



# YORK COUNTY 2018 HAZARD MITIGATION PLAN



YORK COUNTY  
**YCPC**  
PLANNING  
COMMISSION

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# **YORK COUNTY 2018 HAZARD MITIGATION PLAN**

*York County Planning Commission  
28 E. Market Street, York, PA 17401  
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| <b>Acronyms Used in this Plan</b> |   |
|-----------------------------------|---|
| <b>ACS</b>                        | American Community Survey                               |
| <b>ARES</b>                       | Amateur Radio Emergency Services                        |
| <b>BFE</b>                        | Base Flood Elevation                                    |
| <b>BMS</b>                        | Bridge Management System                                |
| <b>CARE</b>                       | Community Action for a Renewed Environment              |
| <b>CAC</b>                        | Community Action Contact                                |
| <b>CAV</b>                        | Community Action Visit                                  |
| <b>CBPRP</b>                      | Chesapeake Bay Pollutant Reduction Plan                 |
| <b>C-BRNE</b>                     | Chemical, Biological, Radiological, or Nuclear Exposure |
| <b>CDBG</b>                       | Community Development Block Grant                       |
| <b>CDC</b>                        | Center for Disease Control                              |
| <b>CFR</b>                        | Code of Federal Regulations                             |
| <b>CISM</b>                       | Critical Incident Stress Management                     |
| <b>DAT</b>                        | Disaster Action Team                                    |
| <b>DCED</b>                       | Department of Community and Economic Development        |
| <b>DCNR</b>                       | Department of Conservation and Natural Resources        |
| <b>DEP</b>                        | Department of Environmental Protection                  |
| <b>DES</b>                        | Department of Emergency Services                        |
| <b>DHS</b>                        | Department of Homeland Security                         |
| <b>DOA</b>                        | Department of Assessment                                |
| <b>DFIRM</b>                      | Digital Flood Insurance Rate Map                        |
| <b>DIY</b>                        | Do It Yourself  |
| <b>DMA 2000</b>                   | Disaster Mitigation Act of 2000                         |
| <b>DOC</b>                        | Department of Commerce                                  |
| <b>DOH</b>                        | Department of Health                                    |
| <b>DU</b>                         | Dwelling Unit   |
| <b>EALS</b>                       | Emergency Action Levels                                 |
| <b>EAP</b>                        | Emergency Action Plan                                   |
| <b>EMA</b>                        | Emergency Management Agency                             |
| <b>EMI</b>                        | Emergency Management Institute                          |
| <b>EOP</b>                        | Emergency Operations Plan                               |
| <b>EPA</b>                        | Environmental Protection Agency                         |
| <b>EPCRA</b>                      | Emergency Planning and Community Right-to-Know Act      |
| <b>EPRCRA</b>                     | Emergency Plan and Community Right-to-know Act          |
| <b>EPZ</b>                        | Emergency Planning Zone                                 |

| <b>Acronyms Used in this Plan</b> |  |
|-----------------------------------|--|
| <b>EWP</b>                        | Emergency Watershed Protection                   |
| <b>FEMA</b>                       | Federal Emergency Management Agency              |
| <b>FHWA</b>                       | Federal Highway Administration                   |
| <b>FIRM</b>                       | Flood Insurance Rate Map                         |
| <b>FIS</b>                        | Flood Insurance Study                            |
| <b>FMA</b>                        | Flood Mitigation Assistance Program              |
| <b>FSA</b>                        | Farm Service Agency                              |
| <b>GIS</b>                        | Geographic Information System                    |
| <b>G</b>                          | Gravity  |
| <b>HAZ-MAT</b>                    | Hazardous Materials                              |
| <b>HEARS</b>                      | Hospital Emergency Amateur Radio                 |
| <b>HMEP</b>                       | Hazard Materials Emergency Preparedness          |
| <b>HMGP</b>                       | Hazard Mitigation Grant Program                  |
| <b>HMP</b>                        | Hazard Mitigation Plan                           |
| <b>HMPU</b>                       | Hazard Mitigation Plan Update                    |
| <b>HMRF</b>                       | Hazardous Materials Response Fund                |
| <b>HMTAP</b>                      | Hazard Mitigation Technical Assistance Program   |
| <b>HUD</b>                        | Department of Housing and Urban Development      |
| <b>HVAC</b>                       | Heating Ventilation and Air Conditioning         |
| <b>IHP</b>                        | Individual and Households Program                |
| <b>IRS</b>                        | Internal Revenue Service                         |
| <b>KEMA</b>                       | Keystone Emergency Management Association        |
| <b>LEPC</b>                       | Local Emergency Planning Committee               |
| <b>LGCPL</b>                      | Local Government Capital Projects Loan Program   |
| <b>LPT</b>                        | Local Planning Team                              |
| <b>LWCF</b>                       | Land and Water Conservation Fund                 |
| <b>LWD</b>                        | Large Woody Debris                               |
| <b>MAP</b>                        | Municipal Assistance Program                     |
| <b>MD</b>                         | Maryland   |
| <b>mph</b>                        | miles per hour                                   |
| <b>NAP</b>                        | Non-Insured Crop Disaster Assistance Program     |
| <b>NCDC</b>                       | National Climatic Data Center                    |
| <b>NDSP</b>                       | National Dam Safety Program                      |
| <b>NESIS</b>                      | Northeast Snowfall Impact Scale                  |
| <b>NETAP</b>                      | National Earthquake Technical Assistance Program |

| <b>Acronyms Used in this Plan</b> |  |
|-----------------------------------|--|
| <b>NFWF</b>                       | National Fish and Wildlife Foundation            |
| <b>NFIP</b>                       | National Flood Insurance Program                 |
| <b>NFIRA</b>                      | National Flood Insurance Reform Act              |
| <b>NHP</b>                        | National Hurricane Program                       |
| <b>NIMS</b>                       | National Incident Management System              |
| <b>NLD</b>                        | National Levee Database                          |
| <b>NOAA</b>                       | National Oceanic and Atmospheric Administration  |
| <b>NPS</b>                        | National Park Service                            |
| <b>NPMS</b>                       | National Pipeline Mapping System                 |
| <b>NRCS</b>                       | Natural Resource Conservation Service            |
| <b>NWS</b>                        | National Weather Service                         |
| <b>OEM</b>                        | Office Of Emergency Management                   |
| <b>OHS</b>                        | Office of Homeland Security                      |
| <b>PA</b>                         | Pennsylvania                                     |
| <b>PA SART</b>                    | Pennsylvania State Animal Response Team          |
| <b>PAGs</b>                       | Protective Action Guides                         |
| <b>PAGWIS</b>                     | Pennsylvania Groundwater Information System      |
| <b>PBAPS</b>                      | Peach Bottom Atomic Power Station                |
| <b>pCi/L</b>                      | pico Curies per Liter                            |
| <b>PDM</b>                        | Pre-Disaster Mitigation Program                  |
| <b>PDSI</b>                       | Palmer Drought Severity Index                    |
| <b>PEIRS</b>                      | Pennsylvania Emergency Incident Reporting System |
| <b>PEMA</b>                       | Pennsylvania Emergency Management Agency         |
| <b>PennDOT</b>                    | Pennsylvania Department of Transportation        |
| <b>PISC</b>                       | Pennsylvania Invasive Species Council            |
| <b>PSA</b>                        | Public Service Announcement                      |
| <b>RACES</b>                      | Radio Amateur Civil Emergency Services           |
| <b>RERF</b>                       | Radiation Emergency Response Fund                |
| <b>RFC</b>                        | Risk Factor                                      |
| <b>RFC</b>                        | Repetitive Flood Claims Program                  |
| <b>RTERF</b>                      | Radiation Transportation Emergency Response Fund |
| <b>RVAT</b>                       | Risk and Vulnerability Assessment                |
| <b>SALDO</b>                      | Subdivision And Land Development Ordinance       |
| <b>SARA</b>                       | Superfund Amendments and Reauthorization Act     |
| <b>SBA</b>                        | Small Business Administration                    |

| <b>Acronyms Used in this Plan</b> |   |
|-----------------------------------|---|
| <b>SCTF</b>                       | South Central Task Force                      |
| <b>SRBC</b>                       | Susquehanna River Basin Commission            |
| <b>TBD</b>                        | To Be Determined                              |
| <b>TMI</b>                        | Three Mile Island                             |
| <b>TRI</b>                        | Toxic Release Inventory                       |
| <b>UNT</b>                        | Unnamed Tributary                             |
| <b>U.S.</b>                       | United States                                 |
| <b>UCC</b>                        | Uniform Construction Code                     |
| <b>USACE</b>                      | United States Army Corps of Engineers         |
| <b>USDA</b>                       | United States Department of Agriculture       |
| <b>USGS</b>                       | United States Geological Survey               |
| <b>WAY</b>                        | Watershed Alliance of York                    |
| <b>Y.A.R.S.</b>                   | York ARES RACES Skywarn                       |
| <b>YCCD</b>                       | York County Conservation District             |
| <b>YCDES</b>                      | York County Department of Emergency Services  |
| <b>YCDMTF</b>                     | York County Drought Management Task Force     |
| <b>YCHMRT</b>                     | York County Hazardous Materials Response Team |
| <b>YCOEM</b>                      | York County Office of Emergency Management    |
| <b>YCPC</b>                       | York County Planning Commission               |

# CHAPTER ONE – INTRODUCTION

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## 1.1 BACKGROUND

Natural and human-made disasters have in the past and continue in the present to impact all segments of society. These impacts, whether measured in deaths, injuries, property damage, or interruption of business and government services, cannot be ignored. The time, money and effort needed to recover from disasters can be significant. Since 1954, there have been 50 Presidential Disaster Declarations and nine (9) Presidential Emergency Declarations in Pennsylvania, of which 18 have included York County. In addition to these Presidential Declarations, there have been 23 Gubernatorial Proclamations and nine (9) declarations from other agencies that have included York County. The elected officials of York County and its 72 municipalities, as well as the emergency management community, citizens, and other stakeholders recognize the impact of disasters on the community and support proactive efforts to reduce the impact of natural and human-made hazards.

The Federal Emergency Management Agency (FEMA) defines Hazard Mitigation as *“any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose of mitigation planning is to systematically identify policies, actions, and tools that can be used to implement those actions.”* Pre-disaster mitigation actions are those taken in advance of a hazard event to interrupt the cycle of damage, reconstruction, and repeated damage. Hazard mitigation originally referred to natural hazards, but after September 11, 2001, many plans now include human-made hazards. Successful mitigation actions can be a cost effective means of reducing future losses. They may also help to reduce the impacts of climate change, which could be responsible for the increased intensity and frequency of naturally occurring hazards in York County.

Accordingly, the staff of the York County Planning Commission (YCPC), utilizing a grant under the Pre-Disaster Mitigation Grant Program (PDMP), guided by the York County Local Hazard Mitigation Planning Team, and in cooperation with County and municipal elected officials, have prepared this Update to the York County Hazard Mitigation Plan. The Plan is a result of a collaborative effort on the part of public, private, and citizen stakeholders of York County.

## 1.2 PURPOSE

Guidance for hazard mitigation planning comes from the Disaster Mitigation Act of 2000, (DMA 2000), which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing Section 409 pertaining to previous mitigation planning and replacing it with Section 322. This amendment placed a new emphasis on the coordination of State and local planning by requiring the development and submission of a hazard mitigation plan by not only the State, but also local governments (counties/municipalities), as a condition of receiving various types of pre- and post-disaster assistance for mitigation efforts as identified under the Stafford Act. The local government plan is to describe the process for identifying hazards, create a risk assessment and vulnerability analysis, identify and prioritize mitigation strategies, and develop an implementation schedule for the County and each of its municipalities. Additionally, the local government plan is to be updated every

five (5) years. Accordingly, this Plan fulfills local government Hazard Mitigation Plan requirements by:

- Providing a blueprint for reducing property damage and saving lives from the effects of future natural and human-made disasters in York County;
- Qualifying the County and its 72 municipalities for pre-disaster and post-disaster grant funding;
- Complying with State and Federal legislative requirements related to local hazard mitigation planning;
- Demonstrating a firm local commitment to hazard mitigation principles;
- Improving community resiliency following a disaster event; and
- Satisfying the five (5) year update requirement.

### **1.3 SCOPE**

The York County 2018 Hazard Mitigation Plan Update has been prepared to meet requirements set forth by the Federal Emergency Management Agency (FEMA) and Pennsylvania Emergency Management Agency (PEMA) in order for the County and its 72 municipalities to be eligible for funding and technical assistance from State and Federal hazard mitigation programs. In the future, it will be updated and maintained to address both natural and human-made hazards determined to be probable and/or present a risk for deaths/injuries and property damages to the local municipalities within the County. The Plan will be evaluated on an annual basis and updates will occur on a five (5) year interval, unless significant disasters or changes in regulations should occur that would dictate otherwise.

### **1.4 AUTHORITY AND REFERENCES**

Authority for this Plan originates from the following Federal sources:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended;
- Code of Federal Regulations (CFR), Title 44, Parts 201 and 206;
- Disaster Mitigation Act of 2000, Public Law 106-390, as amended; and
- National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq.

Authority for this Plan originates from the following Commonwealth of Pennsylvania sources:

- Pennsylvania Emergency Management Services Code. Title 35, Pa C.S. Section 101;
- Pennsylvania Municipalities Planning Code of 1968, Act 247 as reenacted and amended by Act 170 of 1988; and
- Pennsylvania Stormwater Management Act of October 4, 1978. P.L. 864, No. 167.



The following FEMA guides and reference documents were used to prepare this Plan:

- FEMA 386-1: Getting Started. September 2002.
- FEMA 386-2: Understanding Your Risks: Identifying Hazards and Estimating Losses. August 2001.
- FEMA 386-3: Developing the Mitigation Plan. April 2003.
- FEMA 386-4: Bringing the Plan to Life. August 2003.
- FEMA 386-5: Using Benefit-Cost Review in Mitigation Planning. May 2007.
- FEMA 386-6: Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning. May 2005.
- FEMA 386-7: Integrating Manmade Hazards into Mitigation Planning. September 2003.
- FEMA 386-8: Multijurisdictional Mitigation Planning. August 2006.
- FEMA 386-9: Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects. August 2008.
- FEMA Hazard Mitigation Assistance Unified Guidance. June 1, 2016.
- FEMA National Fire Incident Reporting System: Complete Reference Guide. January 2015.
- FEMA Local Hazard Mitigation Planning Fact Sheet. July 2016.
- FEMA 364: Planning for a Sustainable Future: The Link between Hazard Mitigation and Livability. September 2000
- FEMA 365: Rebuilding for a More Sustainable Future: An Operational Framework, November 2000
- FEMA Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials. March 1, 2013
- FEMA Hazard Mitigation Assistance Guidance. February 2015.
- FEMA Local Mitigation Plan Review Guide. October 2011.
- FEMA Local Mitigation Planning Handbook. March 2013.
- FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards. January 2013.

The following PEMA guides and reference documents were used to prepare this Plan:

- PEMA Pennsylvania 2013 Standard All-Hazard Mitigation Plan. October 2013
- PEMA Hazard Mitigation Planning Made Easy!
- PEMA Pennsylvania All-Hazard Mitigation Planning Standard Operating Guide. October 2013.

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## **CHAPTER TWO – COMMUNITY PROFILE**

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### **2.1 GEOGRAPHY AND ENVIRONMENT**

York County covers approximately 911 square miles and is located in the south-central region of the Commonwealth. It is bounded by Cumberland and Dauphin Counties to the north; Carroll, Baltimore and Harford Counties (Maryland (MD)) to the south; the Susquehanna River and Lancaster County to the east; and Adams County to the west. The County is bisected by two (2) major transportation corridors: Interstate 83 north to south and US Route 30 east to west.

York County is rich in its natural features, of note is the quality of the soil, which permits the agricultural industry to flourish. Over one-half of the County's land area is comprised of prime agricultural soils. Approximately 30% of the County's total land area is forested. The section of the Susquehanna River that borders York County extends 54 miles and includes four (4) lakes formed from impounding dams. There are over 100 identified streams in the County. The bulk of York County lies within the Lower Susquehanna River Basin, with a small portion near the Maryland State line in the Gunpowder River Basin. A base map of York County (Figure 2.1-1) is included for reference.

### **2.2 COMMUNITY FACTS**

York County is a Third Class Pennsylvania County. It contains 72 municipalities: 35 townships, 36 boroughs and the City of York. The City of York is the County's largest municipality by population and serves as the County seat.

York County was incorporated in 1749 after it officially separated from Lancaster County. Prior to European settlement, the Susquehannock tribe inhabited the area. The Articles of Confederation were drafted in York and the first battle of the Civil War in Pennsylvania was fought in Hanover Borough.

Agriculture has always been an important factor in the County's economy, but the advent of railroads and canals allowed industry to prosper. Manufacturing of paper, heating and cooling units, snack foods, and motorcycles have substantially contributed to the County's economy. Highway improvements spurred residential suburbanization and fostered economic development.

### **2.3 POPULATION AND DEMOGRAPHICS**

According to the 2016 population estimates issued by the United States (U.S.) Census Bureau, York County had a total population of 443,744. This represents an increase of approximately 2.0% since 2010. York County is the 8th most populous county in the State. It is the 8th fastest growing county based on population percent change 2010-2016 and 7th fastest growing based on numeric population change for the same period. While the County's rate of growth has seemed to slow (2.0%), it still surpasses the State of PA, which experienced a 0.8% increase 2010-2016.

Since the 2010 Census, two (2) municipalities have experienced population growth greater than 10% – Windsor Borough (11.8%) and Stewartstown Borough (10.2%). Nineteen municipalities have lost population over the same period. The County’s population density is 490 persons per square mile.

Table 2.3-1 shows population data by municipality.

| <b>Table 2.3-1: Population of York County Municipalities, 2010-2016 (U.S. Census)</b> |             |             |                 |                 |
|---|-------------|-------------|-----------------|-----------------|
| <b>Municipality</b>   | <b>2010</b> | <b>2016</b> | <b># change</b> | <b>% change</b> |
| Carroll Township  | 5,939       | 6,300       | 361             | 6.10%           |
| Chanceford Township   | 6,111       | 6,151       | 40              | 0.70%           |
| Codorus Township  | 3,796       | 3,876       | 80              | 2.10%           |
| Conewago Township   | 7,510       | 8,050       | 540             | 7.20%           |
| Cross Roads Borough   | 512         | 514         | 2               | 0.40%           |
| Dallastown Borough  | 4,049       | 3,812       | -237            | -5.90%          |
| Delta Borough   | 728         | 721         | -7              | -1.00%          |
| Dillsburg Borough   | 2,563       | 2,564       | 1               | 0.00%           |
| Dover Borough   | 2,007       | 1,986       | -21             | -1.00%          |
| Dover Township  | 21,078      | 21,464      | 386             | 1.80%           |
| East Hopewell Township  | 2,416       | 2,441       | 25              | 1.00%           |
| East Manchester Township  | 7,264       | 7,560       | 296             | 4.10%           |
| East Prospect Borough   | 905         | 933         | 28              | 3.10%           |
| Fairview Township   | 16,668      | 17,294      | 626             | 3.80%           |
| Fawn Grove Borough  | 452         | 456         | 4               | 0.90%           |
| Fawn Township   | 3,099       | 3,140       | 41              | 1.30%           |
| Felton Borough  | 506         | 503         | -3              | -0.60%          |
| Franklin Township   | 4,678       | 4,888       | 210             | 4.50%           |
| Franklintown Borough  | 489         | 490         | 1               | 0.20%           |
| Glen Rock Borough   | 2,025       | 2,041       | 16              | 0.80%           |
| Goldsboro Borough   | 952         | 935         | -17             | -1.80%          |
| Hallam Borough  | 2,673       | 2,658       | -15             | -0.60%          |
| Hanover Borough   | 15,289      | 15,561      | 272             | 1.80%           |
| Heidelberg Township   | 3,078       | 3,076       | -2              | -0.10%          |
| Hellam Township   | 6,043       | 5,997       | -46             | -0.80%          |
| Hopewell Township   | 5,435       | 5,454       | 19              | 0.30%           |
| Jackson Township  | 7,494       | 7,959       | 465             | 6.20%           |
| Jacobus Borough   | 1,841       | 1,848       | 7               | 0.40%           |
| Jefferson Borough   | 733         | 734         | 1               | 0.10%           |
| Lewisberry Borough  | 362         | 363         | 1               | 0.30%           |
| Loganville Borough  | 1,240       | 1,230       | -10             | -0.80%          |
| Lower Chanceford Township   | 3,028       | 3,076       | 48              | 1.60%           |
| Lower Windsor Township  | 7,382       | 7,483       | 101             | 1.40%           |
| Manchester Borough  | 2,763       | 2,746       | -17             | -0.60%          |
| Manchester Township   | 18,161      | 18,567      | 406             | 2.20%           |

| <b>Table 2.3-1: Population of York County Municipalities, 2010-2016 (U.S. Census)</b> |                |                |                 |                 |
|---|----------------|----------------|-----------------|-----------------|
| <b>Municipality</b>   | <b>2010</b>    | <b>2016</b>    | <b># change</b> | <b>% change</b> |
| Manheim Township  | 3,380          | 3,458          | 78              | 2.30%           |
| Monaghan Township   | 2,630          | 2,659          | 29              | 1.10%           |
| Mount Wolf Borough  | 1,393          | 1,381          | -12             | -0.90%          |
| New Freedom Borough   | 4,464          | 4,651          | 187             | 4.20%           |
| New Salem Borough   | 724            | 775            | 51              | 7.00%           |
| Newberry Township   | 15,285         | 15,495         | 210             | 1.40%           |
| North Codorus Township  | 8,905          | 9,035          | 130             | 1.50%           |
| North Hopewell Township   | 2,791          | 2,801          | 10              | 0.40%           |
| North York Borough  | 1,914          | 2,021          | 107             | 5.60%           |
| Paradise Township   | 3,766          | 3,912          | 146             | 3.90%           |
| Peach Bottom Township   | 4,813          | 4,951          | 138             | 2.90%           |
| Penn Township   | 15,612         | 16,282         | 670             | 4.30%           |
| Railroad Borough  | 278            | 279            | 1               | 0.40%           |
| Red Lion Borough  | 6,373          | 6,303          | -70             | -1.10%          |
| Seven Valleys Borough   | 517            | 504            | -13             | -2.50%          |
| Shrewsbury Borough  | 3,823          | 3,858          | 35              | 0.90%           |
| Shrewsbury Township   | 6,447          | 6,697          | 250             | 3.90%           |
| Spring Garden Township  | 12,578         | 12,963         | 385             | 3.10%           |
| Spring Grove Borough  | 2,167          | 2,168          | 1               | 0.00%           |
| Springettsbury Township   | 26,668         | 26,864         | 196             | 0.70%           |
| Springfield Township  | 5,152          | 5,600          | 448             | 8.70%           |
| Stewartstown Borough  | 2,089          | 2,302          | 213             | 10.20%          |
| Warrington Township   | 4,532          | 4,594          | 62              | 1.40%           |
| Washington Township   | 2,673          | 2,675          | 2               | 0.10%           |
| Wellsville Borough  | 242            | 260            | 18              | 7.40%           |
| West Manchester Township  | 18,894         | 18,870         | -24             | -0.10%          |
| West Manheim Township   | 7,744          | 8,339          | 595             | 7.70%           |
| West York Borough   | 4,617          | 4,559          | -58             | -1.30%          |
| Windsor Borough   | 1,319          | 1,474          | 155             | 11.80%          |
| Windsor Township  | 17,504         | 17,970         | 466             | 2.70%           |
| Winterstown Borough   | 632            | 622            | -10             | -1.60%          |
| Wrightsville Borough  | 2,310          | 2,285          | -25             | -1.10%          |
| Yoe Borough   | 1,018          | 1,010          | -8              | -0.80%          |
| York City   | 43,718         | 43,859         | 141             | 0.30%           |
| York Haven Borough  | 709            | 698            | -11             | -1.60%          |
| York Township   | 27,793         | 28,469         | 676             | 2.40%           |
| Yorkana Borough   | 229            | 230            | 1               | 0.40%           |
| <b>York County</b>  | <b>434,972</b> | <b>443,744</b> | <b>8,772</b>    | <b>2.00%</b>    |



### 2.3.1 Characteristics of the Population

#### 2.3.1.1 Age Distribution

The following presents age distribution data for York County 2016 according to the 5-year estimates from the American Community Survey.

