bridge	Salem, OH				**X**
Cassius Clark Thompson House	305 Walnut Street, East Liverpool, OH				**X**
Travelers Hotel	East Liverpool, OH				**X**
YMCA	Washington and 4th St., East Liverpool, OH				**X**

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #2
MINUTES

Date: April 11, 2024
Time: 10:00 a.m.
Duration: 70 minutes
Location: Virtual (via Google Meet)
Attendees: See below for attendee list.

The Columbiana County Emergency Management Agency (CCEMA) sponsored the second planning workshop for the 2024 update to its hazard mitigation plan on Thursday, April 11, 2024. The workshop was a virtual session, held via the Google Meet platform at 10:00 a.m. Following a brief welcome from CCEMA Director Peggy Clark and a prompt by the county's consultant, Jeff Harvey of JH Consulting, LLC for comments in the wake of Meeting #1, the committee began reviewing the primary agenda items.

The committee discussed the plan for obtaining public and other stakeholder participation. To begin, Jeff brought up reaching out to dam and levee owners and regulatory entities as per a 2023 revision to FEMA's guidance for mitigation plans. The first question was how the committee felt would be best to invite these individuals to participate in the development of the plan. Jeff suggested creating a brief interview guide and survey for direct outreach to facility owners to gauge their interest in potential mitigation projects as well as to glean an overview of their interactions with regulators and jurisdictional responders. He also suggested outreaching to the Ohio Department of Natural Resources (ODNR), Dam Safety to see if ODNR has a list of "deficient" dams in Columbiana County. The U.S. Army Corps of Engineers regulates the Wellsville levee. The USACE deems the levee to be "insufficient" and has for quite some time. Peggy indicated that the CCEMA has contact information for the USACE to gauge interest in potential mitigation projects.

Next, the committee discussed outreach to under-represented populations (another item appearing in the 2023 FEMA revision). Jeff asked attendees for their thoughts on which groupings of people have historically been overlooked, left out, or challenging to participate in planning processes. Chaney Nezbeth, as the director of a non-profit, shared that she gets the

biggest response from representatives of the sample under-represented populations provided on the meeting agenda when using food distribution events as an opportunity to share information. There are 11 food pantries in southern Columbiana County and eight to nine in the northern portions of the county. We may consider narrowing it down to the larger of the pantries as opportunities for distributing or collecting information. The group felt that creating a brief, easily answered survey to capture information while attendees wait in line would be beneficial. Jeff agreed to compile a brief survey to include when sharing the meeting minutes. These events may also be an opportunity to provide one-way, educational information. Additionally, Jennifer Whitman from the mental health and recovery services board works with a food pantry on Tuesdays and Thursdays; she also noted that she has a board member that works regularly with the Guatemalan population in the Salem area who may be willing to share information.

Prior to the meeting, Jeff submitted a draft of an online survey for committee review. Next, the committee discussed that draft. Mayor Wilson from Lisbon commented, asking how many respondents we were targeting. Jeff reported that the survey in the 2020 plan updated received just over 100 responses. The group felt it would be beneficial to launch a survey to run in May and June, but also keep options open for collecting feedback during summer events like the county fair, etc. Mayor Wilson also suggested looking at combining questions to make the survey shorter. Kayla Hamilton from the health department seconded the idea of consolidation, noting that Questions 1 and 2 could easily be a single question.

Next, Jeff proposed a means of getting municipal/jurisdictional data for the multi-jurisdictional elements of the plan. He felt that reaching out to a primary point of contact with each jurisdiction, and then asking that individual to identify a small group of interested individuals associated with the city, village, or township who might be willing to participate. Jeff would then schedule a quick meeting with the small group to review previous projects, assets, vulnerable areas, etc. Mayor Wilson indicated that such a process sounded workable. Troy Graft suggested working through the township association to garner participation from the townships.

With time encroaching upon the hour set aside for the meeting, Jeff drew the committee's attention to the asset inventory list on the back of the agenda. That list was the inventory that appeared in the 2020 version of the plan, and Jeff asked that attendees begin reviewing the list for any updates, additions, or deletions that may be necessary.

To close the meeting, Jeff reviewed hazard research as a follow-up from the February planning workshop. During the first meeting, an item of concern was the reported hazardous materials incident data, and Jeff had agreed to pull data from the National Response Center. He

did so, and he provided a brief overview of the findings. Peggy reported that she felt the ancillary data to be more reflective of what the county has experienced. As part of the question/answer agenda item, Jeff asked for attendees to reach out to him with any additional comments on the draft public survey. There were no other questions.

For the third meeting, the committee will begin reviewing document drafts. As such, there may be a gap between this workshop and that third meeting. Jeff also noted that he will begin outreach to municipalities and will share the revised survey for its online launch.

Attendees

- Peggy Clark, CCEM
- Brian Rutledge, CCEMA
- Bill Jones, City of East Liverpool
- Gabe Durrant, Columbiana County Office of Economic Development
- Glenda Schafer, Columbiana County Port Authority
- Jennifer Whitman, Columbiana County Mental Health and Recovery Services Board
- Keith Drabick, Village of East Palestine
- Peter Wilson, Village of Lisbon
- Tim Weigle, Columbiana County Commissioners
- Chaney Nezbeth, The Way Station, Inc.
- Kayla Hamilton, Columbiana County Health Department
- Troy Graft, Columbiana County Engineer's Office
- Troy Rhodes, First Energy
- One Telephone Caller: xxx-xxx-xx59
- Jeff Harvey, JH Consulting, LLC

Attachments

- Under-Represented Populations Survey

MEETING 3

FW: Columbiana HMP (Public Participation Review)

Lisa Elliott <Lisa.Elliott@ccoema.org>

Thu 6/27/2024 2:48 PM

To:Bill Jones <wjones4@primehealthcare.com>;Brian Rutledge <Brian.Rutledge@ccoema.org>;Chaney Nezbeth <chaneynezbeth@gmail.com>;Gabe Durrant <gdurrant@columbianacodev.org>;Jeff Christopher <jchris51@kent.edu>;jharvey <jharvey@jhcpreparedness.com>;Kayla Hamilton <khamilton@columbiana-health.org>;Keith Drabick <k.a.drabick@eastpalestine-oh.gov>;Lance Willard <lwillard@columbianaohio.gov>;Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>;Peggy Clark <Peggy.Clark@ccoema.org>;Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>;Pete Wilson <lisbonmayorpeterwilson@gmail.com>;Tad Herold <therold@columbianacodev.org>;Tim Weigle <tweigle@cccommissioners.org>;Troy Graft <tgraft@cceng.org>;Troy K. Rhoades <troy.rhoades@firstenergycorp.com>;Wayne Chamberlain <wachamb@hotmail.com>

Good afternoon, this brief virtual meeting from below will be Thursday, July 11, 2024 at 10:00am, please let me know if you will attending the virtual meeting or if you will have an other representative from your office attending the virtual meeting.

Thank you, have a wonderful weekend and enjoy you Happy 4th of July holiday!

Take care and stay safe,

Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 South Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725 ext. 1806
Fax: (330) 424-9267

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Thursday, June 27, 2024 1:41 PM
To: Lisa Elliott <Lisa.Elliott@ccoema.org>
Cc: Brian Rutledge <Brian.Rutledge@ccoema.org>
Subject: Fwd: Columbiana HMP (Public Participation Review)

Begin forwarded message:

> **From:** jharvey <jharvey@jhcpreparedness.com>
> **Date:** June 27, 2024 at 7:54:22 AM EDT
> **To:** Peggy Clark <Peggy.Clark@ccoema.org>, Brian Rutledge <Brian.Rutledge@ccoema.org>
> **Subject: Columbiana HMP (Public Participation Review)**
>
> This brief virtual meeting will be to discuss on-going public outreach and participation for the hazard mitigation plan update.
>
> _____
> _____

Microsoft Teams Need help?<https://aka.ms/JoinTeamsMeeting?omkt=en-US>

Join the meeting now<https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDAxZjVkYTktZWU3Ni00YTJlLWI2ZmUtMzBhNDQ5NTFiMDQ3%40thread.v2/0?context=%7b%22Tid%22%3a%22d63c134b-3af6-4bec-806d-b5ac02addc0e%22%2c%22Oid%22%3a%22b54ec602-79cf-428e-b659-d3c35cedb15b%22%7d>
Meeting ID: 280 386 083 217
Passcode: wCDU8K

For organizers: Meeting options<https://teams.microsoft.com/meetingOptions/?organizerId=b54ec602-79cf-428e-b659-d3c35cedb15b&tenantId=d63c134b-3af6-4bec-806d-b5ac02addc0e&threadId=19_meeting_ZDAxZjVkYTktZWU3Ni00YTJlLWI2ZmUtMzBhNDQ5NTFiMDQ3@thread.v2&messageId=0&language=en-US>

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FW: Agenda for Next Week's Meeting

Lisa Elliott <Lisa.Elliott@ccoema.org>

Fri 7/5/2024 8:27 AM

To:Bill Jones <wjones4@primehealthcare.com>;Brian Rutledge <Brian.Rutledge@ccoema.org>;Chaney Nezbeth <chaneynezbeth@gmail.com>;Gabe Durrant <gdurrant@columbianacodev.org>;Jeff Christopher <jchris51@kent.edu>;jharvey <jharvey@jhcpreparedness.com>;Kayla Hamilton <khamilton@columbiana-health.org>;Keith Drabick <k.a.drabick@eastpalestine-oh.gov>;Lance Willard <lwillard@columbianaohio.gov>;Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>;Peggy Clark <Peggy.Clark@ccoema.org>;Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>;Pete Wilson <lisbonmayorpeterwilson@gmail.com>;Tad Herold <therold@columbianacodev.org>;Tim Weigle <tweigle@cccommissioners.org>;Troy Graft <tgraft@cceng.org>;Troy K. Rhoades <troy.rhoades@firstenergycorp.com>;Wayne Chamberlain <wachamb@hotmail.com>

1 attachments (52 KB)

CCHMP-Mtg3_Agenda-07112024.pdf;

Mitigation Plan Group Meeting, Thursday, July 11, 2024 @10am.

From: jharvey <jharvey@jhcpreparedness.com>
Sent: Wednesday, July 3, 2024 2:34 PM
To: Peggy Clark <Peggy.Clark@ccoema.org>; Brian Rutledge <Brian.Rutledge@ccoema.org>
Subject: FYI: Agenda for Next Week's Meeting

Good afternoon.

Please find attached a brief agenda for next week's quick mitigation plan meeting.

Thanks, and have a great holiday!
J.

--

Jeffery W. Harvey, DEL, CEM, PCP

Managing Member, Consultant

JH Consulting, LLC

29 East Main Street, Suite 1

Buckhannon, WV 26201

Telephone: (304) 473-1009

Fax: (304) 473-1099

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Email: jharvey@jhcpreparedness.com

Web: www.jhcpreparedness.com

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE

STEERING COMMITTEE MEETING #3

AGENDA

Date: July 11, 2024

Time: 10:00 a.m.

Duration: Approximately 30 minutes

Location: Virtual (via MS Teams)

Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDAxZjVkYTktZWU3Ni00YTJlLWI2ZmUtMzBhNDQ5NTFiMDQ3%40thread.v2/0?context=%7b%22Tid%22%3a%22d63c134b-3af6-4bec-806d-b5ac02addc0e%22%2c%22Oid%22%3a%22b54ec602-79cf-428e-b659-d3c35cedb15b%22%7d

Meeting ID: 280 386 083 217

Passcode (if prompted): wCDU8K

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1. Welcome & Introductions
2. General Project Status Update
3. Outreach Plan Updates
   - Web survey (w/ results)
     - 28 responses (through July 2)
   - Condensed surveys (w/ results)
     - 73 responses (through July 2)

4. Discussion: Garnering Additional Outreach
   - Fair
   - Additional opportunities to push the online survey link
   - Others?

5. Q & A
6. Adjournment

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #3
MINUTES

Date: July 11, 2024
Time: 10:00 a.m.
Duration: 30 minutes
Location: Virtual (via MS Teams)
Attendees: See below for attendee list.

On July 11, 2024, members of Columbiana County's hazard mitigation steering committee came together to discuss on-going public outreach efforts associated with the 2024 update to the county's mitigation plan. The public's participation in the planning process had been less than desired, so this meeting offered a chance for members to brainstorm ideas for garnering increased participation.

To frame the discussion, Jeff Harvey presented an overview of the comments and survey responses received to date. The online survey received 28 responses, while condensed surveys from food pantries yielded 73. Key findings included severe wind and tornado as top concerns, with 48% of respondents citing tornado as their primary worry. The condensed survey highlighted severe wind and tornado again, with 48% of respondents most concerned about these hazards. He then asked participants for their ideas on generating additional input. Chaney Nezbeth indicated that she is on a committee for an upcoming event in Columbiana – Operation Bridge – with a target audience being those who are going through addiction and recovery as well as the unhoused in Columbiana County's two largest cities, Salem and East Liverpool. The goal for each session is to attract 500 attendees (1,000 total), and Chaney would be willing to include the condensed survey at her table at both events.

Peggy Clark encouraged everyone on the committee to reshare the online survey on their social media platforms, and she indicated that the EMA would reshare it as well. Jeff agreed to re-send the link to the online survey along with sample language that committee members could use with their posts. With no other members have comments, the meeting ended at approximately 10:32 a.m.

Attendees

- Peggy Clark (CCEMA)
- Chaney Nezbeth (The Way Station, Inc.)
- Bryce Miner (City of Columbiana)
- Kayla Hamilton (Columbiana County Health Department)
- Troy Graft (Columbiana County Engineer's Office)
- Jennifer Whitman (Columbiana County Mental Health and Recovery Services Board)
- Penny Traina (Columbiana County Port Authority)
- Brian Rutledge (CCEMA)
- Jeff Harvey (JH Consulting, LLC)

MEETING 4

Save the meeting date

Brian Rutledge <Brian.Rutledge@ccoema.org>

Tue 8/6/2024 6:54 PM

To:Lisa Elliott <Lisa.Elliott@ccoema.org>;Bill Jones <wjones4@primehealthcare.com>;Chaney Nezbeth <chaneynezbeth@gmail.com>; Gabe Durrant <gdurrant@columbianacodev.org>;Jeff Christopher <jchris51@kent.edu>;jharvey <jharvey@jhcpreparedness.com>;Kayla Hamilton <khamilton@columbiana-health.org>;Keith Drabick <k.a.drabick@eastpalestine-oh.gov>;Lance Willard <lwillard@columbianaohio.gov>;Marcy Patton <mpatton@ccmhrsb.org>;Peggy Clark <Peggy.Clark@ccoema.org>;Penny Traina <ptraina@ccpa-ohioriver.com>;Pete Conkle <pete.conkle@oh.nacdnet.net>;Pete Wilson <lisbonmayorpeterwilson@gmail.com>;Tad Herold <therold@columbianacodev.org>;Tim Weigle <tweigle@cccommissioners.org>;Troy Graft <tgraft@cceng.org>;Troy K. Rhoades <troy.rhoades@firstenergycorp.com>;Wayne Chamberlain <wachamb@hotmail.com>

Good evening,

I hope everyone is doing well and enjoying the beautiful hot summer (we do need this rain that we are getting today). We wanted to send out notification of our next meeting to discuss updates to our Hazard Mitigation Plan. The meeting will be held September 5th at 10am in person at the EMA building in Lisbon. As we get closer, we will send out an agenda and some notes from the previous meeting.

Look forward to seeing everyone!

Brian Rutledge
Columbiana County EMA/911
330-424-9725

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Meeting today at 10am.

Lisa Elliott <Lisa.Elliott@ccoema.org>

Thu 9/5/2024 8:36 AM

To:Bill Jones <wjones4@primehealthcare.com>;Brian Rutledge <Brian.Rutledge@ccoema.org>;Chaney Nezbeth <chaneynezbeth@gmail.com>;Gabe Durrant <gdurrant@columbianacodev.org>;Jeff Christopher <jchris51@kent.edu>;jharvey <jharvey@jhcpreparedness.com>;Kayla Hamilton <khamilton@columbiana-health.org>;Keith Drabick <k.a.drabick@eastpalestine-oh.gov>;Lance Willard <lwillard@columbianaohio.gov>;Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>;Peggy Clark <Peggy.Clark@ccoema.org>;Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>;Pete Wilson <lisbonmayorpeterwilson@gmail.com>;Tad Herold <therold@columbianacodev.org>;Tim Weigle <tweigle@cccommissioners.org>;Troy Graft <tgraft@cceng.org>;Troy K. Rhoades <troy.rhoades@firstenergycorp.com>;Wayne Chamberlain <wachamb@hotmail.com>

Good morning, Hope all is well and your morning off to a good start.
I do apologize for the last minute reminder, there is a Hazard Mitigation meeting at the EMA at 10am.
Hope you can attend and again I do apologize for being last minute.
Enjoy your day!

Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 South Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725 ext. 1806
Fax: (330) 424-9267

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE

STEERING COMMITTEE MEETING #4

AGENDA

Date: September 5, 2024
Time: 10:00 a.m.
Duration: 60-90 minutes
Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon

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1. Welcome & Introductions
2. General Project Status Update
3. Outreach Plan Updates
    - Web survey (w/ results)
        - 61 responses (through September 4)
    - Condensed surveys (w/ results)
        - 173 responses (through September 4)
4. Mitigation Goals & Objectives
5. Project Prioritization Criteria
6. Q & A
7. Adjournment

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #4
MINUTES

Date: September 5, 2024
Time: 10:00 to 11:10 a.m.
Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon
Attendees: See attached sign-in sheet.

The meeting focused on updates and feedback for the hazard mitigation planning project, and the discussion began with a general project status update followed by an overview of public outreach received to date. The slide deck displayed during the meeting appears as an attachment below.

Post-Meeting Action Items (Summary)

- Include a comparison of survey results from the current plan update with the previous one in the narrative.
- Explore using survey data to request outage data from the utility to support grant applications for backup power projects.
- Finalize criteria for prioritizing mitigation projects including addressing hazards the public views as concerns.

Survey Data Analysis

- CCEMA's contractor, Jeff Harvey, noted that all web survey respondents live or work in the county, while 168 out of 173 condensed survey respondents also live or work in the county.
- The web survey includes more detailed demographic questions and preparedness measures, while the condensed survey focuses on hazard concerns.
- The top concerns from the web survey are severe thunderstorms or hail, hazmat, and extreme temperatures, with severe wind and tornado being a close second.
- The condensed survey also shows significant concerns about severe wind and tornado,

hazmat, and cybersecurity, with extreme temperatures and public health emergencies also mentioned.

Comparative Survey Results

- Jeff compared the survey results from the web survey and the condensed survey, noting that the web survey includes more detailed questions.
- The web survey shows severe thunderstorms or hail as the top concern, followed by hazmat and extreme temperatures, while the condensed survey lists severe wind and tornado as the top concern.
- Both surveys indicate that public health emergencies and wildfires are less of a concern.
- Troy Rhoades from Ohio Edison suggested including an overview of previous survey results to show consistency and changes in public concerns over time, with which the rest of the attendees agreed.
- Qualitative comments from the condensed survey highlight concerns about power outages, homelessness, and drug issues.

Risk Reduction and Mitigation Actions

- Jeff presented additional data on risk reduction and mitigation actions that the public would support, with burying power lines and upgrading water and sewer systems being the top vote-getters. The group briefly discussed the feasibility of burying power lines, noting that it would be a difficult project to undertake (even as a series of small projects).
- Installing generators for critical facilities is also a high-ranking action, with building or retrofitting community shelters being less popular but still significant.
- Troy and Peggy Clark, CCEMA, discussed the challenges of identifying and using community shelters, including the need for staffing and coordination.

Project Prioritization Criteria

- Jeff then outlined the criteria for prioritizing mitigation projects used in the previous planning process, including addressing multiple hazards, protecting vulnerable populations, and reducing the negative impacts of frequent or severe hazards. Other criteria include ease of implementation, environmental protection, and alignment with local funds or grants.
- Troy, Peggy, and Pete Wilson, mayor of Lisbon, discussed the importance of partnerships and the need for clear definitions of partnerships in the context of the plan.

- Jeff suggested revising the criteria to focus on the top three public concerns and to combine some criteria to streamline the process.

Finalizing Prioritization Criteria

- Jeff proposed removing the criterion for aligning with committee goals and combining ease of implementation with availability of local funds.
- The group then discussed the importance of public perception and the need to balance detailed criteria with practical implementation.
- Jeff suggested using a scoring worksheet to evaluate projects based on the prioritization criteria and to ensure that all projects meet at least some of the criteria. The group agreed to take the prioritization criteria home for further review and to reconvene to finalize the criteria and scoring process.
- With the minutes, Jeff will include a version of the prioritization criteria that includes the changes discussed during this meeting. (See attached.)

Next Steps and Meeting Schedule

- To conclude the meeting, Jeff outlined the next steps, including finalizing the prioritization criteria and creating a draft of the plan for review by the committee.
- The group agreed to meet in mid-October to review the draft and the county project list.

List of Attachments

- Sign-In Sheet
- Slide Deck
- Updated Mitigation Action Prioritization Criteria

Disclosure, Use of AI
At JH Consulting, LLC, we value transparency and seek to model it within our projects. To that end, personnel used otter.ai to assist in transcribing the recording of the meeting and providing an initial draft summary of that transcription in support of the compilation of these minutes.

EMA-

Date: _____ Place/Room: EMA/EOC

Name:	Email:	Agency
WAYNE CHAMBERLAIN	wachamb@hotmail.com	madison TWP
JEFFERY HARVEY	JH CONSULTING, ELC jharvey@hepreparedness.com	JHC
Peggy Clark	peggy.clark@ccoema.org	CCEMA
BRIAN Rutledge	Brian.rutledge@ccoema.org	CCEMA
Pete Conkle	Pete.conkle@oh.nacdnet.net	SVCD
Peter Wilson	Lisbonmayor.peterwilson@gmail.com	Lisbon
Troy Rhoades	troy.rhoades@firstenergycorp.com ~~Ohio Edison~~	OHIO Edison

COLUMBIANA COUNTY
HAZARD MITIGATION PLAN UPDATE

Steering Committee Meeting #4

September 5, 2024 ~ 10:00 a.m.

WELCOME AND INTRODUCTIONS



AGENDA

1. Welcome & Introductions
2. General Project Status Update
3. Outreach Plan Updates
4. Mitigation Goals & Objectives
5. Project Prioritization Criteria
6. Q&A
7. Adjournment

General Project Status Update

Outreach Plan Updates

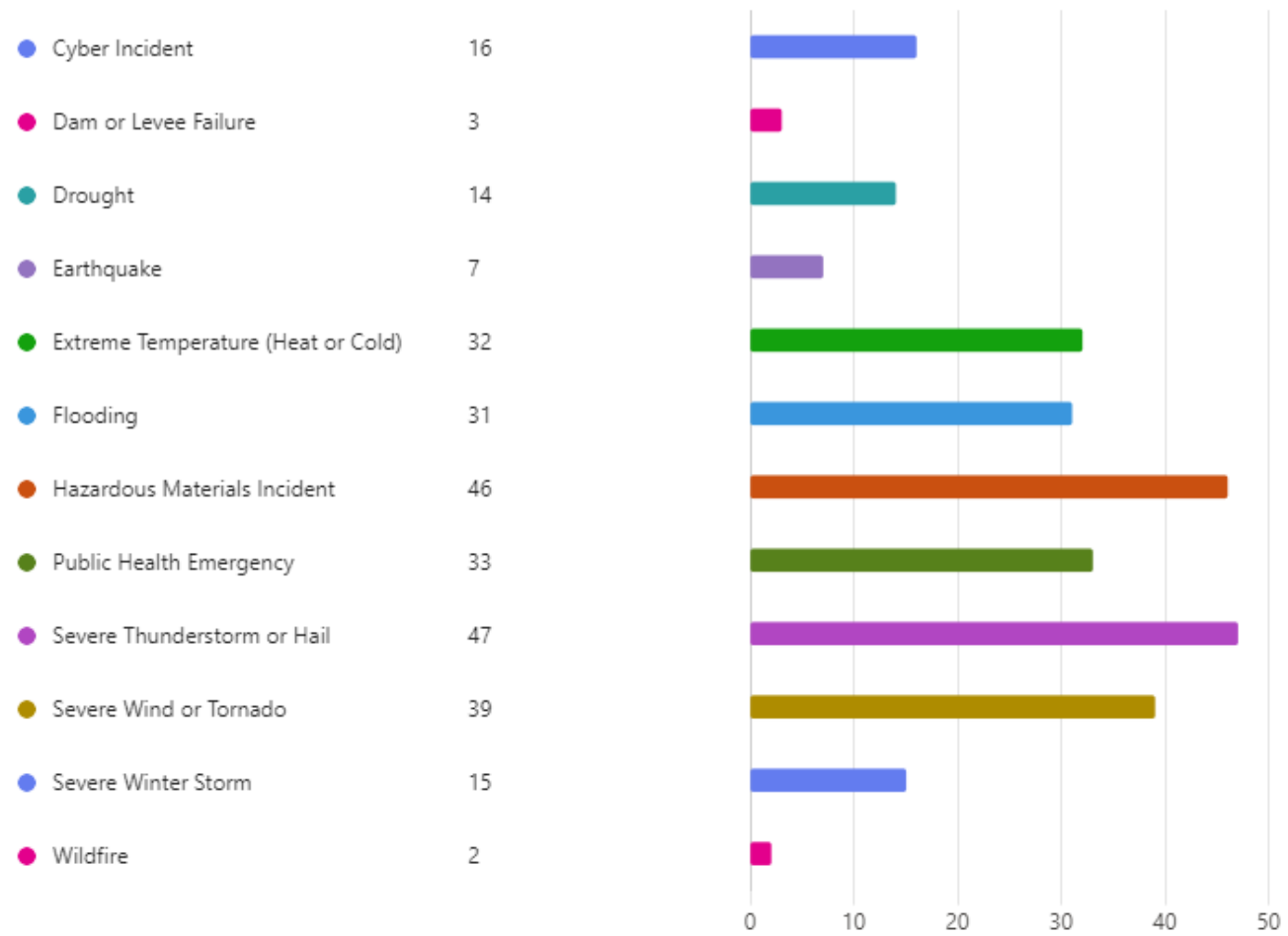
SURVEY RESULTS

- Data current as of September 4, 2024
- Web Survey
  - 61 responses
    - Live/Work in Columbiana County: 60
    - Answering the Live/Work Question: 100% (61 respondents)
- Condensed Survey
  - 173 responses
    - Live/Work in Columbiana County: 160
    - Answering the Live/Work Question: 97.11% (168 respondents)

WEB SURVEY RESULTS (1)

5. Do you remember any of the following occurring in the last five years? (Select all that apply.)

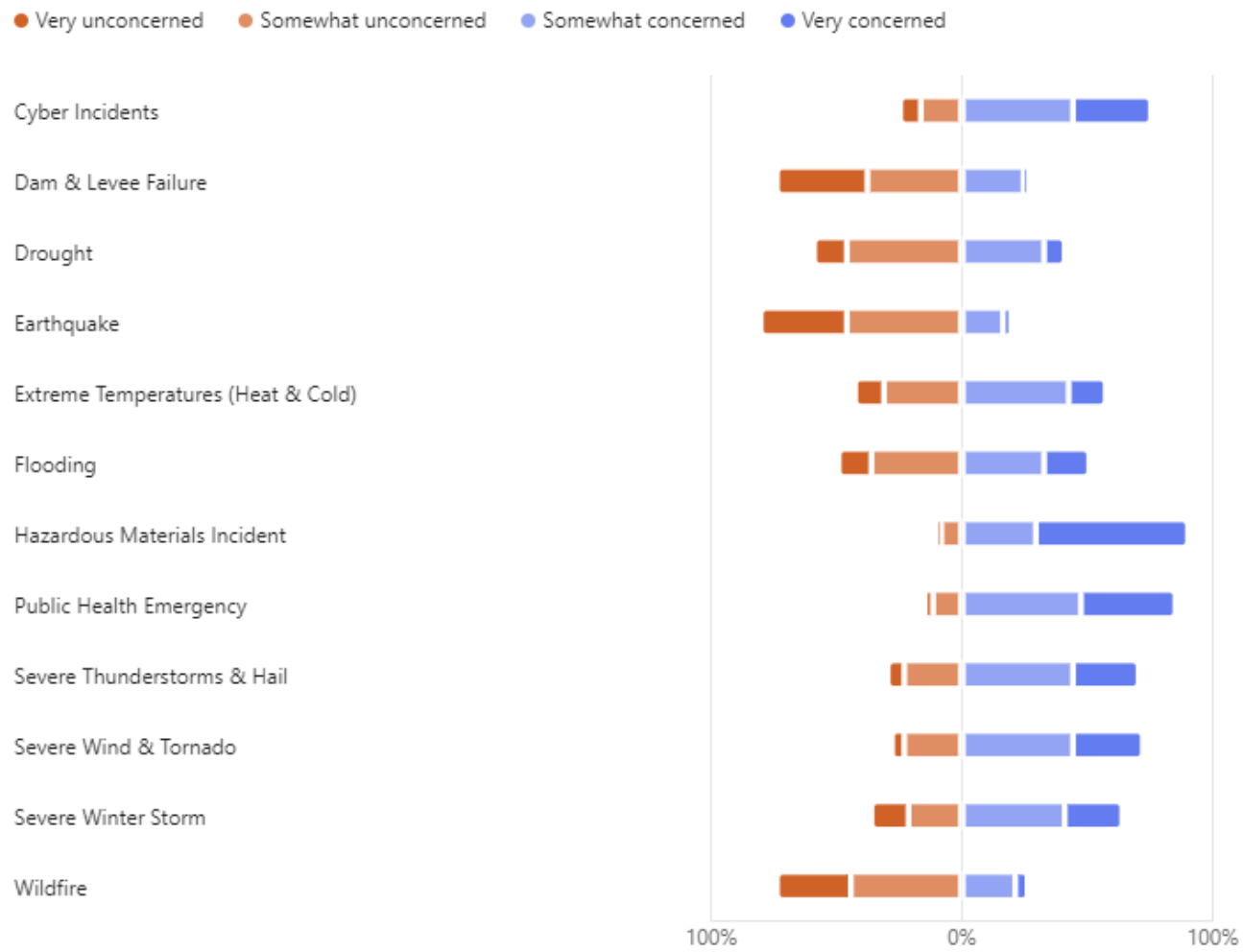
61 Responses



WEB SURVEY RESULTS (2)

6. How concerned are you about the following hazards?

61 Responses

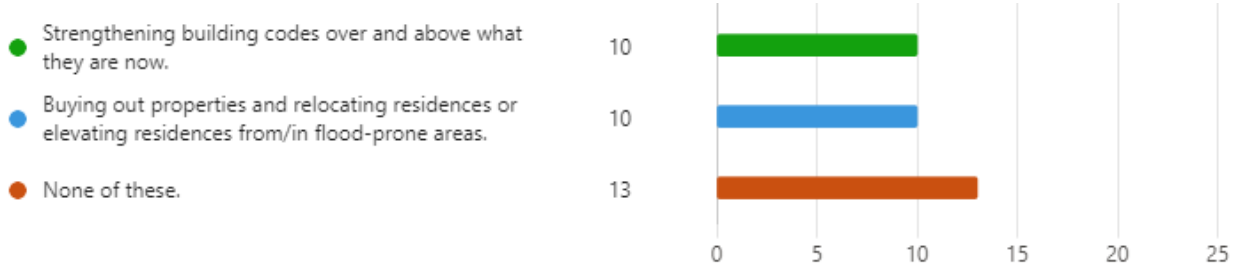


WEB SURVEY RESULTS (3)

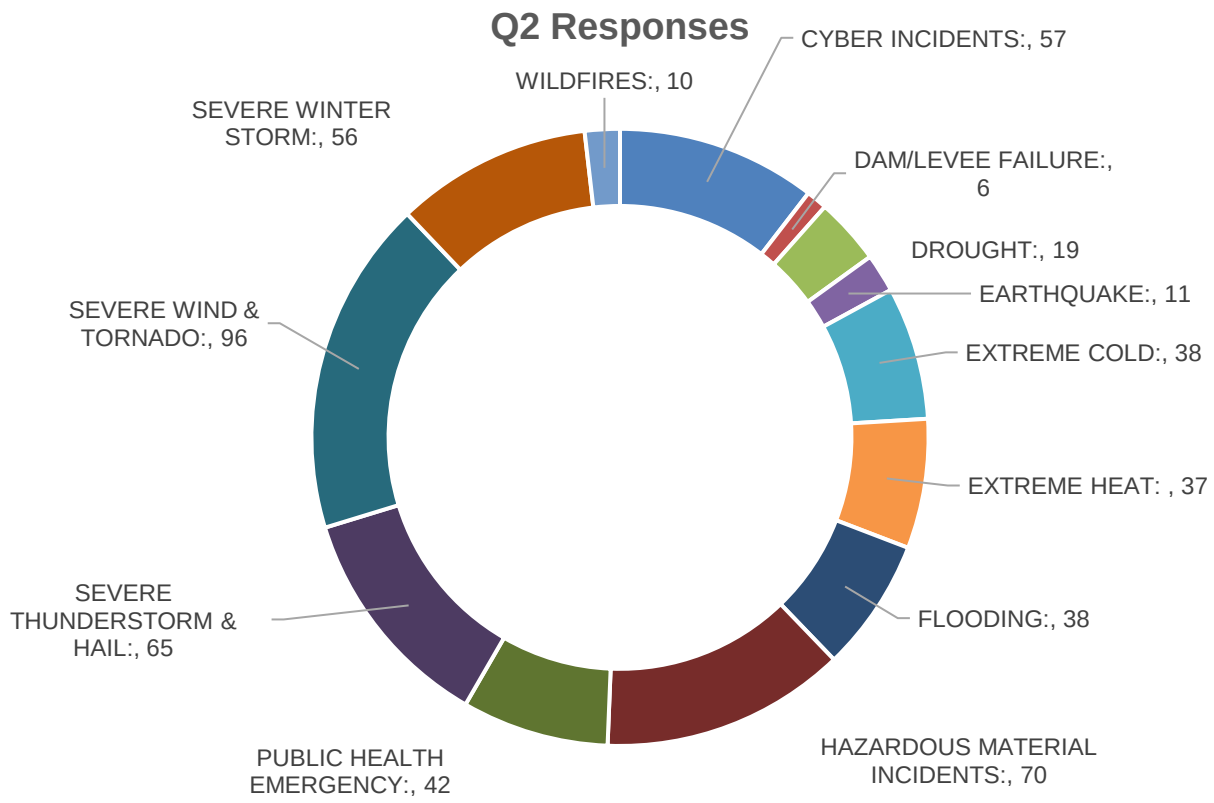
16. Please indicate the type(s) of risk reduction or mitigation actions you would support. In this case, "support" means an effort you would consider doing yourself or an effort you would generally...

54 Responses

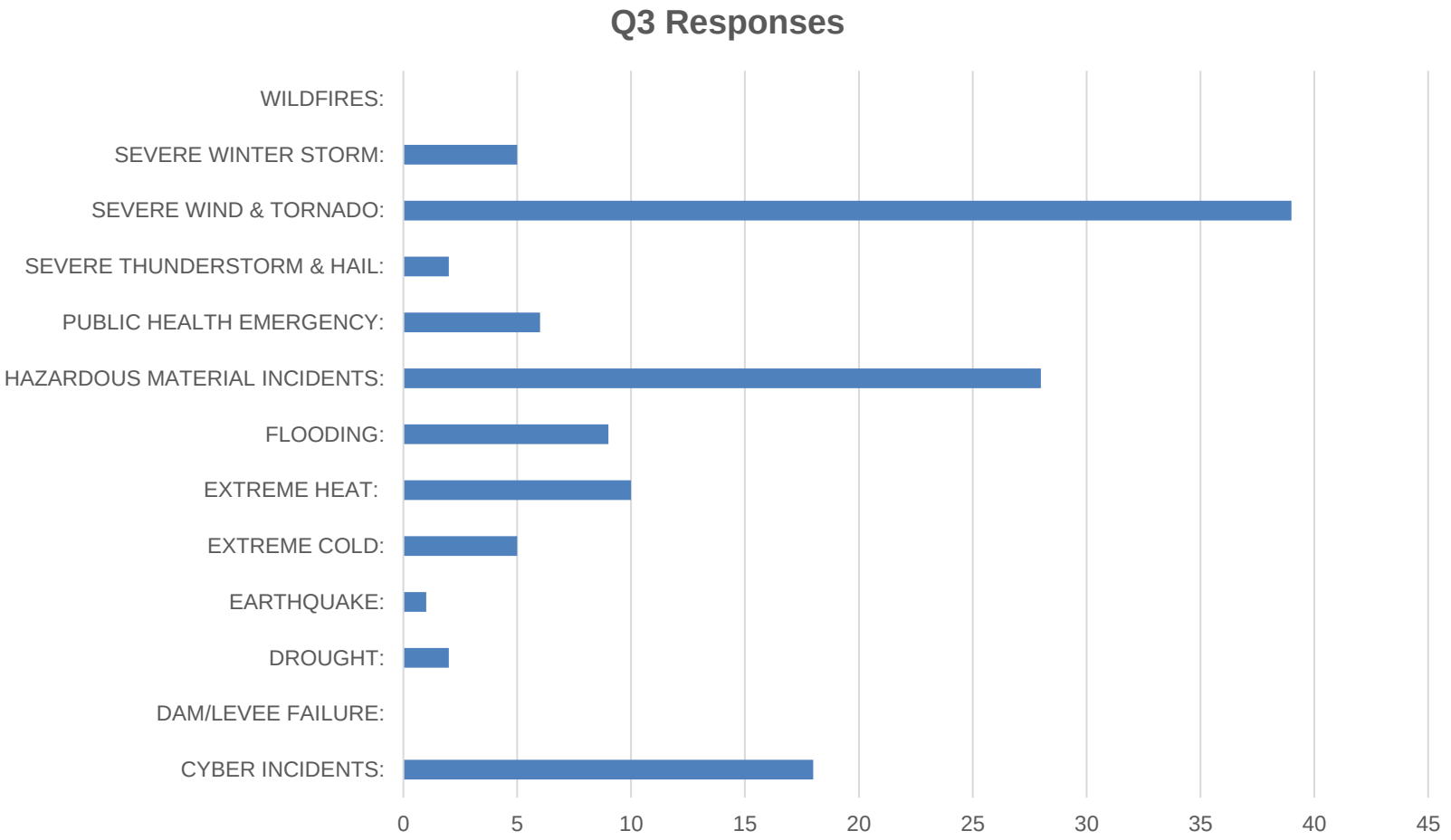




CONDENSED SURVEY RESULTS (1)



CONDENSED SURVEY RESULTS (2)



Mitigation Goals and Objectives

Mitigation Goals from 2020 Plan	
1.	Ensure the health and safety of first responders and the general population in Columbiana County before, during, and after an emergency event or incident.
2.	Promote coordination and partnership of key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.
3.	Protect vulnerable populations from negative effects of hazards in Columbiana County.
4.	Reduce death, injury, illness, and damage to property, infrastructure, and the environment resulting from hazards events or incidents.
5.	Ensure the continued livelihoods of individuals and the community in Columbiana County prior to hazard events or incidents.

Project Prioritization Criteria

PRIORITIZATION CRITERIA

- The action addresses more than one hazard at once.
- The action aims to protect the most vulnerable populations.
- The action attempts to reduce the negative impacts of frequent hazards.
- The action attempts to reduce the negative effects of severe hazards.
- The action is easy to implement (i.e., most of the population agrees with it and it doesn’t have negative political ramifications).
- The action protects the environment.
- The action is easily paid for with local funds or attainable grants.
- The action is already scheduled to start (or is in process).
- The action directly aligns with one or more of the goals set by the committee.
- The action promotes partnerships within the county.


Q&A

ADJOURNMENT

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
MITIGATION ACTION PRIORITIZATION ACTIVITY

Name: _____ Organization/Community:_____

It is important to prioritize the mitigation actions so that planners can implement the projects adequately. Please rate the following from 1 to 8, 1 being the highest priority for you.

___ The action addresses more than one hazard at once
___ The action aims to protect the most vulnerable populations
___ The action protects the environment
___ Jurisdictions in the county have administrative capabilities in place to undertake and manage the action
___ The action is already scheduled to start or is in process
___ The action promotes partnerships within the county
___ The action attempts to reduce the negative impacts of one of the top three most damaging hazards impacting the county (as per the risk assessment ranking)
___ The action attempts to reduce the negative impacts of one of the top three most concerning hazards as per public perception (based on the results of the public surveys)

REVISED

MEETING 5

Meeting for Octocber

Lisa Elliott <Lisa.Elliott@ccoema.org>

Mon 9/16/2024 9:33 AM

To:Bill Jones <wjones4@primehealthcare.com>;Brian Rutledge <Brian.Rutledge@ccoema.org>;Chaney Nezbeth <chaneynezbeth@gmail.com>;Gabe Durrant <gdurrant@columbianacodev.org>;Jeff Christopher <jchris51@kent.edu>;jharvey <jharvey@jhcpreparedness.com>;Kayla Hamilton <khamilton@columbiana-health.org>;Keith Drabick <k.a.drabick@eastpalestine-oh.gov>;Lance Willard <lwillard@columbianaohio.gov>;Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>;Peggy Clark <Peggy.Clark@ccoema.org>;Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>;Pete Wilson <lisbonmayorpeterwilson@gmail.com>;Tad Herold <therold@columbianacodev.org>;Tim Weigle <tweigle@cccommissioners.org>;Troy Graft <tgraft@cceng.org>;Troy K. Rhoades <troy.rhoades@firstenergycorp.com>;Wayne Chamberlain <wachamb@hotmail.com>

Good morning, hope this finds you well and your Monday off to a good start for your week.
Hold the Date: October 28th at 1:30pm- There will be a Hazard Mitigation meeting.
Thank you and have a great week.

Take care and stay safe,

Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 South Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725 ext. 1806
Fax: (330) 424-9267

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Outlook

Meeting reminder for Monday, October 28, 2024 at 1:30pm

From Lisa Elliott <Lisa.Elliott@ccoema.org>

Date Mon 10/21/2024 3:15 PM

To Bill Jones <wjones4@primehealthcare.com>; Brian Rutledge <Brian.Rutledge@ccoema.org>; Chaney Nezbeth <chaneynezbeth@gmail.com>; Donald Schrader <dschrader@columbiana-health.org>; Gabe Durrant <gdurrant@columbianacodev.org>; Jeff Christopher <jchris51@kent.edu>; jharvey <jharvey@jhcpreparedness.com>; Keith Drabick <k.a.drabick@eastpalestine-oh.gov>; Lance Willard <lwillard@columbianaohio.gov>; Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>; Peggy Clark <Peggy.Clark@ccoema.org>; Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>; Pete Wilson <lisbonmayorpeterwilson@gmail.com>; Tad Herold <therold@columbianacodev.org>; Tim Weigle <tweigle@cccommissioners.org>; Troy Graft <tgraft@cceng.org>; Troy K. Rhoades <troy.rhoades@firstenergycorp.com>; Wayne Chamberlain <wachamb@hotmail.com>

1 attachments (430 KB)

CCHMP-Mtg4_Minutes-09052024.pdf;

Good afternoon, I would like to apologize ahead of time. I type in wrong time for meeting, the correct time is **1:30pm.**
Have a good afternoon/evening.

Lisa

From: Lisa Elliott
Sent: Monday, October 21, 2024 8:38 AM
To: Bill Jones <wjones4@primehealthcare.com>; Brian Rutledge <brian.rutledge@ccoema.org>; Chaney Nezbeth <chaneynezbeth@gmail.com>; Donald Schrader <dschrader@columbiana-health.org>; Gabe Durrant <gdurrant@columbianacodev.org>; Jeff Christopher <jchris51@kent.edu>; Jeffrey Harvey <jharvey@jhcpreparedness.com>; Keith Drabick <k.a.drabick@eastpalestine-oh.gov>; Lance Willard <lwillard@columbianaohio.gov>; Lisa Elliott <lisa.elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>; Peggy Clark <peggy.clark@ccoema.org>; Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>; Pete Wilson <lisbonmayorpeterwilson@gmail.com>; Tad Herold <therold@columbianacodev.org>; Tim Weigle <tweigle@cccommissioners.org>; Troy Graft <tgraft@cceng.org>; Troy K. Rhoades <troy.rhoades@firstenergycorp.com>; Wayne Chamberlain <wachamb@hotmail.com>
Subject: Meeting reminder for Monday, October 28, 2024 at 12:30pm

Good morning, hope this finds you well and your Monday off to a good start for your week.
This is a reminder of next Monday's Mitigation Plan meeting at 12:30pm at the EMA. I have attached the minutes from the meeting in September.
I should be sending a agenda by the end of the week.
Hoping you are able to attend but if you are not able maybe another person from your office would be able to in your absence.
Thank you for all your time and support, have a great day and a wonderful rest of your week.

Lisa J. Elliott
Administrative Assistant

lisa.elliott@ccoema.org
Columbiana County EMA
215 South Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725 ext. 1806
Fax: (330) 424-9267

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Outlook

Information for Haz Mit Plan Group Meeting

From Lisa Elliott <Lisa.Elliott@ccoema.org>

Date Wed 10/23/2024 10:11 AM

To Bill Jones <wjones4@primehealthcare.com>; Brian Rutledge <Brian.Rutledge@ccoema.org>; Chaney Nezbeth <chaneynezbeth@gmail.com>; Donald Schrader <dschrader@columbiana-health.org>; Gabe Durrant <gdurrant@columbianacodev.org>; Jeff Christopher <jchris51@kent.edu>; jharvey <jharvey@jhcpreparedness.com>; Keith Drabick <k.a.drabick@eastpalestine-oh.gov>; Lance Willard <lwillard@columbianaohio.gov>; Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>; Peggy Clark <Peggy.Clark@ccoema.org>; Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>; Pete Wilson <lisbonmayorpeterwilson@gmail.com>; Tad Herold <therold@columbianacodev.org>; Tim Weigle <tweigle@cccommissioners.org>; Troy Graft <tgraft@cceng.org>; Troy K. Rhoades <troy.rhoades@firstenergycorp.com>; Wayne Chamberlain <wachamb@hotmail.com>

3 attachments (147 KB)

Columbiana_Co-Ex_Projects.docx; CCHMP_Project_Prioritization.docx; CCHMP-Mtg5_Agenda-10282024.pdf;

Good morning, hope all is well and your Wednesday off to a good start.

I have attached additional information for the Haz Mit Plan Meeting on Monday, October 28th at 1:30pm. Hope you are able to attend, if you are not maybe another representative from your office would be available to sit in for you.

If you would please let me know if you are not able to attend and no other representative will be attending.

Thank you for your time and support for this project.

Take care and stay safe,

Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 South Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725 ext. 1806
Fax: (330) 424-9267

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE

STEERING COMMITTEE MEETING #5

AGENDA

Date: October 28, 2024

Time: 1:30 p.m.

Duration: 60-90 minutes

Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon

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1. Welcome & Introductions
2. General Project Status Update
3. Review (& Approve) Project Prioritization Criteria
   - See attachment.

4. County Project Status Discussion
   - See attachment.

5. Draft Document Review
6. Q & A
7. Adjournment

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #5
MINUTES

Date: October 28, 2024
Time: 1:30 p.m.
Duration: Approximately 80 minutes
Location: See attached sign-in sheet.

Columbiana County's fifth hazard mitigation plan steering committee meeting focused on finalizing the update of the hazard mitigation plan.

Action Items

- Provide access to draft plan documents through a shared OneDrive folder.
- Review draft plan documents and provide comments using the provided Word or Excel templates.
- Schedule a meeting to review the full draft plan document after the holidays.
- Explore information about aging infrastructure and its connection to emergency management in the plan.

Overview

Though the agenda included general updates as to the plan's development status, the primary topics included reviewing the project prioritization methodology and generating a status statement for the projects listed on the existing county project list. However, of note (when discussing a draft of the "drought" profile), the committee asked the county's contractor to consider including notes about invasive species in the drought profile.

Regarding the prioritization criteria, the contractor revisited a discussion point from Meeting 4, during which committee members reduced the number of prioritization criteria from 10 to eight. To outline the methodology, the contractor reminded the committee that the prioritization criteria are listed as yes/no questions, and those for which a project under consideration elicits a "yes" response receive a designated number of points. The committee will review the prioritization criteria one final time at its last planning meeting. (See attached for a list

of the revised criteria.)

The committee then moved on to discuss the status of existing projects on the county's project list. The following bullet list is an abbreviated list of notes taken during the meeting.

- 4.1.1 – County hired a GIS expert – works with CCEMA and all county agencies (and with municipalities, by request for municipalities, though some municipalities have in-house GIS resources)
- 4.3.1 – Continuing with replacements of culverts and bridges, Engineering runs HEC-RAS as part of the planning/design of culvert and bridge
    - Columbiana City has done stormwater work; over the past several years, the city has received multiple grants to redo stormwater infrastructure (from multiple funding sources)
    - East Palestine completed the installment of a retention tank near its wastewater treatment plant (WWTP) with funding received following the train derailment

- 4.5.1 – Check with Columbiana City as well (speak with the city manager)
    - Three projects in townships that the Commissioners funded (for study and planning) include:
        - Liverpool Township (Hampton Court and Kingsridge Court – when it rains hard, water runs from Hampton down, lower houses get inundated with heavy runoff); East Liverpool Township trustees applying for funding to implement the study
        - Perry Township, Painter Road; they have already implemented the improvements to their stormwater system (ARPA funding, they did a lot of local funding)
        - West Township – Using ARPA funds (county going to advertise for bids for them) – Countryside Estates

- 4.6.1 – One home in Wellsville (has been completed since the last plan update)
- 7.2.2 – Highlandtown Volunteer Fire Department – County donated a generator to them (which was originally donated to CCEMA)
- 7.2.5 – Check on the code requirements for public buildings
- 8.2.1 – Continued (keeping list up to date) – CCEMA works with the American Red Cross regarding shelters, CCGHD keeps list of PODs – fairgrounds and three trailers (fairgrounds was a new location added and it was used for COVID)

- 1.1.5 – Wellsville Reservoir Dam no longer exists; it is a completed project. The county is working with ODNR, and plans to start doing tabletop exercises with first responders and dam owners.
    - There are several sources of funding available for landowners that want to remove their dams (particularly those built in the 1950s and 1970s through ODNR DWR has funding available – private individuals, communities, all of the above)

- 1.1.6 – Guilford Lake Dam – rehabilitation in 2025 or 2026
    - Also, Highlandtown Lake Dam is under rehabilitation currently
    - Tomahawk Lake (it is a private owner) – leave it out for now (will talk more in the future)

- 5.1.1 – Ongoing
- 2.1.2 – Ongoing
    - Now have an electronic notification system that links with NWS
    - IPAWS is also sending out NWS tornado, severe weather, winter storm alerts and warnings.