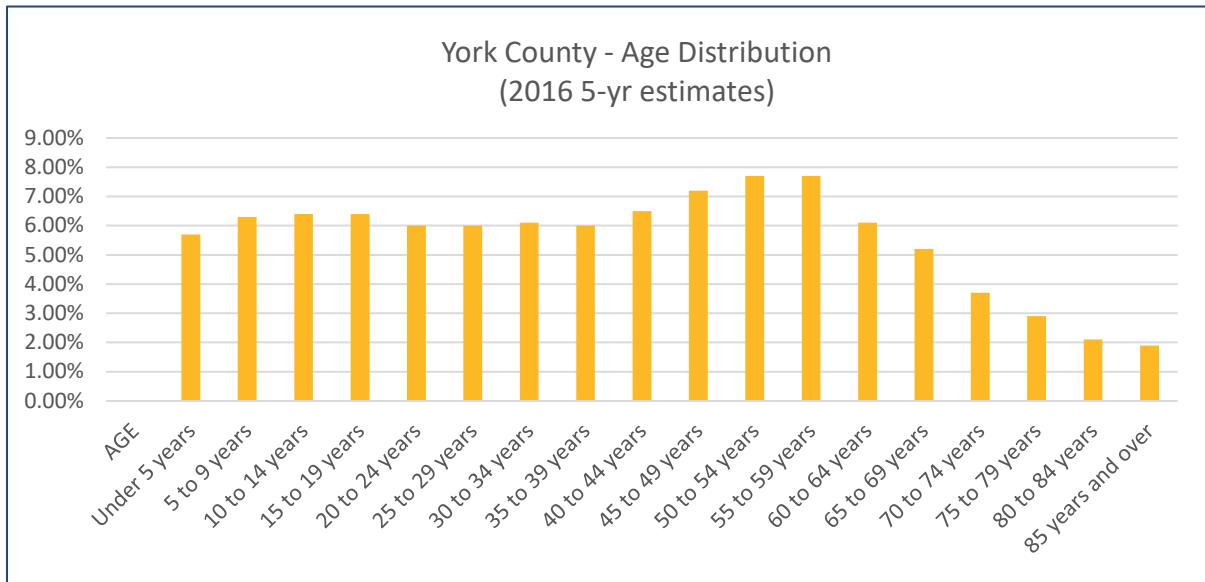


Figure 2.3.1-1: York County - Age Distribution  
Source: US Census, American Community Survey

Focusing in on segments of the population, 77.5% of the total population is over age 18 years. Almost 16% of the total population is over the age of 65 years. The median age is 40.8 years.

#### 2.3.1.2 Racial Composition

Based on the American Community Survey 2016 5-year estimates, 89% of the total population of York County identifies as White. Approximately 6% of the total population is Black or African American. The Asian population of the County is about 1.4% of the total. 0.1% of the County’s total population identifies as American Indian or Alaska Native, and less than 0.1% as Native Hawaiian or Other Pacific Islander. Approximately 1.4% identify as some other race and 2.3% indicate they are of two (2) or more races.

#### 2.3.1.3 Selected Housing and Economic Characteristics

In 2016, there were 180,618 housing units in York County. The vacancy rate was 7%. Of the occupied housing units, 76% were owner-occupied and 24% were renter-occupied. The median mortgage was \$1476 and the median rent was \$871. The average household size was 2.57.

York County’s median household income for 2016 was \$59,853. The unemployment rate was 6.2% and 7.5% of families and 10.5% of individuals were below poverty.

## 2.4 LAND USE AND DEVELOPMENT

Figure 2.4-2 presents the 2016 land use patterns in York County. As shown, the predominant land use in the County is agricultural. Approximately 62% of the County's total land area is in agriculture, with approximately 359,409 acres of farmland. The most recent Census of Agriculture (2012) reports 2,171 farms in York County. Farming is a major part of the local economy, with over \$234 million in agricultural products sold in York County annually.



Figure 2.4-1: Farmland in Hopewell Township

Residential, shown in yellow on the Existing Land Use Map, comprises 2% of the County's total land area. While residential land use occurs throughout the County, higher concentrations of population reside within the County's established Growth Areas (overlain with a black slanted line on Figure 2.4-2).

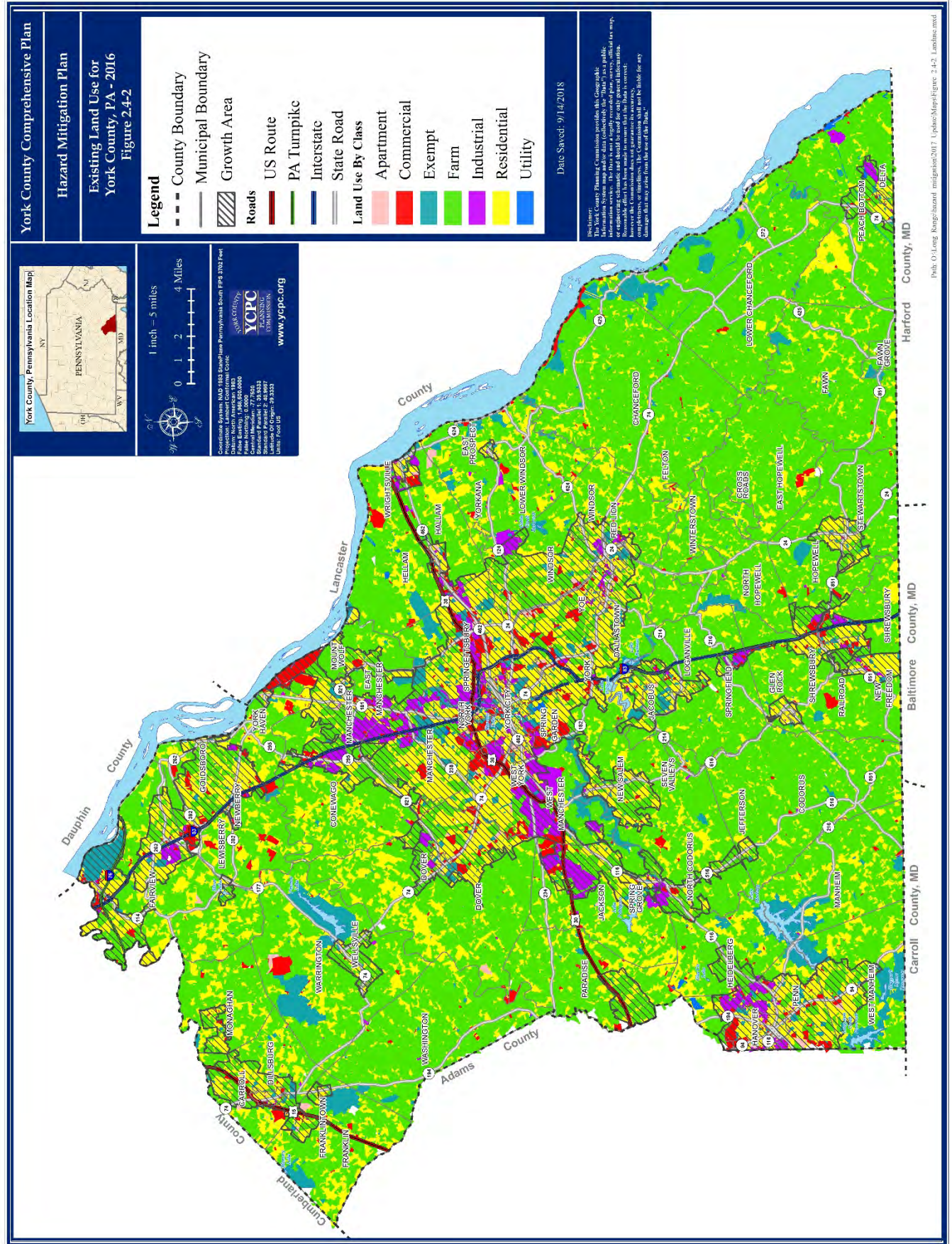
### 2.4.1 What Makes York County Unique?

York County is unique from other PA counties in several areas. The eastern border of the County is demarcated by the Susquehanna River and has several power generation stations that are fueled by coal, natural gas, hydro, and nuclear. The central part of the County is a heavily developed urban area that transitions to low density agricultural areas. The County is bisected by US Route 30 and Interstate 83, as well as the PA Turnpike and US 15 in the north, which makes the area easily accessible and a bedroom community for many surrounding areas. The southern border of the County is shared with the State of Maryland, which relies on County run government, whereas York County, in Pennsylvania, relies on a municipal run government system.

Developed and implemented to strike a balance between development and preservation, the York County Growth Management Plan component of the York County Comprehensive Plan was originally adopted in 1997, with the most recent amendment in December 2017. True to the primary goals of the County's Comprehensive Plan, the implementation of the Growth Management Plan has directed growth and development in such a way that natural resources and special places are protected. The purpose of Growth Areas is to establish "boundaries," which separate areas that are appropriate for more urbanized uses and the expansion of services and utilities from areas intended for rural and resource uses. Growth areas often include lands appropriate for future development requiring a full range of services, including public water and sewer, police, fire, and schools, along with residential, commercial, industrial and recreational uses. By working collaboratively with the municipalities, growth area boundaries are designated and adopted, creating consistency between municipal comprehensive plans and the York County Comprehensive Plan.

The York County Comprehensive Plan also includes components to protect our natural and heritage resources, including the York County Agricultural Land Protection Plan (2008), the Heritage Preservation Plan (2016), the Integrated Water Resources Plan (2011), and Open Space and Greenway Plan (2006). The Long Range Transportation Plan (2009), Housing and Community Development Plan (2010), and the Economic Development Plan (2014) are implemented to address the County's





transportation, housing, and economic development needs. The Plan also includes several resource components covering Growth Trends (2008), Environmental Resources Inventory (2018), Natural Areas Inventory (2004), and Community Facilities (2006).

## **2.5 DATA SOURCES AND LIMITATIONS**

Parcel data from the York County Assessment Office was used to complete the risk assessment portion of this Plan. The YCPC's Information Systems Division maintains the County geographical information system (GIS) and it was key in providing information regarding hazard identification and risk assessment.

The list of critical facilities identified in this Plan was developed based on information from the YCPC's Information Systems Division. Generally referred to as entities that are essential to the health and welfare of the community, the comprehensive list of critical facilities includes, but is not limited to, chemical and fuel companies, colleges and universities, county offices, day care facilities, electric providers, EMS stations, financial institutions, fire stations, hospitals, infrastructure dams, major shopping centers, nursing homes, pharmaceutical locations, police stations, prisons/correctional institutions, SARA facilities, schools, state and federal facilities, wastewater plants, and water companies. With this data, the Information Systems Division created a critical facilities GIS layer, but due to the sensitive nature of some of the data, it is not published in this Plan.

The York County preliminary Digital Flood Insurance Rate map (12/16/2015) was used for all flood risk analysis. HAZUS-MH, Version 3.1, was utilized to analyze potential losses from floods.

Other information used to complete the risk assessment for this Plan was taken from various governmental and non-governmental agencies, including, but not limited to the Centers for Disease Control, PA Department of Conservation and Natural Resources, PA Department of Environmental Protection, PA Department of Health, PA Emergency Management Agency, National Integrated Drought Information System, Federal Emergency Management Agency, Millersville University, US Geologic Survey, National Oceanic and Atmospheric Administration, National Weather Service, National Flood Insurance Program, National Hurricane Center, Natural Resource Conservation Service, PA Groundwater Information System, PA State Climatologist, PA Invasive Species Council, Penn State Cooperative Extension, Small Business Administration, Susquehanna River Basin Commission, York County West Nile Virus Program, US Army Corps of Engineers, US Department of Agriculture, US Environmental Protection Agency, US Nuclear Regulatory Commission, National Inventory of Dams, National Levee Inventory, the York County Office of Emergency Management and Department of Emergency Services, and the World Health Organization. The York County Comprehensive Plan was also a solid source of many types of data to inform this Plan.

In determining the vulnerability of different areas to hazards, data on past occurrences of hazard events was gathered from the National Oceanic and Atmospheric Administration (NOAA). Additional information was also gathered from the National Weather Service (NWS) and York County 911 Call Records.

In terms of demographic data, the products of the US Census Bureau were the primary data source. Utilizing the decennial 2010 Census, the 2012 Census of Agriculture, and the American Community Survey, every attempt was made to provide consistency in reported data and in data sources. The only limitation is that not all data elements were available with the most current information.

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## CHAPTER THREE – PLANNING PROCESS

### 3.1 PLANNING PROCESS AND PARTICIPATION SUMMARY

The YCPC was the lead agency for this planning initiative. YCPC staff worked in conjunction with the Hazard Mitigation Local Planning Team (LPT). This group provided guidance in the development of the Plan and assisted in the identification of hazards, data collection, and risk assessment. A multi-jurisdictional approach was used to prepare this Hazard Mitigation Plan update (HMPU).

The YCPC made a concerted effort to involve all 72 municipalities, the public, adjacent counties, PEMA, other county departments, emergency management officials, local police, and non-profits in the update of this Plan. Outreach included Facebook postings, information posted to YCPC website, inclusion of the information in the YCPC E-newsletter, mailings, email, electronic surveys, and meetings. The following sections summarize participation on the local planning team, municipal involvement, past municipal involvement, meetings, stakeholder involvement, information distribution/outreach materials, and a summary of the update process.

### 3.2 THE PLANNING TEAM

The LPT was engaged throughout the Plan Update. Tasks for the LPT included hazard identification and recommendation to municipalities, assessing future hazard probability for the County, identifying mitigation goals and objectives, developing actions, and reviewing Plan Update information. The LPT for the York County 2018 Hazard Mitigation Plan update included:

| <b>Representing</b>                         | <b>Name/Organization</b>   |
|---|--|
| Municipal Emergency Management Coordinators | Kathleen M. Dellinger, York Township                                     |
| GIS/Mapping/HAZUS                           | Joe Simora, YCPC   |
| Higher Education                            | Ken Martin, York College   |
| Historic Resources                          | Amy Evans, YCPC and York County Heritage Preservation Advisory Committee |
| Local Emergency Planning Committee          | Dan O’Connell, Chairman  |
| Municipal                                   | Laurel Oswald, Dover Township  |
| Nuclear Facilities Planning                 | Shen Kreiser, YCEMA  |
| State Hazard Mitigation Plan                | Ernie Szabo, Pennsylvania Emergency Management Agency                    |
| Police Department                           | Chief George Swartz, Spring Garden Township                              |
| Transportation                              | Jeph Rebert, YCPC  |
| Water Resources                             | John Seitz, YCPC   |
| York County Agency on Aging                 | Ross Stanko, York County Area Agency on Aging                            |
| York County Conservation District           | Gary Peacock, YCCD   |
| York County Emergency Management Agency     | Bill James, YCEA   |
| York County Planning Commission Board       | Brian Brenneman, YCPC  |

Other YCPC Staff that participated in the LPT meetings and in other aspects of the Plan Update process were:

- Wade Gobrecht, Assistant Director
- Pam Shellenberger, Chief, County Long Range Planning
- Roy Livergood, Senior Planner
- Anne Walko, Senior Planner

### **3.3 MEETING DOCUMENTATION**

The following meetings were held during the Plan update process. Advertisements, agendas, materials, and sign-in sheets for these meetings are in Appendix A.

**April 28, 2017** – Kick-Off Meeting for Hazard Mitigation Local Planning Team. The purpose of the meeting was to provide Plan background, discuss planning team role, go over Plan Update timeframes, and review capability and hazard identification surveys.

**December 11, 2017** – Hazard Mitigation Local Planning Team Meeting. The purpose of the meeting was to review the updated hazard profiles, update goals and objectives, and discuss/identify new action items for the Plan.

**February 7, 2018** – The first public meeting was held for the York County HMPU. Notification was placed on the YCPC website, YCPC Facebook page, YCPC e-newsletter, and an advertisement ran in the local newspaper. The purpose of this meeting was to provide background information on hazard mitigation planning and what constitutes a hazard mitigation plan, go over hazard identification in York County, summarize information collected from hazard surveys, identify work completed to date, and collect input on goals, objectives, and action to be identified by the HMPU. Due to inclement weather, the meeting was not well attended.

**July 13, 2018** – Final meeting for the Hazard Mitigation Local Planning Team. The purpose of the meeting was to review the HMPU to date, discuss the hazard mitigation action survey, identify any additional actions needed, review the NFIP survey, and announce the upcoming public meeting and review period, as well as, the Plan approval and adoption process.

**July 31, 2018** – Two (2) public meeting sessions were held for the Draft County HMPU. Notification was placed on the YCPC website, YCPC Facebook page, and YCPC e-newsletter. A Public Notice was published in the local newspapers. The purpose of the meeting was to present the HMPU planning process, HMPU requirements, 2018 HMPU, Plan adoption process, implementation measures, and grant funding opportunities, and receive comments on the Draft Plan prior to submission to PEMA and FEMA.

After review and approval pending adoption by FEMA, the Plan will be submitted to the YCPC Board for a recommendation of approval by York County Commissioners. A presentation and public hearing

will then be held during one (1) of the County Commissioners regular scheduled meetings to adopt the York County 2018 Hazard Mitigation Plan, as part of the York County Comprehensive Plan.

### **3.4 PUBLIC AND STAKEHOLDER OUTREACH**

Municipal leaders and other stakeholders were kept informed throughout the planning process via e-mail. The website of the YCPC, [www.ycpc.org](http://www.ycpc.org), was kept current to document the planning process and progress for public review. Public information meeting notices were also posted there. In order to obtain information from municipalities, LPT members, stakeholders, and the public, forms and surveys were distributed throughout the process. Some were completed during meetings and others were conducted electronically. All materials related to public and stakeholder outreach are in Appendix B.

**March 20, 2017** – Invitations sent out seeking participation on the Hazard Mitigation Local Planning Team. Sectors contacted included emergency management coordinators, geologist/county parks, GIS/mapping/HAZUS, Federal Emergency Management Agency, health field, higher education, historic resources, local emergency planning committee, municipalities, nuclear facilities planning, Pennsylvania Emergency Management Agency, police, Red Cross, school districts, transportation, water resources, York County Area Agency on Aging, York County Conservation District, York County EMA, and the YCPC Board.

**March 23, 2017** – Notification of Hazard Mitigation Plan Update posted on YCPC website, sent out via e-newsletter, and email to all 72 municipalities, adjacent counties, school districts, and municipal EMA coordinators.

**April 11, 2017** – Hazard Identification and Prioritization Survey sent to municipal primary contacts and appointed emergency management agency (EMA) coordinators. Beyond identifying and prioritizing hazards that impact York County, the survey also addressed Plan familiarity, strengths and weaknesses of the Plan, identified hazard mitigation issues, and most effective ways to communicate hazard mitigation efforts.

**April 11, 2017** – Municipal Capability Survey and Self-evaluation sent to municipal primary contacts and EMA coordinators. Survey identified resources available at municipal level for areas of planning/regulation, administrative/technical, financial, and education/outreach. It also asked municipalities to evaluate their ability to implement hazard mitigation in these areas. Additionally, questions were asked about previous projects and willingness to assist residents with grant applications.

**May 2, 2017** – Hazard Identification and Prioritization Public Survey made available on YCPC web page and Facebook to general public. Beyond identifying and prioritizing hazards that impact York County, the survey also addressed plan familiarity, strengths and weaknesses of the Plan, hazard mitigation issues, and most effective ways to communicate hazard mitigation efforts.

**October 19, 2017** – Presentation made to York County Transportation Coalition. Presentation focused on Hazard Mitigation Plan and relationship to transportation planning. Solicited comments and actions regarding Plan Update.

**January 16, 2018** – Presentation made to York County Heritage Preservation Advisory Committee. Presentation focused on overview of Hazard Mitigation Plan Update, identifying actions related to hazard mitigation currently identified in the York County Heritage Preservation Plan, and soliciting other action items from the Advisory Committee.

**February 20, 2018** – Presentation made to Local Emergency Planning Committee. Presentation focused on summarizing hazard mitigation planning and elements of the Plan, as well as generating action items for the Plan.

**February 23, 2018** – Notice placed in YCPC E-newsletter directing municipalities and public to information on YCPC web page pertaining to the first HMPU public meeting (02-07-2018) and soliciting additional comments on information provided. This was done to allow further participation due to low attendance at the first public meeting because of inclement weather.

**March 16, 2018** – Two (2) surveys sent out to municipalities. The first dealt with NFIP compliance and the second provided a listing of existing mitigation actions identified by the municipality and requested corrections, deletions, or additions to those actions.

**July 16, 2018** – Memo sent to York County municipalities, emergency management coordinators, and school districts, as well as adjacent counties, municipalities, and school districts, and related organizations announcing 45-day review period (07-23-2018 through 09-05-2018) and July 31, 2018, public meetings.

**July 17, 2018** – Presentation made to YCPC Board, at their regularly scheduled public meeting, summarizing planning process, 2018 HMPU, public review period/meetings, and approval/adoption process.

**July 23, 2018** – Ad placed in legal section of local newspapers advertising Plan review period and public meetings. Information also posted to YCPC website, Facebook page, and e-newsletter. Copies of the Plan made available at local libraries and YCPC per advertisements.

**July 24, 2018** – Press release issued announcing 45-day Plan review period and public meetings.

**July 31, 2018** – Hazard Mitigation Plan Update live Facebook interview conducted by York Daily Record and viewed over 1,900 times.

### **3.5 MULTIJURISDICTIONAL PARTICIPATION**

This Hazard Mitigation Plan Update (HMPU) was developed using a multi-jurisdictional approach. With funding from FEMA, the YCPC was the lead organization for this planning initiative. The YCPC endeavored to involve all 72 municipalities in the planning process. Table 3.5-1 lists the municipal participation, including identifying and ranking hazards, completing a capability assessment, project



identification, attendance at meetings, and individual municipal contact, as needed. Local municipalities have the legal authority to implement ordinances consistent with their land use planning and development priorities, are keenly aware of the hazards encountered on a daily basis, and work closely with their residents. Thus municipal involvement was important, especially when identifying and ranking hazards and identifying project ideas.

Each municipality was emailed invitations to the public information meetings. Surveys and forms were emailed or mailed to all municipalities, including municipal managers, secretaries, and municipal EMA coordinators with a request to forward the information to all applicable elected officials and municipal staff. Municipalities were also directed to [www.ycpc.org](http://www.ycpc.org), where all forms and reminders were posted. Primary contact information for each York County municipality is provided in Appendix C. Given the data in Table 3.5-1, all of the York County municipalities participated, or were given the opportunity to participate in the Plan update in some manner.

### **3.5.1 Past Municipal Participation**

The first York County Hazard Mitigation Plan was adopted in 2008. 70 of 72 municipalities adopted the 2008 Plan by resolution. Municipal participation included a hazard identification survey, project identification mailing, two (2) public meetings, and review of the Plan. The 2008 Plan was updated in 2013 and 68 municipalities adopted the Plan by resolution. Municipal participation included an update survey, review of previously identified municipal project opportunities, mitigation strategy action identification, two (2) public meetings, and individual municipal contact, as needed.

### **3.5.2 Neighboring Communities and Local/Regional Participation**

Opportunities for adjacent counties, municipalities, school districts, and related agencies to participate in the planning process was provided through direct communication in the form of mailings, emails and indirectly as part of legal advertisements, YCPC electronic newsletter/web page, Facebook postings, and news releases of public meetings and comment periods. Table 3.5-2, in Appendix B, identifies adjacent communities and agencies and how they were notified and provided opportunity to participate in the planning process. Comments received from this outreach are included in Appendix B and were addressed as part of the 45-day review period.

## **3.6 EXISTING PLANNING MECHANISMS**

There are numerous planning initiatives and regulations at the State, County, and local level that support hazard mitigation planning. They include, but are not limited to, the Commonwealth of PA Standard All-Hazard Mitigation Plan, the York County Comprehensive Plan, municipal floodplain ordinances, municipal zoning ordinances, County and municipal subdivision and land development ordinances, municipal and multi-municipal comprehensive plans, and other environmental plans. Information and data from many of these plans has been incorporated into this Plan. Additionally, many of the mitigation actions that have been developed will further integrate these planning mechanisms into the hazard mitigation planning process.

**Table 3.5-1: Summary of Participation from Local Municipalities during the 2018 HMPU**

| Municipality             | Municipality Representative<br>(Title or Position) | Worksheet/Survey/Form                           |   |  |                                  |                                  | Meetings           |                    |                                   |
|--------------------------|--|---|---|--|----------------------------------|----------------------------------|--------------------|--------------------|-----------------------------------|
|                          |  | Hazard Identification and Prioritization Survey | Municipal Capability Survey and Self-evaluation | Public Hazard Mitigation and Prioritization Survey | Hazard Mitigation Actions Survey | NFIP Municipal Compliance Survey | Public Info Mtg #1 | Public Info Mtg #2 | Individual Contact (as necessary) |
| Carroll Township         | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  |                                  | X                                |                    |                    |                                   |
| Chanceford Township      | Township Secretary, Emer Mgmt Coordinator          |   |   |  |                                  | X                                |                    |                    |                                   |
| Codorus Township         | Township Secretary, Emer Mgmt Coordinator          |   |   |  | X                                | X                                |                    |                    |                                   |
| Conewago Township        | Township Secretary, Emer Mgmt Coordinator          | X   | X   | X  | X                                | X                                |                    |                    |                                   |
| Crossroads Borough       | Borough Secretary, Emer Mgmt Coordinator           | X   |   |  |                                  |                                  |                    |                    |                                   |
| Dallastown Borough       | Borough Manager, Emer Mgmt Coordinator             | X   |   |  | X                                | X                                |                    |                    |                                   |
| Delta Borough            | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Dillsburg Borough        | Borough Manager, Emer Mgmt Coordinator             | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Dover Borough            | Borough Manager, Emer Mgmt Coordinator             | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Dover Township           | Township Manager, Emer Mgmt Coordinator            | X   | X   |  | X                                | X                                |                    |                    |                                   |
| East Hopewell Township   | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  |                                  |                                  |                    |                    |                                   |
| East Manchester Township | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    |                    |                                   |
| East Prospect Borough    | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Fairview Township        | Township Manager, Emer Mgmt Coordinator            | X   | X   | X  | X                                | X                                |                    |                    |                                   |
| Fawn Grove Borough       | Borough Secretary, Emer Mgmt Coordinator           | X   |   |  |                                  |                                  |                    |                    |                                   |
| Fawn Township            | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Felton Borough           | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Franklin Township        | Township Secretary, Emer Mgmt Coordinator          | X   |   | X  |                                  |                                  |                    |                    |                                   |
| Franklintown Borough     | Borough Secretary, Emer Mgmt Coordinator           |   | X   |  |                                  |                                  |                    |                    |                                   |



**Table 3.5-1: Summary of Participation from Local Municipalities during the 2018 HMPU**

| Municipality            | Municipality Representative<br>(Title or Position) | Worksheet/Survey/Form                           |   |  |                                  |                                  | Meetings           |                    |                                   |
|-------------------------|--|---|---|--|----------------------------------|----------------------------------|--------------------|--------------------|-----------------------------------|
|                         |  | Hazard Identification and Prioritization Survey | Municipal Capability Survey and Self-evaluation | Public Hazard Mitigation and Prioritization Survey | Hazard Mitigation Actions Survey | NFIP Municipal Compliance Survey | Public Info Mtg #1 | Public Info Mtg #2 | Individual Contact (as necessary) |
| Mount Wolf Borough      | Borough Secretary, Emer Mgmt Coordinator           |   |   |  |                                  |                                  |                    |                    | X                                 |
| New Freedom Borough     | Borough Administrator, Emer Mgmt Coordinator       | X   | X   |  | X                                | X                                |                    |                    |                                   |
| New Salem Borough       | Borough Secretary, Emer Mgmt Coordinator           |   |   |  |                                  |                                  |                    |                    | X                                 |
| Newberry Township       | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    |                    |                                   |
| North Codorus Township  | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    | X                  |                                   |
| North Hopewell Township | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  |                                  |                                  |                    |                    |                                   |
| North York Borough      | Administrative Assistant, Emer Mgmt Coordinator    | X   | X   | X  |                                  |                                  |                    |                    | X                                 |
| Paradise Township       | Township Secretary, Emer Mgmt Coordinator          | X   | X   | X  |                                  |                                  |                    | X                  |                                   |
| Peach Bottom Township   | Township Manager, Emer Mgmt Coordinator            |   |   |  |                                  |                                  |                    |                    | X                                 |
| Penn Township           | Township Manager, Emer Mgmt Coordinator            | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Railroad Borough        | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Red Lion Borough        | Borough Manager, Emer Mgmt Coordinator             | X   | X   |  |                                  | X                                |                    |                    |                                   |
| Seven Valleys Borough   | Borough Secretary, Emer Mgmt Coordinator           |   |   |  | X                                | X                                |                    |                    |                                   |
| Shrewsbury Borough      | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  | X                                | X                                |                    |                    |                                   |
| Shrewsbury Township     | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Spring Garden Township  | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Spring Grove Borough    | Borough Manager, Emer Mgmt Coordinator             |   |   |  |                                  |                                  |                    |                    | X                                 |
| Springettsbury Township | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                                  |                                  |                    |                    |                                   |
| Springfield Township    | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  | X                                | X                                |                    |                    |                                   |

**Table 3.5-1: Summary of Participation from Local Municipalities during the 2018 HMPU**

| Municipality             | Municipality Representative<br>(Title or Position) | Worksheet/Survey/Form                           |   |  |                           |                                  | Meetings           |                    |                                   |
|--------------------------|--|---|---|--|---------------------------|----------------------------------|--------------------|--------------------|-----------------------------------|
|                          |  | Hazard Identification and Prioritization Survey | Municipal Capability Survey and Self-evaluation | Public Hazard Mitigation and Prioritization Survey | Mitigation Actions Survey | NFIP Municipal Compliance Survey | Public Info Mtg #1 | Public Info Mtg #2 | Individual Contact (as necessary) |
| Stewartstown Borough     | Borough Secretary, Emer Mgmt Coordinator           |   |   |  |                           | X                                |                    |                    |                                   |
| Warrington Township      | Township Manager, Emer Mgmt Coordinator            | X   | X   |  |                           | X                                |                    |                    |                                   |
| Washington Township      | Township Secretary, Emer Mgmt Coordinator          | X   | X   |  | X                         | X                                |                    |                    |                                   |
| Wellsville Borough       | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  |                           |                                  |                    |                    |                                   |
| West Manchester Township | Township Manager, Emer Mgmt Coordinator            | X   |   | X  | X                         | X                                |                    |                    |                                   |
| West Manheim Township    | Township Manager, Emer Mgmt Coordinator            | X   | X   | X  | X                         | X                                |                    |                    |                                   |
| West York Borough        | Borough Mayor, Emer Mgmt Coordinator               |   |   |  |                           |                                  |                    |                    | X                                 |
| Windsor Township         | Township Manager, Emer Mgmt Coordinator            | X   | X   | X  | X                         | X                                |                    |                    |                                   |
| Windsor Borough          | Borough Secretary, Emer Mgmt Coordinator           |   |   |  | X                         | X                                |                    |                    |                                   |
| Winterstown Borough      | Borough Secretary, Emer Mgmt Coordinator           |   |   |  |                           |                                  |                    |                    | X                                 |
| Wrightsville Borough     | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  |                           |                                  |                    |                    |                                   |
| Yoe Borough              | Borough Secretary, Emer Mgmt Coordinator           | X   | X   |  |                           | X                                |                    |                    |                                   |
| York City                | Zoning Officer, Emer Mgmt Coordinator              | X   | X   | X  |                           |                                  |                    |                    |                                   |
| York Haven Borough       | Borough Secretary, Emer Mgmt Coordinator           |   |   |  | X                         | X                                |                    |                    |                                   |
| York Township            | Township Manager, Emer Mgmt Coordinator            | X   | X   | X  |                           | X                                |                    | X                  |                                   |
| Yorkana Borough          | Borough Secretary, Emer Mgmt Coordinator           | X   |   |  |                           |                                  |                    |                    |                                   |

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# CHAPTER FOUR – RISK ASSESSMENT

## 4.1 PROCESS SUMMARY

The primary purpose of the risk assessment is to identify and describe natural and human-made hazards that may impact a jurisdiction, as well as, describe vulnerability to the identified hazards. The risk assessment section of the York County Hazard Mitigation Plan Update (HMPU) uses existing data and analysis from the previous FEMA approved York County 2013 Hazard Mitigation Plan (HMP), as well as updated data and analysis on hazards occurring during the last five (5) years.

Table 4.1-1 lists the natural and human-made hazards identified and profiled for the County and its municipalities in the York County 2013 HMP.

| Table 4.1-1: Natural and Human-Made Hazards Identified in the York County 2013 HMP |
|--|
| • Civil Disturbance  |
| • Dam Failure  |
| • Drought  |
| • Earthquake   |
| • Environmental Hazards  |
| • Extreme Temperatures   |
| • Flood, Flash Flood, Ice Jam  |
| • Hailstorm  |
| • Hurricane, Tropical Storm, Nor'Easter  |
| • Invasive Species   |
| • Landslide  |
| • Lightning Strike   |
| • Nuclear Incidents  |
| • Pandemic*  |
| • Radon Exposure   |
| • Subsidence, Sinkhole   |
| • Terrorism  |
| • Tornado, Windstorm   |
| • Urban Fire and Explosion   |
| • Wildfire   |
| • Winter Storm   |

\* Now Pandemic and Infectious Disease

Source: York County 2013 Hazard Mitigation Plan

Staff of the YCPC, reviewed the York County 2013 HMP and compared the identified hazards in that Plan to hazards identified in the Pennsylvania 2013 Standard State All-Hazard Mitigation Plan, new

hazard declarations since 2013, other documented events, and hazards identified in the Commonwealth of Pennsylvania’s All-Hazard Mitigation Planning Standard Operating Guide to arrive at a list of hazards not covered by the 2013 York County Plan. The list of further identified hazards, along with background information, was then presented to the LPT for their consideration and recommendation to municipalities, as to inclusion in the Plan. All municipalities were then presented the identified hazards and recommendations as part of a Hazard Identification and Prioritization Survey (see Appendix D). Based on the recommendation of the LPT and the results of the survey, hazard profiles were then developed in order to define the characteristics of the hazard as it applies to York County. It should be noted that the occurrence of a past hazard event in the County provided an indication of future possible incidents, but the fact that a hazard event has not previously occurred did not exclude the hazard from further investigation.

The hazards were then profiled to describe the location, extent of impact, past occurrences, future probability of occurrence, and environmental impact of each identified hazard. The profiles are intended to expose the unique characteristics of individual hazards and help determine which area of the County is vulnerable to a specific hazard event.

Finally, a vulnerability assessment was performed to identify the impact of natural or human-made hazards on the County and its 72 municipalities. Measures of impact included population at risk, number of buildings, critical facilities, and infrastructure within identified hazard areas, and other impacts, such as those to water bodies, forest, agricultural, etc., dependent upon the hazard. Where possible, impacts were measured using dollar loss estimations, population at risk, total structures at risk, or land area at risk. Information provided by the vulnerability assessment includes the areas susceptible to each hazard and areas where the highest losses could occur. This information provides a factual basis for developing effective mitigation strategies.

## 4.2 HAZARD IDENTIFICATION

Presidential Disaster and Emergency Declarations are issued when it is determined that State and local governments need assistance in responding to a disaster event. Requests can also be made to the Small Business Administration (SBA) when disasters occur for physical damages or economic injury assistance depending on the type of SBA declaration requested. Table 4.2-1 identifies Presidential, Gubernatorial, and SBA declarations issued from 1954 through 2018 that have affected York County.

| Table 4.2-1: York County Disaster History (1954 – 2018) |                               |   |
|---|-------------------------------|---|
| Date  | Type                          | Action  |
| March 2018  | Severe Winter Weather         | Gubernatorial Proclamation of Disaster Emergency    |
| January 2018  | Opioid Crisis                 | Gubernatorial Proclamation of Disaster Emergency    |
| March 2017  | Severe Winter Storm           | Gubernatorial Proclamation of Disaster Emergency    |
| February 2017   | Frost and Freeze              | SBA – Secretary of Agriculture Disaster Declaration |
| March 2016  | Severe Winter Storm/Snowstorm | Major Disaster                                      |
| January 2016  | Severe Winter Storm           | Gubernatorial Proclamation of Disaster Emergency    |
| August 2015   | Severe Storms/Flooding        | Gubernatorial Proclamation of Disaster Emergency    |



**Table 4.2-1: York County Disaster History (1954 – 2018)**

| <b>Date</b>    | <b>Type</b>                            | <b>Action</b>   |
|----------------|--|---|
| January 2015   | Severe Winter Storm                    | Gubernatorial Proclamation of Disaster Emergency  |
| September 2014 | State Trooper Attack                   | Gubernatorial Proclamation of Disaster Emergency  |
| February 2014  | Severe Winter Storm                    | Disaster Emergency  |
| January 2014   | Severe Cold                            | Gubernatorial Proclamation of Disaster Emergency  |
| October 2012   | Hurricane Sandy                        | Disaster Emergency  |
| September 2011 | Tropical Storm Lee                     | Major Disaster  |
| September 2011 | Hurricane Irene                        | Gubernatorial Proclamation of Emergency   |
| April 2011     | Flooding                               | SBA – physical damage and economic injury   |
| January 2011   | Winter Storm                           | Gubernatorial Proclamation of Emergency   |
| April 2010     | Severe Winter Storms/Snowstorm         | Presidential Proclamation   |
| July 2009      | Fire                                   | SBA – physical damage and economic injury   |
| April 2007     | Severe Winter Storm/Emergency Flooding | Gubernatorial Proclamation  |
| February 2007  | Severe Winter Storm                    | Gubernatorial Proclamation  |
| September 2006 | Tropical Depression Ernesto            | Gubernatorial Proclamation  |
| June 2006      | Flooding                               | Gubernatorial Proclamation  |
| September 2005 | Hurricane Katrina                      | Presidential Emergency Proclamation   |
| September 2004 | Tropical Depression Ivan               | Major Disaster  |
| May 2004       | Heavy rain, winds, flooding            | SBA – physical damage and economic injury   |
| September 2003 | Hurricanes Isabel and Henri            | Disaster Emergency  |
| March 2003     | Severe winter storm                    | Disaster Emergency  |
| February 2002  | Drought and water shortage             | Gubernatorial Proclamation  |
| September 1999 | Hurricane Floyd                        | Major Disaster  |
| July 1999      | Major drought                          | Gubernatorial Proclamation of Hazard Mitigation grant program and agricultural disaster |
| February 1999  | West Shore Farmers’ Market Fire        | SBA – physical disaster and economic disaster loans                                     |
| January 1996   | Flooding                               | Major disaster  |
| January 1996   | Severe winter storm                    | Major disaster  |
| January 1994   | Severe winter storm                    | Major disaster  |
| March 1993     | Blizzard                               | Emergency   |
| July 1991      | Drought                                | Gubernatorial Proclamation  |
| November 1980  | Drought                                | Gubernatorial Proclamation  |
| June 1980      | High winds and hail                    | None  |
| March 1979     | Three Mile Island incident             | None  |
| February 1978  | Blizzard                               | Gubernatorial Proclamation  |
| January 1978   | Heavy snow                             | Gubernatorial Proclamation  |
| October 1976   | Flooding                               | Major disaster  |
| March 1976     | Tornado                                | None  |
| September 1975 | Flooding (Hurricane Eloise)            | Major disaster  |
| April 1975     | High winds                             | None  |

**Table 4.2-1: York County Disaster History (1954 – 2018)**

| Date          | Type                       | Action                     |
|---------------|----------------------------|----------------------------|
| February 1974 | Truckers’ strike           | Gubernatorial Proclamation |
| June 1972     | Flooding (Hurricane Agnes) | Major disaster             |
| February 1972 | Heavy snow                 | Gubernatorial Proclamation |
| January 1966  | Heavy snow                 | Gubernatorial Proclamation |
| March 1963    | Ice jam                    | Gubernatorial Proclamation |
| February 1958 | Heavy snow                 | Gubernatorial Proclamation |
| October 1954  | Flooding (Hurricane Hazel) | Major disaster             |

Source: PEMA and SBA

Since 1954, declarations have been issued for various hazard events, including hurricanes or tropical storms, severe winter storms, flooding, and drought. The majority of the recent declarations affecting York County were due to severe winter storms and severe cold. Individual events of flooding, opioid addiction, and violence towards police officers (statewide) have also been recorded.

**4.2.1 Summary of Hazards**

A comprehensive list of hazards ensures that none have been omitted and all potential hazards have been given consideration. Developing this list involved reviewing existing PEMA documents, the York County 2013 HMP, municipality risk assessments and previous incidents. Table 4.1-1 summarizes hazards included in the 2013 HMP. Of the hazards listed, all were profiled and vulnerability assessments were conducted in the 2013 HMP and were also included and updated as part of this 2018 HMPU. For consistency in terminology, Pandemic is now referred to as Pandemic and Infectious Disease. Subsequent risk analysis by the YCPC identified two (2) additional hazards to be considered in this 2018 HMPU (see Table 4.2.1-1).

**Table 4.2.1-1: Additional Natural and Human-Made Hazards Identified during 2018 YCPC HMPU Risk Assessment**

|                                     |
|-------------------------------------|
| Levee Failure                       |
| Mass Food/Animal Feed Contamination |

Additional hazards identified from the PEMA Standard List of Hazards that were considered as part of the hazard identification process, but not profiled or assessed as part of this 2018 HMPU, are listed in Table 4.2.1-2. Also listed in the table is the reason for the hazard not being given further consideration.