- 6.1.2 – Completed – CCEMA provided all-hazard radios
- 7.1.1 – Ongoing (actually, move the drought one down to combine with this one)
    - Remove WENS – make generic

New Project Considerations

East Palestine is working on building an all-hazard first responder training center as a local facility to offer more hands-on training locally. This facility would target multiple response capabilities, not just fire and hazmat. The health district also continues on-going testing in the East Palestine area. Finally, East Palestine is building a new municipal complex housing the police and fire departments in addition to village administration that is further away from the rail line than the existing facility.

Committee members asked the contractor to highlight the LEPC's efforts regarding training and education. Other projects worthy of consideration and possible inclusion in this plan include sanitary sewer service extensions, including the following.

- Water and sewer to Elkton area
- Hanoverton - $7M sanitary sewer (eliminating approximately 200 septic systems)

- Multiple small communities that previously did not have water/sewer will now have it (county used ARPA funding)

Committee members discussed bridge replacements throughout the county. Generally, the worst bridges get replaced first. If a bridge rates as 4 on a 0-9 scale, funding opens up. (Nine [9] is a new bridge; if you have a 5, it is a low priority and may get waitlisted for funding.)

Following the projects discussion, the meeting concluded. The contractor and CCEMA encouraged committee members to keep an eye out for the OneDrive folder containing draft documents.

Attachments

- Sign-in Sheet
- Revised Prioritization Criteria

EMA- Haz Mitigation Plan

Date: 10/28/2024 Place/Room: EMA/EOC

Name:	Email:	Agency
Nicole Drabick		
Keith Drabick	K.a.drabick@eastpalestine-oh.gov	
Jeff Harvey	jharvey@jhpreparedness.com	JH Consulting, LLC
Don Schrader	DSCHRADER@COLUMBIANA-HEALTH.ORG	CCHD PHEP
Peggy Clark		CoEMA
Pete Conkle	pete.conkle@oh.neednet.net	SWCD
Wayne Chamberlain	Waychan5@hotmail.com	Madison Twp
Jennifer Whitman	jwhitman@ccmhrsb.org	CCMHRSB
Troy Graft	tgraft@cceng.org	Col. Co. Eng
Chaney Nezbeth	chaneynezbeth@gmail.com	TWS
Penny Traina	ptraina@ccportsidiver.com	CCPA
Gabriel Durrant	gdurrant@columbianacodav.org	GIS
Peter Wilke	LISBONmayor peterwilke@gmail.com	Lisbon

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
MITIGATION ACTION PRIORITIZATION ACTIVITY

Name: _____ Organization/Community:_____

It is important to prioritize the mitigation actions so that planners can implement the projects adequately. Please rate the following from 1 to 8, 1 being the highest priority for you.

___ The action addresses more than one hazard at once
___ The action aims to protect the most vulnerable populations
___ The action protects the environment
___ Jurisdictions in the county have administrative capabilities in place to undertake and manage the action
___ The action is already scheduled to start or is in process
___ The action promotes partnerships within the county
___ The action attempts to reduce the negative impacts of one of the top three most damaging hazards impacting the county (as per the risk assessment ranking)
___ The action attempts to reduce the negative impacts of one of the top three most concerning hazards as per public perception (based on the results of the public surveys)

REVISED

MEETING 6

Outlook

FW: Hazard Mitigation Plan Draft

From Lisa Elliott <Lisa.Elliott@ccoema.org>

Date Thu 4/10/2025 11:27 AM

To Bill Jones <wjones4@primehealthcare.com>; Brian Rutledge <Brian.Rutledge@ccoema.org>; Chaney Nezbeth <chaneynezbeth@gmail.com>; Donald Schrader <dschrader@columbiana-health.org>; Gabe Durrant <gdurrant@columbianacodev.org>; Jeff Christopher <jchris51@kent.edu>; Jeffery Harvey <jharvey@jhcpreparedness.com>; Keith Drabick <k.a.drabick@eastpalestine-oh.gov>; Lance Willard <lwillard@columbianaohio.gov>; Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>; Peggy Clark <Peggy.Clark@ccoema.org>; Penny Traina <ptraina@ccpa-ohioriver.com>; Pete Conkle <pete.conkle@oh.nacdnet.net>; Pete Wilson <lisbonmayorpeterwilson@gmail.com>; Tad Herold <therold@columbianacodev.org>; Troy Graft <tgraft@cceng.org>; Troy K. Rhoades <troy.rhoades@firstenergycorp.com>; Wayne Chamberlain <wachamb@hotmail.com>

Good morning, please see Peggy's email below. Also, please let me know if you are or are not able to attend. If you are not, if you could please have another representative from your office attend the meeting and please let me know who that person will be.
Thank you for all your time and support for this project.

Take care and stay safe,
Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 S. Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725
Fax: (330)424-9267

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Thursday, April 10, 2025 11:12 AM
To: Lisa Elliott <Lisa.Elliott@ccoema.org>
Subject: Hazard Mitigation Plan Draft

Hello Committee members-

Please block your calendars for an in person meeting to discuss the draft copy of the CC Hazard Mitigation Plan. I will provide a copy of the draft plan about a week prior to the meeting. Please note that the public will be invited to attend after the committee has some initial time to discuss.

Tuesday, May 6th
CCEMA office
1:30 pm

I know that this has been a long process, and I appreciate all your participation with this project!

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

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Outlook

FW: Mitigation Committee Meeting

From Lisa Elliott <Lisa.Elliott@ccoema.org>

Date Fri 5/2/2025 2:00 PM

To Bill Jones <wjones4@primehealthcare.com>; Brian Rutledge <Brian.Rutledge@ccoema.org>; Chaney Nezbeth <chaneynezbeth@gmail.com>; Donald Schrader <dschrader@columbiana-health.org>; Jeff Christopher <jchris51@kent.edu>; Jeffery Harvey <jharvey@jhcpreparedness.com>; Keith Drabick <k.a.drabick@eastpalestine-oh.gov>; Lance Willard <lwillard@columbianaohio.gov>; Lisa Elliott <Lisa.Elliott@ccoema.org>; Marcy Patton <mpatton@ccmhrsb.org>; Peggy Clark <Peggy.Clark@ccoema.org>; Pete Conkle <pete.conkle@oh.nacdnet.net>; Pete Wilson <lisbonmayorpeterwilson@gmail.com>; Tad Herold <therold@columbianacodev.org>; Troy Graft <tgraft@cceng.org>; Wayne Chamberlain <wachamb@hotmail.com>; Wendy F. Zele <wfzele@firstenergycorp.com>

3 attachments (4 MB)

CCHMP-1.0 Introduction_Draft.pdf; CCHMP-3.0 Mitigation Strategy_Draft.pdf; CCHMP-4.0 Plan Maintenance_Draft.pdf;

Just a reminder of the Mitigation Plan Group's meeting next week on Tuesday, May 6th at 1:30pm, here at the EMA, address below if needed.
Please see attached drafts and agenda for this meeting. If you are unable to attend, please if there is someone else from your office that can attend
in your place, just let me know.
Thank you for all your time and support, have a great weekend.

Take care and stay safe,

Lisa J. Elliott
Administrative Assistant
lisa.elliott@ccoema.org
Columbiana County EMA
215 S. Market Street
Lisbon, Ohio 44432
Phone: (330) 424-9725
Fax: (330)424-9267

From: Peggy Clark <Peggy.Clark@ccoema.org>
Sent: Friday, May 2, 2025 1:09 PM
To: Lisa Elliott <Lisa.Elliott@ccoema.org>
Subject: Mitigation Committee Meeting

Lisa-

Please send these out to the committee members along with the agenda for next weeks meeting.

Thank you,

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

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2025 UPDATE

STEERING COMMITTEE MEETING #6

AGENDA

Date: May 6, 2025

Time: 1:30 p.m.

Duration: 60-90 minutes

Location: Columbiana County Emergency Management Agency
215 South Market Street, Lisbon

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1. Welcome & Introductions
2. Review Plan Development and Maintenance Process
   - See documents related to Section 4.0; this item will be a discussion of the proposed plan maintenance process and the documents from the plan outlining that process.
     - *4.0 Plan Maintenance*
     - *4.1 Monitoring, Evaluating, and Updating the Plan*
     - *4.2 Implementation through Existing Programs*
     - *4.3 Continued Public Involvement*

3. Draft Document Review: Section 1.0 (Introduction)
   - *1.0 Introduction*
   - *1.1 Planning Process*
   - *1.2 Description of the Planning Area*
   - *1.3 Capabilities*

4. Draft Document Review: Section 3.0 (Mitigation Strategy)
   - *3.0 Mitigation Strategy*
   - *3.1 Mitigation Goals*
   - *3.2 Mitigation Actions*

5. Process for Reviewing Section 2.0 (Risk Assessment)
6. Submission for State/Federal Approval
7. Q & A
8. Adjournment

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
STEERING COMMITTEE MEETING #5
MINUTES

Date: May 6, 2025
Time: 1:30 p.m.
Duration: Approximately 75 minutes
Location: See attached sign-in sheet.

Columbiana County's sixth hazard mitigation plan steering committee meeting included finalizing the plan development and maintenance section and a review of draft documents.

Action Items

- Provide access to draft plan documents through a shared OneDrive folder.
- Review draft plan documents and provide comments using the provided Word or Excel templates.
- Submit plan to the Ohio Emergency Management Agency for review and approval.

Overview

The meeting began with a discussion surrounding Section 4.0: Plan Development and Maintenance in the updated document. The committee briefly discussed the maintenance process at an earlier meeting, with a directive to the county's consultant to review the process from the 2020 version of the plan and update it where necessary to ensure alignment with new priorities (as outlined in the *Local Mitigation Planning Handbook*). This agenda item was an opportunity to validate the revisions to the process.

The major difference was the incorporation of worksheets from the 2023 and 2025 mitigation planning handbooks from FEMA. Mentioning the updated planning handbook prompted questions and further discussion about certain items in the draft that would need to be revised per changing federal requirements for mitigation plans. The committee decided to leave references to social vulnerability and evolving climatic variables even though they are no longer required.

The consultant then reviewed draft documents in Sections 1 (Introduction) and 3

(Mitigation Strategy). At the time of this meeting, there were still a few municipalities that needed to submit information, but the review of the mitigation strategy helped those in attendance to fully understand the types of questions that would be asked of the outstanding municipalities. (The consultant scheduled a meeting to discuss municipal matters with representatives from one of the villages who attended this meeting.) To finalize the draft review agenda item, the consultant showed committee members a shared Microsoft OneDrive folder with draft risk assessment documents. The Columbiana County Emergency Management Agency (CCEMA) provided the link to the committee after this meeting.

Attachments

- Sign-in Sheet

EMA- Hazard Mitigation

Date: 5/6/2025 Place/Room: EMA/EOC

Name:	Email:	Agency
JEFFERY HARVEY	jharvey@jhpreparedness.com	JH CONSULTING, LLC
DON SCHRADER	DSCHRADER@COLUMBIANA-HEALTH.ORG	CCHD
WAYNE CHAMBERLAIN	Wachamb@hotmail.com	Madison TWP
nicole Drabick	n.drabick@eastpalestine-oh.gov	EPFD
KEith Drabick	K.a.drabick@eastpalestine-OH.gov	EPFD
Chaney Nezbeth	Chaneynezbeth@gmail.com	TWS
Carrie Carver	ccarver@columbianaCODEV.org	Columbiana GIS
Wendy Zele	Wfzele@firstenergycorp.com	FirstEnergy
Brad Bosley	bbosley@ccceng-org	Col. City Engineer
Brian Rutledge	Brian.rutledge@ccoema.org	Col Cty EMA

MISC. STAKEHOLDER OUTREACH

Outlook

Updating Hazard Mitigation Plan

From Peggy Clark <Peggy.Clark@ccoema.org>
Date Fri 1/17/2025 8:46 AM
To Lees, Robin <robin.lees@mahoningcountyoh.gov>; Tim Warstler - Stark Co (tlwarstler@starkcountyohio.gov) <tlwarstler@starkcountyohio.gov>; Tom Cottis - Carroll Co (tcottis@carrollcountyohio.us) <tcottis@carrollcountyohio.us>; jeffersoncounty88@yahoo.com <jeffersoncounty88@yahoo.com>
Cc Brian Rutledge <Brian.Rutledge@ccoema.org>; Jeffery Harvey <jharvey@jhcpreparedness.com>

Happy Friday All!

Columbiana County is updating its hazard mitigation plan, and as part of that process, we wanted to ask you, as the emergency management director for a neighboring county, if there are:

- Any hazards that concern you that may originate in Columbiana County and impact your county, or
- Any hazards that originate in your county that might impact our county.

Feel free to reply to this message with any ideas or questions.

Also, if you would like to review the existing Columbiana County mitigation plan, you can find it at https://ccoema.org/images/pdf/Columbiana-HMP-01092020-FULL.pdf. If you would like to request to review a copy of the final draft of the updated document, please let me know.

Thank you.

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

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Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR MARY MERTZ, DIRECTOR

Division of Water Resources
Dena C. Barnhouse, Chief
2045 Morse Road/Building B-3
Columbus, Ohio 43229
614-265-6620
dswc@dnr.state.oh.us

December 19, 2023

Columbiana Co. Emergency Mgmt.
Attn: Peggy Clark
215 South Market St.
Lisbon, OH 44432

electronic transmittal only

RE: Notice of Funding Opportunity
FY 2024 Rehabilitation of High Hazard Potential Dams

Dear Director:

On November 3, 2023, the U.S. Department of Homeland Security, Federal Emergency Management Agency, Federal Insurance and Mitigation Administration, National Dam Safety Program Office released the Notice of Funding Opportunity (NOFO) for the Fiscal Year 2024 Rehabilitation of High Hazard Potential Dams Grant Program (HHPD). The NOFO in its entirety may be found through the Grants.gov webpage at: https://www.grants.gov/search-results-detail/350857.

The State Dam Safety Program has determined that the following dams in your county are eligible to be a sub-applicant for this grant.

Dam Name	ODNR File Number	Owner Name	Need Sponsor Agency?
Guilford Lake Dam	0606-001	ODNR, Division of Parks & Watercraft,	No
Highlandtown Lake Dam	0505-001	ODNR, Division of Wildlife	No
Lake Tomahawk Dam	0604-001	Lake Tomahawk Property Owners Association	No
Salem Reservoir (South Embankment)	0606-002	City of Salem	No

Eligibility requirements include, but are not limited to:

1. Subrecipient Eligibility
    a. Sub-applicant must be a non-federal governmental organization (other than the Ohio Department of Natural Resources, Division of Water Resources, Dam Safety Program) or non-profit organization. Homeowner's Associations are eligible if filed under the 501(c)(4) tax title.
    b. Acts in accordance with the state dam safety program and the project dam must be regulated by the state dam safety program.
    c. Community in which the dam is located in, and complies with, all applicable regulations of the National Flood Insurance Program (NFIP).
    d. The local government with jurisdiction over the area in which the dam is located has in place a FEMA-approved hazard mitigation plan that includes all dam risks. Or will request an extension to update the hazard mitigation plan as needed.
    e. Commit to provide operation and maintenance of the project for the expected life of the dam following the completion of rehabilitation.

f. Carries out activities relating to the public in the area around the dam in accordance with the hazard mitigation plan.
g. Complies with section 5196(j)(9) of title 42 of the U.S. Code (as in effect on December 16, 2016) with respect to projects receiving assistance under this section in the same manner as recipients are required to comply in order to receive financial contributions from the Administrator for emergency preparedness purposes. See Section D.13.a. of the NOFO, Requirements Related to Contractor and Subcontractor Wages, for additional information.
h. Complies with chapter 11 of the title 40; Selection of Architects and Engineers. (See Section D.13.b. of the NOFO, Requirements Related to Contract and Subcontract Services.)
i. Have in place, or will develop, a floodplain management plan.
j. Be able to provide 35 percent of project funding with non-federal dollars as a local match.

2. Dam Eligibility
   a. Must be classified as "high hazard potential." This is typically defined as a Class I dam in Ohio.
   b. Have a state approved Emergency Action Plan.
   c. The dam fails to meet the minimum dam safety standards of the state and poses an unacceptable risk to the public.
   d. Has a condition assessment rating of "poor" or "unsatisfactory" as identified in the National inventory of Dams (NID) as of 9/15/2023.
      i. Dams with a "fair" condition are eligible case-by-case if the population at risk (PAR) is at or greater than 1000.
   e. Dam **cannot** be a licensed hydroelectric dam.
   f. Dam **cannot** be built under the authority of the U.S. Secretary of Agriculture.

Through this program, eligible subrecipients may work with the State Dam Safety Office to apply for federal funds for technical planning, design, pre-construction, and construction activities related to repair, remove, or rehabilitate an eligible high hazard dam. An example of eligible activities is found in the following table.

Table 3: Examples of Eligible Scope of Work Activities

Category	Eligible Scope of Work Activities	FPMP Requirement Y/N
Planning	• Development of evacuation plans, plans for flood fighting, or community response plans to include in the floodplain management plan • Coordination of EAP and EOPs for different release conditions	N
Planning	• Activities and studies that determine risks associated with eligible dams • Environmental studies for NEPA compliance • Development of operation and maintenance plans	N
Planning	• Public education and awareness of flood risks associated with the eligible dam project	N
Planning	• Dam risk and consequence assessments Feasibility studies • Preliminary engineering studies Alternatives analysis • Mapping, engineering survey, and inundation modeling	Y
Design	• Engineering design • Development of specifications	Y
Construction	• Repair or rehabilitation of the dam • Dam removal • Construction monitoring • Installation of early warning systems associated with the eligible dam project	Y

If you are interested in this opportunity and would like more information, please attend a webinar hosted through Microsoft Teams on **Thursday, January 4, 2024 1 pm – 2:30 pm**. You may access the webinar by scanning this QR Code, visiting our webpage http://water.ohiodnr.gov, or using the call-in information below:

Microsoft Teams meeting

Join on your computer, mobile app or room device

Click here to join the meeting

Join with a video conferencing device

682042763@t.plcm.vc

Video Conference ID: 119 575 841 2

Or call in (audio only)

+1 614-721-2972,,301322771# United States, Columbus

Phone Conference ID: 301 322 771#

Assistance provided under the HHPD grant is subject to a non-Federal cost-sharing requirement of at least 35 percent. Federal funding is available for up to 65 percent of the eligible activity costs. The State of Ohio is responsible for submitting one application which covers all projects submitted by sub-applicants. Nationally, a total of $185,120,000.00 is available for projects. Funding allocated for the State of Ohio will be released in the Spring of 2024. The deadline for the State of Ohio to apply for this grant on behalf of any sub-applicants is February 29, 2024 by 5 pm EDT.

At this time, no action is required on your part. However, private dam owners may be seeking sponsors who are eligible subrecipients for a private dam project. Also, depending on the selection process and guidance from FEMA, the local hazard mitigation plan may need to be amended in the future. Our office will coordinate with you and the Ohio Emergency Management Agency further. If you have any questions or concerns, please contact Adam Lanzillotta at adam.lanzillotta@dnr.ohio.gov or 614-265-6737.

Sincerely,

Melissa Menerey

Melissa Menerey, CFM
Program Manager
Dam Safety Program
Division of Water Resources

MEM:ALL

5.0 APPENDICES

Appendix 2: Project Prioritization

This appendix contains a spreadsheet that shows the calculation of priority for the mitigation actions listed in Section 3.2.

Table A2.1

PROJECT PRIORITIZATION COLUMBIANA COUNTY HAZARD MITIGATION PLAN										
		Criteria (Yes = Point Total, No = 0)								
Project Number	**Project**	Reduce impacts of three most-damaging hazards	Address more than one hazard	Protects most vulnerable	Reduce impacts of top three hazards of public concern	Protects the environment	Promotes partnerships	Admin. capabilities in place	Already scheduled or started	**TOTAL**
COLUMBIANA COUNTY										
4.3.1	Integrate site-specific disaster mitigation issues into stormwater planning initiatives, including efforts to eliminate CSOs.	0	0	6	0	4	3	2	0	**15**
4.5.1	Consider installing, re-routing, or increasing the capacity of existing storm drainage systems, which may involve detention and retention ponds.	0	0	6	0	4	3	2	0	**15**
4.6.1	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	0	**12**
7.2.2	Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.	0	7	6	5	0	3	2	1	**24**

7.2.5	Construction/installation of community and residential safe rooms. Support efforts in all jurisdictions. As an immediate action item, identify the code requirements for public buildings and determine whether portions of those facilities would serve the same purpose.	0	7	6	5	0	3	0	0	**21**
8.2.1	Maintain a list of sites that could be used as emergency shelters or PODs throughout Columbiana County.	0	7	6	5	0	3	2	1	**24**
1.1.5	Share information provided by dam owners with jurisdictions downstream of high-hazard dams.	0	0	6	0	4	3	2	1	**16**
1.1.6	Support rehabilitation projects, as and if necessary, at high-hazard dams.	0	7	6	0	4	3	2	0	**22**
5.1.1	Conduct a commodity flow study to determine materials are shipped through the county.	8	0	0	5	4	0	2	0	**19**
5.1.2	Continue testing and monitoring in the East Palestine area.	8	0	6	5	4	3	2	1	**29**
2.1.2	Using a collaborative approach between preparedness partners (e.g., CCEMA, CCHD), periodically push preparedness information specific to drought conditions via social media outlets.	0	7	0	5	0	3	2	1	**18**
7.1.1	When received from the NWS, use the countywide mass notification system to push weather alerts to residents for all hazards (and particularly weather-related hazards). Ensure additional notification when watches ascend to warnings.	0	7	6	5	0	0	2	1	**21**
10.5.1	Extend potable water and sanitary sewer service into currently under-served areas.	8	7	6	0	4	3	2	1	**31**
COLUMBIANA (CITY)										
1A.1.2	Continue storm sewer improvements throughout the city to help mitigate site-specific flooding when heavy rains occur.	0	0	6	0	4	3	2	1	**16**
1A.1.3	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	**13**
1A.1.4	Replace the city's elevated 500,000-gallon water tank.	0	0	0	0	4	3	2	1	**10**
EAST LIVERPOOL										

1B.1.1	Promote flood insurance educational materials via social media.	0	0	6	0	4	0	3	1	14
1B.1.4	Demolish blighted structures that could contribute to hazard risk.	8	7	0	0	4	3	2	1	25
1B.1.5	Replace the flood gauge that used to be on Jennings Randolph Bridge.	0	0	0	0	4	3	2	0	9
EAST PALESTINE										
1D.1.2	Encourage residents to adhere to current floodplain regulations in effect. To do this effectively, the village needs a map of its current floodplain and topology.	0	0	6	0	4	3	2	1	16
1D.1.1	Encourage the residents of East Palestine to maintain required flood insurance.	0	0	6	0	4	3	2	1	16
1D.1.4	Repair the spillway on the East Palestine lake dam.	0	7	0	0	4	3	0	0	14
1D.1.5	Construct an all-hazard first responder training center to facilitate hands-on training locally.	8	7	0	5	0	3	0	0	23
1D.1.6	Reolocate the municipal complex to a site that is further away from the rail line than the existing facility.	8	0	0	5	0	3	2	1	19
HANOVERTON										
1E.1.1	Updgrade the village's capability to notify its residents by partnering with the county on the mass notification system.	8	7	6	5	0	3	2	0	31
1E.1.2	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	13
LEETONIA										
1F.1.2	Expand and improve the village's stormwater system.	0	0	6	0	4	3	2	0	15
1F.1.3	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	13
1F.1.4	Expand green infrastructure and low-impact development throughout the village.	0	7	6	0	4	3	2	0	22
1F.1.5	Purchase a vacuum truck to help clean and maintain the stormwater system.	0	0	0	0	4	0	2	0	6
1F.1.6	Consider a village-specific COOP plan to look at redundancy of communications and access to information that is primarily in the cloud.	8	7	0	5	0	0	2	0	22

LISBON										
1G.1.1	Increase the use of the countywide mass notification system.	8	7	0	5	0	3	2	1	26
1G.1.3	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	13
NEW WATERFORD										
1H.1.2	Encourage property owners to control and secure debris, yard items, or stored objects in floodplains that may be swept away, damaged, or pose a hazard when flooding occurs.	0	7	6	0	4	0	2	0	19
1H.1.3	Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.	0	7	0	0	4	3	2	0	16
ROGERS										
1I.1.1	Clean and maintain Little Bull Creek, clearing log jams, trees, and sediment bars that prevent water from flowing freely.	0	0	6	0	4	3	0	0	13
1I.1.2	Improve storm drainage throughout the village.	0	0	6	0	4	3	0	0	13
1I.1.3	Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.	0	7	0	0	4	3	2	0	16
SALEM										
1C.1.3	Consider rehabilitation of the Salem Reservoir (South Embankment).	0	0	6	0	4	3	2	0	15
SALINEVILLE										
1J.1.2	Address continued slippage in the village along Route 39.	0	0	0	0	0	3	2	0	5
1J.1.3	Maintain and, as necessary, upgrade the Salineville Reservoir Dam (which is physically located in Carroll County).	0	7	6	0	4	3	0	0	20
SUMMITVILLE										

1K.1.1	Clean and maintain creeks and streams, clearing log jams, trees, and sediment bars that prevent water from flowing freely.	0	0	6	0	4	3	0	0	13
1K.1.2	Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.	0	7	0	0	4	3	2	0	16
1K.1.3	When reviewing the village's building ordinance, and when considering the creation of a zoning ordinance, consider provisions that promote resilience to the weather hazards impacting the village.	0	7	6	5	4	3	0	0	25
WASHINGTONVILLE										
1L.1.2	Coordinate with other municipalities in the county to create agreements for sharing expensive, specialized equipment that can support ditch and culvert maintenance projects.	0	7	0	0	4	3	2	0	16
1L.1.3	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	13
WELLSVILLE										
1M.1.2	Continue to collect the floodwall fee from citizens for the maintenance of the levee (e.g., mowing, etc.).	0	7	6	0	0	3	2	1	19
1M.1.3	Upgrade pumps associated with the levee structure. To operationalize this project, strengthen the relationship with the USACE.	0	7	6	0	0	3	2	0	18
1M.1.5	Acquisition, demolition, and/or retrofit of flood prone properties.	0	0	6	0	4	0	2	1	13
1M.1.6	Upgrade the drainage system off the 10th Street Extension.	0	7	6	0	4	3	2	0	22

5.0 APPENDICES

Appendix 3: Inactive Projects

This appendix includes lists and tables outlining the projects from the 2025 update, as well as previous updates, that were either completed, deleted, or deferred during the planning cycle. Project numbering and data tracking have evolved with each planning cycle, and as such, the lists may not look uniform. The projects appear here, though, to serve as an on-going record of risk reduction progress.