**Table 4.2.1-2: Natural and Human-Made Hazard Evaluated, But Not Included HMPU**

| Identified Hazard              | Reason Not Included in HMPU         |
|--------------------------------|-------------------------------------|
| Avalanche/Glacier              | Not applicable.                     |
| Building or Structure Collapse | Result of other identified hazards. |

| Table 4.2.1-2: Natural and Human-Made Hazard Evaluated, But Not Included HMPU |   |
|---|---|
| Identified Hazard   | Reason Not Included in HMPU   |
| Coastal Erosion   | Not applicable.   |
| Disorientation  | Limited impact and scale. No problem identified.  |
| Drowning  | Limited impact and scale.   |
| Dust/Sand Storm   | Not applicable.   |
| Expansive Soils   | No problem identified.  |
| Transportation Accidents  | Result of other identified hazards or results in environmental hazard. Already covered. |
| Tsunami   | Not applicable.   |
| Utility Interruption  | Result of other identified hazards. Already covered.                                    |
| Volcano   | Not applicable.   |
| War and Criminal Violence   | Beyond scope of County/municipality. Covered partially under terrorism.                 |

Table 4.2.1-3 contains a complete list of all potential hazards in York County identified through document review, past history, LPT meetings, and municipal/public surveys. The hazard descriptions provided as part of Table 4.2.1-3 are general descriptions of the identified hazards as presented in PEMA’s All-Hazard Standard Operating Guide. Hazard profiles are included in Section 4.3 for each of these hazards, which further define each hazard as it applies to York County. It should be noted that the Opioid Crises Declaration was declared after the research and consideration of hazards had been completed. It was decided by the LPT that the Opioid Crisis will be considered as part of the next Plan update, when PEMA has addressed it as part of the State Hazard Mitigation Plan Update and provided guidance on the issue.

| Table 4.2.1-3: List of Natural and Human-Made Hazards Profiled in the 2018 York County HMPU |   |
|---|---|
| Hazard  | Hazard Description  |
| <b>Natural Hazards</b>  |   |
| <b>Drought</b>  | Drought is a natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought. This hazard is of particular concern in Pennsylvania due to the presence of farms as well as water-dependent industries and recreation areas across the Commonwealth. A prolonged drought could severely impact these sectors of the local economy, as well as residents who depend on wells for drinking water and other personal uses. (National Drought Mitigation Center, 2006).                                    |
| <b>Earthquake</b>   | An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10-20 miles of the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of underground caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake. (FEMA, 1997). |

**Table 4.2.1-3: List of Natural and Human-Made Hazards Profiled in the 2018 York County HMPU**

| Hazard  | Hazard Description  |
|---|---|
| <p><b>Extreme Temperature</b></p>                   | <p>Extreme cold temperatures drop well below what is considered normal for an area during the winter months and often accompany winter storm events. Combined with increases in wind speed, such temperatures in Pennsylvania can be life threatening to those exposed for extended periods of time. Extreme heat can be described as temperatures that hover 10°F or more above the average high temperature for a region during the summer months. Extreme heat is responsible for more deaths in Pennsylvania than all other natural disasters combined (Lawrence County, PA HMP, 2004).</p>   |
| <p><b>Flood/Flash Flood/ Ice Jam</b></p>            | <p>Flooding is the temporary condition of partial or complete inundation on normally dry land and it is the most frequent and costly of all hazards in Pennsylvania. Flooding events are generally the result of excessive precipitation. General flooding is typically experienced when precipitation occurs over a given river basin for an extended period of time. Flash flooding is usually a result of heavy localized precipitation falling in a short time period over a given location, often along mountain streams and in urban areas where much of the ground is covered by impervious surfaces. The severity of a flood event is dependent upon a combination of stream and river basin topography and physiography, hydrology, precipitation and weather patterns, present soil moisture conditions, the degree of vegetative clearing as well as the presence of impervious surfaces in and around flood-prone areas. (NOAA, 2009). Winter flooding can include ice jams which occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of a river. The ice layer often breaks into large chunks, which float downstream, piling up in narrow passages and near other obstructions such as bridges and dams. All forms of flooding can damage infrastructure (USACE, 2007).</p> |
| <p><b>Hailstorm</b></p>                             | <p>In addition to flooding and severe winds, hail is another potential damaging product of severe thunderstorms. Hailstorms occur when ice crystals form within a low pressure front due to the rapid rise of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation in the form of balls or irregularly shaped masses of ice greater than 0.75 inches in diameter (FEMA, 1997). The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Damage to crops and vehicles are typically the most significant impacts of hailstorms. Areas in eastern and central Pennsylvania typically experience less than 2 hailstorms per year while areas in western Pennsylvania experience 2-3 annually. (FEMA, 1997).</p>   |
| <p><b>Hurricane/ Tropical Storm/ Nor'easter</b></p> | <p>Hurricanes, tropical storms, and nor'easters are classified as cyclones and are any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise (in the Northern Hemisphere) and whose diameter averages 10-30 miles across. While most of Pennsylvania is not directly affected by the devastating impacts cyclonic systems can have on coastal regions, many areas in the State are subject to the primary damaging forces associated with these storms including high-level sustained winds, heavy precipitation, and tornadoes. Areas in southeastern Pennsylvania could be susceptible to storm surge and tidal flooding. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season (June through November). (FEMA, 1997).</p>  |
| <p><b>Invasive Species</b></p>                      | <p>An invasive species is a species that is not indigenous to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. These species can be any type of organism: plant, fish, invertebrate, mammal, bird, disease, or pathogen. Infestations may not necessarily impact human health, but can create a nuisance or agricultural hardships by destroying crops, defoliating populations of native plant and tree species, or interfering with ecological systems (Governor's Invasive Species Council of Pennsylvania, 2009).</p>  |

**Table 4.2.1-3: List of Natural and Human-Made Hazards Profiled in the 2018 York County HMPU**

| Hazard                                 | Hazard Description  |
|--|---|
| <b>Landslide</b>                       | A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. Landslides may be triggered by both natural and human-made changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, and changes in groundwater levels. Mudflows, mudslides, rock falls, rockslides, and rock topples are all forms of a landslide. Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires. (Delano & Wilshusen, 2001).  |
| <b>Lightning Strike</b>                | Lightning is a discharge of electrical energy resulting from the build-up of positive and negative charges within a thunderstorm. The flash or "bolt" of light usually occurs within clouds or between clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000°F. On average, 89 people are killed each year by lightning strikes in the United States. Within Pennsylvania, the annual average number of thunder and lightning events a given area can expect ranges between 40-70 events per year (FEMA, 1997).  |
| <b>Pandemic and Infectious Disease</b> | A pandemic occurs when infection from of a new strain of a certain disease, to which most humans have no immunity, substantially exceeds the number of expected cases over a given period of time. Such a disease may or may not be transferable between humans and animals. (Martin & Martin-Granel, 2006).  |
| <b>Radon Exposure</b>                  | Radon is a cancer-causing natural radioactive gas that you can't see, smell, or taste. It is a large component of the natural radiation that humans are exposed to and can pose a serious threat to public health when it accumulates in poorly ventilated residential and occupation settings. According to the USEPA, radon is estimated to cause about 21,000 lung cancer deaths per year, second only to smoking as the leading cause of lung cancer (EPA 402-R-03-003: EPA Assessment, 2003). An estimated 40% of the homes in Pennsylvania are believed to have elevated radon levels (Pennsylvania Department of Environmental Protection, 2009).  |
| <b>Subsidence/<br/>Sinkhole</b>        | Subsidence is a natural geologic process that commonly occurs in areas with underlying limestone bedrock and other rock types that are soluble in water. Water passing through naturally occurring fractures dissolves these materials leaving underground voids. Eventually, overburden on top of the voids causes a collapse which can damage structures with low strain tolerances. This collapse can take place slowly over time or quickly in a single event, but in either case. Karst topography describes a landscape that contains characteristic structures such as sinkholes, linear depressions, and caves. In addition to natural processes, human activity such as water, natural gas, and oil extraction can cause subsidence and sinkhole formations. (FEMA, 1997).   |
| <b>Tornado/<br/>Windstorm</b>          | A wind storm can occur during severe thunderstorms, winter storms, coastal storms, or tornadoes. Straight-line winds such as a downburst have the potential to cause wind gusts that exceed 100 miles per hour. Based on 40 years of tornado history and over 100 years of hurricane history, FEMA identifies western and central Pennsylvania as being more susceptible to higher winds than eastern Pennsylvania. (FEMA, 1997). A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes or tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and windblown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage. Waterspouts are weak tornadoes that form over warm water and are relatively uncommon in Pennsylvania. Each year, an average of over 800 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries (NOAA, 2002). Based on NOAA Storm Prediction Center Statistics, the number of recorded F3, F4, & F5 tornadoes between 1950-1998 ranges from <1 to 15 per 3,700 square mile area across Pennsylvania (FEMA, 2009). A water spout is a tornado over a body of water (American Meteorological Society, 2009). |

**Table 4.2.1-3: List of Natural and Human-Made Hazards Profiled in the 2018 York County HMPU**

| Hazard                              | Hazard Description  |
|-------------------------------------|---|
| <p><b>Wildfire</b></p>              | <p>A wildfire is a raging, uncontrolled fire that spreads rapidly through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. Wildfires can occur at any time of the year, but mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Wildfires in Pennsylvania can occur in fields, grass, brush, and forests. 98% of wildfires in Pennsylvania are a direct result of people, often caused by debris burns (PA DCNR, 1999).</p>   |
| <p><b>Winter Storm</b></p>          | <p>Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. A winter storm can range from a moderate snowfall or ice event over a period of a few hours to blizzard conditions with wind-driven snow that lasts for several days. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow, which can severely impair visibility and disrupt transportation. The Commonwealth of Pennsylvania has a long history of severe winter weather. (NOAA, 2009).</p>  |
| <p><b>Human-Made Hazards</b></p>    |   |
| <p><b>Civil Disturbance</b></p>     | <p>Civil disturbance hazards encompass a set of hazards emanating from a wide range of possible events that cause civil disorder, confusion, strife, and economic hardship. Civil disturbance hazards include the following:</p> <ul style="list-style-type: none"> <li>• <b>Famine;</b> involving a widespread scarcity of food leading to malnutrition and increased mortality (Robson, 1981).</li> <li>• <b>Economic Collapse, Recession;</b> Very slow or negative growth, for example (Economist, 2009).</li> <li>• <b>Misinformation;</b> erroneous information spread unintentionally (Makkai, 1970).</li> <li>• <b>Civil Disturbance, Public Unrest, Mass Hysteria, Riot;</b> group acts of violence against property and individuals, for example (18 U.S.C. § 232, 2008).</li> <li>• <b>Strike, Labor Dispute;</b> controversies related to the terms and conditions of employment, for example (29 U.S.C. § 113, 2008).</li> </ul>   |
| <p><b>Dam Failure</b></p>           | <p>A dam is a barrier across flowing water that obstructs, directs, or slows down water flow. Dams provide benefits such as flood protection, power generation, drinking water, irrigation, and recreation. Failure of these structures results in an uncontrolled release of impounded water. Failures are relatively rare, but immense damage and loss of life is possible in downstream communities when such events occur. Aging infrastructure, hydrologic, hydraulic and geologic characteristics, population growth, and design and maintenance practices should be considered when assessing dam failure hazards. The failure of the South Fork Dam, located in Johnstown, PA, was the deadliest dam failure ever experienced in the United States. It took place in 1889 and resulted in the Johnstown Flood which claimed 2,209 lives (FEMA, 1997). Today there are approximately 3,200 dams and reservoirs throughout Pennsylvania (Pennsylvania Department of Environmental Protection, 2009).</p>  |
| <p><b>Environmental Hazards</b></p> | <p>Environmental hazards are hazards that pose threats to the natural environment, the built environment, and public safety through the diffusion of harmful substances, materials, or products. For the purposes of the SSAHMP, environmental hazards include the following:</p> <ul style="list-style-type: none"> <li>• Hazardous material releases at fixed facilities or in transit; including toxic chemicals, infectious substances, biohazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive (PL 1990-165, § 207(e)).</li> <li>• Coal mining incidents; including the release of the release of harmful chemical and waste materials into water bodies or the atmosphere, explosions, fires, and other hazards and threats to life safety stemming from mining (Environmental Protection Agency, Natural Disaster PSAs, 2009).</li> <li>• Oil and gas well incidents; including the release of the release of harmful chemical and waste materials into water bodies or the atmosphere, explosions, fires, and other hazards and threats to life safety stemming from oil and gas extraction (Environmental Protection Agency, Natural Disaster PSAs, 2009).</li> </ul> |

**Table 4.2.1-3: List of Natural and Human-Made Hazards Profiled in the 2018 York County HMPU**

| Hazard                                      | Hazard Description   |
|---|--|
| <b>Levee Failure</b>                        | A levee is a human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding (Interagency Levee Policy Review Committee, 2006). Levee failures or breaches occur when a levee fails to contain the floodwaters for which it is designed to control or floodwaters exceed the height of the constructed levee. 51 of Pennsylvania's 67 counties have been identified as having at least one levee (FEMA Region III, 2009).  |
| <b>Mass Food/ Animal Feed Contamination</b> | Mass food or animal feed contamination hazards occur when food or food sources are contaminated with pathogenic bacteria, viruses, or parasites, as well as chemical or natural toxins. They may lead to foodborne illnesses and/or interruptions in the food supply. Contamination may occur due to natural foodborne illnesses and chemical, biological, radiological, or nuclear exposure. Most foodborne illnesses are caused by Campylobacter in poultry, E. Coli in beef, leafy greens, and raw milk, Listeria in deli meats, unpasteurized soft cheeses, and produce, Salmonella in eggs, poultry, meat, and produce, Vibrio in raw oysters, Norovirus in many foods, and Toxoplasma in meats (Center for Disease Control (CDC), 2013). Contamination usually occurs accidentally during the production/preparation process but can also be the result of intentional acts.   |
| <b>Nuclear Incidents</b>                    | Nuclear accidents generally refer to events involving the release of significant levels of radioactivity or exposure of workers or the general public to radiation (FEMA, 1997). Nuclear accidents/incidents can be placed into three categories: 1) Criticality accidents which involve loss of control of nuclear assemblies or power reactors, 2) Loss-of-coolant accidents which result whenever a reactor coolant system experiences a break or opening large enough so that the coolant inventory in the system cannot be maintained by the normally operating make-up system, and 3) Loss-of-containment accidents which involve the release of radioactivity. The primary concern following such an incident or accident is the extent of radiation, inhalation, and ingestion of radioactive isotopes which can cause acute health effects (e.g. death, burns, severe impairment), chronic health effects (e.g. cancer), and psychological effects. (FEMA, 1997). |
| <b>Terrorism</b>                            | Terrorism is use of force or violence against persons or property with the intent to intimidate or coerce. Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber-attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons. (FEMA, 2009).   |
| <b>Urban Fire and Explosion</b>             | An urban fire involves a structure or property within an urban or developed area. For hazard mitigation purposes, major urban fires involving large buildings and/or multiple properties are of primary concern. The effects of a major urban fire include minor to significant property damage, loss of life, and residential or business displacement. Explosions are extremely rapid releases of energy that usually generate high temperatures and often lead to fires. The risk of severe explosions can be reduced through careful management of flammable and explosive hazardous materials. (FEMA, 1997).  |

Source: Pennsylvania All-Hazard Mitigation Standard Operating Guide

### 4.3 HAZARD PROFILES

Hazard profiling investigates the impact, historical occurrence, and probability of future occurrence for hazards that can affect York County. Hazard profiling exposes the unique characteristics of individual hazards and begins the process of determining which areas within York County are vulnerable to a specific hazard event.

#### NATURAL HAZARDS

##### 4.3.1 Drought

Droughts are regional climatic events that can have varying degrees of impact. Drought can be defined by rainfall amounts, vegetation conditions, agricultural productivity, soil moisture, levels in reservoirs and stream flow, or economic impacts. The main type of drought that is included in this

HMPU is a hydrological drought. A hydrological drought occurs when surface and subsurface water levels drop, such as in streams, rivers, lakes and reservoirs, due to a prolonged period of time without rainfall.

#### **4.3.1.1 Location and Extent**

Impacts of drought can be felt across the entire County, outside York County’s boundaries, and throughout the entire mid-Atlantic region. Areas with extensive agricultural land use and interests can experience impacts of particular significance. A drought is likely to impact the County in a relatively uniform fashion with only minor localized variations in rainfall amounts of specific storm events. The Susquehanna River Basin Commission (SRBC) identified “potentially stressed areas” in its *Groundwater Management Plan (2005)*. There are two (2) such locations in York County; the Hanover Area (Hanover Borough and Heidelberg, Penn, and West Manheim Townships) and Pennsylvania Fruit Belt (Franklin Township). It would be reasonable to believe that drought impacts could affect these areas of York County earlier than the rest of the County. Figure 4.3.1.1-1: Potential Groundwater Stressed Areas in York County, PA, identifies drought susceptible areas.

#### **4.3.1.2 Range of Magnitude**

Droughts can have varying effects, depending upon their timing, severity, duration, and location. Some droughts may have their greatest impact on agriculture, while others may impact water supply or other water use activities, such as recreation. Most droughts cause direct impacts to aquatic resources. The effects of a drought can be far-reaching and typically include reduced productivity of aquatic resources, mandatory water use restrictions, well failures, cutbacks in industrial production, agricultural losses, and limited recreational opportunities.

The Commonwealth of PA uses five (5) parameters to assess drought conditions:

- Stream flows (compared to benchmark records)
- Precipitation (measured as the departure from normal, 30 year average precipitation)
- Reservoir storage levels in a variety of locations
- Groundwater elevations in a number of counties (comparing to past month, year, and historic record)
- The Palmer Drought Severity Index (PSDI) – a soil moisture algorithm calibrated for relatively homogeneous regions, which measures dryness, based on recent precipitation and temperature (see Table 4.3.1.2-1).





| Table 4.3.1.2-1: Palmer Drought Severity Index Classification (NOAA 2017) |               |
|---|---------------|
| Severity Category   | PSDI Value    |
| Extremely wet   | 4.0 or more   |
| Very wet  | 3.0 to 3.99   |
| Moderately wet  | 2.0 to 2.99   |
| Slightly wet  | 1.0 to 1.99   |
| Incipient wet spell   | 0.5 to 0.99   |
| Near normal   | 0.49 to -0.49 |
| Incipient dry spell   | -0.5 to -0.99 |
| Mild drought  | -1.0 to -1.99 |
| Moderate drought  | -2.0 to -2.99 |
| Severe drought  | -3.0 to -3.99 |
| Extreme drought   | -4.0 or less  |

In Pennsylvania, PEMA has primary responsibility for managing droughts with direct support from the Department of Environmental Protection (DEP). PEMA and DEP use the following three (3) stages to describe and manage droughts. They are listed in order of increasing severity:

- Drought Watch:** A period to alert government agencies, public water suppliers, water users, and the public regarding the potential for future drought-related problems. The focus is on increased monitoring, awareness, and preparation for response if conditions worsen. A request for voluntary water conservation is made. The objective of voluntary water conservation measures during a drought watch is to reduce water use by 5% in the affected areas. Due to varying conditions, individual water suppliers or municipalities may be asking for more stringent conservation actions.
- Drought Warning:** This phase involves a coordinated response to imminent drought conditions and potential water supply shortages through concerted voluntary conservation measures to avoid or reduce shortages, relieve stressed sources, develop new sources, and if possible, forestall the need to impose mandatory water use restrictions. The objective of voluntary water conservation measures during a drought warning is to reduce overall water use by 10-15% in the affected areas. Due to varying conditions, individual water suppliers or municipalities may be asking for more stringent conservation actions.
- Drought Emergency:** This stage is a phase of concerted management operations to marshal all available resources to respond to actual emergency conditions, to avoid depletion of water sources, to assure at least minimum water supplies to protect public health and safety, to support essential and high priority water uses, and to avoid unnecessary economic dislocations. It is possible during this phase to impose mandatory restrictions on non-essential water uses that are provided in the Pennsylvania Code (Chapter 119), if deemed necessary and if ordered by the Governor of PA. The objective of water use restrictions (mandatory or voluntary) and other conservation measures during this phase is to reduce consumptive water

use in the affected area by 15%, and to reduce total use to the extent necessary to preserve public water system supplies, to avoid or mitigate local or area shortages, and to assure equitable sharing of limited supplies.

In addition, local water rationing is an option for communities.

- **Local Water Rationing:** Although not a drought phase, local municipalities may, with the approval of the PA Emergency Management Council, implement local water rationing to share a rapidly dwindling or severely depleted water supply in designated water supply service areas. These individual water-rationing plans, authorized through provisions of the PA Code (Chapter 120), will require specific limits on individual water consumption to achieve significant reductions in use. Under both mandatory restrictions imposed by the Commonwealth and local water rationing, procedures are provided for granting of variances to consider individual hardships and economic dislocations.

The **potential environmental impacts** of a drought include:

- Hydrologic effects – lower water levels in reservoirs, lakes and ponds; reduced stream flow; loss of wetlands; estuarine impacts; groundwater depletion and land subsidence; effects on water quality, such as increases in salt content and water temperature;
- Damage to animal species – lack of feed and drinking water; disease; loss of biodiversity; migration or concentration; and degradation of fish and wildlife habitats;
- Damage to plant communities – loss of biodiversity; loss of trees from urban landscapes and wooded conservation area;
- Increased number and severity of fires;
- Reduced soil quality;
- Air quality effects – dust and pollutants;
- Loss of quality in landscape; and
- Loss of water for navigation and recreation.

#### 4.3.1.3 Historical Occurrence

There have been four (4) gubernatorial proclaimed drought events recorded for York County since January of 1950 (see Table 4.2-1). These events occurred in November 1980, July 1991, July 1999, and February 2002. PA DEP records indicate that there have been a total of 25 drought watches, 14 drought warnings, and 10 drought emergencies from 1980 to June of 2017 (see table 4.3.1.3-1).

| Date                | Drought Status | Date                | Drought Status |
|---------------------|----------------|---------------------|----------------|
| 11/18/80 – 04/20/82 | Emergency      | 12/16/98 – 01/15/99 | Warning        |
| 04/26/85 – 07/29/85 | Watch          | 01/15/99 – 03/15/99 | Warning        |
| 07/29/85 – 10/22/85 | Watch          | 03/15/99 – 06/10/99 | Watch          |
| 10/22/85 – 10/29/85 | Watch          | 06/10/99 – 06/18/99 | Warning        |

| Table 4.3.1.3-1: Past Drought Events in York County 1980- June 2017<br>(PA DEP 2017) |                |                     |                |
|--|----------------|---------------------|----------------|
| Date   | Drought Status | Date                | Drought Status |
| 10/29/85 – 12/19/85  | Watch          | 06/18/99 – 07/20/99 | Warning        |
| 07/07/88 – 08/24/88  | Watch          | 07/20/99 – 09/30/99 | Emergency      |
| 8/24/88 – 12/12/88   | Watch          | 09/30/99 – 12/16/99 | Watch          |
| 06/28/91 – 07/24/91  | Warning        | 12/16/99 – 02/25/00 | Watch          |
| 07/24/91 – 08/16/91  | Emergency      | 02/25/00 – 05/05/00 | Watch          |
| 08/16/91 – 09/13/91  | Emergency      | 08/08/01 – 08/24/01 | Watch          |
| 09/13/91 – 10/21/91  | Emergency      | 08/24/01 – 11/06/01 | Watch          |
| 10/21/91 – 01/16/92  | Warning        | 11/06/01 – 12/05/01 | Warning        |
| 01/17/92 – 04/20/92  | Warning        | 12/05/01 – 02/12/02 | Warning        |
| 04/20/92 – 06/23/92  | Warning        | 02/12/02 – 05/13/02 | Emergency      |
| 09/11/92 – 01/15/93  | Watch          | 05/13/02 – 06/14/02 | Emergency      |
| 09/01/95 – 09/20/95  | Warning        | 06/14/02 – 08/09/02 | Emergency      |
| 09/20/95 – 11/08/95  | Warning        | 08/09/02 – 09/05/02 | Emergency      |
| 11/08/95 – 12/18/95  | Watch          | 09/05/02 – 11/07/02 | Emergency      |
| 07/17/97 – 10/27/97  | Watch          | 11/07/02 – 12/19/02 | Warning        |
| 10/27/97 – 11/13/97  | Watch          | 12/19/02 – 01/08/03 | Watch          |
| 11/13/97 – 01/16/98  | Watch          | 04/11/06 – 06/30/06 | Watch          |
| 01/16/98 – 02/19/98  | Watch          | 08/06/07 – 09/05/07 | Watch          |
| 12/03/98 – 12/08/98  | Watch          | 10/05/07 – 02/11/08 | Watch          |
| 12/08/98 – 12/14/98  | Watch          | 09/16/10 – 11/10/10 | Watch          |
| 12/14/98 – 12/16/98  | Warning        |                     |                |

Source: [http://files.dep.state.pa.us/Water/BSDW/Drought/DroughtStatusMaps/PA\\_Drought\\_History\\_Maps\\_1980\\_Present.pdf](http://files.dep.state.pa.us/Water/BSDW/Drought/DroughtStatusMaps/PA_Drought_History_Maps_1980_Present.pdf)

One of the worst droughts ever experienced by the lower Susquehanna River basin and to affect York County occurred in 2002. This drought event was actually initiated in the summer of 2001, which had a significant number of days with an above-average temperature and below-average precipitation followed by one of the driest winters on record. Groundwater levels, stream flows, and lake/reservoir levels were already well below normal going into the spring of 2002. An abnormally dry spring, followed by an extremely dry summer with a record number of days above 90 degrees contributed to this drought event. The impacts of the 2002 drought resulted in record low groundwater levels, record low stream flow levels, record low reservoir/lake levels, and an unprecedented number of private homeowner well failures in the lower Susquehanna River basin. Many local farmers suffered crop losses of 70-100%. In addition, water-dependent industries, such as nurseries, suffered losses while others had operational concerns due to the record low stream flow conditions.

#### 4.3.1.4 Future Occurrence

It is difficult to forecast the severity and frequency of future drought events in York County. The County is subject to periodic droughts that impact the ability to meet water needs. The frequency or probability of occurrence of a given drought event is calculated as a function of its intensity and duration. As such, the statistical analysis for determining the probability of drought events is similar to that used for calculating the return interval of flood events and results in a “percent chance” for a more severe event to occur. According to DEP’s Drought Status History (see Table 4.3.1.3-1), York County can be expected to experience a drought emergency about once every ten (10) years. This same drought history shows that York County can expect to enter into some level of declared drought status (watch, warning, emergency) roughly every other year.

Figure 4.3.1.4-1: PA Palmer Drought Severity Index (PDSI) (1895-1995) indicates that historically York County, which is located in the Lower Susquehanna PDSI area, is within conditions of drought between 5% to 9.9% of the time.

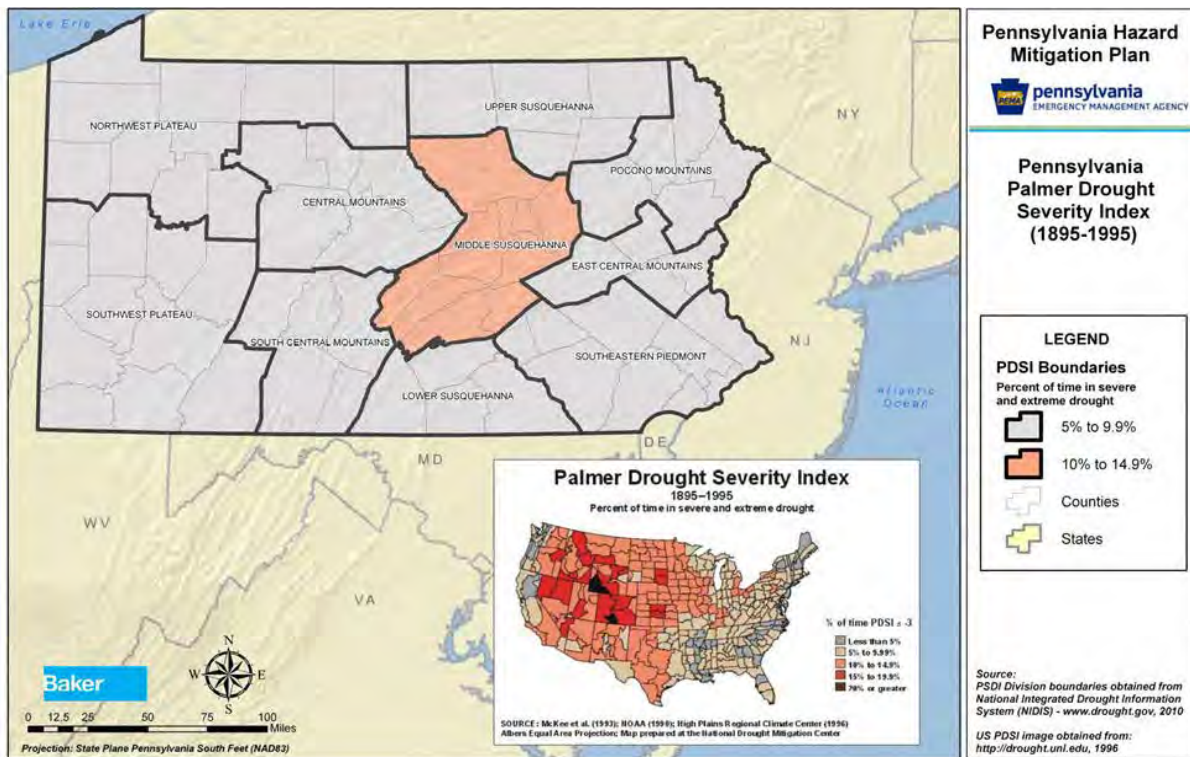


Figure 4.3.1.4-1: PA Palmer Drought Severity Index (National Integrated Drought Information System)

#### 4.3.1.5 Vulnerability Assessment

The impacts of drought are dependent on the intensity, duration, and area of the event. As a hazard, droughts primarily impact water supply and agricultural land. The drought of 2002 is considered to be one of the worst on record for this area. During that time, many farmers lost between 70 - 100% of their crops. To update that information (2012 Census of Agriculture), if all farmers in York County were to lose approximately 70% of their crops in a worst-case scenario, this would translate into an economic loss in excess of \$103 million (2012 market value of crops x 70% minimum loss for 2002 drought event).

Water supply is also vulnerable to severe drought, especially those dependent on private wells in rural areas. Per the York County Integrated Water Resources Plan, as of January 2010, there were 62 community water systems providing public water to approximately 302,897 persons. These systems utilize both surface (85%) and groundwater sources (15%). Additionally, there are 204 non-community water systems that serve a population of approximately 39,360. According to the Pennsylvania Groundwater Information System (PAGWIS) there are approximately 25,859 operational wells in York County. The PAGWIS information relies on voluntary submission of well data and, therefore, is not a complete database of all wells in the County. Surface water sources are more susceptible to the effects of drought. However, longer-term droughts that slow the recharge of groundwater aquifers can exacerbate the problems for water suppliers and well owners.

If drought conditions continue for an extended period of time, water restrictions are enforced. It is imperative that the County and the municipalities have methods in place to inform their residents and businesses of drought emergencies and restrictions that may be implemented.

A detailed vulnerability assessment considers the amount of agricultural acres, total wells, water challenged acres/population, and potential groundwater stressed acres/population (see Table 4.3.1.5-1).

**Table 4.3.1.5-1: Drought Vulnerability by Municipality**

| <b>Municipality</b>      | <b>Total Agricultural Acres (DOA 2017)</b> | <b>Municipal Agricultural Exposure (2012 Census of Ag.)</b> | <b>Total Wells* (PAGWIS 2009)</b> | <b>Water Challenged Acres (SRBC 2005) /Population (YCPC 2017)</b> | <b>Potential Groundwater Stressed Acres (SRBC 2005)/ Population (YCPC 2017)</b> |
|--------------------------|--|---|-----------------------------------|---|---|
| Carroll Township         | 5,343                                      | \$4,776,298   | 824                               | 3,101/1,579   |   |
| Chanceford Township      | 25,259                                     | \$22,581,306  | 934                               |   |   |
| Codorus Township         | 18,003                                     | \$16,094,928  | 662                               |   |   |
| Conewago Township        | 9,785                                      | \$8,748,216   | 598                               | .5/0  |   |
| Cross Roads Borough      | 837  | \$747,935   | 56                                |   |   |
| Dallastown Borough       | 45   | \$40,561  | 19                                |   |   |
| Delta Borough            | 14   | \$12,237  | 25                                |   |   |
| Dillsburg Borough        | 38   | \$34,396  | 27                                | 202/615   |   |
| Dover Borough            | 3  | \$2,289   | 108                               |   |   |
| Dover Township           | 16,920                                     | \$15,126,141  | 1,088                             | 5,894/10,067  |   |
| East Hopewell Township   | 11,242                                     | \$10,050,053  | 543                               |   |   |
| East Manchester Township | 5,914                                      | \$5,287,354   | 309                               |   |   |
| East Prospect Borough    | 38   | \$33,554  | 2                                 |   |   |
| Fairview Township        | 11,114                                     | \$9,935,570   | 1,654                             | 3,643/1,888   |   |
| Fawn Grove Borough       | 674  | \$602,631   | 54                                |   |   |

**Table 4.3.1.5-1: Drought Vulnerability by Municipality**

| <b>Municipality</b>       | <b>Total Agricultural Acres (DOA 2017)</b> | <b>Municipal Agricultural Exposure (2012 Census of Ag.)</b> | <b>Total Wells* (PAGWIS 2009)</b> | <b>Water Challenged Acres (SRBC 2005) /Population (YCPC 2017)</b> | <b>Potential Groundwater Stressed Acres (SRBC 2005)/ Population (YCPC 2017)</b> |
|---------------------------|--|---|-----------------------------------|---|---|
| Fawn Township             | 14,441                                     | \$12,910,652  | 651                               |   |   |
| Felton Borough            | 104  | \$92,587  | 93                                |   |   |
| Franklin Township         | 6,701                                      | \$5,990,438   | 777                               | 1,830/818   | 2,518/931   |
| Franklintown Borough      | 28   | \$25,266  | 10                                | 38/3  |   |
| Glen Rock Borough         | 79   | \$70,299  | 18                                |   |   |
| Goldsboro Borough         | 65   | \$57,767  | 28                                |   |   |
| Hallam Borough            | 41   | \$36,317  | 12                                |   |   |
| Hanover Borough           | 36   | \$32,024  | 103                               |   | 2,363/13,094  |
| Heidelberg Township       | 5,737                                      | \$5,128,809   | 738                               |   | 2,299/407   |
| Hellam Township           | 11,677                                     | \$10,439,112  | 683                               |   |   |
| Hopewell Township         | 13,571                                     | \$12,132,852  | 638                               |   |   |
| Jackson Township          | 8,311                                      | \$7,429,706   | 818                               | 255/42  |   |
| Jacobus Borough           | 96   | \$86,244  | 7                                 |   |   |
| Jefferson Borough         | 141  | \$126,177   | 7                                 |   |   |
| Lewisberry Borough        | .25  | \$224   | 61                                |   |   |
| Loganville Borough        | 183  | \$163,297   | 5                                 |   |   |
| Lower Chanceford Township | 21,731                                     | \$19,427,770  | 419                               |   |   |
| Lower Windsor Township    | 10,017                                     | \$8,955,632   | 1,021                             |   |   |
| Manchester Borough        | 32   | \$29,018  | 2                                 |   |   |
| Manchester Township       | 2,489                                      | \$2,225,397   | 309                               |   |   |
| Manheim Township          | 9,082                                      | \$8,119,390   | 900                               |   |   |
| Monaghan Township         | 5,740                                      | \$5,131,650   | 579                               | 3,895/1,339   |   |
| Mount Wolf Borough        | 107  | \$95,771  | 6                                 |   |   |
| New Freedom Borough       | 87   | \$77,441  | 9                                 |   |   |
| New Salem Borough         | 77   | \$68,765  | 8                                 |   |   |
| Newberry Township         | 10,624                                     | \$9,497,723   | 1,199                             | 3,311/2,350   |   |
| North Codorus Township    | 14,148                                     | \$12,648,148  | 1,371                             |   |   |
| North Hopewell Township   | 9,161                                      | \$8,189,831   | 489                               |   |   |
| North York Borough        | 0  |   | 4                                 |   |   |
| Paradise Township         | 9,196                                      | \$8,221,412   | 792                               | 3,756/775   |   |

**Table 4.3.1.5-1: Drought Vulnerability by Municipality**

| <b>Municipality</b>      | <b>Total Agricultural Acres (DOA 2017)</b> | <b>Municipal Agricultural Exposure (2012 Census of Ag.)</b> | <b>Total Wells* (PAGWIS 2009)</b> | <b>Water Challenged Acres (SRBC 2005) /Population (YCPC 2017)</b> | <b>Potential Groundwater Stressed Acres (SRBC 2005)/ Population (YCPC 2017)</b> |
|--------------------------|--|---|-----------------------------------|---|---|
| Peach Bottom Township    | 13,723                                     | \$12,268,575  | 576                               |   |   |
| Penn Township            | 2,218                                      | \$1,982,878   | 370                               |   | 6,528/14,770  |
| Railroad Borough         | 279  | \$249,482   | 2                                 |   |   |
| Red Lion Borough         | 6  | \$5,514   | 10                                |   |   |
| Seven Valleys Borough    | 511  | \$457,255   | 16                                |   |   |
| Shrewsbury Borough       | 136  | \$121,683   | 266                               |   |   |
| Shrewsbury Township      | 13,755                                     | \$12,296,529  | 684                               |   |   |
| Spring Garden Township   | 329  | \$293,939   | 39                                |   |   |
| Spring Grove Borough     | 41   | \$36,800  | 12                                |   |   |
| Springettsbury Township  | 1,655                                      | \$1,479,411   | 313                               |   |   |
| Springfield Township     | 12,139                                     | \$10,851,935  | 544                               |   |   |
| Stewartstown Borough     | 71   | \$63,305  | 31                                |   |   |
| Warrington Township      | 14,199                                     | \$12,694,054  | 993                               | 12,794/2,359  |   |
| Washington Township      | 15,042                                     | \$13,447,893  | 469                               | 2,331/460   |   |
| Wellsville Borough       | 15   | \$13,303  | 25                                |   |   |
| West Manchester Township | 3,308                                      | \$2,956,932   | 340                               |   |   |
| West Manheim Township    | 6,279                                      | \$5,613,186   | 867                               |   | 6,453/4,481   |
| West York Borough        | 0  |   | 3                                 |   |   |
| Windsor Borough          | 129  | \$115,633   | 2                                 |   |   |
| Windsor Township         | 9,908                                      | \$8,857,437   | 960                               |   |   |
| Winterstown Borough      | 1,181                                      | \$1,055,757   | 62                                |   |   |
| Wrightsville Borough     | 34   | \$30,801  | 6                                 |   |   |
| Yoe Borough              | 4  | \$3,226   | 0                                 |   |   |
| York City                | 1  | \$1,111   | 106                               |   |   |
| York Haven Borough       | 57   | \$50,939  | 44                                | 88/84   |   |
| York Township            | 6,171                                      | \$5,516,937   | 457                               |   |   |
| Yorkana Borough          | 23   | \$20,555  | 2                                 |   |   |
| <b>Total</b>             | <b>360,143</b>                             | <b>\$321,968,261</b>  | <b>25,859</b>                     | <b>41,137.5/22,381</b>  | <b>20,160/33,685</b>  |

\*Includes all domestic, commercial, other uses relying on withdrawal of groundwater per PAGWIS

Source: YCPC GIS Analysis using York County Department of Assessment (DOA), Census of Agriculture, Pennsylvania Groundwater Information System (PAGWIS), and Susquehanna River Basin Commission (SRBC) data.



This analysis shows that 360,143 acres of farmland could be impacted by a drought. Calculations using the 2012 Census of Agriculture indicate that the Market Value of Products Sold is approximately \$894 per acre. This calculates to \$321,968,261 in exposure for York County.

### **4.3.2 Earthquake**

Earthquakes are geologic events that involve the movement or shaking of the crust of the earth and are measured in terms of magnitude and intensity. Earthquakes can cause destruction to the human-made environment. The movement or shaking of the ground can cause secondary effects. These secondary effects include falling objects, fires, avalanches, land and mudslides, soil liquefaction, ground lurching, settlement (compression of soil layers), structural collapse, and tsunamis. Avalanches and tsunamis are unlikely to occur in York County due to the insignificant snow cover and depth and the distance to large bodies of water.

#### **4.3.2.1 Location and Extent**

In relation to Pennsylvania, York County lies within one of the most active seismic areas in the State. This area is known as the Lancaster Seismic Zone and consists of York, Lancaster, Lebanon, and Berks Counties. Earthquakes in this area usually occur along the margins of the Mesozoic Newark Basin. According to the Department of Conservation and Natural Resources (DCNR), PA has experienced fewer and milder earthquakes than most other states or Canadian provinces. However, earthquakes do occur in the Commonwealth and residents can also be subject to the effects of earthquakes with epicenters located in other areas.

The locations of the earthquakes occurring in York County and the Lancaster Seismic Zone are shown on Figure 4.3.2.1-1: Earthquakes in York County.

#### **4.3.2.2 Range of Magnitude**

Earthquakes are measured by magnitude and intensity. The Richter Scale measures magnitude by measuring the amount of ground movement at a set distance from the epicenter (point on surface of the earth directly above hypocenter or focus of the earthquake). The numbers in this scale have no upper or lower limits and each is ten (10)-fold amplitude of ground motion. While used more for comparing earthquakes than expressing the results, the Richter Scale is most relied upon for measuring earthquakes.

The Modified Mercalli Scale, on the other hand, expresses the intensity of an earthquake by quantifying the effects caused by an earthquake. Although mostly used as a supplement to the Richter (Magnitude) Scale, the Modified Mercalli Scale is useful for measuring the effects of an earthquake on different areas. As previously noted, the intensity or severity of an earthquake will depend on topography, soil characteristics, location of the earthquake relative to rock structure, and type of bedrock. A generalized comparison of the Modified Mercalli Scale to the Magnitude Scale (Richter Scale) is provided (Table 4.3.2.2-1).

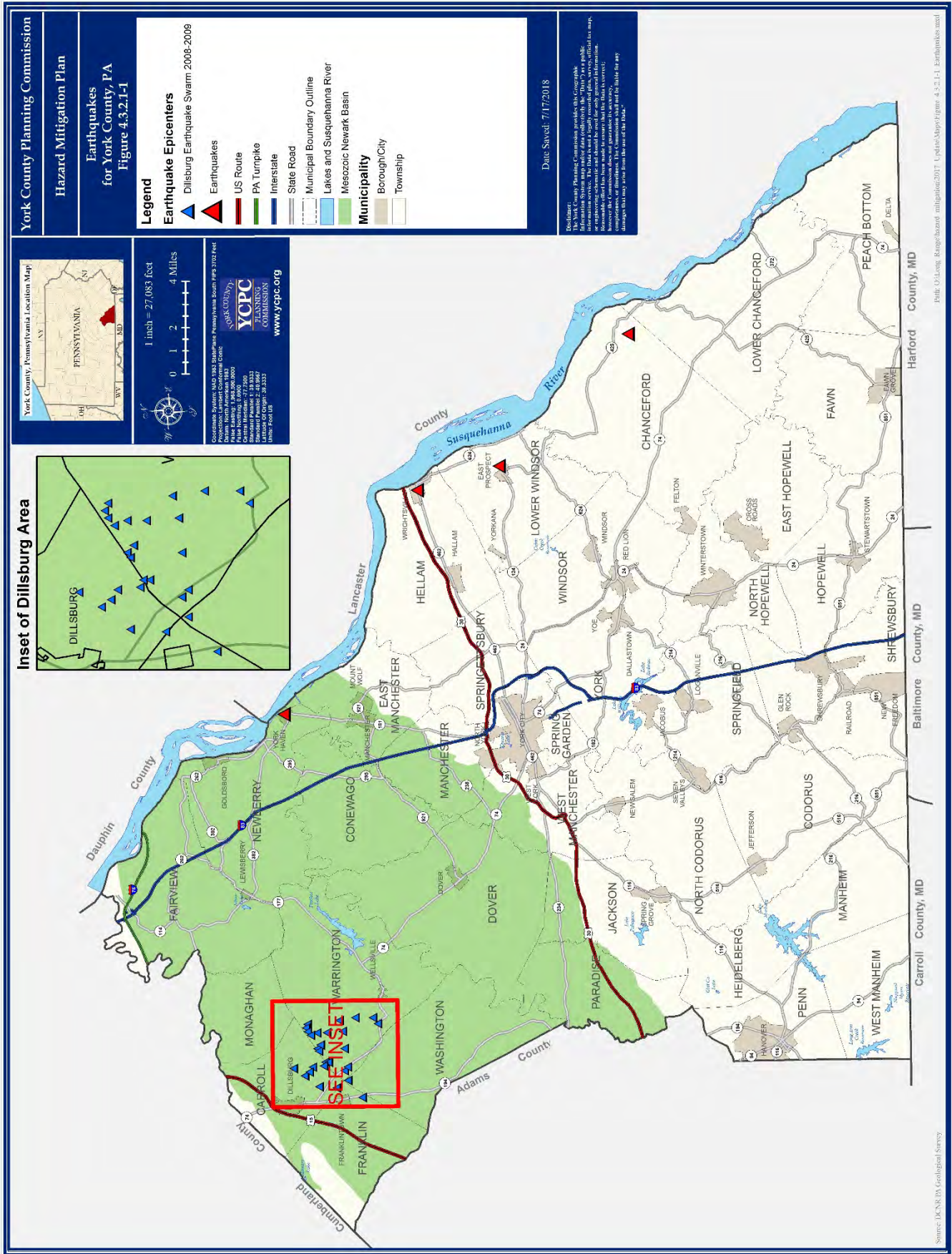
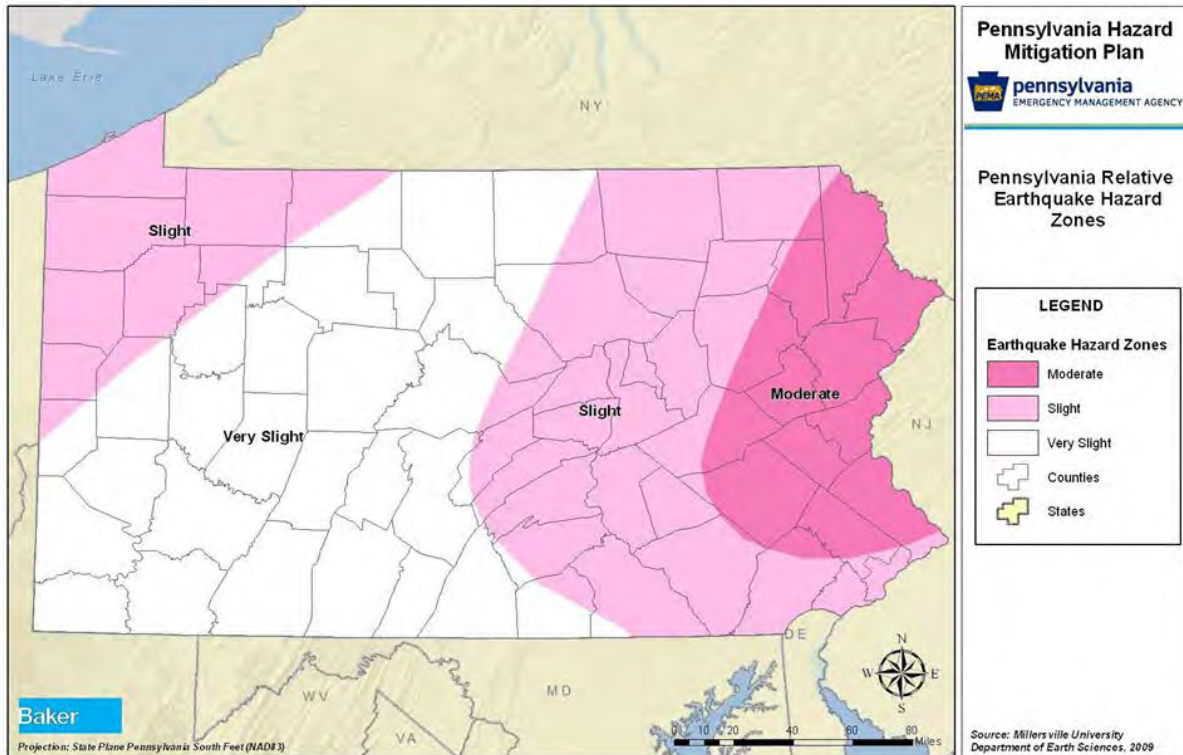


Table 4.3.2.2-1: Modified Mercalli and Richter Scales

| Modified Mercalli Scale |  | Richter Magnitude Scale |
|-------------------------|--|-------------------------|
| I                       | Detected only by sensitive instruments   | 1.5                     |
| II                      | Felt by few persons at rest, especially on upper floors; delicately suspended objects may swing                              | 2                       |
| III                     | Felt noticeably indoors, but not always recognized as earthquake; standing autos rock slightly, vibration like passing truck | 2.5                     |
| IV                      | Felt indoors by many, outdoors by few, at night some may awaken; dishes, windows, doors disturbed; autos rock noticeably     | 3                       |
| V                       | Felt by most people; some breakage of dishes, windows, and plaster; disturbance of tall objects                              | 3.5                     |
| VI                      | Felt by all, many frightened and run outdoors; falling plaster and chimneys, damage small                                    | 4                       |
| VII                     | Everybody runs outdoors; damage to buildings varies depending on quality of construction; noticed by drivers of autos        | 4.5                     |
| VIII                    | Panel walls thrown out of frames; fall of walls, monuments, chimneys; sand and mud ejected; drivers of autos disturbed       | 5                       |
| IX                      | Buildings shifted off foundations, cracked, thrown out of plumb; ground cracked; underground pipes broken                    | 5.5                     |
| X                       | Most masonry and frame structures destroyed; ground cracked, rails bent, landslides  | 6                       |
| XI                      | Few structures remain standing; bridges destroyed, fissures in ground, pipes broken, landslides, rails bent                  | 6.5                     |
| XII                     | Damage total; waves seen on ground surface, lines of sight and level distorted, objects thrown up in air                     | 7                       |

Source: [www.dnr.mo.gov](http://www.dnr.mo.gov)

Based on historical data of earthquakes with a recorded history, little damage is expected from earthquake events in PA or in York County. However, the largest recorded earthquake in PA (magnitude of 5.2 and intensity of VI) occurred near the border of Mercer and Crawford Counties on September 25, 1998. As a worst-case scenario, a repeat of this type of earthquake hazard event in or adjacent to York County would cause mild damage in populated areas. The map below (Figure 4.3.2.2-1: PA Relative Earthquake Hazard Zones) shows the relative earthquake hazard zones for the State. As shown, York County, with the exception of the southwestern-most portion, is located in the “slight” hazard zone.