Completed, Deleted, or Deferred during the 2020-2025 Planning Cycle

Table A3.1

Columbiana County Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
HAZARD: FLOODING		
4.1.1	Develop GIS capabilities within the Emergency Management Agency through a MOU with the county using non-local funds.	**COMPLETED** The county hired a GIS expert who works with CCEMA and all county agencies (and municipalities who do not have in-house capabilities, by request).
HAZARD: SEVERE WIND & TORNADO		
7.2.2	Purchase generators that can provide auxiliary power to shelters and other critical facilities throughout Columbiana County.	**ON-GOING** Completed projects include four fixed generators at public locations in West Township, Salineville, New Waterford, and Guilford Lake. The health dept. has two portable generators.
HAZARD: SEVERE THUNDERSTORM & HAIL		
6.1.2	Encourage township offices to have a NOAA all-hazard radio to strengthen redundant notification and warning efforts.	**COMPLETED** CCEMA provided all-hazard radios to township offices.

Table A3.2

East Liverpool Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
1B.1.3	Establish a stormwater department to maintain the city's storm sewer system.	**COMPLETED** The city created a stormwater utility with its safety services director at its head.

Table A3.3

East Palestine Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
1D.1.3	Establish a more robust stormwater utility for East Palestine.	**COMPLETED** The upgraded EQ basin, with 1,000,000 gallons of overflow capacity is working and function. During excessive downpours it takes between 300,000 and 750,000 gallons. All discharge activity is operating well. Annual catch basin maintenance plan is in place.

Table A3.4

Salem Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
1C.1.2	Coordinate with rail shippers using the line through the city as well as covered facilities in the city to share information about materials, risks, vulnerabilities, and response capabilities. Utilize this information to maintain a commodity flow study and an updated hazmat response plan for the city.	**DELETED** The city deleted this project because it appears as a countywide project from which the city would benefit.

Table A3.5

Wellsville Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
1M.1.1	As and if conditions necessitate it, rehabilitate or upgrade the Wellsville Reservoir Dam.	**COMPLETED** The village has removed the dam.

Wellsville Inactive Mitigation Projects, 2020-2025 Cycle		
Project Number	*Mitigation Project*	*Status*
1M.1.4	Coordinate with the county regarding the placement of a river gauge on the Ohio River.	**DELETED** The village removed this project because of tools provided by the USACE, National Weather Service (NWS), etc.

Completed, Deleted, or Deferred during Previous Planning Cycles

Table A3.6

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

Columbiana County Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
7.2.1	Coordinate with the State Building Inspector to annually assess county building codes to determine possible enhancements for reducing tornado risks that supplement Ohio Building Code requirements for commercial and apartments with four (4) or more dwellings.	**Yes** **There is no Building Inspector!** **No building code** The state building inspector does all commercial buildings and those with four or more units. Update "County" to "State." Add an inspector question to the capability survey because some municipalities do have inspection capabilities.
HAZARD 3: SEVERE WINTER STORM		
8.1.1	Coordinate with local private contractors and volunteers to develop mutual aid agreements for emergency snow removal.	√ The county has MOUs for salt and de-icer with municipalities and townships.
8.2.2	Seek funding to purchase a generator for Columbiana County Career and Technical Center to support primary sheltering operations and health medical operations.	**Good choice** **Completed** **Done**
HAZARD 4: DAM FAILURE		
1.1.3	Coordinate with the ODNR, Dam Safety Engineering Program, to conduct regular safety inspections of existing dams in Columbiana County.	**ODNR Inspectors**
1.1.1	Coordinate with the Ohio Department of Natural Resources, Division of Soil & Water – Dam Safety Section, in accordance with ORC Section 1512.062, to periodically reclassify any dam within Columbiana County as a result of a change in circumstances not in existence at the time of the dam's initial classification to ensure adequate safety according to the potential for downstream damage.	ODNR does this as part of its regular duties. When ODNR conducts inspections in Columbiana County, it notifies the EMA.
1.1.2	During all new dam construction, encourage the completion of a critical flood engineering analysis by a professional engineer licensed in the State of Ohio.	**Required** If the dam is a Class 1 structure, the owner also does an inundation study.
1.1.5	Work with Class I dam owners to develop Emergency Action Plans, to include a detailed assessment of the vulnerability of structures and critical facilities near the hydrological shadow of the dams.	**ODNR** This has been more of a focus for ODNR in the past few years, and ODNR has a review and approval process. ODNR shares EAPs with the EMA.
1.1.4	Develop a notification system that can be utilized to notify residents and businesses downstream of large dams of actions to take before a dam failure, if lead time exists. (i.e., similar to reverse 911 system).	**EMA?** Completed – WENS.
HAZARD 5: HAZARDOUS MATERIALS INCIDENT		

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

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

Table A3.7

City of Columbiana Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1A.1.1	Participate in the Community Rating System (CRS).	**DEFERRED** The city opted to defer this project until a later date. Its current priority focus is addressing flooding via storm sewer improvements.
N/A	Construct a new fire station in the southern portion of the city to support operations in all areas of town if a train stalls on the tracks splitting the city.	**COMPLETED** The city used levy funds to construct a new station in 2017.

Table A3.8

City of East Liverpool Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1B.1.2	Consider conducting acquisition and relocation projects in East Liverpool.	**DEFERRED** The city prefers to educate residents on the benefits of flood insurance, and it currently has no plans to undertake acquisition or relocation projects. The project is valid, so the city listed it as "deferred" to take advantage of future opportunities to make it active should funding be available.
N/A	Upgrade flood and other hazard notification capabilities via Nixle.	**COMPLETED** Per the city's fire chief, East Liverpool recently launched the Nixle system in the city.

Table A3.9

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

Table A3.10

Village of Hanoverton Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1E.1.1	Consider constructing snow fences or planting rows of trees to serve as living snow fences to limit blowing and drifting snow over critical roadways.	**DELETED** The village deleted this project as part of the 2019 update. Village officials elected to replace it with a project that would have more applicable to a wider range of hazards.

Table A3.11

Village of Leetonia Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1F.1.1	Improve the design, routing, and traffic control at problem roadway areas.	**DELETED** The village deleted this project as part of the 2019 update. Village officials replaced it with a project that addresses more acute risk concerns (i.e., flooding).

Table A3.12

Village of Lisbon Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1G.1.2	Monitor water levels with stream gauges and/or trained monitors.	**DELETED** The village deleted this project during the 2019 update. The project has proven unfeasible due to cost constraints.

Table A3.13

Village of New Waterford Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1H.1.1	Consider elevating critical flood-prone structures above the 100-year flood level, and/or conducting acquisition/relocation projects where and as needed.	**DEFERRED** The village deferred this project due to lack of regular available funding. Deferring the project allows village officials to focus on projects that address more acute risk concerns.

Table A3.14

Village of Salineville Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1J.1.1	Coordinate with the railroad company to periodically inspect and improve designs at problem railway/roadway intersections.	**DELETED** The village deleted this project to focus on higher-priority hazards.

Table A3.15

Village of Washingtonville Inactive Mitigation Projects, Previous Cycles		
Project Number	*Mitigation Project*	*Status*
1L.1.1	Encourage businesses and residents to utilize safe interior designs and furniture arrangements (i.e., anchoring tall bookcases and file cabinets, installing latches on drawers and cabinet doors, using flexible connections on gas and water appliances, mounting framed pictures and mirrors securely, and anchoring and bracing propane tanks and gas cylinders).	**DELETED** The village deleted this project to focus on hazards more commonly thought to impact the village's residents.

5.0 APPENDICES

Appendix 4: Public Participation

This appendix provides evidence of public participation in the process. It includes condensed survey responses, meeting sign-in sheets, meeting minutes, and evidence of relevant advertisements. For the full results of the online survey, contact the Columbiana County Emergency Management Agency for a spreadsheet containing the data.

COLUMBIANA COUNTY HAZARD MITIGATION PLAN 2024 UPDATE
PUBLIC MEETING
MINUTES

Date: May 6, 2025
Time: 2:00 p.m.
Duration: Approximately 30 minutes
Location: See attached sign-in sheet.

The Columbiana County Emergency Management Agency (CCEMA) held a public meeting for county residents and stakeholders to review draft elements of the updated hazard mitigation plan at 2:00 p.m. on May 6, 2025. The meeting was at the Columbiana County Emergency Operations Center. No members of the public attended.

The meeting was scheduled immediately following a steering committee meeting to allow for committee members to interact with citizens who came to the meeting with questions. Since there were no attendees, the steering committee continued its review of the drafts (further outlined in the minutes to Steering Committee Meeting #6).

Attachments

- Sign-In Sheet
- Notices of the Meeting
- Accompanying Slides

COLUMBIANA COUNTY HAZARD MITIGATION PLAN

2025 Update ~ Public Meeting

May 6, 2025
Sign In Sheet

	Name	Agency	Contact Info. (Phone or Email)
1.	PETER WILSON	Village of Lisbon, Ohio	PESER1313@GMAIL.COM
2.	Peter Conkle	Columbiana Soil & Water Conservation District	pete.conkle@odnr.gov
3.	DON SCHRADER	COLUMBIANA COUNTY HEALTH DISTRICT	DSCHRADER@COLUMBIANA-HEALTH.ORG
4.	WAYNE CHAMBERLAIN	MADISON TWP	330-424-2931
5.	Brad Bosley	Columbiana County Engineer	tgrasta@cceng.org.
6.	KEITH I. DRABICK	EAST PALESTINE FIRE DEPT.	K.A.DRABICK@EASTPALESTINE-OH.GOV
7.	NICOLE DRABICK	EAST PALESTINE FIRE DEPT.	N.DRABICK@EASTPALESTINE-OH.GOV
8.	ChaneyNezbeth	The way station	Chaneynezbeth@gmail.com
9.	Wendy Zele	FirstEnergy Corp	Wfzele@firstenergycorp.com
10.	Brian Rutledge	Columbiana County EMA	Brian.rutledge@CCCOEMA.com
11.	JEFFERY HARVEY	JH CONSULTING, LLC	jharvey@jhcpreparedness.com
12.			
13.			
14.			
15.			
16.			

SALEM NEWS

On the calendar

TUE/5-6

County

Columbiana County Hazard Mitigation Plan meeting, 2 p.m., Columbiana County EMA, 215 S. Market St., Lisbon

East Palestine

The Way Station, Presbyterian Church, 109 W. Rebecca St., 9 a.m.-3 p.m.

East Palestine Library, Preschool Storytime, 1 p.m.; Read to SomeBunny, 4 p.m.

East Palestine Eagles, kitchen open 4-8 p.m., mild sausage sandwich with side; $9; 330-886-0397

East Palestine Amateur Radio monthly meeting, 6 p.m., club location on state Route 14.

Greenford

Green Township Board of Zoning, meeting, 7 p.m., Community Building, 12184 Lisbon Road. Changes in township zoning regulations will be discussed and voted on.

Knox Township

Board of Trustees, 7 p.m., administration building; review bills at 6:45 p.m.

There are no results for **Community Calendar TUE/5-6 Alliance Music Storytime, 10:30 a.m., Rodman Branch Library; stories and activities with a music theme; French Horn/ Voice (Charlene Duro) with a special visit from the bookmobile; information at 330-821-1313 Columbiana City council, 7 p.m., city hall County Columbiana County Hazard Mitigation Plan meeting, 2 p.m., Columbiana County EMA, 215 S. Market St., Lisbon East Liverpool Needles and Hooks (crochet and knitting group), noon-2 p.m., Carnegie Public Library Community Room North Country Trail Association Wampum Chapter Ladies Hike-Beaver Creek State Park Loop Hike, 6 p.m., Gretchen Lock Parking area; information and RSVP at https://www.meetup.com/wampum-chapter-north-country-trail-association-meetup East Palestine The Way Station, […] May 6, 2025 LOCAL NEWS**

Check your spelling or try different keywords

The Review

Calendar

TUE/5-6

Columbiana

City council, 7 p.m., city hall

County

Columbiana County Hazard Mitigation Plan meeting, 2 p.m., Columbiana County EMA, 215 S. Market St., Lisbon

East Liverpool

Needles and Hooks (crochet and knitting group), noon-2 p.m., Carnegie Public Library Community Room

North Country Trail Association Wampum Chapter Ladies Hike-Beaver Creek State Park Loop Hike, 6 p.m., Gretchen Lock Parking area; information and RSVP at https://www.meetup.com/wampum-chapter-north-country-trail-association-meetup

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COLUMBIANA COUNTY
HAZARD MITIGATION PLAN UPDATE

Public Meeting
May 6, 2025

1

AGENDA

1. Welcome & Introductions
2. What is a hazard mitigation plan?
3. Hazards/Risks
4. Project Types
5. Q&A

2

WELCOME AND INTRODUCTIONS



3

WHAT IS HAZARD MITIGATION?



Federal Emergency Management Agency (FEMA) – Region V

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



4

WHAT IS HAZARD MITIGATION?

Ohio Emergency Management Agency (OEMA)

- Oversees the hazard mitigation process at the state levels
- Ensure jurisdictional participation
- Ensure alignment with state project and funding strategies



5

HAZARDS / RISKS

Natural Hazards	Technological/Human-Caused Hazards
• Cyber Incidents • Dam & Levee Failure • Drought • Earthquake • Extreme Temperatures • Flooding • Hazardous Materials Incident	• Landslides • Public Health Emergency • Severe Thunderstorm & Hail • Severe Wind & Tornado • Severe Winter Storm • Wildfire

6

PROJECT TYPES (1)

Revised Mitigation Goals

1. Sustain the health and safety of first responders and the general population in Columbiana County before, during, and after emergency incidents.
2. Maximize partnership with key organizations tasked with maintaining the health and wellbeing of the Columbiana County population.
3. Protect vulnerable populations from the negative effects of hazards.
4. Minimize death, injury, illness, and damage to property, infrastructure, and the environment from hazardous incidents.
5. Support the livelihoods of Columbiana County residents and businesses through risk reduction activities.

Mitigation Type	Description	Examples
Local Plans & Regulations	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Subdivision regulations • Development review • Building codes and enforcement • Open space preservation
Structure & Infrastructure Projects	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct structures to reduce the impacts of hazards.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms

7

PROJECT TYPES (2)

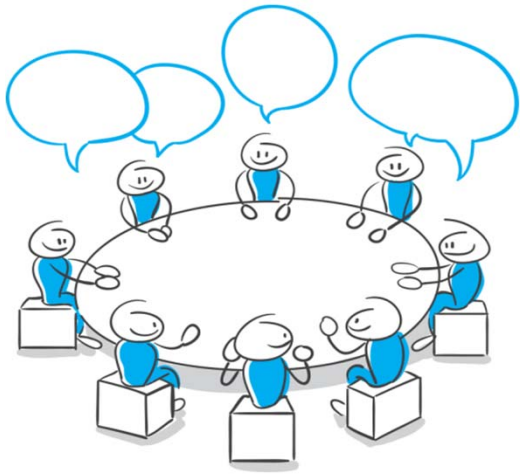
Revised Mitigation Goals

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Mitigation Type	Description	Examples
Natural Systems Protection and Nature-Based Solutions	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements • Wetland restoration and preservation
Education and Outreach Activities	These are actions to inform and education citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady or Firewise Communities. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation.	• Radio or television spots • Websites with maps and information • Real estate disclosure • Presentations to school groups or neighborhood organizations • Mailings to residents in hazard-prone areas • StormReady • Firewise Communities

8

QUESTIONS & ANSWERS (Q&A)



9

ADJOURNMENT

10

CONDENSED SURVEY SUMMARY
As of 09/04/2024

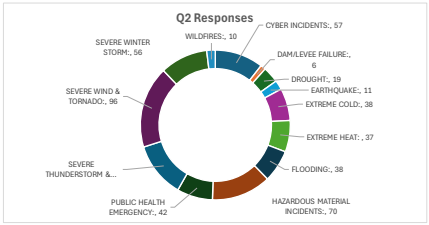
SURVEYS: 173

1. Do you live or work in Columbiana County? % ANSWERING: 97.11%

YES:	160
NO:	8

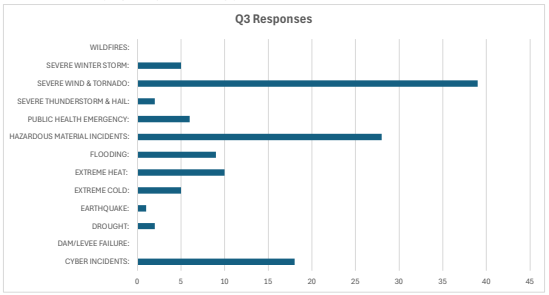
2. Are you concerned about any of these hazards (circle the ones that concern you)? TOTAL RESPONSES: 545

CYBER INCIDENTS:	57
DAM/LEVEE FAILURE:	6
DROUGHT:	19
EARTHQUAKE:	11
EXTREME COLD:	38
EXTREME HEAT:	37
FLOODING:	38
HAZARDOUS MATERIAL INCIDENTS:	70
PUBLIC HEALTH EMERGENCY:	42
SEVERE THUNDERSTORM & HAIL:	65
SEVERE WIND & TORNADO:	96
SEVERE WINTER STORM:	56
WILDFIRES:	10



3. Which of these hazards concerns you the most? TOTAL RESPONSES: 125
% ANSWERING: 72.25%

CYBER INCIDENTS:	18
DAM/LEVEE FAILURE:	0
DROUGHT:	2
EARTHQUAKE:	1
EXTREME COLD:	5
EXTREME HEAT:	10
FLOODING:	9
HAZARDOUS MATERIAL INCIDENTS:	28
PUBLIC HEALTH EMERGENCY:	6
SEVERE THUNDERSTORM & HAIL:	2
SEVERE WIND & TORNADO:	39
SEVERE WINTER STORM:	5
WILDFIRES:	0



Why does this hazard concern you? TOTAL RESPONSES: 113 % ANSWERING: 65.32%

(Severe wind) We live in a trailer	(Extreme cold) Never lived anywhe	(Severe wind & tornado) Happenec	(Tornado) Recent nearby	(Flooding) Roads closed	(Hazardous materials incident) A li	(Cyber) Try to steal my money	(Severe wind & tornado) Recent we	(Cyber) So much info being shared online, client info	
(Tornado) I need a place to live	(Extreme heat) Climate change	(Hazardous material incidents) Liv	(Weather, wind events) Trees com	(Severe wind & tornado) Wrecks th	(Hazardous materials incident) Ma	(Extreme heat) Heat strokes, dehy	(Flooding) Where I live, floods ofte	(Severe weather) More extreme weather, loss of electric power, inability to work without power	
(N/A) Illegible	(Wind & tornado) Because we are i	(Hazardous material incidents) Be	(Tornado) Frequency	(Extreme cold) Driving, trying to he	(Tornado) I live in a valley; if one to	(Flooding & heat) Residents w/o re	(Cyber) It absolutely affects everyo	(Hazardous materials incident) I live in East Palestine	
(Hazardous material incidents) We	(All circled) Damage to my home. I	(Flooding) He lives close to Beaver	(Hazmat) E.P.	(Hazardous materials incident) He	(Flooding) I live in a flood zone	(Hazardous materials incident) I th	(Public health emergency) Mass pa	(Cyber) Recent cyber attacks / hackers / terrorist attacks	
(Severe winter storm) Icy roads	(Public health emergency) Is an un	(Hazardous materials incident) Spi	(Tornado) Been through microburs	(Hazardous materials incident) Be	(Cyber) A hacker could shut down	(Extreme heat) Many elderly peopl	(Hazardous materials incident) Ea	(Cyber) Everything is run by cyber	
(Flooding) Floods destroy homes a	(Severe winter storm) I live on a hill	(Tornadoes) Can lose everything	(Tornado) Frequency	(Public health emergency) Becaus	(Hazardous materials incident) Tra	(Extreme heat) A lot of homeless	(Severe wind & tornado) Damages		
(Extreme cold) I don't like cold wea	(Hazardous material incidents) Cli	(Tornado) Frequency	(Tornado) XXX trees coming down	(Cyber) Had problems with bullies	(Drought) Farming, food	(Extreme heat) Sensitive to heat &	(Hazardous materials incident) Thi	(Extreme heat) It is a current reality and I am unaware of local cooling stations	
(Public health emergency) Since C	(Cyber, thunderstorm, wind, publi	(Tornado) Been impacted by bad s	(Weather) Modular home	(Drought) Farming	(Hazardous materials incident) No	(Severe weather) I worry about ele	(Cyber) Affecting elderly communi	(N/A) Appropriate warnings & safety	
(Cyber) shuts down everything	(Hazardous material incidents) Tra	(Tornado) Frequency	(Weather) Lives alone	(Extreme heat) I don't like the heat	(Winter storm) If freezing, would w	(Hazardous materials incident) Be	(Hazardous materials incident) Be	(Weather) Ability to get in/out	
(Tornado) Trees hitting home	(Severe wind & tornado) Because ¿	(Torando) What they can do	(Cyber) We can't control it	(Flooding) I live in low lands	(Cyber) I worked at a hospital prev	(Cyber) No control	(Hazardous materials incident) To	(N/A) Cyber, cold, tornado; international tension, cold because of loss of power	
(Tornado) Severe wind knock down	(Severe wind & tornado) Live in a m	(Cyber) Happens a lot	(Extreme heat) Global warming	(Flooding) Because of all the low la	(Hazardous materials incident) De	(Cyber) Because everything is cyb	(Hazardous materials incident) E.P	(Hazardous materials incident) Toxic chemicals getting in the water	
(Hazardous material incidents) I lik	(Tornadoes) Nowhere to go	(Weather) Weather changing, freq	(Hazardous material incidents) Ea	(Hazardous materials incident) Tra	(Cyber) I have children	(Cyber) So many opportunities anc	(Public health emergency) The county resources being overwhelmed		
(N/A) Was in one tornado that is	(Tornadoes & strong winds) Could	(Flooding) Live in flood area	(Extreme heat) It concerns me bec	(Extreme cold) With the cost of ele	(Storms) My husband on oxygen, c	(Severe wind & tornado) Recent oc	(Cyber) Everything being online, debit cards, work, etc.		

4. Is there any other hazard you feel we should consider? TOTAL RESPONSES: 32 % ANSWERING: 18.50%

Cyber - grid down
The flooding of the roads and the pot holes
Pot holes
Hazardous material incidents. Train derailments (such as E.P.O.). Landfills are all on the increase in our county.
Extreme cold we can't take
Famine - Food expensive, too much waste, people abuse/lie to foodbanks, food stamp program doesn't provide enough to keep one person alive. Should be mandatory for recipients to volunteer at least 1x yr. to see effort required to provide for public. (1) Lawlessness - Things are bound to get worse - abuse of the system is discouraging. Lacks organizational skills. I pull in as Car 19 but your paper says I'm 23. Our God is a God of order.
Everything going on in this world today. Government
Severe weather - Live in old mobile home. No safe place to go
High end development, high property taxes, unaffordable for average people. High amount of tax foreclosures in county
Bad drinking water
Good storm - get stuck or wreck
All of them. Global warming
Terrorism. BUPS.
Terrorist event
Lisbon viaduct railroad infrastructure
East Palestine
Govt. overreach, loss of civil liberty
Trains
Power plant meltdown, Beaver Valley
The East Palestine derailment
Extreme cold
I don't know; I just moved here
Active shooter somewhere
Train derailment
Nuclear power plant incident
Substance abuse & mental health crisis

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

Mitigation is an action you or your community takes to reduce the negative impacts of hazards such as severe weather, hazardous material releases, and floods.

Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Wind

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you? I need a place to live

4. Is there any other hazard you feel we should consider? cyber - Grid Down

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   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

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   _____
   _____
   _____

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3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Heat

   - Why does this hazard concern you? I live in a [illegible] area. I have a [illegible] and I have a [illegible] and it is [illegible]

4. Is there any other hazard you feel we should consider? _____

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Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? HAZARDOUS material incidents
   - Why does this hazard concern you? WATER, AIR, and LAND. Contaminated with Hazard Chemical

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Winter Storm

   - Why does this hazard concern you? Icy Roads

4. Is there any other hazard you feel we should consider? The flooding of the Roads And the pot holes

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? flooding

   - Why does this hazard concern you? floods Destroy Homes and lives.

4. Is there any other hazard you feel we should consider? Pot Holes

Thank you for sharing your thoughts with us!

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Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme Cold

   - Why does this hazard concern you? I don't like Cold weather

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

- Cyber Incidents
- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding
- Hazardous Material Incidents
- Public Health Emergency
- Severe Thunderstorm & Hail
- Severe Wind & Tornado
- Severe Winter Storm
- Wildfires

3. Which of these hazards concerns you the most? Public Health Emergency

   - Why does this hazard concern you? Since COVID pandemic - we are seeing additional variants and new viruses and illnesses never experienced B4. This is a global concern

4. Is there any other hazard you feel we should consider? Hazardous material incidents. Train derailments (such as E. P. O.) landfills, are all on the increase in our county.