**Figure 4.3.2.2-1: PA Relative Earthquake Hazard Zones**  
 Source: Millersville University, PA HMP

The **potential environmental impacts** of an earthquake include:

- Poor water quality;
- Damage to vegetation;
- Breakage/compromise of sewage or toxic material containments;
- Induced flooding or landslides;
- Secondary impacts including: train derailment and spillage of hazardous materials and utility interruption;
- Structural damage or collapse; and
- Injury and/or loss of life.

### 4.3.2.3 Historical Occurrence

The most recent earthquake, in York County, occurred on August 13, 2015, in Chanceford Township, near the intersection of Mill and Goram Roads. It registered 1.5 on the Richter Scale. According to data from the United States Geological Survey (USGS) and DCNR, York County has recorded a total of 32 earthquakes (see Table 4.3.2.3-1). The earliest recorded earthquake took place on March 8, 1889, in the Wrightsville Borough area. Most of the recorded earthquakes occurred as a swarm of small earthquakes near Dillsburg from 2008 until mid-2010 with 27 separate events being measurable, the largest reading 3.1 on the Richter Scale of Magnitude. The earthquakes occurring in York County have been located relatively close to the margins of the Mesozoic Newark Basin.

| <b>Table 4.3.2.3-1: York County Recorded Earthquakes</b> |  |                  |
|--|--|------------------|
| <b>Date</b>  | <b>Location</b>                            | <b>Magnitude</b> |
| 08/13/2015   | 39.892°N 76.408°W<br>Chanceford Township   | 1.2              |
| 06/03/2010   | 40.086°N 76.974°W                          | 3.1              |
| 10/25/2009   | 40.096°N 76.976°W                          | 2.8              |
| 10/25/2009   | 40.075°N 76.987°W                          | 1.8              |
| 10/25/2009   | 40.098°N 76.973°W                          | 2.5              |
| 05/11/2009   | 40.099°N 76.970°W                          | 1.2              |
| 05/11/2009   | 40.088°N 77.001°W                          | 1.3              |
| 04/30/2009   | 40.073°N 77.013°W                          | 2.0              |
| 04/24/2009   | 40.064°N 77.027°W                          | 2.0              |
| 04/23/2009   | 40.085°N 76.998°W                          | 2.4              |
| 04/22/2009   | 40.073°N 77.002°W                          | 1.1              |
| 12/31/2008   | 40.107°N 77.003°W                          | 2.1              |
| 11/07/2008   | 40.097°N 77.006°W                          | 1.4              |
| 10/23/2008   | 40.068°N 76.962°W                          | 1.2              |
| 10/19/2008   | 40.090°N 76.984°W                          | 1.5              |
| 10/19/2008   | 40.075°N 77.005°W                          | 1.1              |
| 10/19/2008   | 40.091°N 76.989°W                          | 1.6              |
| 10/19/2008   | 40.076°N 76.973°W                          | 1.5              |
| 10/19/2008   | 40.095°N 77.002°W                          | 1.0              |
| 10/19/2008   | 40.100°N 77.009°W                          | 1.7              |
| 10/19/2008   | 40.092°N 76.987°W                          | 1.1              |
| 10/19/2008   | 40.057°N 76.962°W                          | 0.8              |
| 10/19/2008   | 40.091°N 77.018°W                          | 1.0              |
| 10/19/2008   | 40.092°N 76.974°W                          | 1.8              |
| 10/19/2008   | 40.087°N 76.998°W                          | 1.5              |
| 10/19/2008   | 40.078°N 76.964°W                          | 2.1              |
| 10/19/2008   | 40.080°N 77.019°W                          | 1.9              |
| 10/05/2008   | 40.054°N 76.967°W                          | 2.0              |
| 08/24/2000   | Near York Haven<br>Borough                 | 1.9              |
| 06/16/1997   | 40.098°N 76.967°W                          | 2.2              |
| 10/06/1978   | 39.974°N 76.514°W<br>East Prospect Borough | 3.0              |
| 03/08/1889   | Near Wrightsville<br>Borough               | 4.3              |

Source: USGS and DCNR

Other earthquakes, with epicenters in PA and experienced by York County residents, can most likely be attributed to the Counties of Lancaster, Berks, Lebanon, and Northampton. Within Pennsylvania, the largest recorded earthquake happened near the border of Mercer and Crawford Counties. This earthquake, with a magnitude of 5.2 and an intensity of VI, occurred on September 25, 1998. According to “The Geology of Pennsylvania,” published by the PA Geological Survey and the Pittsburgh Geological Society, there have been 35 earthquakes which have caused light damage in the State since colonial times with almost half of these coming from outside the State. DCNR notes that southeastern Pennsylvania has not experienced an earthquake greater than 4.7 on the Richter Scale, but the records only go back about 200 years.

Areas outside of PA that have experienced earthquakes with effects most likely felt in York County include Cape Ann, north of Boston (intensity of IV to V in eastern PA); Charleston, South Carolina (intensity up to IV throughout PA); Timiskaming, Ontario (low intensity throughout PA); southeastern New York and northern New Jersey (intensities ranging from IV to V in eastern PA). Most recently (8/2011), a quake with an epicenter northwest of Richmond, Virginia (intensity VII) was felt in York County. None of the previously recorded earthquakes have been declared major disasters or received a proclamation from the Governor for York County.

#### **4.3.2.4 Future Occurrence**

Earthquake history has been determined by many to be the best basis for determining earthquake hazard. The United States Geological Survey (USGS) has used earthquake history to estimate the probability of earthquakes at different magnitudes occurring in various locations over a period of time, usually 50 years. The level of hazard expressed by these maps is the expected level of ground shaking measured in the percentage of gravity (g) (32 feet/second/second) or the acceleration due to gravity (g). This measurement is used because building codes are written to indicate how much horizontal force a building can withstand. DEP requires that structures built in areas with a 2% chance of exceeding 10% g in 50 years to incorporate safety features. As can be seen on the Seismic Hazard Map of PA (Figure 4.3.2.4-1), York County appears to lie somewhere between the 6-10% g range, with a small portion of southeastern York County being in the 10-14% g range. These values correspond to intensities of VII; such earthquakes can cause significant building damage.

It can be concluded that York County is located in a recognized seismically active area, has geological features associated with earthquake prone areas, and has experienced earthquakes in the past. According to DCNR, “a large local earthquake, one with a magnitude of greater than six (6), though unlikely, is not impossible” and the “possibility of a magnitude seven (7) earthquake, near New York City” could pose a threat for eastern PA. Given this information, there is a chance of future earthquakes occurring in any given year and, based on recorded earthquake activity over the past 20 years, they can be expected at an average rate of one (1) or more smaller earthquakes per year.

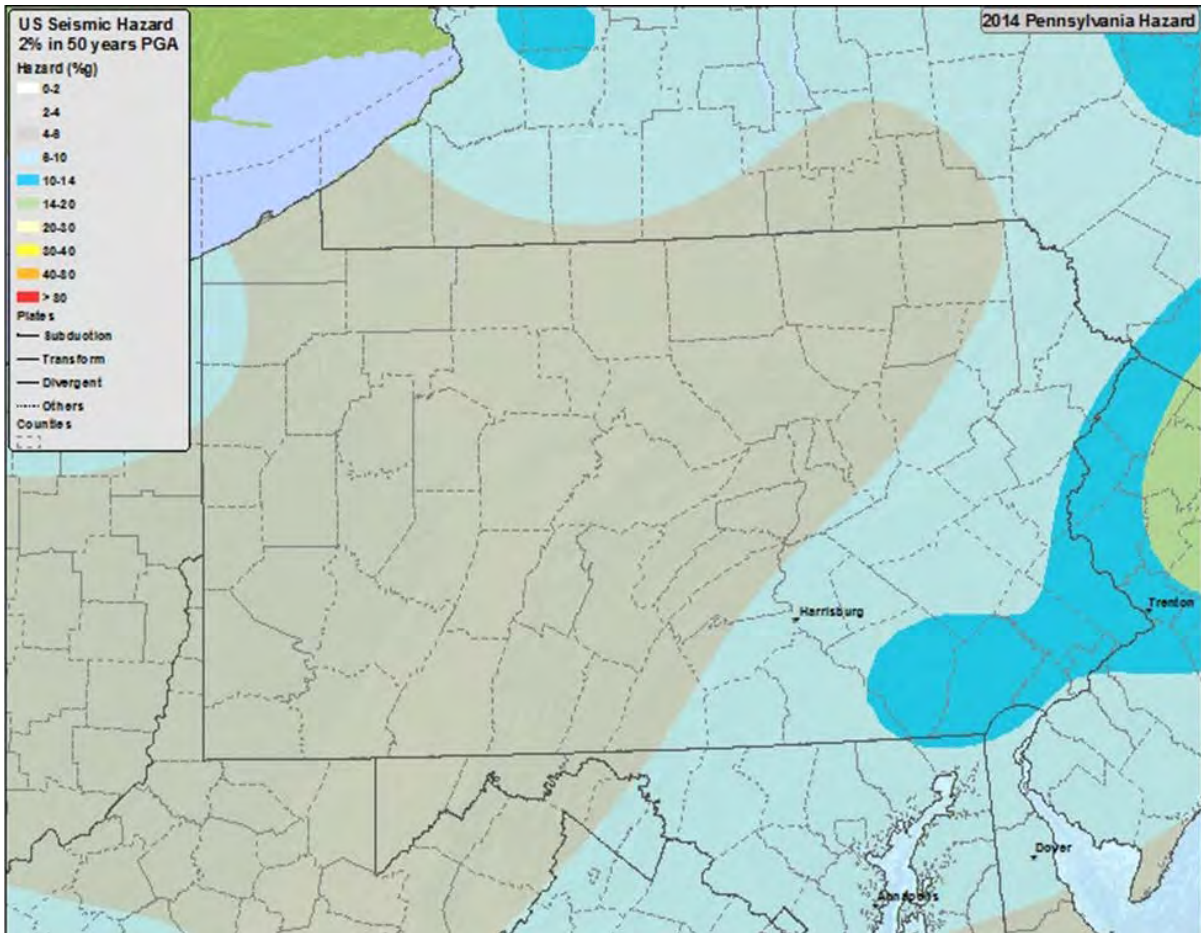


Figure 4.3.2.4-1 USGS 2014 Seismic Hazard Map

**4.3.2.5 Vulnerability Assessment**

York County’s vulnerability to earthquakes is minimal. Recorded history documents a few minor quakes in the County. The PA Relative Earthquake Hazard Zones were utilized to determine the earthquake vulnerability by municipality, as follows in Table 4.3.2.5-1.

| Table 4.3.2.5-1: Earthquake Vulnerability by Municipality |                            |                                      |                              |                                 |                            |
|---|----------------------------|--------------------------------------|------------------------------|---------------------------------|----------------------------|
| Municipality  | Dwelling Units (YCPC 2017) | Estimated Population (YCPC/DOA 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure* (DOA 2017) |
| <b>SLIGHT RISK ZONE</b>                                   |                            |                                      |                              |                                 |                            |
| Carroll Township  | 2,361                      | 6,634                                | 913                          | 30                              | \$728,480,557              |
| Chanceford Township                                       | 2,334                      | 6,302                                | 2,245                        | 11                              | \$438,086,852              |
| Codorus Township  | 1,416                      | 3,639                                | 1,689                        | 4                               | \$338,948,679              |
| Conewago Township   | 3,338                      | 9,013                                | 1,516                        | 20                              | \$865,093,546              |
| Cross Roads Borough                                       | 180                        | 556                                  | 129                          | 0                               | \$40,392,895               |

**Table 4.3.2.5-1: Earthquake Vulnerability by Municipality**

| Municipality              | Dwelling Units (YCPC 2017) | Estimated Population (YCPC/DOA 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure* (DOA 2017) |
|---------------------------|----------------------------|--------------------------------------|------------------------------|---------------------------------|----------------------------|
| <b>SLIGHT RISK ZONE</b>   |                            |                                      |                              |                                 |                            |
| Dallastown Borough        | 1,486                      | 3,730                                | 860                          | 13                              | \$278,102,643              |
| Delta Borough             | 257                        | 619                                  | 114                          | 3                               | \$42,507,665               |
| Dillsburg Borough         | 939                        | 2,197                                | 419                          | 9                               | \$197,955,010              |
| Dover Borough             | 725                        | 1,856                                | 278                          | 14                              | \$127,463,821              |
| Dover Township            | 9,017                      | 22,813                               | 3,822                        | 40                              | \$1,794,636,831            |
| East Hopewell Township    | 927                        | 2,549                                | 566                          | 1                               | \$205,648,946              |
| East Manchester Township  | 3,180                      | 9,063                                | 1,087                        | 37                              | \$895,735,600              |
| East Prospect Borough     | 343                        | 1,005                                | 135                          | 4                               | \$51,143,005               |
| Fairview Township         | 6,839                      | 17,987                               | 2,297                        | 63                              | \$1,852,330,757            |
| Fawn Grove Borough        | 170                        | 471                                  | 188                          | 4                               | \$66,782,117               |
| Fawn Township             | 1,101                      | 2,962                                | 972                          | 6                               | \$295,517,060              |
| Felton Borough            | 200                        | 574                                  | 164                          | 1                               | \$44,251,680               |
| Franklin Township         | 1,835                      | 4,606                                | 1,082                        | 7                               | \$372,262,777              |
| Franklintown Borough      | 212                        | 562                                  | 108                          | 3                               | \$29,672,291               |
| Glen Rock Borough         | 696                        | 1,712                                | 286                          | 7                               | \$151,838,574              |
| Goldsboro Borough         | 340                        | 1,003                                | 181                          | 4                               | \$56,652,082               |
| Hallam Borough            | 987                        | 2,171                                | 268                          | 6                               | \$163,963,690              |
| Hanover Borough           | 314                        | 728                                  | 200                          | 16                              | \$169,013,405              |
| Heidelberg Township       | 1,176                      | 3,305                                | 912                          | 12                              | \$262,623,070              |
| Hellam Township           | 2,491                      | 5,879                                | 1,447                        | 18                              | \$563,964,126              |
| Hopewell Township         | 2,014                      | 5,700                                | 1,299                        | 17                              | \$740,427,461              |
| Jackson Township          | 3,463                      | 9,177                                | 2,402                        | 31                              | \$753,192,646              |
| Jacobus Borough           | 655                        | 1,847                                | 386                          | 7                               | \$182,223,878              |
| Jefferson Borough         | 257                        | 673                                  | 211                          | 4                               | \$51,728,760               |
| Lewisberry Borough        | 141                        | 337                                  | 101                          | 3                               | \$28,338,801               |
| Loganville Borough        | 478                        | 1,286                                | 303                          | 6                               | \$114,220,689              |
| Lower Chanceford Township | 1,110                      | 3,130                                | 1,235                        | 8                               | \$216,466,578              |
| Lower Windsor Township    | 3,070                      | 7,921                                | 2,437                        | 21                              | \$576,573,373              |
| Manchester Borough        | 928                        | 2,246                                | 377                          | 7                               | \$165,649,345              |



**Table 4.3.2.5-1: Earthquake Vulnerability by Municipality**

| Municipality             | Dwelling Units (YCPC 2017) | Estimated Population (YCPC/DOA 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure* (DOA 2017) |
|--------------------------|----------------------------|--------------------------------------|------------------------------|---------------------------------|----------------------------|
| <b>SLIGHT RISK ZONE</b>  |                            |                                      |                              |                                 |                            |
| Manchester Township      | 6,996                      | 18,749                               | 1,618                        | 57                              | \$2,501,623,571            |
| Manheim Township         | 321                        | 924                                  | 375                          | 3                               | \$80,134,144               |
| Monaghan Township        | 1,036                      | 2,673                                | 693                          | 3                               | \$264,447,807              |
| Mount Wolf Borough       | 505                        | 1,338                                | 240                          | 9                               | \$79,147,699               |
| New Freedom Borough      | 1,698                      | 4,500                                | 554                          | 12                              | \$521,913,355              |
| New Salem Borough        | 319                        | 880                                  | 172                          | 4                               | \$71,364,242               |
| Newberry Township        | 6,307                      | 16,398                               | 2,454                        | 37                              | \$1,116,236,140            |
| North Codorus Township   | 3,450                      | 9,246                                | 2,706                        | 19                              | \$709,270,268              |
| North Hopewell Township  | 1,092                      | 2,697                                | 889                          | 5                               | \$237,050,276              |
| North York Borough       | 654                        | 1,557                                | 534                          | 1                               | \$125,609,783              |
| Paradise Township        | 1,527                      | 3,985                                | 1,413                        | 13                              | \$300,323,849              |
| Peach Bottom Township    | 2,003                      | 5,648                                | 1,060                        | 12                              | \$465,791,737              |
| Penn Township            | 300                        | 801                                  | 139                          | 8                               | \$304,517,151              |
| Railroad Borough         | 96                         | 253                                  | 84                           | 3                               | \$34,932,589               |
| Red Lion Borough         | 2,274                      | 5,662                                | 1,092                        | 18                              | \$414,746,089              |
| Seven Valleys Borough    | 175                        | 425                                  | 158                          | 3                               | \$31,117,947               |
| Shrewsbury Borough       | 1,362                      | 3,664                                | 581                          | 17                              | \$410,838,341              |
| Shrewsbury Township      | 2,689                      | 7,072                                | 1,644                        | 36                              | \$1,070,505,606            |
| Spring Garden Township   | 4,508                      | 11,405                               | 1,462                        | 53                              | \$1,639,299,332            |
| Spring Grove Borough     | 826                        | 2,164                                | 525                          | 16                              | \$203,882,621              |
| Springettsbury Township  | 9,820                      | 24,059                               | 2,076                        | 137                             | \$3,109,008,431            |
| Springfield Township     | 2,186                      | 5,727                                | 1,577                        | 19                              | \$661,489,149              |
| Stewartstown Borough     | 775                        | 1,821                                | 324                          | 9                               | \$186,765,294              |
| Warrington Township      | 1,846                      | 4,523                                | 1,585                        | 20                              | \$365,161,135              |
| Washington Township      | 1,052                      | 3,061                                | 1,432                        | 1                               | \$230,994,449              |
| Wellsville Borough       | 108                        | 252                                  | 92                           | 3                               | \$31,800,977               |
| West Manchester Township | 7,618                      | 18,207                               | 2,292                        | 80                              | \$2,060,303,027            |
| West York Borough        | 1,591                      | 4,009                                | 1,032                        | 9                               | \$231,416,024              |
| Windsor Borough          | 464                        | 1,225                                | 202                          | 3                               | \$61,331,662               |

Table 4.3.2.5-1: Earthquake Vulnerability by Municipality

| Municipality                  | Dwelling Units (YCPC 2017) | Estimated Population (YCPC/DOA 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure* (DOA 2017) |
|-------------------------------|----------------------------|--------------------------------------|------------------------------|---------------------------------|----------------------------|
| <b>SLIGHT RISK ZONE</b>       |                            |                                      |                              |                                 |                            |
| Windsor Township              | 6,935                      | 18,516                               | 2,507                        | 36                              | \$3,534,302,639            |
| Winterstown Borough           | 228                        | 524                                  | 211                          | 5                               | \$48,076,358               |
| Wrightsville Borough          | 862                        | 2,095                                | 510                          | 14                              | \$151,003,246              |
| Yoe Borough                   | 346                        | 865                                  | 195                          | 3                               | \$38,025,514               |
| York City                     | 13,347                     | 34,969                               | 3,556                        | 113                             | \$2,464,233,333            |
| York Haven Borough            | 224                        | 652                                  | 145                          | 5                               | \$23,469,519               |
| York Township                 | 14,067                     | 32,917                               | 2,956                        | 88                              | \$22,771,243,661           |
| Yorkana Borough               | 87                         | 226                                  | 59                           | 1                               | \$12,515,171               |
| <b>SLIGHT RISK TOTAL</b>      | <b>154,674</b>             | <b>397,946</b>                       | <b>69,773</b>                | <b>1,312</b>                    | <b>\$59,425,781,346</b>    |
| <b>VERY SLIGHT RISK ZONE</b>  |                            |                                      |                              |                                 |                            |
| Codorus Township              | 95                         | 244                                  | 120                          | 0                               | \$22,844,284               |
| Hanover Borough               | 5,330                      | 12,366                               | 2,770                        | 63                              | \$1,336,446,011            |
| Heidelberg Township           | 1                          | 3                                    | 1                            | 0                               | \$262,640                  |
| Manheim Township              | 929                        | 2,676                                | 818                          | 3                               | \$233,452,179              |
| Penn Township                 | 6,146                      | 16,410                               | 2,342                        | 39                              | \$1,427,846,639            |
| West Manheim Township         | 3,104                      | 9,188                                | 1,575                        | 20                              | \$848,971,364              |
| <b>VERY SLIGHT RISK TOTAL</b> | <b>15,605</b>              | <b>40,886</b>                        | <b>7,626</b>                 | <b>125</b>                      | <b>\$3,869,823,117</b>     |
| <b>COUNTY TOTAL</b>           | <b>170,279</b>             | <b>438,832</b>                       | <b>77,399</b>                | <b>1,437</b>                    | <b>\$63,295,604,463</b>    |

\* Total Exposure= All building and content losses per County Assessment. Content losses equal 75% of assessed value.

Source: YCPC GIS Analysis using County Assessment and YCPC data.

Based on this information, York County could potentially have as much as \$63,295,604,463 in exposed buildings and contents impacted by earthquakes.