Thank you for sharing your thoughts with us!

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? Shuts Down everything

4. Is there any other hazard you feel we should consider? _____

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornados

   - Why does this hazard concern you? Trees hitting house

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you? Severe it not down Trees

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous material

   - Why does this hazard concern you? I Live in East Palestine

4. Is there any other hazard you feel we should consider? ?

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	(Severe Wind & Tornado)
(Extreme Cold)	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? WAS IN ONE. TORNADO THAT IS

4. Is there any other hazard you feel we should consider? _____

EXTREME COLD
WE CAN'T TAPE

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold ✓	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme Cold

   - Why does this hazard concern you? I never lived anywhere until now that had Cold Weather

4. Is there any other hazard you feel we should consider? No

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN
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1. Do you live or work in Columbiana County? ☒ Yes ☐ No

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme Heat

   - Why does this hazard concern you? Climate Change

4. Is there any other hazard you feel we should consider? _____

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Wind & Tornado

   - Why does this hazard concern you? Because we Are In An Area That Could Be Effective of This. Losing Everything We Work For Would Be Devastating. But I Live Near Railroad Tracks too So Hazardous Material Incidents would be of Concern Also

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? all circled

   - Why does this hazard concern you? Damage to my home. I am a widow

4. Is there any other hazard you feel we should consider? No

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? HEALTH

   - Why does this hazard concern you? IS AN UNKNOWN

4. Is there any other hazard you feel we should consider? _____

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents yes	Hazardous Material Incidents yes
Dam/Levee Failure yes	Public Health Emergency yes
Drought yes	Severe Thunderstorm & Hail yes
Earthquake yes	Severe Wind & Tornado yes
Extreme Cold yes	Severe Winter Storm yes
Extreme Heat yes	Wildfires
Flooding yes	

3. Which ~~of these~~ hazards concerns you the most? Famine

   - Why does this hazard concern you? food expensive, too much waste, people abuse/lie to foodbanks, food stamps program doesn't provide enough to keep one person alive. Should be mandatory for recipients to volunteer at least 1x yr to see effort required to provide for public

4. Is there any other hazard you feel we should consider?

① Lawlessness – things are bound to get worse – abuse of the system is discouraging. Lacks
② organizational skills – I pull in as early 9 but paper says I'm 23. Our God is a God of order.

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Winter storms

   - Why does this hazard concern you? I live on a hill, My road is always done last. It makes it hard to get to work & affects businesses.

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Material

   - Why does this hazard concern you? Cloud Seeding to change the weather. You shouldn't mess with Mother Nature! Silver Iodide is being used. Can not be good for the environment.

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)? No

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? None

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? No

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber Incidents Severe Thunderstorms & hail Severe Wind & Tornados Public Health Emergency
   Why does this hazard concern you? Because I'm elderly

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Material

   - Why does this hazard concern you? Train derailment

4. Is there any other hazard you feel we should consider? _____

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Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Wind & TORNADO

   - Why does this hazard concern you? BECAUSE PEOPLE AN LOSES POWER HOMES get KILL And Public Health NO Food + WATER

4. Is there any other hazard you feel we should consider? N/A

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

LIVE IN PARK MOBILE No Place To Go

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Everything in this COIN ON World Today Government

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? severe weather

   - Why does this hazard concern you? live in old mobile home. No safe place to go

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____
   HIGH RURAL DEVELOPMENT, HIGH PROPERTY TAXES
   UNAFFORDABLE FOR AVERAGE PEOPLE.
   HIGH AMOUNT OF TAX FORECLOSURES IN COUNTY

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornados bad drinking water

   - Why does this hazard concern you? No where to go

4. Is there any other hazard you feel we should consider? bad drinking water

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? TORNADO'S - STRONG WINDS
   Why does this hazard concern you? COULD BLOW YOUR HOUSE DOWN

4. Is there any other hazard you feel we should consider? SNOW STORM - GET STUCK OR WRECK.

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Wind & Tornado

   - Why does this hazard concern you? Happened to my property two years ago.

4. Is there any other hazard you feel we should consider? all of them. Global Warming.

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Lived on Ohio Blvd. below Nease Chemical, Building being eaten by chemicals.

4. Is there any other hazard you feel we should consider? EAST PALESTINE ??

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? HAZARDOUS MATERIAL INCIDENTS

   - Why does this hazard concern you? BECAUSE OF TRAIN WRECK IN E. PA

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Earthquakes

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding!!!

   - Why does this hazard concern you? We live close to Beaver Creek.

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous

   - Why does this hazard concern you? Spills

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

Mitigation is an action you or your community takes to reduce the negative impacts of hazards such as severe weather, hazardous material releases, and floods.

Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Haz. Mat

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? Tornado's

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? Nothing

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3. Which of these hazards concerns you the most? Tornado's!!

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? None

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Flooding	

3. Which of these hazards concerns you the most? Tornado's

   - Why does this hazard concern you? Can loose everything

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? frequency

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

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Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? been impacted by bad storms

4. Is there any other hazard you feel we should consider?

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3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? ↑ frequency

4. Is there any other hazard you feel we should consider? _____

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- Cyber Incidents
- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding
- Hazardous Material Incidents
- Public Health Emergency
- Severe Thunderstorm & Hail
- Severe Wind & Tornado
- Severe Winter Storm
- Wildfires

3. Which of these hazards concerns you the most? Tornado !!!

   - Why does this hazard concern you? what they can do

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? happens alot

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? weather

   - Why does this hazard concern you? weather changing ↑ freq

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding ~~tornado~~ other

   - Why does this hazard concern you? live in flood area

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? tornado most

   - Why does this hazard concern you? recent nearby

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? tornadoes

   - Why does this hazard concern you? BUPS

4. Is there any other hazard you feel we should consider? Red Cross Volunteer

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Flooding	

3. Which of these hazards concerns you the most? weather Wind events

   - Why does this hazard concern you? trees coming down

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? _____

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Flooding	

3. Which of these hazards concerns you the most? tornado tornadoes

   - Why does this hazard concern you? ↑ frequency

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? haz mat

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? been there microburst

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Earthquake	Severe Wind & Tornado
Extreme Cold	~~Severe Winter Storm~~
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? tornado

   - Why does this hazard concern you? ↑ freq.

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? fire tornado

   - Why does this hazard concern you? trees coming down

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you? _____

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3. Which of these hazards concerns you the most? tornadoes!!

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? terrorist event

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? weather

   - Why does this hazard concern you? Modern Home

4. Is there any other hazard you feel we should consider? Col. Urban Viaduct railroad infrastructure

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? Weather

   - Why does this hazard concern you? lives alone

4. Is there any other hazard you feel we should consider? _____

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   - Why does this hazard concern you? _____

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3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Drought	Severe Thunderstorm & Hail
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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Wind & Tornado

   - Why does this hazard concern you? Distruction it can cause

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Dying Not Fixed Our

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

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Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? we can't control it.

4. Is there any other hazard you feel we should consider? NO

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Winter Storm

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? No

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Heat, Hazardous Material Incidents, Train
   - Why does this hazard concern you? Global Warming & East Palestine Accident

4. Is there any other hazard you feel we should consider? _____

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	☒ Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	☒ Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
☒ Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Heat

   - Why does this hazard concern you? It concerns me because of the effect it has on my garden.

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding

   - Why does this hazard concern you? Roads closed

4. Is there any other hazard you feel we should consider? NO

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	GOVT OVERREACH LOSS OF CIVIL LIBERTY

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? wind

   - Why does this hazard concern you? wrecks things

4. Is there any other hazard you feel we should consider? ?

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme cold

   - Why does this hazard concern you? driving trying to heat house

4. Is there any other hazard you feel we should consider? _____

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? N/A

4. Is there any other hazard you feel we should consider? ?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? No

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? not concerned

   - Why does this hazard concern you? not concerned

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? NONE

   - Why does this hazard concern you? N/A

4. Is there any other hazard you feel we should consider? NA

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	✓ Hazardous Material Incidents
Dam/Levee Failure	✓ Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	✓ Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

   because I live in Area where those could happen

4. Is there any other hazard you feel we should consider? _____

   Not At this time

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Health

4. Is there any other hazard you feel we should consider? Trains

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous trains material

   - Why does this hazard concern you? because trains are in my back yard.

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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Cyber Incidents	☒ Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Train Spill Farm Spray

   - Why does this hazard concern you? Health

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

(Cyber Incidents)	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber incidents

   - Why does this hazard concern you? had problems with Bullys with my daughter

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? NH

   - Why does this hazard concern you? NA

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Drought

   - Why does this hazard concern you? Farming

4. Is there any other hazard you feel we should consider? No

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? I dont like the heat

4. Is there any other hazard you feel we should consider? No.

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding

   - Why does this hazard concern you? I live in low lands

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding

   - Why does this hazard concern you? Because of all the low land flooding has been an issue

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe weather

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Materials

   - Why does this hazard concern you? Train wrecks

4. Is there any other hazard you feel we should consider? No

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? public health

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	(Severe Winter Storm)
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme Cold

   - Why does this hazard concern you? With the cost of electricity going up may not be able to afford to heat my home.

4. Is there any other hazard you feel we should consider? NO

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Flooding	

3. Which of these hazards concerns you the most? HAZ MATerial

   - Why does this hazard concern you? A lot of Bad Chemicals come Thar Here

4. Is there any other hazard you feel we should consider? No

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Flooding	

3. Which of these hazards concerns you the most? N/A

   - Why does this hazard concern you? N/A

4. Is there any other hazard you feel we should consider? N/A

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Flooding	

3. Which of these hazards concerns you the most? HAZ MATERIALS

   - Why does this hazard concern you? MAJOR DESTRUCTION to AREA & HEALTH

4. Is there any other hazard you feel we should consider? _____

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Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Tornado

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornados

   - Why does this hazard concern you? I live in a valley, if one touched down in there it would cause Massive damage

4. Is there any other hazard you feel we should consider? No

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flood

   - Why does this hazard concern you? I Live in Flood zone

4. Is there any other hazard you feel we should consider? N/A

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3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? N/A

4. Is there any other hazard you feel we should consider? N/A

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3. Which of these hazards concerns you the most? Cyber Incidents

   - Why does this hazard concern you? A hacker could shut down whole cities and we are so reliant on computers, even a small incident could be disastrous

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail ✓
Earthquake	Severe Wind & Tornado ✓
Extreme Cold	Severe Winter Storm ✓
Extreme Heat	Wildfires
Flooding ✓	

3. Which of these hazards concerns you the most? Severe Weather

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

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3. Which of these hazards concerns you the most? public health emerg.

   - Why does this hazard concern you? Because I work at Salem Hosp. & COVID impacted all aspects of healthcare, so I hope it would not happen again

4. Is there any other hazard you feel we should consider? _____

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Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? All

   - Why does this hazard concern you? First Responder

4. Is there any other hazard you feel we should consider? _____

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Dam/Levee Failure	✓ Public Health Emergency
✓ Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Drought

   - Why does this hazard concern you? Farming, food

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? Haz. Mat.

   - Why does this hazard concern you? Not much for us to do other than evacuate.

4. Is there any other hazard you feel we should consider? Power plant meltdown, Beaver Valley

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? winter storms

   - Why does this hazard concern you? if freezing, would we have enough resources for electric repair for heat in home - if using candles for light, fire hazard

4. Is there any other hazard you feel we should consider? N/A

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Dam/Levee Failure	Public Health Emergency
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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? I worked at a hospital previously and we had ongoing cyber threats which were a true concern.

4. Is there any other hazard you feel we should consider? n/a

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? derailment

4. Is there any other hazard you feel we should consider? not sure

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

   The east palestine derailment

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? I have Children.

4. Is there any other hazard you feel we should consider? —

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☐ Dam/Levee Failure	☒ Public Health Emergency
☒ Drought	☒ Severe Thunderstorm & Hail
☐ Earthquake	☒ Severe Wind & Tornado
☒ Extreme Cold	☒ Severe Winter Storm
☒ Extreme Heat	☐ Wildfires
☒ Flooding	

3. Which of these hazards concerns you the most? Storms

   - Why does this hazard concern you? My husband on Oxygen - can't lose electric

4. Is there any other hazard you feel we should consider? _____

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber incidents
   - Why does this hazard concern you? Try to steal my money.

4. Is there any other hazard you feel we should consider? No

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? extreme heat

   - Why does this hazard concern you? heat stroke, dehydration

4. Is there any other hazard you feel we should consider? extreme cold

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? None

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? I Don't Know I Just Moved Here

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? N/A

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? N/A

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Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding + Heat

   - Why does this hazard concern you? Residents who relocated to deal with aftermath of these events

4. Is there any other hazard you feel we should consider? _____

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Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous materials

   - Why does this hazard concern you? I think companies see Columbiana City as an easy dumping ground.

4. Is there any other hazard you feel we should consider? not at this time

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3. Which of these hazards concerns you the most? N/A

   - Why does this hazard concern you? N/A

4. Is there any other hazard you feel we should consider? N/A

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Extreme Cold	Severe Winter Storm
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Flooding	

3. Which of these hazards concerns you the most? N/A

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? N/A

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Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? heat

   - Why does this hazard concern you? many elderly people in county who are vulnerable, especially w/ high utility costs and no more ARPA funds to help

4. Is there any other hazard you feel we should consider? no

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

Mitigation is an action you or your community takes to reduce the negative impacts of hazards such as severe weather, hazardous material releases, and floods.

Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents		X	Hazardous Material Incidents
Dam/Levee Failure			Public Health Emergency
Drought			Severe Thunderstorm & Hail
Earthquake			Severe Wind & Tornado
Extreme Cold			Severe Winter Storm
Extreme Heat			Wildfires
Flooding			

3. Which of these hazards concerns you the most? Train derailment

   - Why does this hazard concern you? Affected us physically & mentally

4. Is there any other hazard you feel we should consider? No

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
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1. Do you live or work in Columbiana County? ☒ Yes ☐ No

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? None

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? no

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? None

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme heat

   - Why does this hazard concern you? Sensitive to heat & sun due to medication I take

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Weather

   - Why does this hazard concern you? I worry about electric going out

4. Is there any other hazard you feel we should consider? Active shooter somewhere

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
~~Extreme Heat~~	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Haz Mat

   - Why does this hazard concern you? Because of the train derailment and trucking which passes through our county

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

- Cyber Incidents
- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding
- Hazardous Material Incidents
- Public Health Emergency
- Severe Thunderstorm & Hail
- Severe Wind & Tornado
- Severe Winter Storm
- Wildfires

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? no control

4. Is there any other hazard you feel we should consider? Train derailment

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber Incidents

   - Why does this hazard concern you? Because everything is Cyber based people use the internet for everything -

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? So many opportunities and ways for a cyber incident.

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe Wind formado

   - Why does this hazard concern you? recent occurance

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Wind + Tornado

   - Why does this hazard concern you? Severe weather

4. Is there any other hazard you feel we should consider? N/A

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? NONE

   - Why does this hazard concern you?_____

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Flooding

   - Why does this hazard concern you? where I live Floods often, Tornados have hit our area this year

4. Is there any other hazard you feel we should consider? Nuclear power plant incidents

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber Incidents

   - Why does this hazard concern you? It absolutely effects everyone.

4. Is there any other hazard you feel we should consider? No

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Public Health

   - Why does this hazard concern you? Most Recent

4. Is there any other hazard you feel we should consider? Sud & MH Crisis

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? HAZMAT

   - Why does this hazard concern you? EAST PALESTINE

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

✓ Cyber Incidents	✓ Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
✓ Drought	Severe Thunderstorm & Hail
Earthquake	✓ Severe Wind & Tornado
✓ Extreme Cold	Severe Winter Storm
✓ Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Heat

   - Why does this hazard concern you? A lot of Homeless

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Material

   - Why does this hazard concern you? the lack of proper clean-up

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber Incidents

   - Why does this hazard concern you? Affecting elderly community and most times scams them out of their savings investments

4. Is there any other hazard you feel we should consider? Severe Weather we have had so far this season, & damage it has caused

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

- Cyber Incidents
- Dam/Levee Failure
- Drought
- Earthquake
- Extreme Cold
- Extreme Heat
- Flooding
- Hazardous Material Incidents
- Public Health Emergency
- Severe Thunderstorm & Hail
- Severe Wind & Tornado
- Severe Winter Storm
- Wildfires

3. Which of these hazards concerns you the most? hazardous

   - Why does this hazard concern you? Because it can happen anytime

4. Is there any other hazard you feel we should consider? Tornado

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Haz mat

   - Why does this hazard concern you? Toxin and The Impact on environment and Human education + preparation is vital and sharing This w/ community is helpful

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? E.P. train

   - Why does this hazard concern you? Air & water contamination

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? _____

   The county resources being overwhelmed

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber Incidents

   - Why does this hazard concern you? everything being on line, Debit cards, work ect.

4. Is there any other hazard you feel we should consider? Lack of funds for the homeless - That is why Cold, heat flooding and storms. Dry issues with lack of resources.

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? so much info being shared online; clear info

4. Is there any other hazard you feel we should consider? no

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Severe weather

   - Why does this hazard concern you? More extreme weather loss of electric power, inability to work without power.

4. Is there any other hazard you feel we should consider? Road Rage

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Tornado

   - Why does this hazard concern you? _____

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Material

   - Why does this hazard concern you? I live in East Palestine

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber

   - Why does this hazard concern you? Recent Cyber attacks / Hackers / Terrorist attacks

4. Is there any other hazard you feel we should consider? Active Shooters / Terrorist Sex trafficking / Drugs Epidemic

Thank you for sharing your thoughts with us!

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber incidents

   - Why does this hazard concern you? Everything is run by cyber.

4. Is there any other hazard you feel we should consider? No

Thank you for sharing your thoughts with us!

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

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Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Storm/wind

   - Why does this hazard concern you? Damages

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

Mitigation is an action you or your community takes to reduce the negative impacts of hazards such as severe weather, hazardous material releases, and floods.

Please share your thoughts on the hazards facing the county to help the county, cities, villages, and townships update their plan for reducing these negative impacts.

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Extreme Heat

   - Why does this hazard concern you? it is a current reality and I am aware of local cooling stations.

4. Is there any other hazard you feel we should consider? _____

Thank you for sharing your thoughts with us!

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2024

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you? Appropriate Warnings & Safety

4. Is there any other hazard you feel we should consider? NO

Thank you for sharing your thoughts with us!

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2024

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Weather

   - Why does this hazard concern you? ability to get in/out

4. Is there any other hazard you feel we should consider? unsure

Thank you for sharing your thoughts with us!

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2024

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2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Cyber, Tornado, Cold,

   - Why does this hazard concern you? International Tension, Cold because of loss of power,

4. Is there any other hazard you feel we should consider? Civil unrest

Thank you for sharing your thoughts with us!

COLUMBIANA COUNTY HAZARD MITIGATION PLAN
2024

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

2. Are you concerned about any of these hazards (circle the ones that concern you)?

Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? Hazardous Material Incident
   - Why does this hazard concern you? Toxic Chemicals getting in the water

4. Is there any other hazard you feel we should consider? N/A

Thank you for sharing your thoughts with us!

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Cyber Incidents	Hazardous Material Incidents
Dam/Levee Failure	Public Health Emergency
Drought	Severe Thunderstorm & Hail
Earthquake	Severe Wind & Tornado
Extreme Cold	Severe Winter Storm
✓ Extreme Heat	Wildfires
Flooding	

3. Which of these hazards concerns you the most? _____

   - Why does this hazard concern you?_____
     _____
     _____
     _____
     _____

4. Is there any other hazard you feel we should consider? _____
   _____
   _____
   _____

Thank you for sharing your thoughts with us!

5.0 APPENDICES

Appendix 5: Jurisdictional Flood Mapping

This appendix contains special flood hazard area (SFHA) mapping for the cities and villages participating in this plan[1]. These images show a closer detail of each participants' corporate limits. For each participating jurisdiction, there are two maps. The first is a street view showing the SFHAs, structures at risk of flooding, and facilities appearing on the asset inventory. The second is an aerial image with the SFHAs overlaid on it.

[1] Summitville does not appear in this appendix because it does not contain SFHAs.

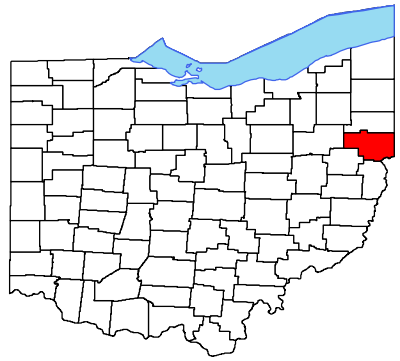
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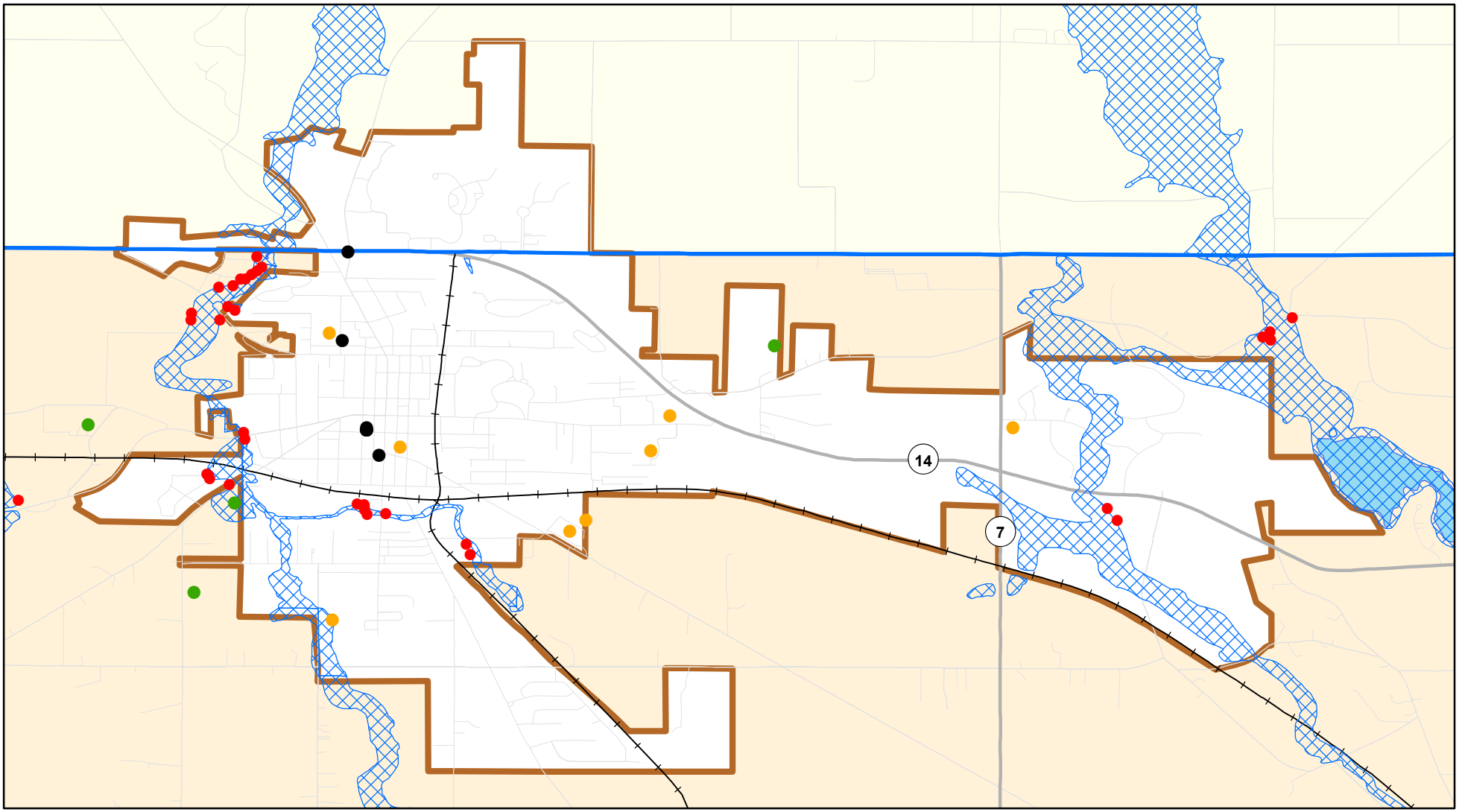
Flood Mapping: Columbiana (Street View)

Data Source(s):
FEMA, Steering Committee

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

- Assets: Built Environment
- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
- At-Risk Structures (General)
- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

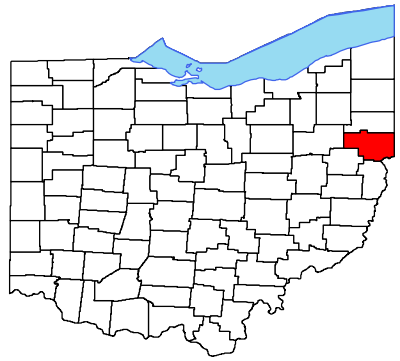
Flood Mapping: Columbiana (Aerial View)

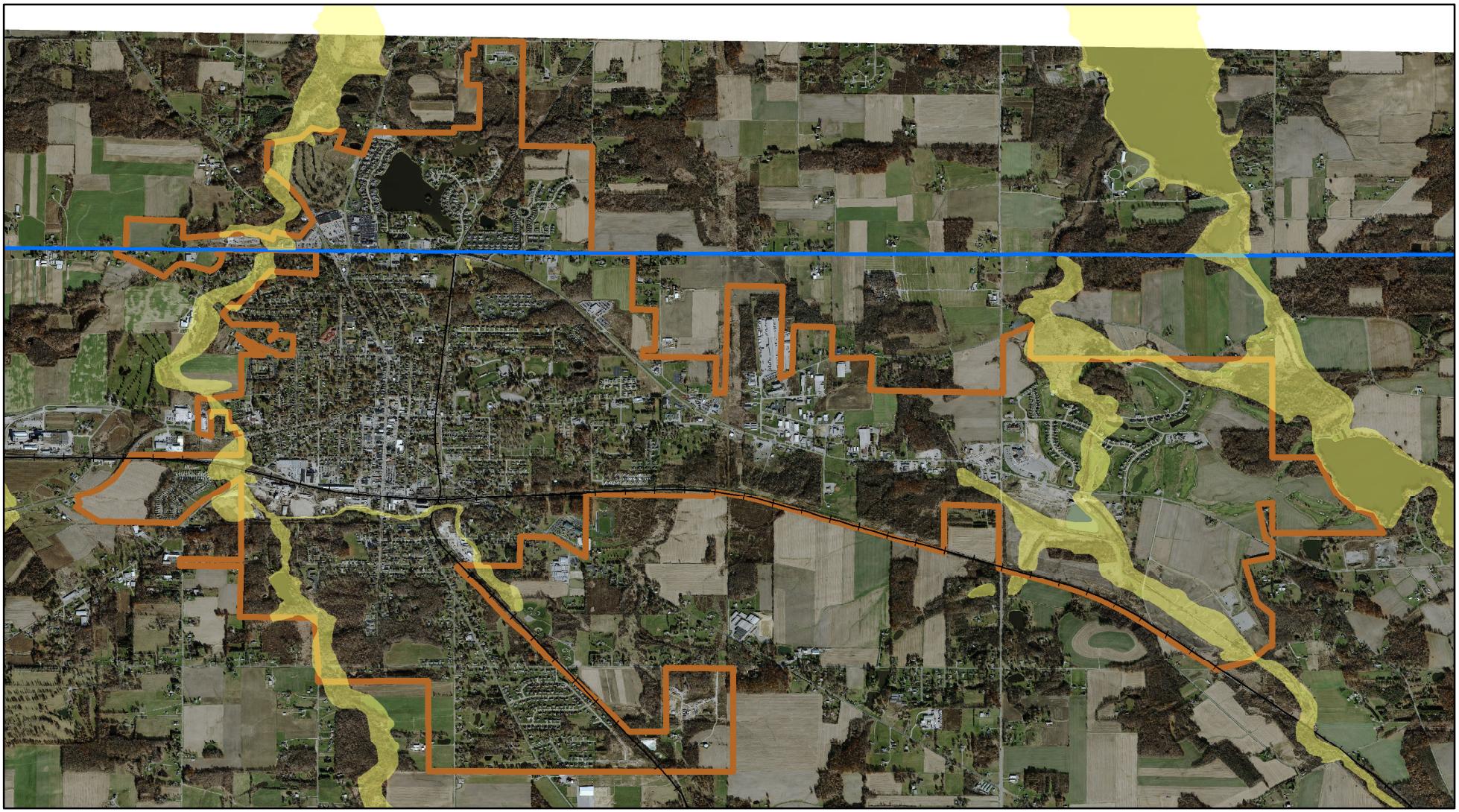
Data Source(s):
FEMA, Steering Committee

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Floodway

SFHA: 1% Annual Chance





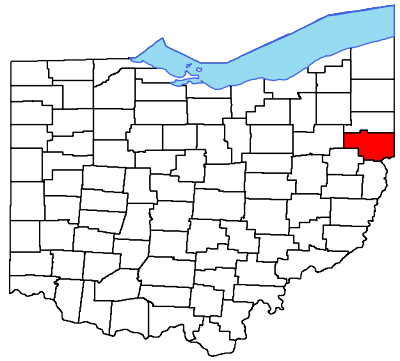
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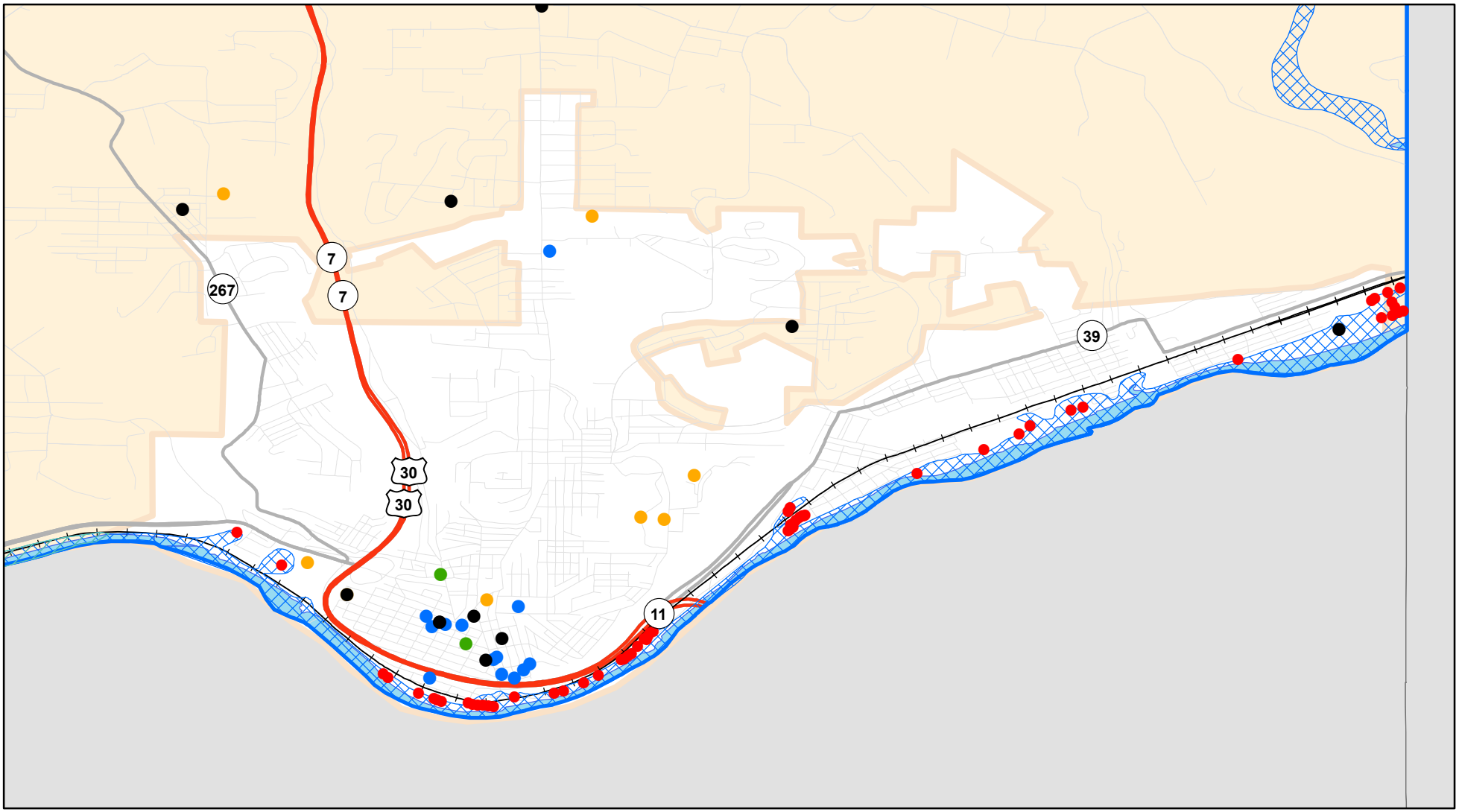
Flood Mapping: East Liverpool (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
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- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

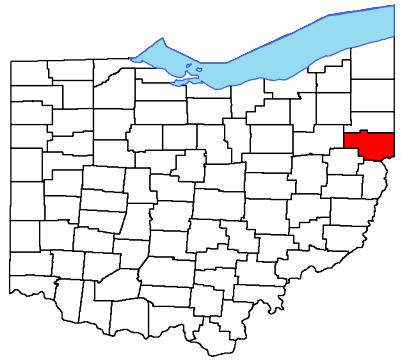
Flood Mapping: East Liverpool (Aerial View)

Data Source(s):
FEMA, Steering Committee

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Floodway

SFHA: 1% Annual Chance





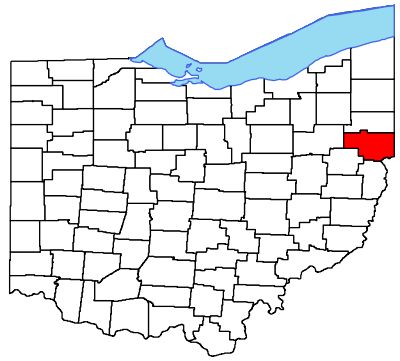
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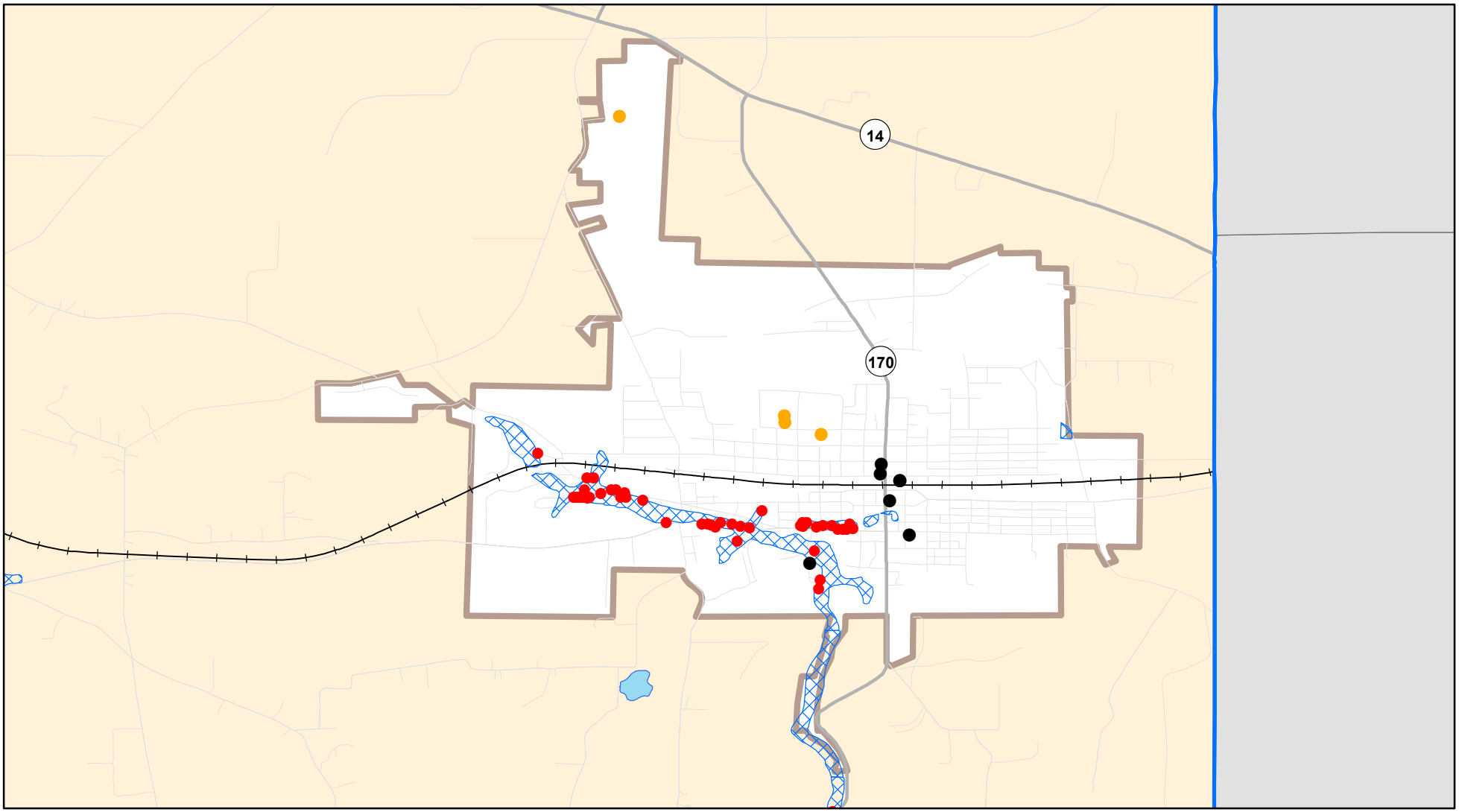
Flood Mapping: East Palestine (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
- At-Risk Structures (General)
- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

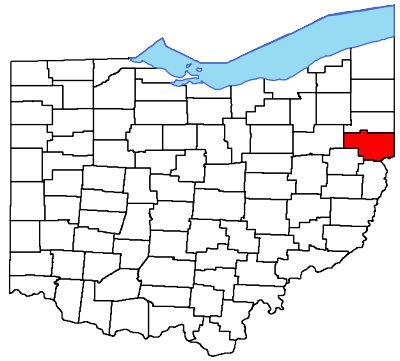
Flood Mapping: East Palestine (Aerial View)

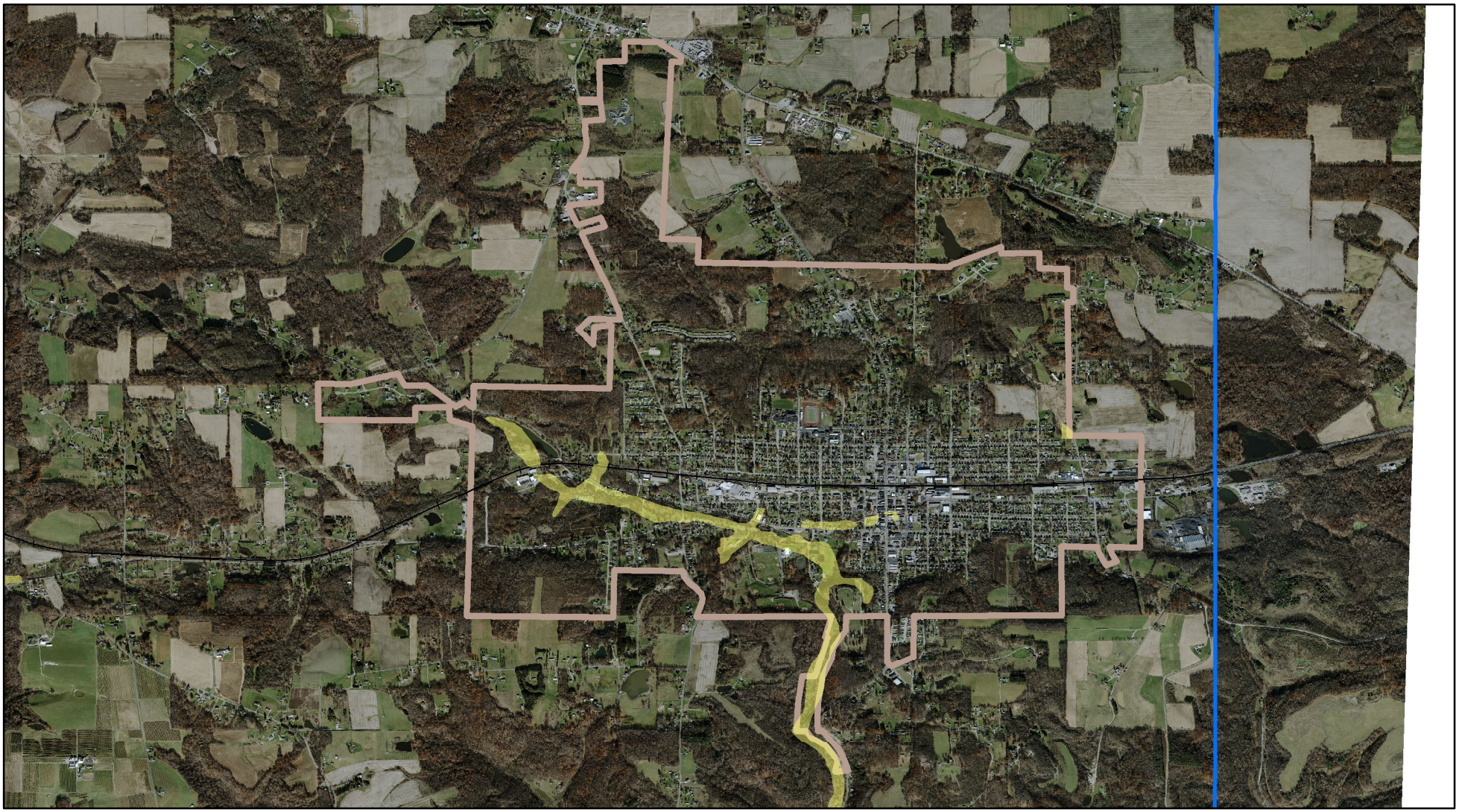
Data Source(s):
FEMA, Steering Committee

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Floodway

SFHA: 1% Annual Chance





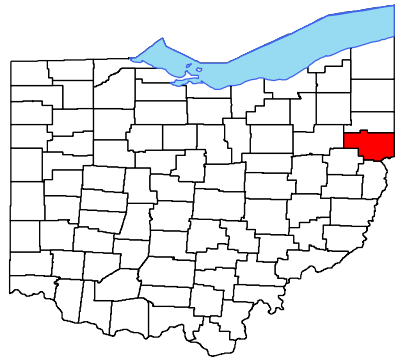
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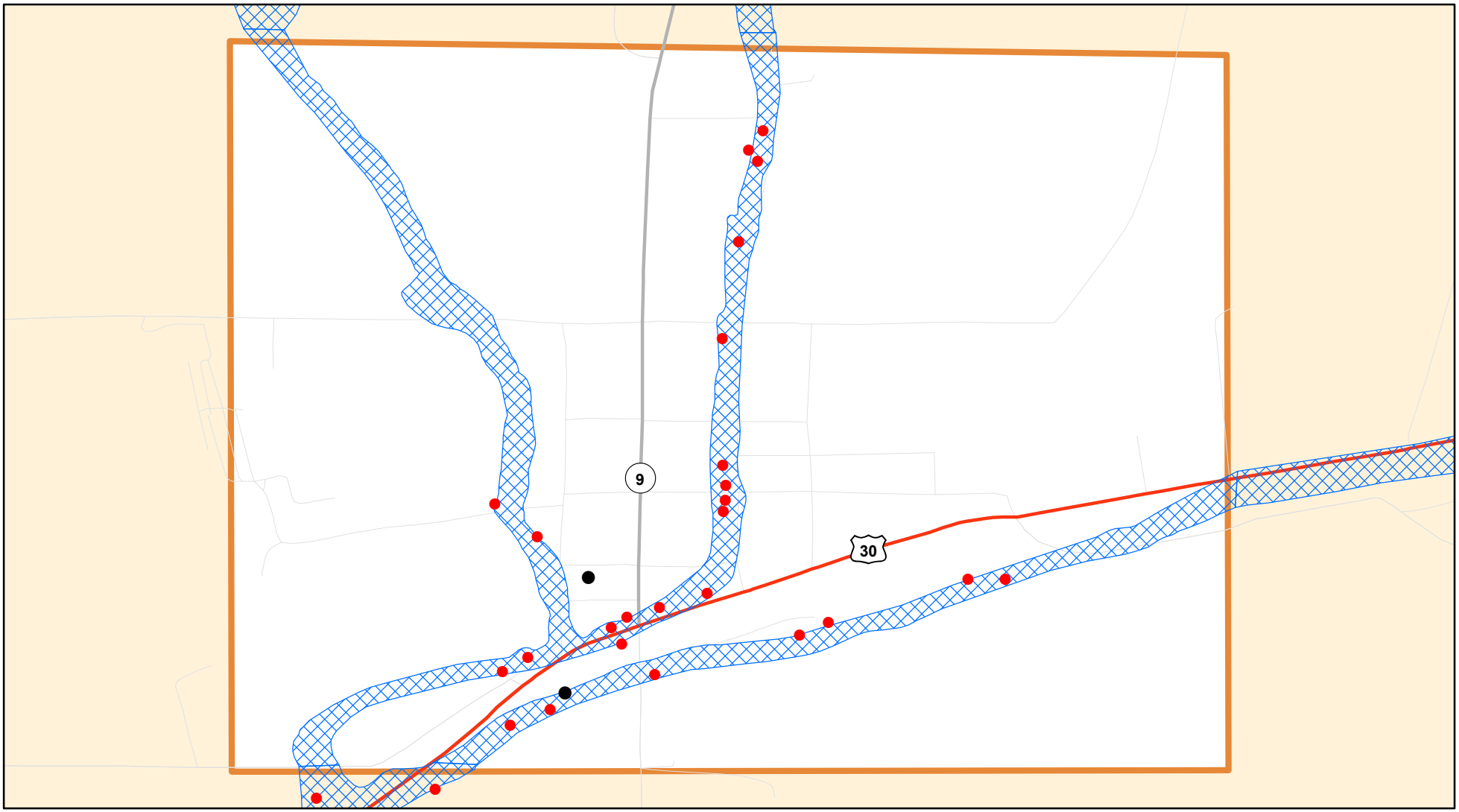
Flood Mapping: Hanoverton (Street View)

Data Source(s):
FEMA, Steering Committee

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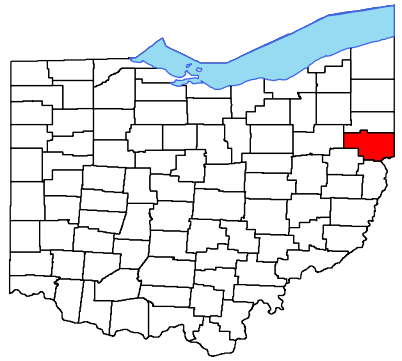
Flood Mapping: Hanoverton (Aerial View)

Data Source(s):
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Floodway

SFHA: 1% Annual Chance





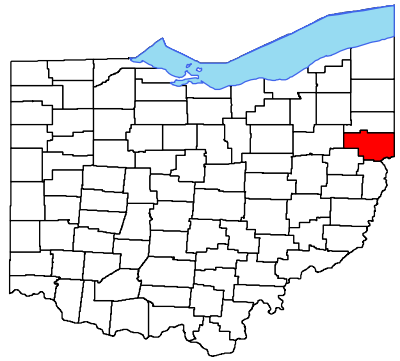
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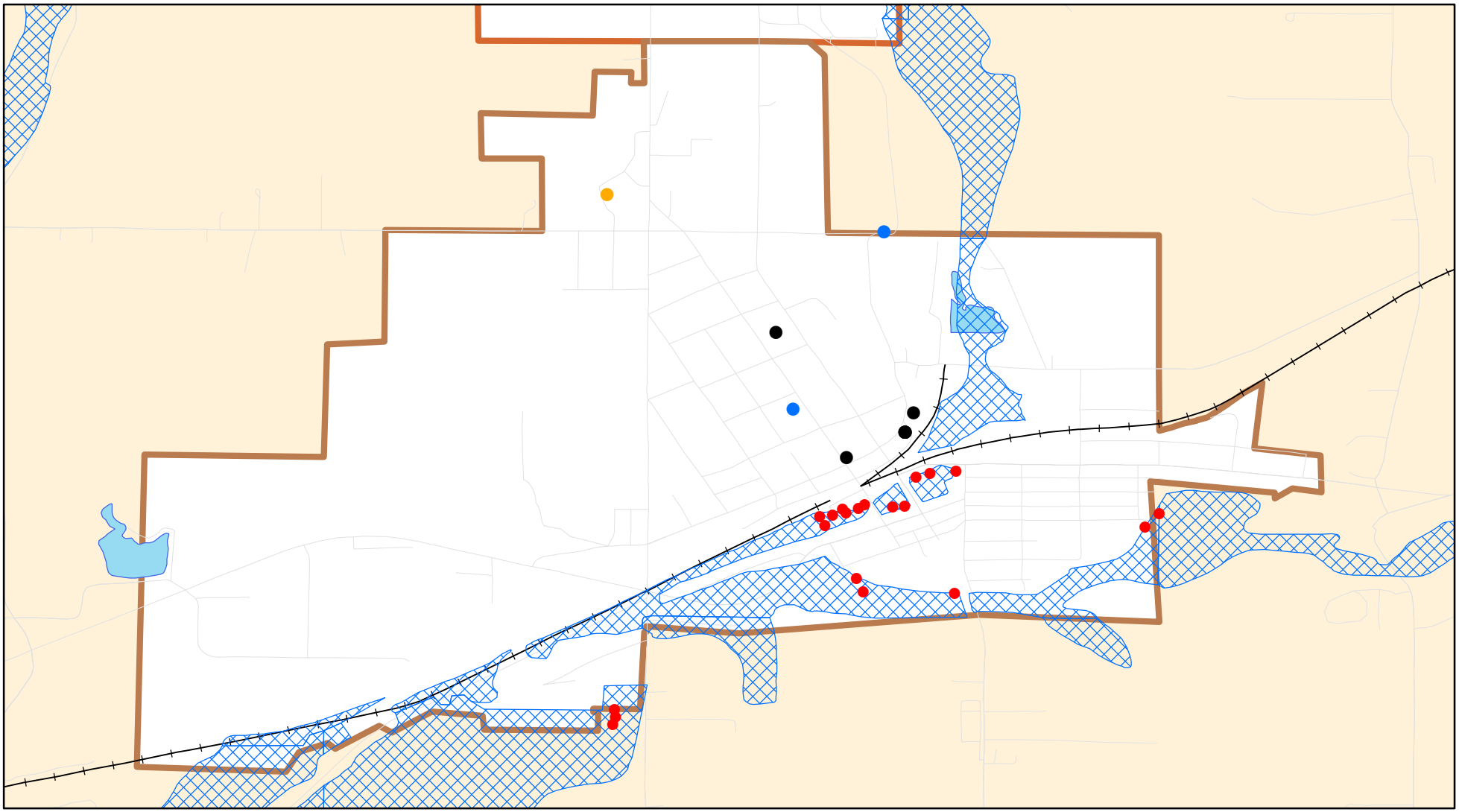
Flood Mapping: Leetonia (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
- At-Risk Structures (General)
- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