### 4.3.3 Extreme Temperature (Hot and Cold)

FEMA defines extreme heat temperatures as those that exceed average high temperatures for a region by ten (10) or more degrees for a period of several weeks. In York County, July is the hottest month with an average maximum temperature of 86.9 degrees Fahrenheit. Based on FEMA's definition, any extended period of temperatures 96.9 degrees Fahrenheit or more would constitute extreme heat temperatures.

The Center for Disease Control (CDC) indicates that what constitutes extreme cold can vary in different regions of the U.S. and depends on what is considered relatively normal weather for an area. No

definition for extreme cold could be found, so the basis for FEMA’s definition of extreme heat temperatures will be applied to extreme cold temperatures. In York County, January is the coolest month with an average minimum temperature of 19.4 degrees Fahrenheit. Given FEMA’s definition, any extended period of temperatures below 9.4 degrees Fahrenheit would constitute extreme cold temperatures that residents of York County may not be prepared to experience. Figure 4.3.3-1 provides the average temperature, maximum temperature, and minimum temperature by month for York County.

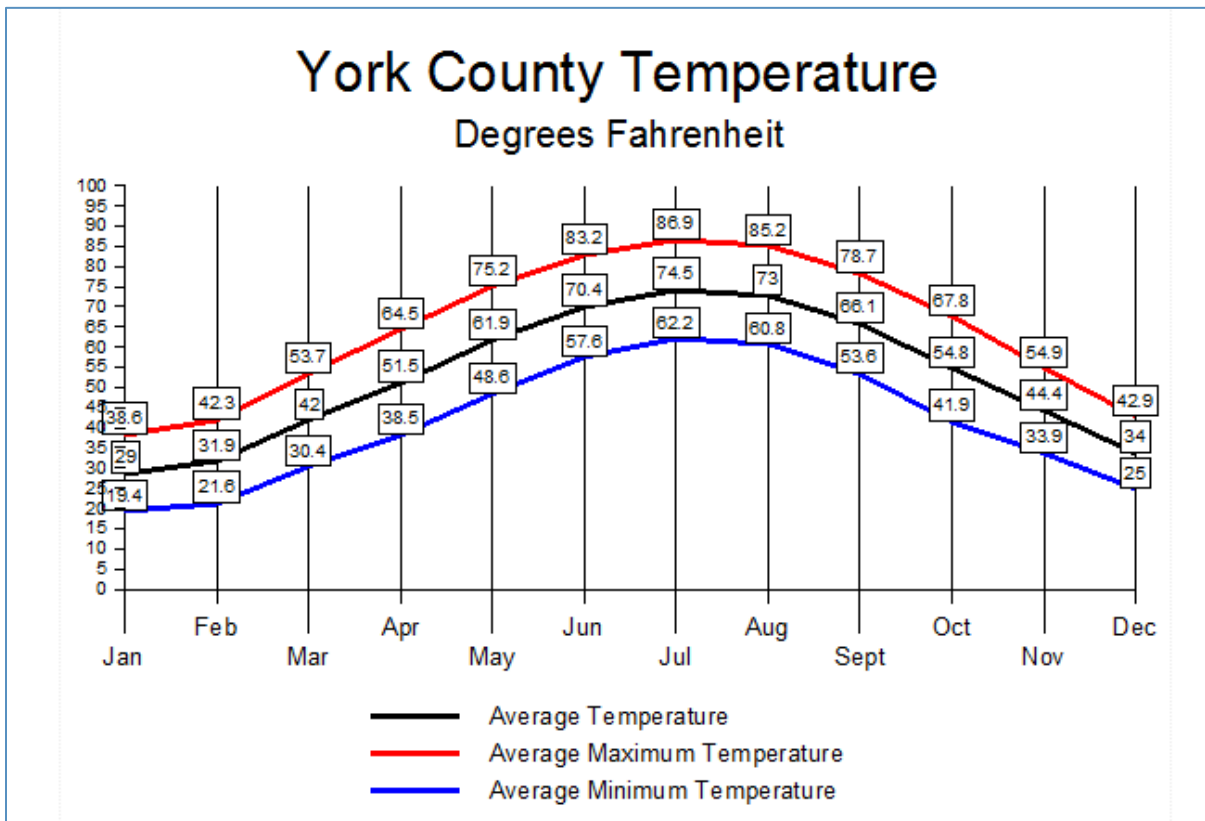


Figure 4.3.3-1: York County Average Temperatures  
 Source: United States Department of Agriculture/ National Resource Conservation Service

Extended periods of unseasonably high temperatures hamper the body’s ability to cool itself and can lead to heat strokes, heat exhaustion, heat cramps, and, in many cases, death. Those at greatest risk for heat-related illnesses include infants and children younger than five (5) years of age, people age 75 or older, people who are overweight, and people with existing medical problems or that are currently on certain medications. Besides health effects, extreme heat can lead to power and water shortages from increased demand and food shortages resulting from crop damage.

Extreme cold causes the body to lose heat faster than it can be generated, which can lead to hypothermia, frostbite, or death. These abnormally cold temperatures can be further worsened by the addition of snow and wind. Those most at risk from the effects of extreme cold include elderly with inadequate food, clothing, or heating; babies; children left unattended; adults under the influence of alcohol; mentally ill individuals; and people who remain outdoors for extended periods

of time (homeless, hikers, hunters, etc.). Infants and people 65 or older are especially at risk due to their bodies inadequate or diminished capacity to produce body heat.

**4.3.3.1 Location and Extent**

York County, as a whole, is subject to extreme temperatures in the summer and winter seasons.

**4.3.3.2 Range of Magnitude**

According to the National Climatic Data Center (NCDC), approximately 618 people are killed in the United States on an annual basis by extreme heat. This average is even higher for extreme cold related deaths, which total approximately 1,301 deaths per year. According the PA HMP, a worst-case scenario for extreme heat temperature would be the Commonwealth experiencing 90 degree or higher temperatures for an extended period of days potentially overwhelming the power grid and causing widespread blackouts and loss of HVAC services. Thus for extreme cold, it can be assumed that a severe winter storm, accompanied by low temperatures and wind, could knock out the power grid leaving some without heat and others stranded in extreme cold conditions. This would likely be a worst-case scenario.

The National Weather Service (NWS), as shown in the table below, issues temperature advisories, watches, and warnings for extreme temperature events.

**Table 4.3.3.2-1: Advisories, Watches and Warnings Related to Extreme Temperatures**

| Category                | Criteria  |
|-------------------------|---|
| Heat Advisory           | Heat index $\geq 100^{\circ}\text{F}$ , but $<105^{\circ}\text{F}$                |
| Excessive Heat Warnings | Heat indices $\geq 105^{\circ}\text{F}$   |
| Excessive Heat Watches  | Issued if excessive heat warning criteria may be experienced in 24-48 hours       |
|                         |   |
| Wind Chill Warnings     | Issued when wind chill drops to $(-15^{\circ}\text{F})$ - $(-24^{\circ}\text{F})$ |

Source: NOAA, NWS, 2010

The **potential environmental impacts** of extreme temperatures can include the following:

- Extreme high temperatures increase the need for air conditioning, which can overwhelm the power grid, causing widespread blackouts/power loss;
- Human health risks and public health emergencies related to excessive heat can include heat cramps, heat stroke, heat exhaustion, and death;
- Human health risks and public health emergencies from extremely cold temperatures include frostbite, hypothermia, heart attacks, and death;
- Extreme heat over an extended period could exacerbate the effects of a drought, including crop damage; and
- Prolonged exposure to extremely cold temperatures can kill wildlife and vegetation.

**4.3.3.3 Historical Occurrence**

Only one (1) declaration was issued due to extreme cold in the past. In January, 2014, the Governor issued a Disaster Emergency Proclamation due to Severe Cold. Additionally, extreme cold and heat temperatures most likely have been contributing factors to some of the winter storm and drought declarations.

The NOAA tracks temperature extremes. According to the NOAA, there have been 11 recorded extreme temperature events within York County, since 1950. All of these events involved portions, or the entirety, of other counties in Pennsylvania and occurred since 1997. It does not appear that there were any deaths or injuries. However, \$25 million in crop damages related to extreme temperature were noted for the 1997 event. Table 4.3.3.3-1 provides the NOAA reported events by date and type of event.

**Table 4.3.3.3-1: NOAA Reported Extreme Temperature Events**

| Date       | Type                    |
|------------|-------------------------|
| 04/09/1997 | Cold/Wind Chill         |
| 07/05/1999 | Heat                    |
| 07/17/2006 | Heat                    |
| 07/18/2006 | Heat                    |
| 07/31/2006 | Heat                    |
| 08/01/2006 | Heat                    |
| 02/05/2007 | Extreme Cold/Wind Chill |
| 07/21/2011 | Excessive Heat          |
| 02/15/2015 | Extreme Cold/Wind Chill |
| 07/25/2016 | Excessive Heat          |
| 08/13/2016 | Excessive Heat          |

**4.3.3.4 Future Occurrence**

Given the past recorded events, especially within the last 20 years, the likelihood of extreme temperatures occurring in the future would appear to be very likely and, based on records, could be expected several times annually. According to the CDC, extreme heat events, in the United States, are already occurring and expected to become more common, more severe, and longer-lasting as climate changes. The following figures (4.3.3.4-1 and 4.3.3.4-2) provide the probability of annual occurrence of temperatures > 95 degrees F and < 0 degrees F. According to this data, York County is expected to experience temperatures > 95 degrees F approximately three (3) to four (4) times a year. For temperatures < 0 degrees F, the County can expect a reoccurrence of these temperatures two (2) to three (3) times a year.

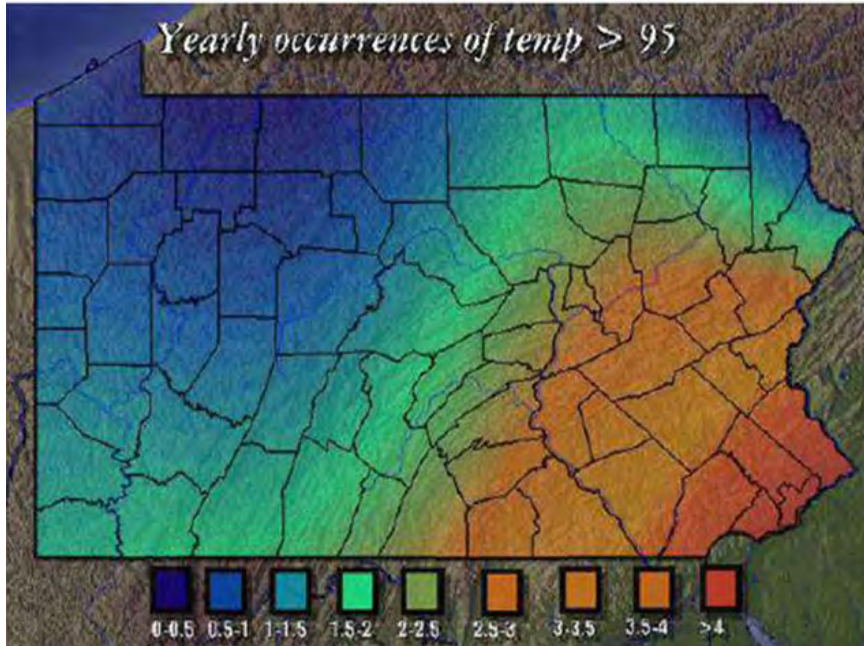


Figure 4.3.3.4-1: Map of Yearly Occurrence of temperatures > 95 degrees  
 Source: PA Climatologist, PA State HMP

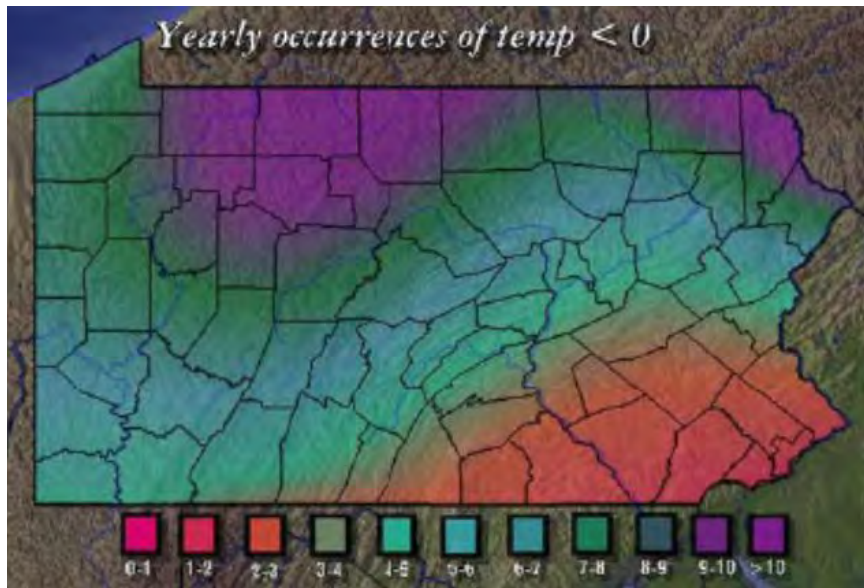


Figure 4.3.3.4-2: Map of Yearly Occurrence of temperatures < 0 degrees  
 Source: PA Climatologist, PA State HMP

#### 4.3.3.5 Vulnerability Assessment

The potential for extreme temperatures, heat and cold, always exists in the summer and winter months. Meteorological forecasting and extreme temperature warnings can significantly reduce the risks associated with extreme heat or cold. Often, those most significantly impacted by both extremes are the very young and the very old. Excessive heat can complicate health concerns of those with certain pre-existing conditions. Older dwelling units built prior to 1960 can increase the vulnerability

to temperature extremes due to the lack of air conditioning. Table 4.3.3.5-1 provides the vulnerability information related to extreme temperatures for York County.

| <b>Table 4.3.3.5-1: Extreme Temperature Vulnerability by Municipality</b> |   |  |   |                                   |                                    |  |
|---|---|--|---|-----------------------------------|------------------------------------|--|
| <b>Municipality</b>   | <b>Total Dwelling Units (YCPC 2017)</b> | <b>Dwelling Units Built Prior to 1960 (DOA 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Age &lt; 5 yrs. (ACS 2015)</b> | <b>Age &gt; 75 yrs. (ACS 2015)</b> | <b>Critical Facilities (YCPC 2017)</b> |
| Carroll Township  | 2,361                                   | 421  | 6,634                                   | 509                               | 253                                | 30                                     |
| Chanceford Township   | 2,334                                   | 644  | 6,302                                   | 477                               | 276                                | 11                                     |
| Codorus Township  | 1,511                                   | 535  | 3,883                                   | 272                               | 320                                | 4                                      |
| Conewago Township   | 3,338                                   | 639  | 9,013                                   | 544                               | 386                                | 20                                     |
| Cross Roads Borough   | 180                                     | 48   | 556                                     | 18                                | 17                                 | 13                                     |
| Dallastown Borough  | 1,486                                   | 887  | 3,730                                   | 259                               | 394                                | 3                                      |
| Delta Borough   | 257                                     | 217  | 619                                     | 18                                | 23                                 | 9                                      |
| Dillsburg Borough   | 939                                     | 339  | 2,197                                   | 162                               | 202                                | 14                                     |
| Dover Borough   | 725                                     | 262  | 1,856                                   | 155                               | 126                                | 40                                     |
| Dover Township  | 9,017                                   | 1,575  | 22,813                                  | 1,359                             | 1,066                              | 1                                      |
| East Hopewell Township  | 927                                     | 189  | 2,549                                   | 83                                | 120                                | 37                                     |
| East Manchester Township  | 3,180                                   | 555  | 9,063                                   | 327                               | 355                                | 4                                      |
| East Prospect Borough   | 343                                     | 157  | 1,005                                   | 53                                | 25                                 | 63                                     |
| Fairview Township   | 6,839                                   | 1,437  | 17,987                                  | 1,032                             | 724                                | 4                                      |
| Fawn Grove Borough  | 170                                     | 115  | 471                                     | 25                                | 36                                 | 6                                      |
| Fawn Township   | 1,101                                   | 290  | 2,962                                   | 101                               | 209                                | 1                                      |
| Felton Borough  | 200                                     | 120  | 574                                     | 32                                | 20                                 | 7                                      |
| Franklin Township   | 1,835                                   | 278  | 4,606                                   | 205                               | 277                                | 3                                      |
| Franklintown Borough  | 212                                     | 72   | 562                                     | 48                                | 5                                  | 7                                      |
| Glen Rock Borough   | 696                                     | 418  | 1,712                                   | 125                               | 70                                 | 4                                      |
| Goldsboro Borough   | 340                                     | 132  | 1,003                                   | 87                                | 37                                 | 6                                      |
| Hallam Borough  | 987                                     | 295  | 2,171                                   | 148                               | 89                                 | 79                                     |
| Hanover Borough   | 5,644                                   | 3,588  | 13,094                                  | 1,205                             | 1,411                              | 12                                     |
| Heidelberg Township   | 1,177                                   | 341  | 3,307                                   | 114                               | 199                                | 18                                     |
| Hellam Township   | 2,491                                   | 700  | 5,879                                   | 312                               | 499                                | 17                                     |
| Hopewell Township   | 2,015                                   | 313  | 5,702                                   | 333                               | 306                                | 31                                     |
| Jackson Township  | 3,463                                   | 664  | 9,177                                   | 377                               | 454                                | 7                                      |
| Jacobus Borough   | 655                                     | 247  | 1,847                                   | 127                               | 112                                | 4                                      |
| Jefferson Borough   | 257                                     | 122  | 673                                     | 42                                | 54                                 | 3                                      |
| Lewisberry Borough  | 141                                     | 79   | 337                                     | 10                                | 29                                 | 6                                      |
| Loganville Borough  | 478                                     | 191  | 1,286                                   | 105                               | 58                                 | 8                                      |
| Lower Chanceford Township   | 1,110                                   | 382  | 3,130                                   | 207                               | 158                                | 21                                     |
| Lower Windsor Township  | 3,070                                   | 831  | 7,921                                   | 476                               | 316                                | 7                                      |

| Table 4.3.3.5-1: Extreme Temperature Vulnerability by Municipality |                                  |   |                                  |                         |                          |                                 |
|--|----------------------------------|---|----------------------------------|-------------------------|--------------------------|---------------------------------|
| Municipality   | Total Dwelling Units (YCPC 2017) | Dwelling Units Built Prior to 1960 (DOA 2017) | Estimated Population (YCPC 2017) | Age < 5 yrs. (ACS 2015) | Age > 75 yrs. (ACS 2015) | Critical Facilities (YCPC 2017) |
| Manchester Borough   | 928                              | 372   | 2,246                            | 226                     | 103                      | 57                              |
| Manchester Township  | 6,996                            | 1,444   | 18,749                           | 908                     | 1,261                    | 6                               |
| Manheim Township   | 1,250                            | 284   | 3,600                            | 142                     | 194                      | 3                               |
| Monaghan Township  | 1,036                            | 238   | 2,673                            | 100                     | 187                      | 9                               |
| Mount Wolf Borough   | 505                              | 416   | 1,338                            | 150                     | 186                      | 12                              |
| New Freedom Borough  | 1,698                            | 374   | 4,500                            | 243                     | 189                      | 4                               |
| New Salem Borough  | 319                              | 105   | 880                              | 30                      | 53                       | 37                              |
| Newberry Township  | 6,307                            | 896   | 16,398                           | 823                     | 581                      | 19                              |
| North Codorus Township   | 3,450                            | 860   | 9,246                            | 359                     | 596                      | 5                               |
| North Hopewell Township  | 1,092                            | 233   | 2,697                            | 141                     | 230                      | 1                               |
| North York Borough   | 654                              | 591   | 1,557                            | 103                     | 49                       | 13                              |
| Paradise Township  | 1,527                            | 441   | 3,985                            | 139                     | 273                      | 12                              |
| Peach Bottom Township  | 2,003                            | 319   | 5,648                            | 363                     | 190                      | 47                              |
| Penn Township  | 6,446                            | 1,732   | 17,211                           | 836                     | 1,382                    | 3                               |
| Railroad Borough   | 96                               | 68  | 253                              | 3                       | 13                       | 18                              |
| Red Lion Borough   | 2,274                            | 1,510   | 5,662                            | 440                     | 567                      | 3                               |
| Seven Valleys Borough  | 175                              | 131   | 425                              | 26                      | 47                       | 17                              |
| Shrewsbury Borough   | 1,362                            | 328   | 3,664                            | 258                     | 378                      | 36                              |
| Shrewsbury Township  | 2,689                            | 468   | 7,072                            | 187                     | 407                      | 53                              |
| Spring Garden Township   | 4,508                            | 3,298   | 11,405                           | 465                     | 1,104                    | 16                              |
| Spring Grove Borough   | 826                              | 408   | 2,164                            | 176                     | 94                       | 137                             |
| Springettsbury Township  | 9,820                            | 3,704   | 24,059                           | 1,188                   | 2,852                    | 19                              |
| Springfield Township   | 2,186                            | 407   | 5,727                            | 360                     | 320                      | 9                               |
| Stewartstown Borough   | 775                              | 320   | 1,821                            | 142                     | 202                      | 20                              |
| Warrington Township  | 1,846                            | 443   | 4,523                            | 78                      | 295                      | 1                               |
| Washington Township  | 1,052                            | 301   | 3,061                            | 177                     | 168                      | 3                               |
| Wellsville Borough   | 108                              | 80  | 252                              | 14                      | 21                       | 80                              |
| West Manchester Township   | 7,618                            | 2,501   | 18,207                           | 1,091                   | 2,142                    | 20                              |
| West Manheim Township  | 3,106                            | 404   | 9,194                            | 640                     | 453                      | 9                               |
| West York Borough  | 1,591                            | 1,454   | 4,009                            | 403                     | 147                      | 3                               |
| Windsor Borough  | 464                              | 333   | 1,225                            | 101                     | 76                       | 36                              |
| Windsor Township   | 6,935                            | 1,185   | 18,516                           | 1,018                   | 1,266                    | 5                               |
| Winterstown Borough  | 228                              | 88  | 524                              | 11                      | 43                       | 14                              |
| Wrightsville Borough   | 862                              | 625   | 2,095                            | 107                     | 200                      | 3                               |
| Yoe Borough  | 346                              | 206   | 865                              | 68                      | 37                       | 113                             |
| York City  | 13,347                           | 11,468  | 34,969                           | 3,559                   | 1,635                    | 5                               |



**Table 4.3.3.5-1: Extreme Temperature Vulnerability by Municipality**

| Municipality       | Total Dwelling Units (YCPC 2017) | Dwelling Units Built Prior to 1960 (DOA 2017) | Estimated Population (YCPC 2017) | Age < 5 yrs. (ACS 2015) | Age > 75 yrs. (ACS 2015) | Critical Facilities (YCPC 2017) |
|--------------------|----------------------------------|---|----------------------------------|-------------------------|--------------------------|---------------------------------|
| York Haven Borough | 224                              | 165   | 652                              | 65                      | 16                       | 88                              |
| York Township      | 14,067                           | 1,976   | 32,917                           | 1,045                   | 3,117                    | 1                               |
| Yorkana Borough    | 87                               | 58  | 226                              | 21                      | 8                        | 30                              |
| <b>TOTAL</b>       | <b>170,282</b>                   | <b>57,317</b>                                 | <b>438,840</b>                   | <b>25,553</b>           | <b>29,708</b>            | <b>1,437</b>                    |

Source: YCPC GIS analysis using YCPC data layers, DOA, and American Community Survey (ACS).