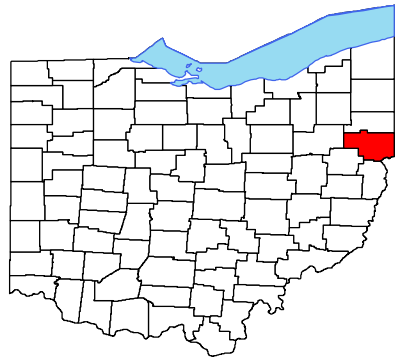
Flood Mapping: Leetonia (Aerial View)

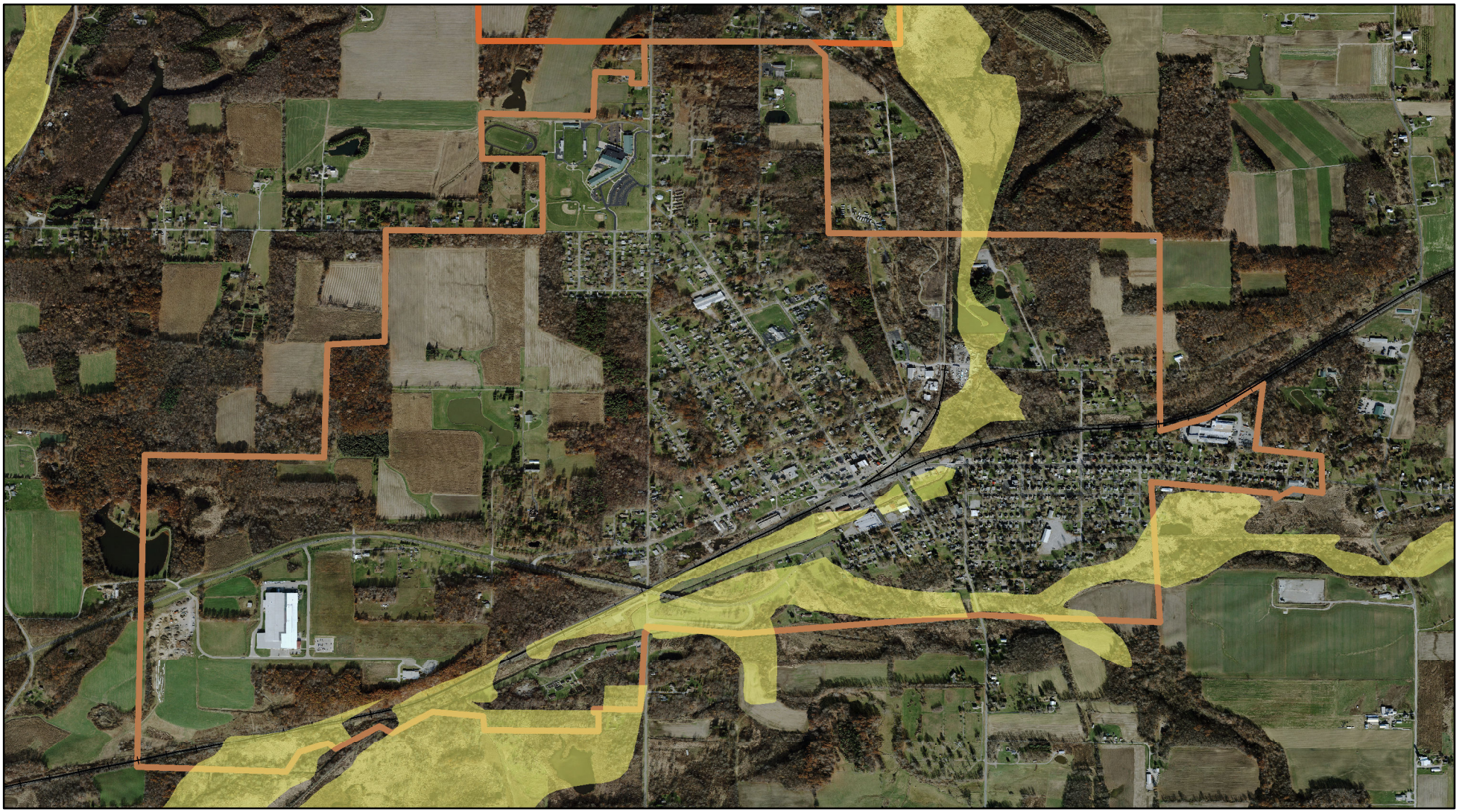
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Floodway

SFHA: 1% Annual Chance





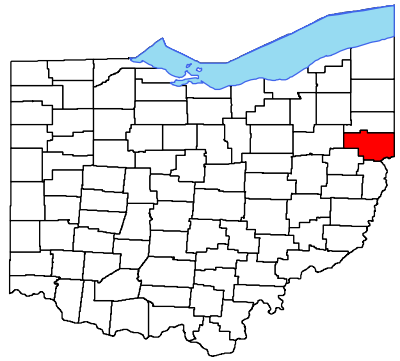
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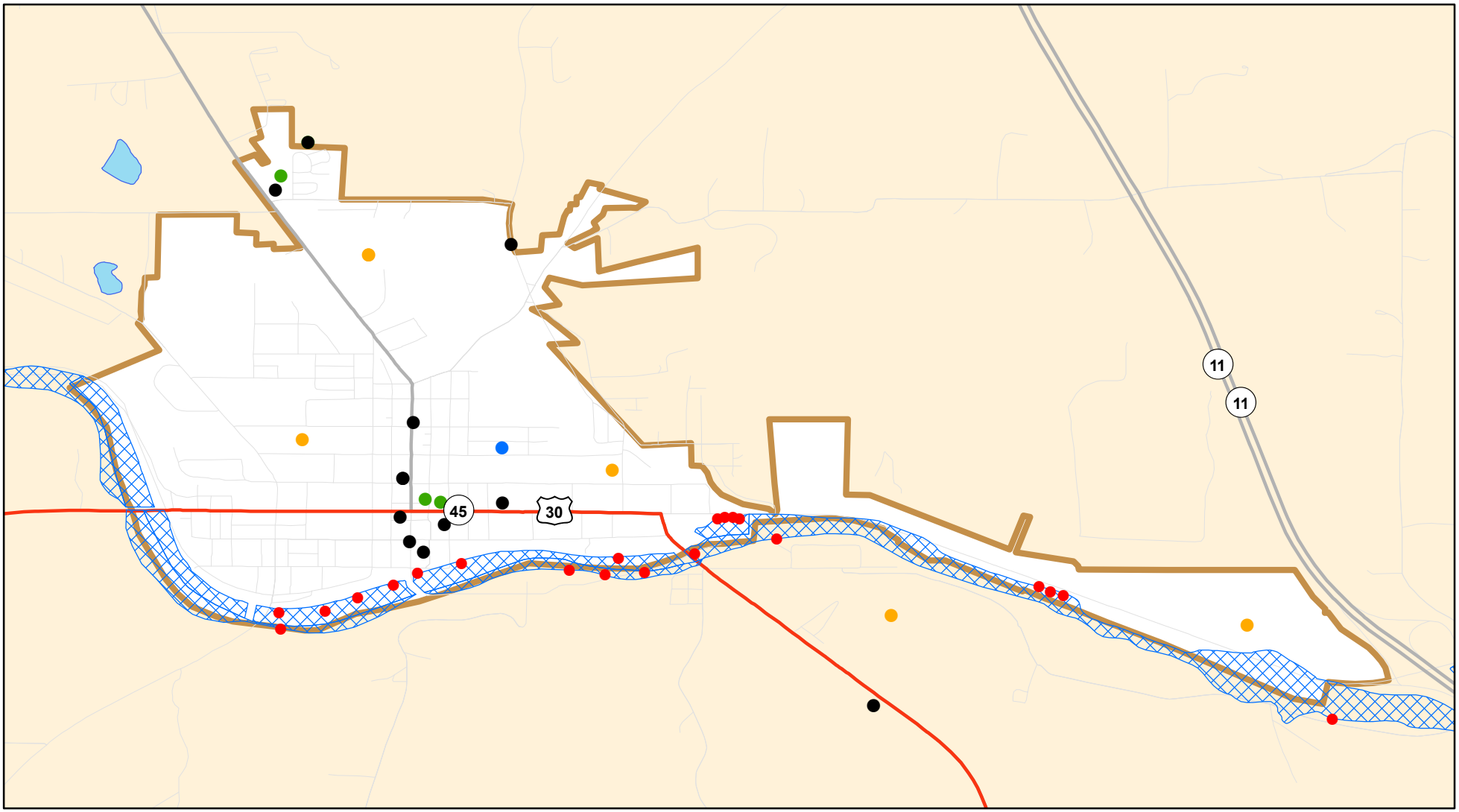
Flood Mapping: Lisbon (Street View)

Data Source(s):
FEMA, Steering Committee

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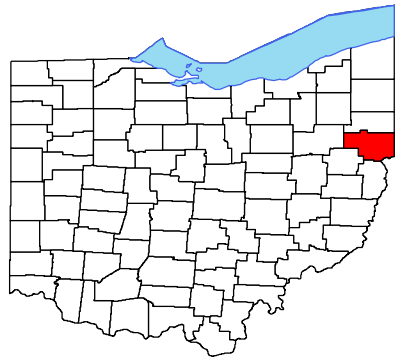
Flood Mapping: Lisbon (Aerial View)

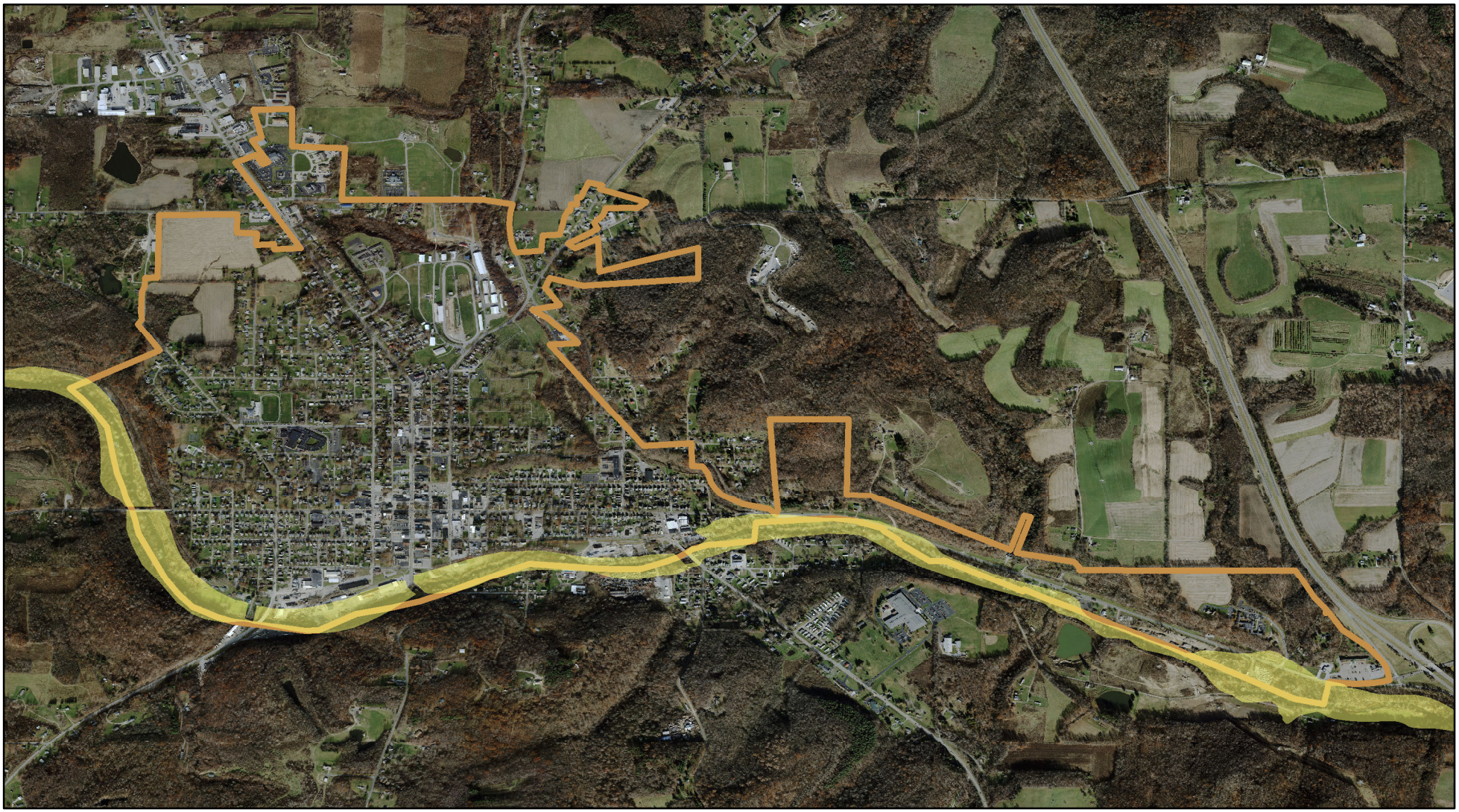
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Floodway

SFHA: 1% Annual Chance





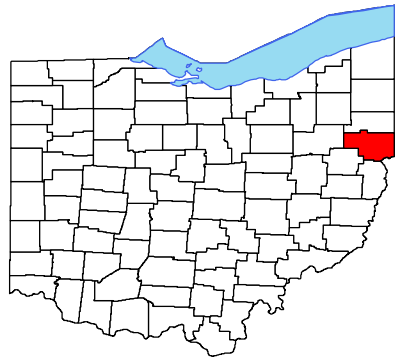
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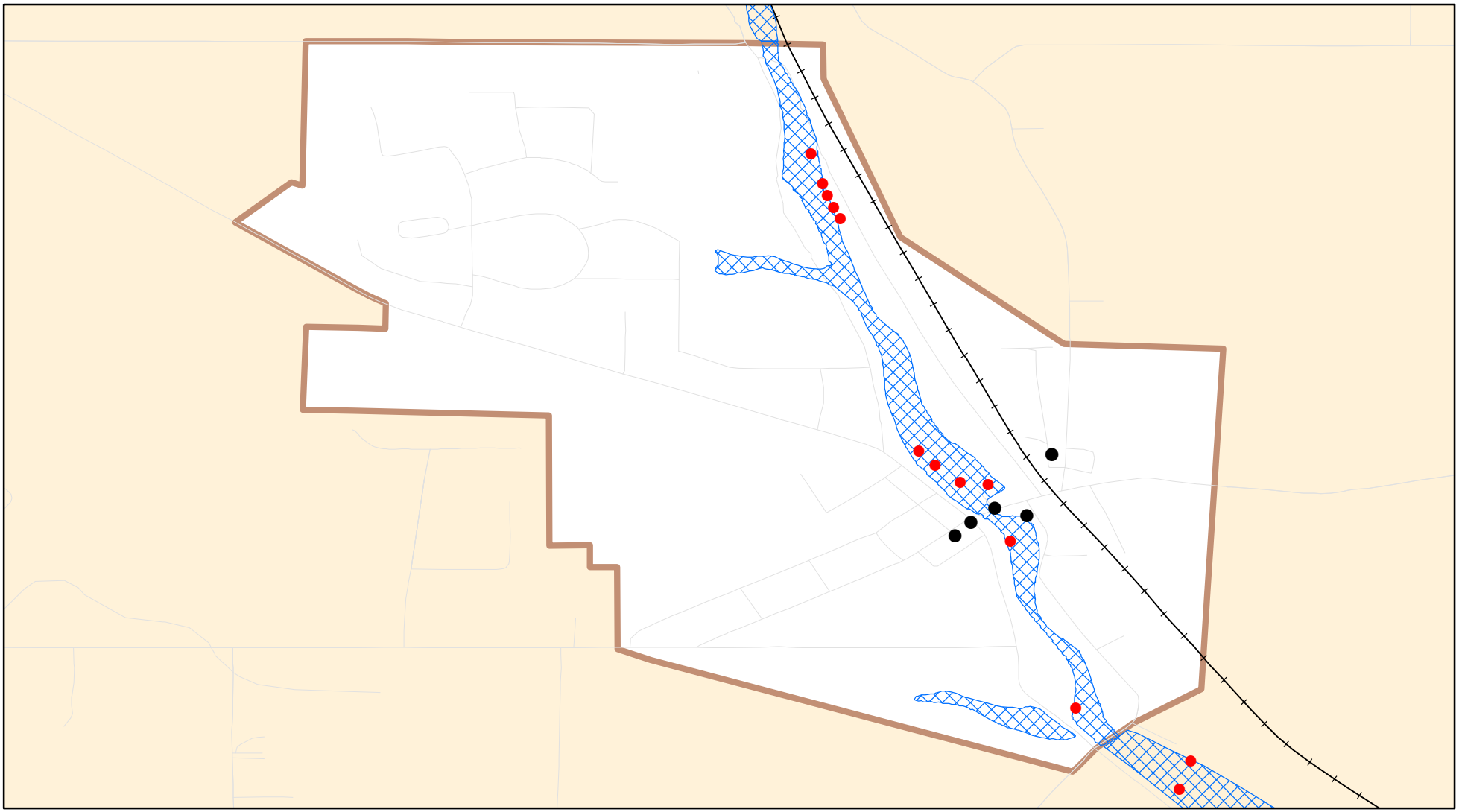
Flood Mapping: New Waterford (Street View)

Data Source(s):
FEMA, Steering Committee

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COLUMBIANA COUNTY HAZARD MITIGATION PLAN

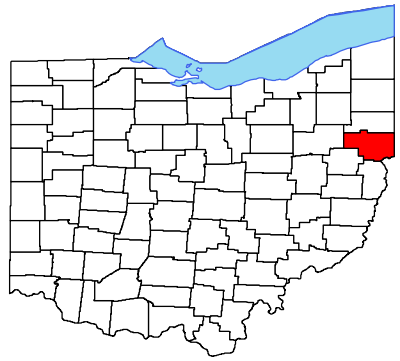
Flood Mapping: New Waterford (Aerial View)

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Floodway

SFHA: 1% Annual Chance





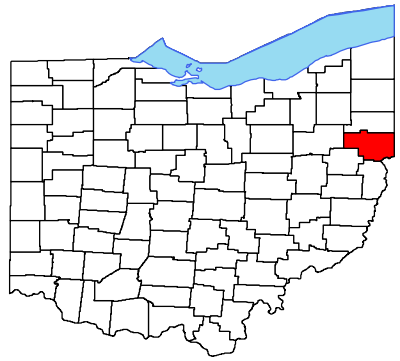
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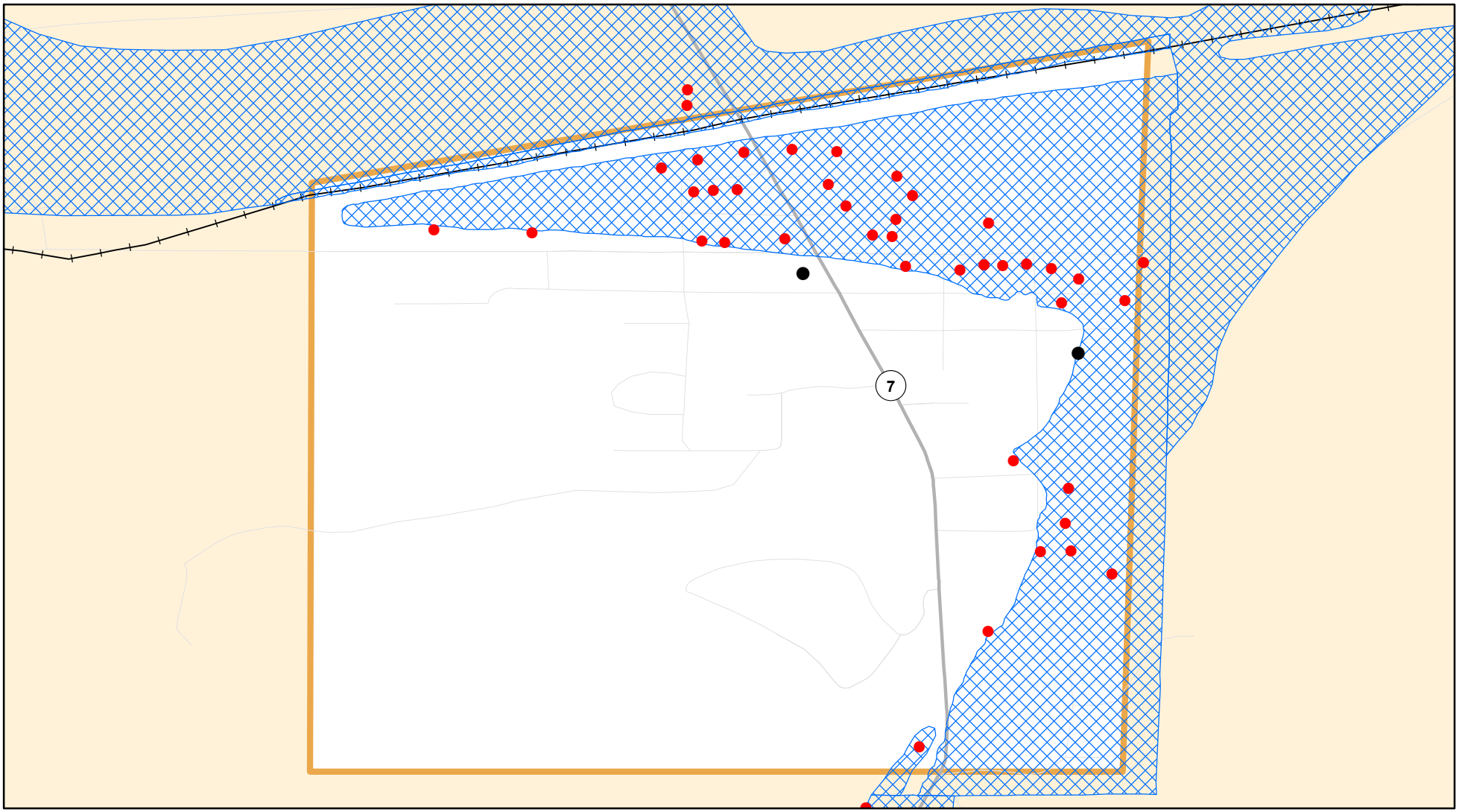
Flood Mapping: Rogers (Street View)

Data Source(s):
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COLUMBIANA COUNTY HAZARD MITIGATION PLAN

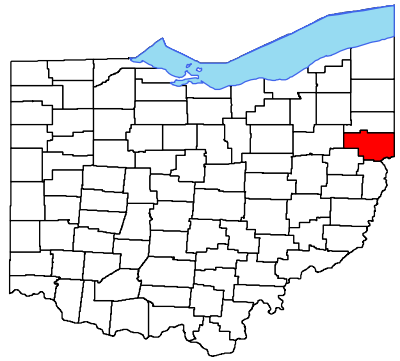
Flood Mapping: Rogers (Aerial View)

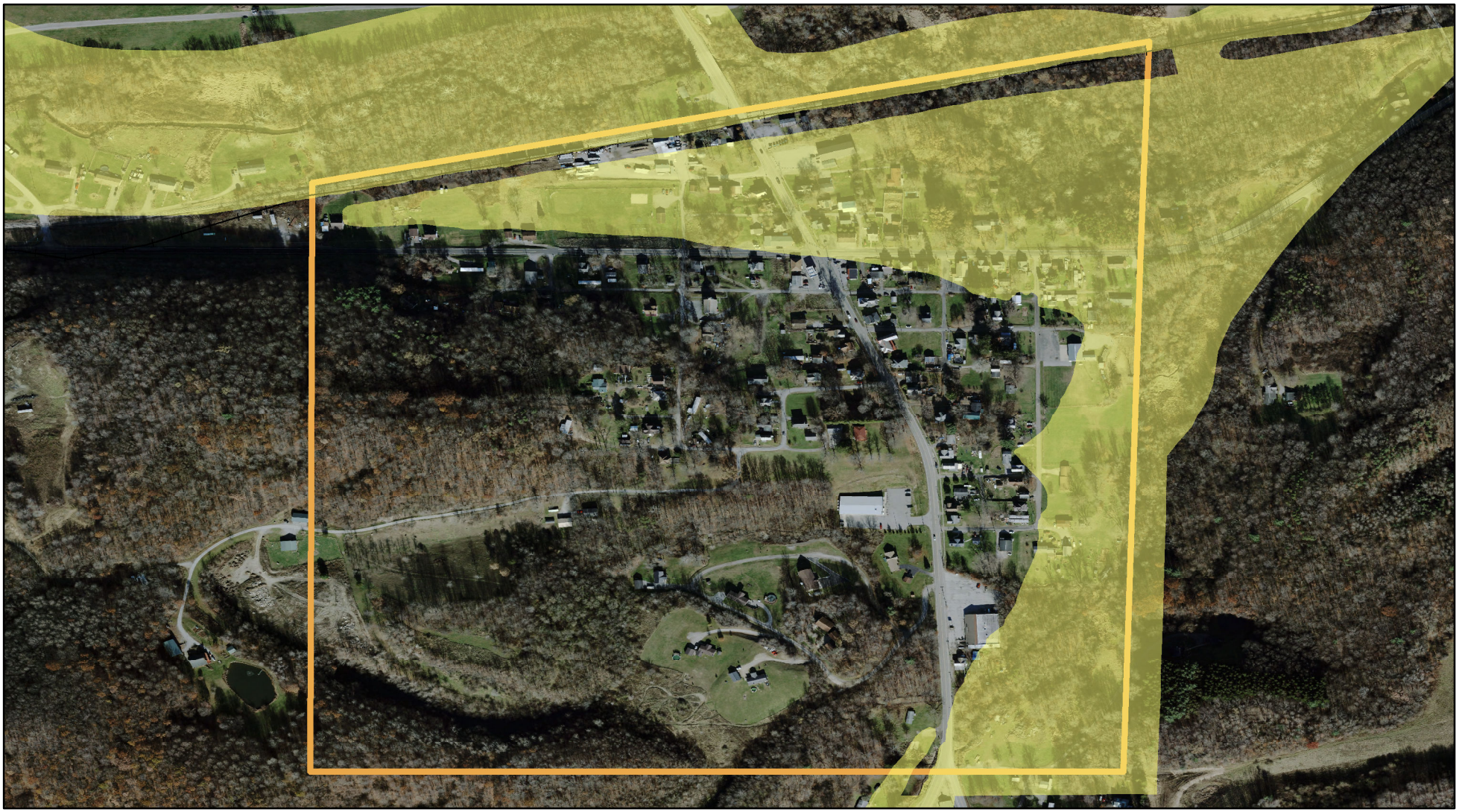
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Floodway

SFHA: 1% Annual Chance





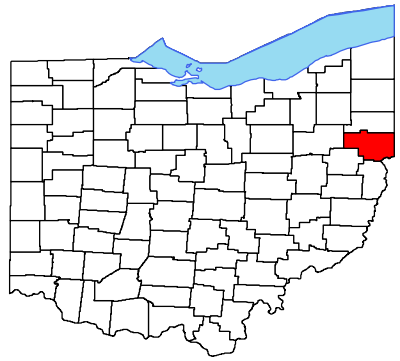
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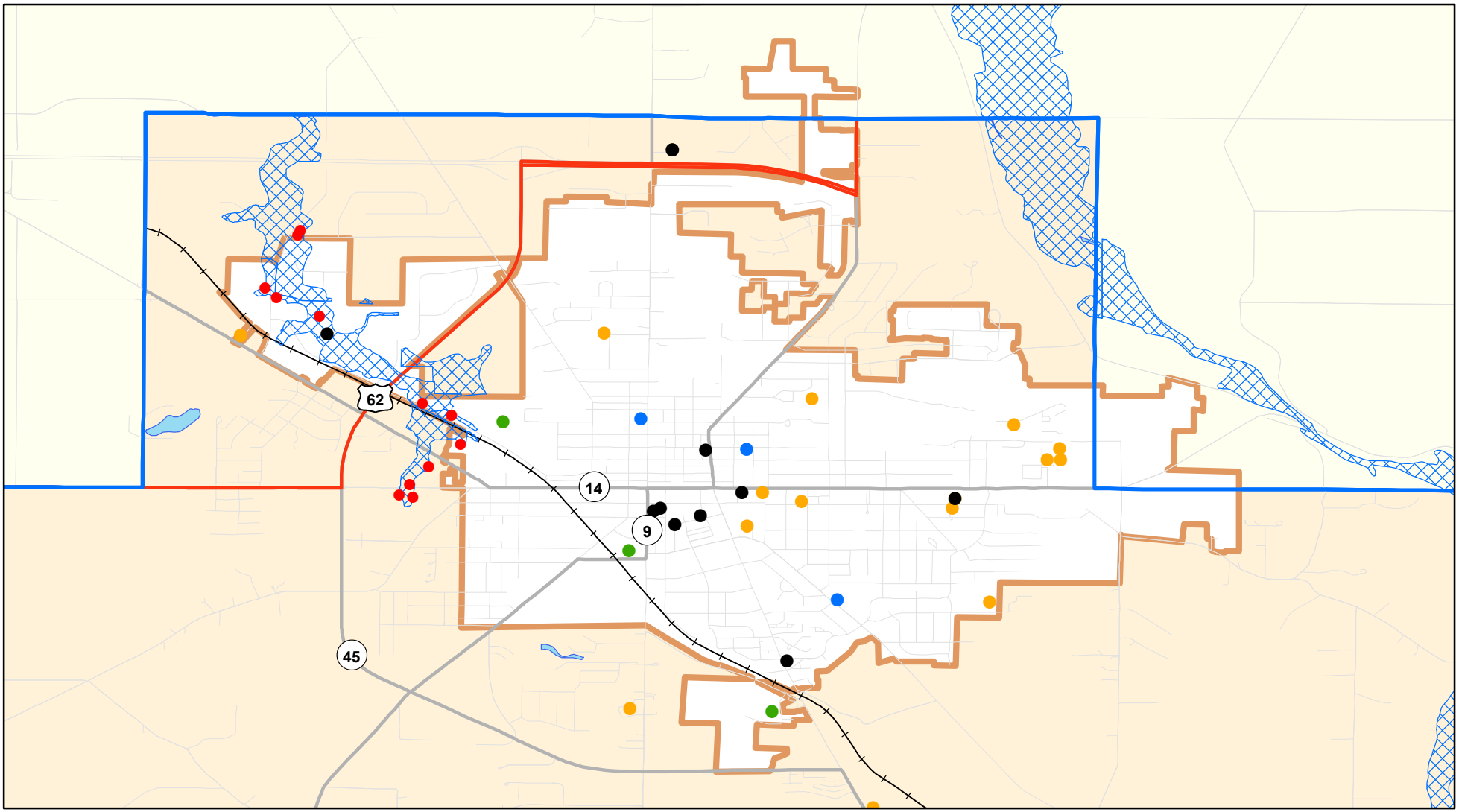
Flood Mapping: Salem (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Cultural & Natural
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- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

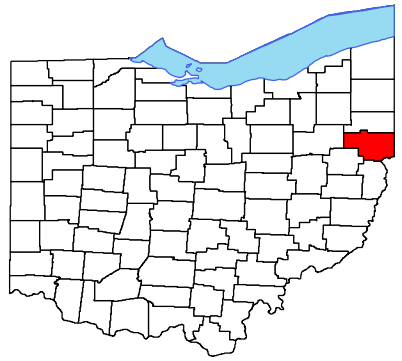
Flood Mapping: Salem (Aerial View)

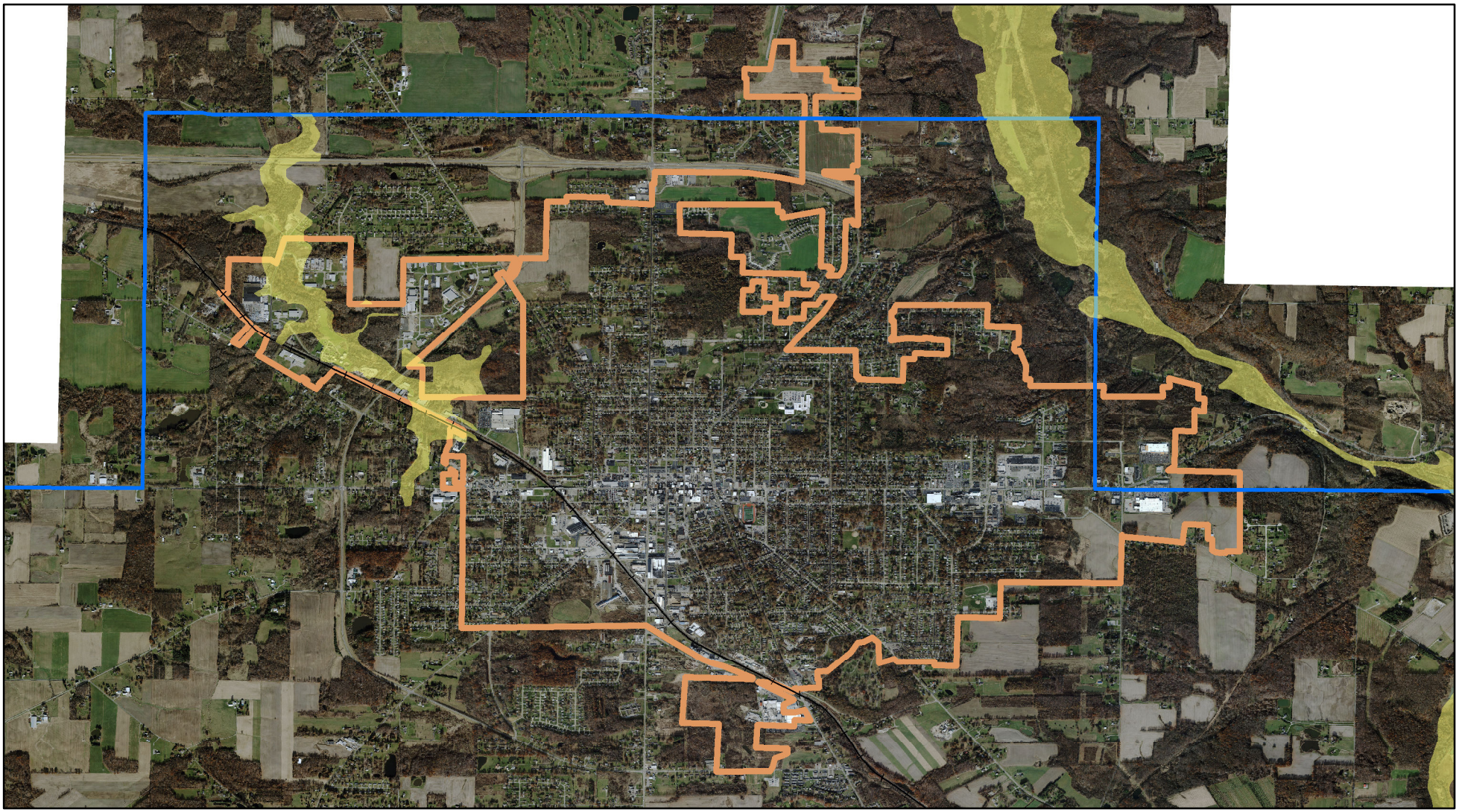
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FEMA, Steering Committee

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

Floodway

SFHA: 1% Annual Chance





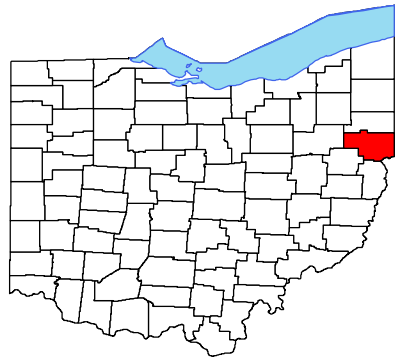
COLUMBIANA COUNTY HAZARD MITIGATION PLAN

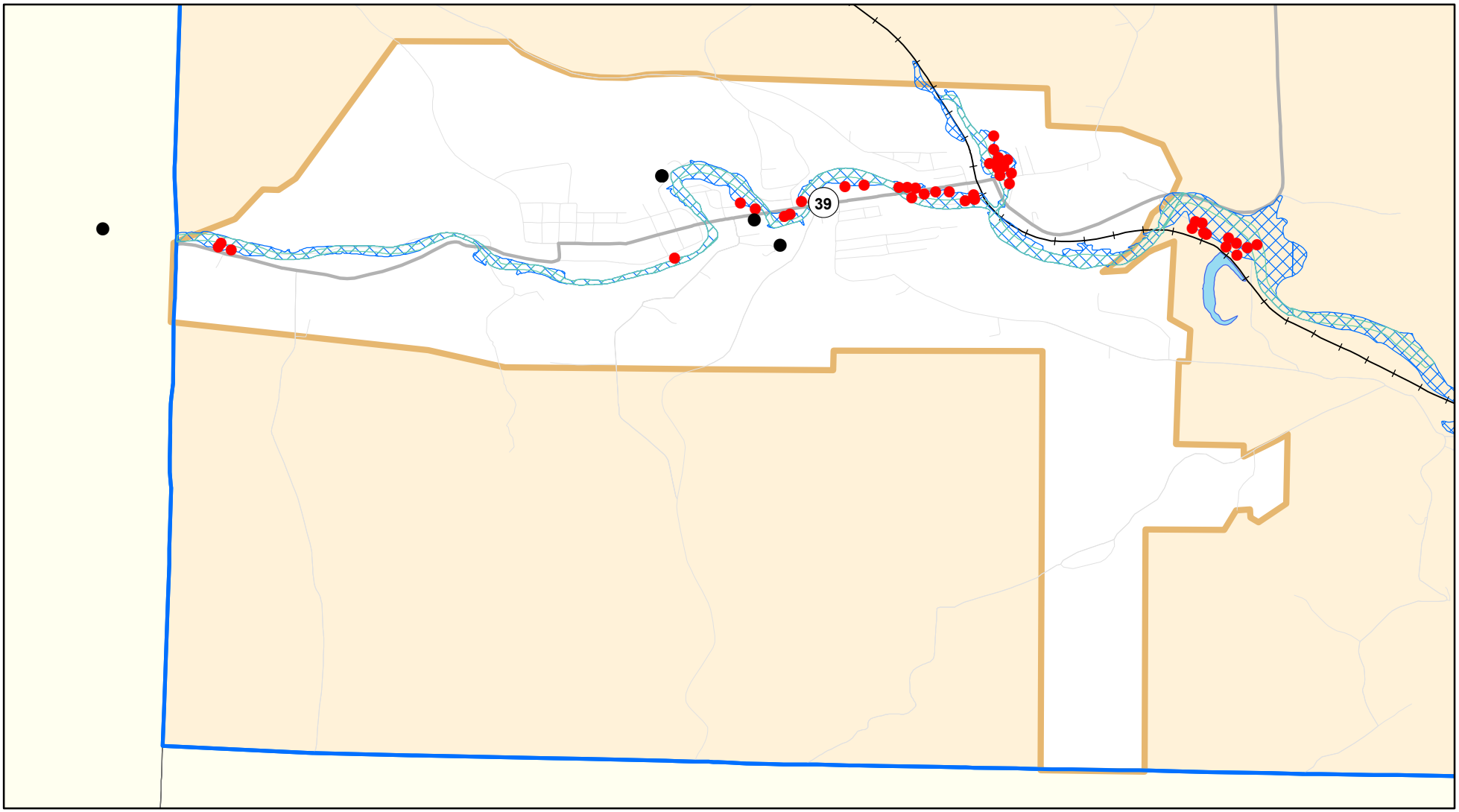
Flood Mapping: Salineville (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Built Environment
- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
- At-Risk Structures (General)
- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

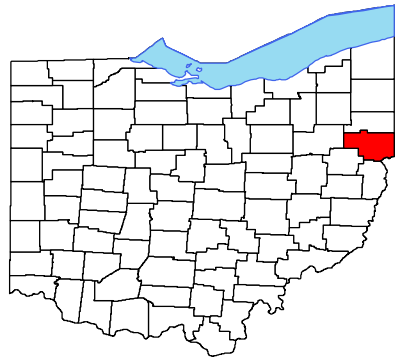
Flood Mapping: Salineville (Aerial View)

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Floodway

SFHA: 1% Annual Chance





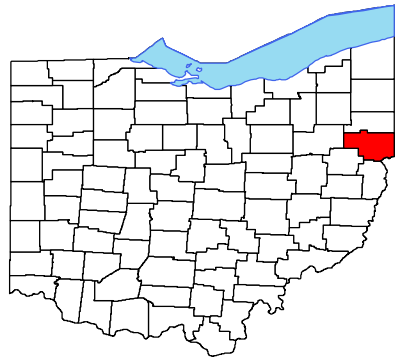
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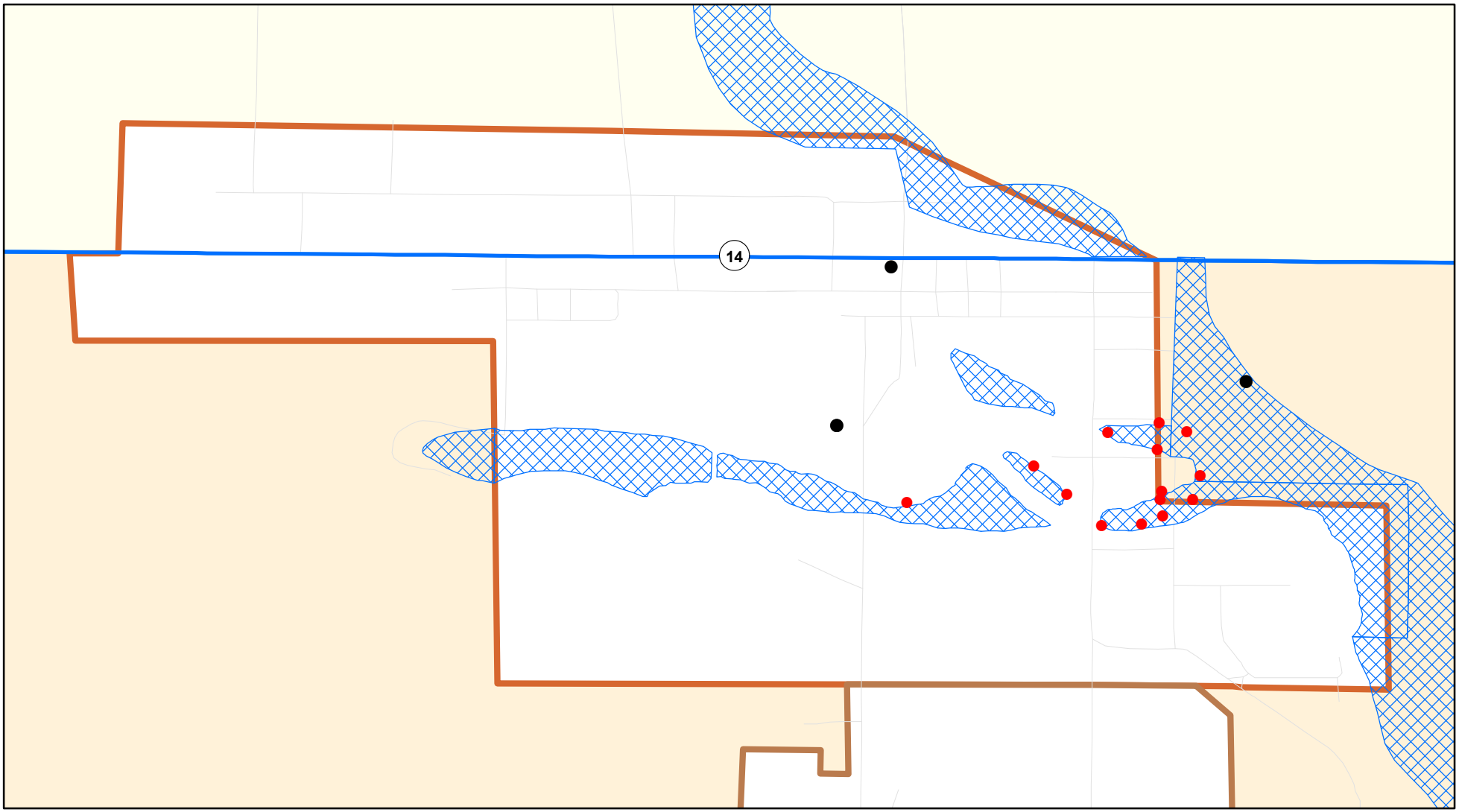
Flood Mapping: Washingtonville (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Built Environment
- Assets: Cultural & Natural
- Assets: Economy
- Assets: People
- At-Risk Structures (General)
- Floodway
- SFHA: 1% Annual Chance





COLUMBIANA COUNTY HAZARD MITIGATION PLAN

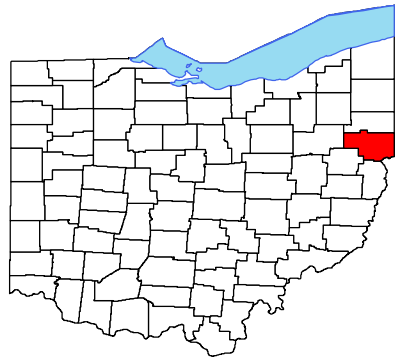
Flood Mapping: Washingtonville (Aerial View)

Data Source(s):
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Floodway

SFHA: 1% Annual Chance





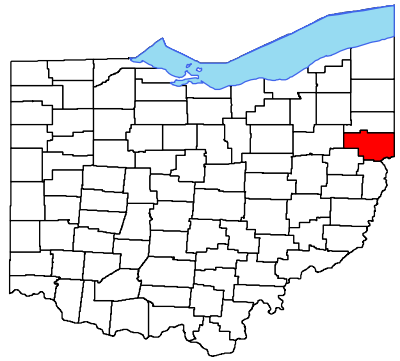
COLUMBIANA COUNTY HAZARD MITIGATION PLAN

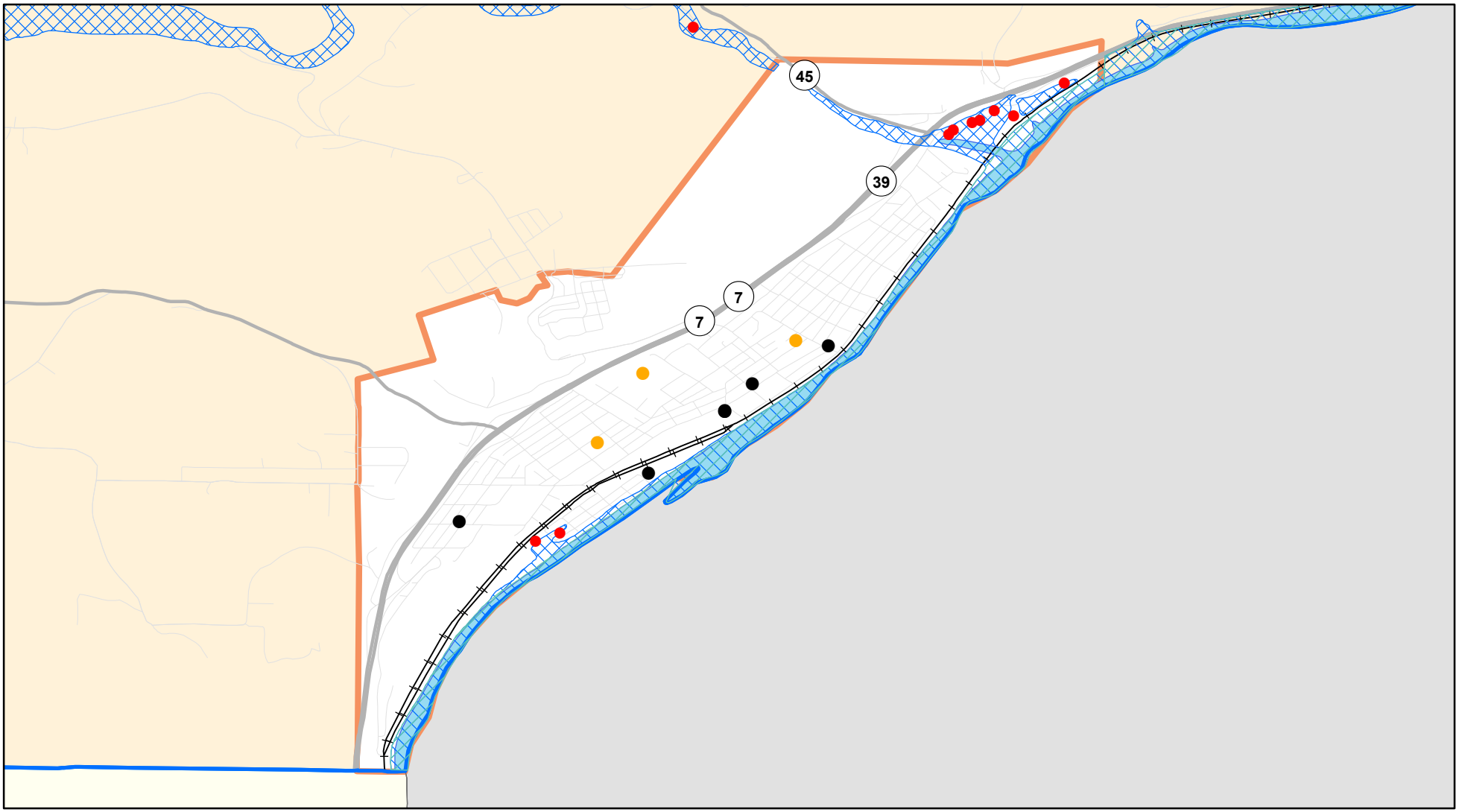
Flood Mapping: Wellsville (Street View)

Data Source(s):
FEMA, Steering Committee

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- Assets: Built Environment
- Assets: Cultural & Natural
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COLUMBIANA COUNTY HAZARD MITIGATION PLAN

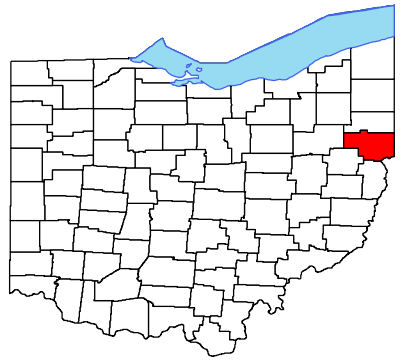
Flood Mapping: Wellsville (Aerial View)

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Floodway

SFHA: 1% Annual Chance





5.0 APPENDICES

Appendix 6: References

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