The vulnerability for extreme temperatures in York County in the past has not been measured in dollars, but rather in persons impacted most by these events. In this case, it is persons younger than five (5) years of age (25,553 people) and those older than 75 years of age (29,708 people) living in older structures that may not have proper heating or cooling.

The impact on crops can also not be ignored. Extended periods of extreme heat and even short periods of extreme cold can affect crop production, as was documented in the 1997 cold event. The total vulnerability to crops would be similar to that of drought (see Table 4.3.1.5-1) and would be approximately \$321,968,261.

**4.3.4 Flood/Flash Flood/Ice Jam**

Flooding is a rising and overflowing of a body of water onto land that is normally dry. It can happen during heavy rains, when ocean waves come onshore, when snow melts too fast, or when dams or levees break. Flooding may happen with only a few inches of water, or it may cover a house to the rooftop. The most dangerous flood event, the **flash flood**, happens rapidly with little or no warning; other flooding events occur over a long period and may last days, weeks, or longer.

**Ice jams** occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layer often breaks into large chunks, which float downstream and often pile up near narrow passages of other obstructions, such as bridges and dams.

**4.3.4.1 Location and Extent**

A flood is a natural event for rivers and streams. York County has a well-developed drainage network consisting of numerous first, second, and third order streams. Several larger watercourses (e.g., Conewago Creek, Muddy Creek, Codorus Creek, Yellow Breeches Creek, and the Susquehanna River) traverse the County. As evidenced by Figure 4.3.4.1-1, most of these watercourses have delineated floodplains. The YCPC has developed a floodplain viewer which can be accessed at [www.ycpc.org](http://www.ycpc.org) and provides continuously updated floodplain information searchable by address for all of York County. Floodplains are found in lowlands, adjacent to rivers, streams, creeks, lakes, or other large water bodies and subject to recurring floods. The size of the floodplain is described by the recurrence interval of a given flood. In assessing the potential spatial extent of flooding, it is important



to know that a floodplain associated with a flood that has a 10% chance of occurring in a given year is smaller than the floodplain associated with a flood that has a 0.2%-annual-chance of occurring. The National Flood Insurance Program (NFIP) for which Digital Flood Insurance Rate Maps (DFIRM) are published, identifies the 1%-annual-chance flood, which is used to delineate the Special Flood Hazard Area and identify Base Flood Elevations. These delineated floodplains show the estimated area of inundation associated with the 100-year storm events and include the A, AE, AH, AO, and X flood zones in Pennsylvania (see Table 4.3.4.1-1 for flood zone definitions). Figure 4.3.4.1-2 illustrates the 100 Year floodplain terminology. Sixty of the County’s 72 municipalities lie within these delineated floodplains indicating their vulnerability to periodic flooding.

| Table 4.3.4.1-1: York County Flood Zone Designations |  |
|--|--|
| <b>A*</b>  | Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.   |
| <b>AE*</b>   | The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.   |
| <b>AH*</b>   | Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.                                    |
| <b>AO*</b>   | River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones. |
| <b>B and X (shaded)</b>                              | Area of moderate flood hazard, usually the area between the limits of the 100- year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.        |

*\* In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to these zones.*

Source: FEMA

In 2018, the YCPC completed the York County Flooded Roadway Study. The purpose of this Study was to identify roadways within York County that close due to flooding events, and to identify which of these roadways should be considered for flood proofing or flood resiliency as part of rehabilitation or resurfacing projects that may be proposed for the area. Figure 4.3.4.1-3 identifies roads impacted by flooding in York County.

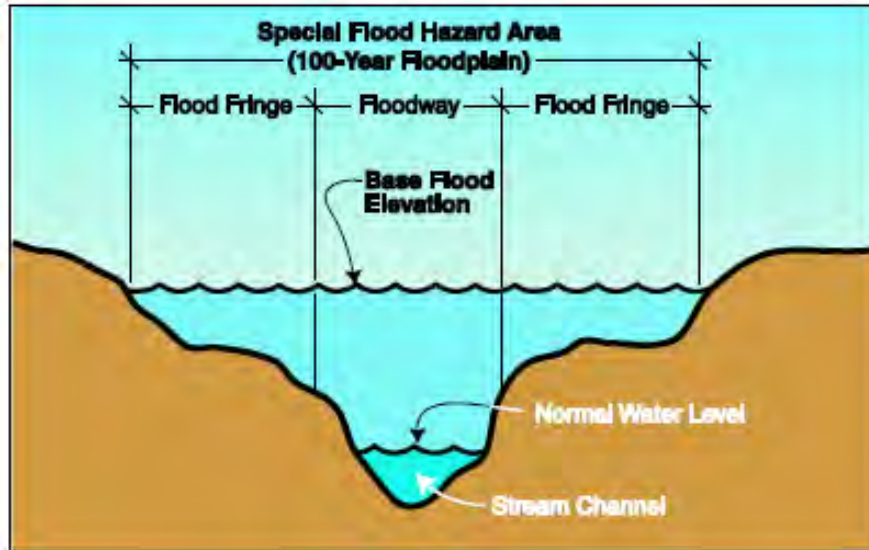


Figure 4.3.4.1-2: Special Flood Hazard Area Diagram Depicting 100 Year Floodplain, Floodway, and Flood Fringe

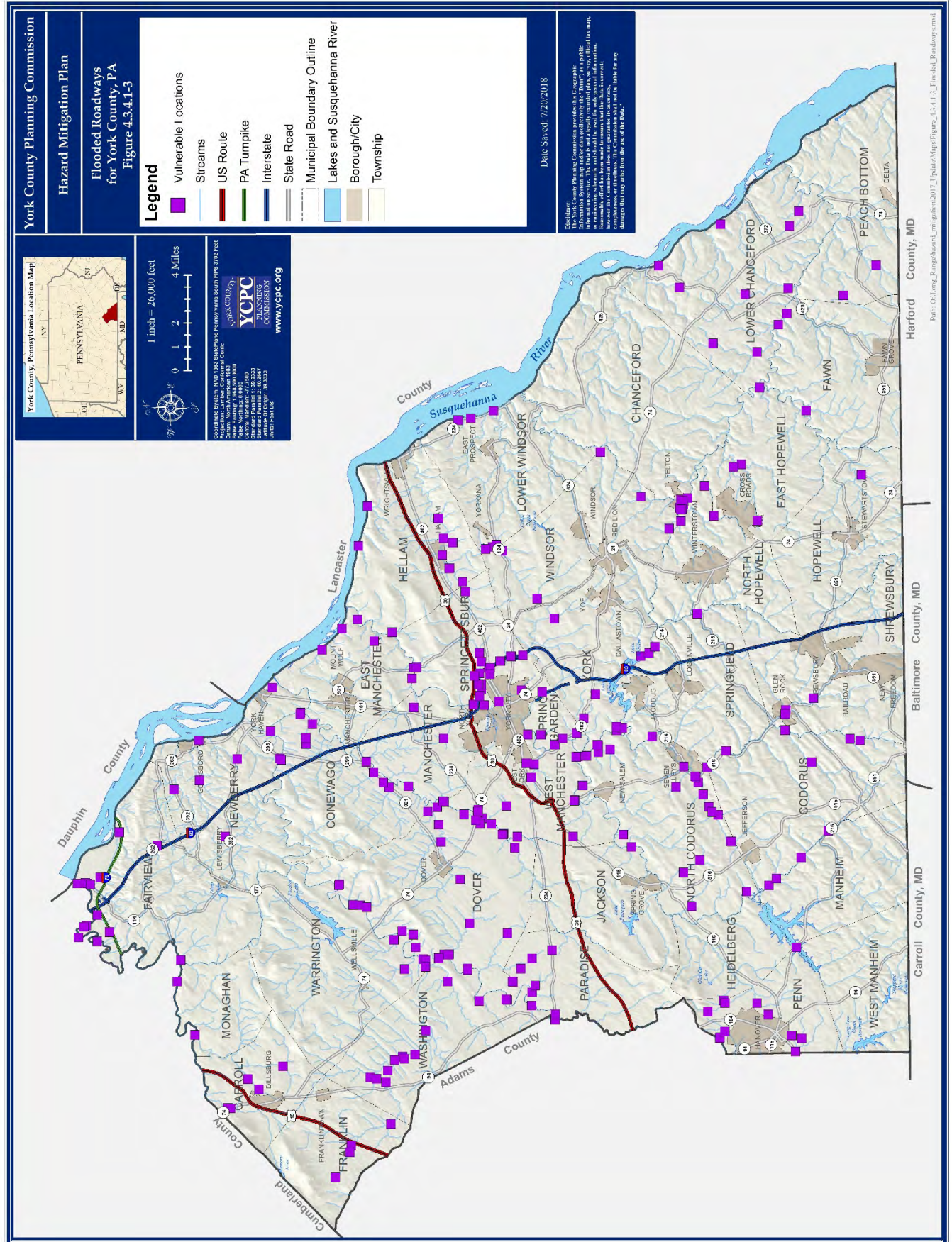
Source: PA HMP

#### 4.3.4.2 Range of Magnitude

Floods are considered hazards when people and property are affected. Most injuries and deaths from flooding happen when people are swept away by flood currents, and most property damage results from inundation by sediment-filled water. A large amount of rainfall over a short time span can result in flash flood conditions. Small amounts of rain can result in floods in locations where the soil is frozen or saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces, such as large parking lots, paved roadways, or other impervious, developed areas. Flooding can occur in individual municipalities within York County or it can have a countywide effect, involving multiple sites and streams. Populations that are particularly vulnerable to flooding are those residing in mobile homes, and the elderly and handicapped in floodplain areas.

Several factors determine the severity of floods, including rainfall intensity and duration, topography, ground cover, and rate of snowmelt. Water runoff is greater in areas with steep slopes and little to no vegetative ground cover. Also, urbanization typically results in the replacement of vegetative ground cover with asphalt and concrete, increasing the volume of surface runoff and stormwater, particularly in areas with poorly planned stormwater drainage systems.

There are seasonal differences in the causes of floods. In the winter and early spring major flooding can occur as a result of heavy rainfall on dense snowpack throughout contributing watersheds, although the snowpack is generally moderate during most winters. Winter floods also have resulted due to runoff from the frozen ground during an intense rainfall event, and, on rare occasions, local flooding has been exacerbated by ice jams in the Susquehanna River. Ice jam floods occur when the river is totally or partially frozen. A rise in stream stage will break up a totally frozen river and create ice flows that can pile up on channel obstructions such as shallow riffles, log jams, or bridge piers. The



jammed ice creates a dam across the channel over which the water and ice mixture continues to flow, allowing for more jamming to occur.

Summer floods can occur from intense rainfall on previously saturated soils. Summer thunderstorms deposit large quantities of rainfall over a short period of time that can result in flash flood incidents, when the velocity of floodwaters has the potential to amplify the impacts of a flood incident.

Flood effects can be volume or force related. Major floods along larger streams having wide floodplains tend to result in large-scale inundations. This causes widespread damage through soaking and silt deposits in homes, businesses, and industrial plants. In hilly regions where runoff paths are steep, flash floods may be prevalent. Flash floods are short in duration and usually occur in a somewhat localized area. In these floods, the velocity rather than the volume of water causes flood damages. Torrents of water can rush down minor hillside gullies at 30-50 miles per hour, carrying trees, debris, and rocks. These floods are often unpredictable and, particularly if they occur at night, can cause major panic and loss of life. Frozen surfaces can more than double normal runoff velocities, particularly in small drainage areas. This causes flash floods, which can be compounded by ice and debris jams in channels and culverts. Obstructions within the floodplain, such as bridges and undersized culverts, can serve to increase flooding impacts, as well.

York County has experienced its worst flooding as a result of tropical storms/hurricanes and snowmelt events. Tropical storms and hurricanes occur between the months of June and November, with the peak season being September to October. These storms bring torrential rains and high winds and often cause flash flooding, as well as overbank flooding of inland streams and rivers. Snowmelts typically occur between the months of January and April. Because the ground often remains frozen under snow, it cannot absorb the water from the melt, and large volumes of surface water runoff are produced. Extreme flooding events can occur during snowmelts when additional rainfall combines with the snowmelt runoff.

Tropical Storm Agnes of 1972 is the storm of record for the Susquehanna River in York County. Tropical Storm Agnes hit in June just after an earlier rainfall had saturated the ground. Agnes brought as much as 18 inches of rain to some places in Pennsylvania, with York receiving a reported 16 inches, producing severe surface water runoff conditions, which caused abnormally high flows in local streams and tributaries. Most communities along the river, including York County, experienced severe flooding. The USGS gage at Marietta recorded a peak river stage of 64.54 feet, 15.54 feet above the 49-foot flood stage. Damage estimates indicate that the Susquehanna River basin (from Sunbury to York) incurred approximately \$832.662 million (1972) in damages, with the York County area accounting for approximately \$34 million of that total. Pennsylvania incurred over \$2.12 billion in damages and was so severely impacted that President Richard Nixon declared the entire State a disaster area.

In September of 1975, just three (3) years after Agnes, Tropical Storm Eloise brought flooding to the County. Tropical Storm Eloise moved inland over the Florida panhandle and weakened rapidly. Remnants of Eloise spread northward and, on September 24th, one (1) inch of rain fell over most of

the Susquehanna River basin. Flash flood watches were in effect as precipitation was forecasted to be heavier the following day. September 25th brought between 4.5 and 6.5 inches of rainfall over the basin, and widespread flooding occurred. The result of Tropical Storm Eloise was the third-highest flood discharge on record. The USGS gage at Marietta recorded a peak river stage of 55.73 feet on September 27th, just 8.81 feet less than the peak stage recorded during the 1972 Agnes event. Damage estimates indicate that the Susquehanna River basin (from Sunbury to York) incurred approximately \$26.3 million (1975) in damages (USACE, 1976).

In 1996, snowmelt combined with rainfall led to a large-scale flash flooding event across Pennsylvania. Over the winter, a blizzard occurred that froze the ground and left up to seven (7) feet of snow base. In January, temperatures climbed rapidly into the 60's and caused the snow to melt. In addition, heavy rains averaging between 1.2 and 3 inches fell over the area in a six (6) hour period. The frozen ground could not absorb the water from the melt or the rainfall, and large amounts of surface water runoff were produced. To further compound the problem, large floating masses of ice accumulated at the various river crossings, creating obstructions to the flood flow. The USGS gage at Marietta reached a peak stage of 56.80 feet. Damage estimates for the entire Susquehanna River basin as a result of this flood event were in the range of \$600 million (NWS, 1998).

Flooding in September of 2011 closely approached the flood of record for York County, which resulted from Hurricane Agnes. Hurricane Irene swelled County waters the last days of August 2011, causing minor home damage, flooded roadways, and 20,000 customers to be without electricity. Directly following Hurricane Irene, Tropical Storm Lee dumped large amounts of rainfall resulting in a Presidential Disaster Declaration. Hundreds of homes were damaged, 19 of which were completely destroyed. Roads, bridges, and culverts experienced major damage and destruction. Over 4,000 residents filed for assistance from FEMA, resulting in over \$6 million dollars paid in claims. Infrastructure damages were estimated at over \$5 million dollars.

Flooding damages property and can cause injuries and loss of life. The ***potential environmental impacts*** of flood, flash floods and ice jams include:

- Groundwater recharge;
- Introduction of nutrient-rich sediment that improves soil fertility;
- Destruction of riparian buffers;
- Changes to land use and land cover;
- Introduction of chemical and biological contaminants;
- Water-borne diseases;
- Heavy siltation;
- Crop damage and/or loss; and
- Loss of life due to drowning.

**4.3.4.3 Historical Occurrence**

A review of Pennsylvania’s Disaster History from the PEMA website shows 16 disaster/emergency declarations in York County that entailed flooding events since 1954 (Oct. 1954, June 1972, Sept. 1975, Oct. 1976, Jan. 1996, Sept. 1999, Sept. 2003, May 2004, Sept. 2004, Sept. 2005, June 2006, April 2007, April 2011, Sept. 2011(2 events), and Aug. 2015). NOAA recorded 104 reported flood events in York County between January of 1996 and the end of 2017. This information represents reported data that appears to include duplicate records for flood and flashflood and incomplete data. Table 4.3.4.3-1 displays the NOAA flood and flash flood event data for York County.

| <b>Table 4.3.4.3-1: NOAA Flood and Flash Flood Reported Events<br/>January 1996 – December 2017</b> |             |             |               |                 |                             |                         |
|---|-------------|-------------|---------------|-----------------|-----------------------------|-------------------------|
| <b>Location</b>   | <b>Date</b> | <b>Type</b> | <b>Deaths</b> | <b>Injuries</b> | <b>Property Damage (\$)</b> | <b>Crop Damage (\$)</b> |
| Countywide  | 01/19/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
|   | 01/19/1996  | Flood       | 0             | 0               | \$0                         | \$0                     |
| 5W York   | 06/19/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Red Lion  | 08/16/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| York  | 08/27/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Eastern Section   | 11/08/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 12/13/1996  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 01/08/1998  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 03/21/1998  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| York  | 05/05/1998  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Spring Grove  | 06/23/1998  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 01/18/1999  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Shrewsbury  | 08/26/1999  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| York  | 09/06/1999  | Flash Flood | 0             | 0               | \$10,000                    | \$0                     |
| Hallam  | 09/09/1999  | Flash Flood | 0             | 0               | \$5,000                     | \$0                     |
| Countywide  | 09/16/1999  | Flash Flood | 0             | 0               | \$30,000                    | \$0                     |
|   | 03/21/2000  | Flood       | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 03/21/2000  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Southeast Portion   | 07/14/2000  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| North Portion   | 09/01/2000  | Flash Flood | 0             | 0               | \$5,000                     | \$0                     |
| York  | 09/14/2000  | Flash Flood | 0             | 0               | \$10,000                    | \$0                     |
| York  | 09/19/2000  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Countywide  | 12/17/2000  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
| Felton  | 06/22/2001  | Flash Flood | 0             | 0               | \$200,000                   | \$0                     |
| York  | 09/24/2001  | Flash Flood | 0             | 0               | \$0                         | \$0                     |
|   | 02/22/2003  | Flood       | 0             | 0               | \$0                         | \$0                     |
|   | 03/20/2003  | Flood       | 0             | 0               | \$0                         | \$0                     |
|   | 06/07/2003  | Flood       | 0             | 0               | \$0                         | \$0                     |



**Table 4.3.4.3-1: NOAA Flood and Flash Flood Reported Events  
January 1996 – December 2017**

| Location     | Date       | Type        | Deaths | Injuries | Property Damage (\$) | Crop Damage (\$) |
|--------------|------------|-------------|--------|----------|----------------------|------------------|
| Fawn Grove   | 06/13/2003 | Flash Flood | 0      | 0        | \$25,000             | \$0              |
| York         | 09/23/2003 | Flash Flood | 0      | 0        | \$0                  | \$0              |
|              | 09/23/2003 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 09/23/2003 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 12/11/2003 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 02/06/2004 | Flood       | 0      | 0        | \$0                  | \$0              |
| Felton       | 05/09/2004 | Flash Flood | 2      | 0        | \$5,500,000          | \$0              |
| Felton       | 06/14/2004 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Newberrytown | 08/01/2004 | Flash Flood | 0      | 0        | \$0                  | \$0              |
|              | 08/01/2004 | Flood       | 0      | 0        | \$0                  | \$0              |
| York         | 08/02/2004 | Flash Flood | 0      | 0        | \$0                  | \$0              |
|              | 09/17/2004 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 09/28/2004 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 01/14/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 01/15/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 03/28/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 03/30/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 04/02/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
|              | 04/03/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
| Sunny Burn   | 06/06/2005 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| York         | 07/07/2005 | Flash Flood | 0      | 0        | \$0                  | \$0              |
|              | 10/08/2005 | Flood       | 0      | 0        | \$0                  | \$0              |
| Fawn Grove   | 06/01/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Windsor      | 06/02/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Newberrytown | 06/25/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Delta        | 06/26/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Countywide   | 06/27/2006 | Flood       | 0      | 0        | \$0                  | \$0              |
| Countywide   | 06/27/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Countywide   | 06/28/2006 | Flood       | 0      | 0        | \$0                  | \$0              |
| York         | 11/16/2006 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| York         | 03/03/2007 | Flood       | 0      | 0        | \$0                  | \$0              |
| Dover        | 04/15/2007 | Flood       | 0      | 0        | \$0                  | \$0              |
| Spring Grove | 06/01/2007 | Flash Flood | 0      | 0        | \$50,000             | \$0              |
| Spring Grove | 06/01/2007 | Flood       | 0      | 0        | \$0                  | \$0              |
| Hanover      | 03/05/2008 | Flood       | 0      | 0        | \$0                  | \$0              |
| Hanover      | 04/20/2008 | Flood       | 0      | 0        | \$0                  | \$0              |
| Spring Grove | 06/10/2009 | Flash Flood | 0      | 0        | \$200,000            | \$0              |

**Table 4.3.4.3-1: NOAA Flood and Flash Flood Reported Events  
January 1996 – December 2017**

| Location             | Date       | Type        | Deaths | Injuries | Property Damage (\$) | Crop Damage (\$) |
|----------------------|------------|-------------|--------|----------|----------------------|------------------|
| Yocumtown            | 07/23/2009 | Flash Flood | 0      | 0        | \$50,000             | \$0              |
| Yocumtown            | 07/23/2009 | Flood       | 0      | 0        | \$0                  | \$0              |
| New Market           | 07/24/2009 | Flood       | 0      | 0        | \$10,000             | \$0              |
| Jacobs Mills         | 08/12/2010 | Flash Flood | 0      | 0        | \$10,000             | \$0              |
| Strinestown          | 09/30/2010 | Flood       | 0      | 0        | \$0                  | \$0              |
| Strinestown          | 09/30/2010 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Strinestown          | 10/01/2010 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Strinestown          | 10/01/2010 | Flood       | 0      | 0        | \$0                  | \$0              |
| Manchester           | 03/10/2011 | Flood       | 0      | 0        | \$0                  | \$0              |
| York Haven           | 04/16/2011 | Flood       | 0      | 0        | \$0                  | \$0              |
| Andersontown         | 04/16/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| York Haven           | 04/28/2011 | Flood       | 0      | 0        | \$0                  | \$0              |
| Leaders Hgts         | 05/18/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| North York           | 06/11/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Brillhart            | 06/11/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Blackrock            | 06/11/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Glen Rock            | 06/11/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Hanover              | 08/28/2011 | Flood       | 0      | 0        | \$0                  | \$0              |
| Felton               | 09/07/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Eastmont             | 09/07/2011 | Flood       | 0      | 0        | \$4,700,000          | \$0              |
| Big Mount            | 09/11/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Beavertown           | 09/23/2011 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| North York           | 08/04/2012 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Zions View           | 09/18/2012 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Clear Spg            | 10/29/2012 | Flood       | 0      | 0        | \$0                  | \$0              |
| Clear Spg            | 01/31/2013 | Flood       | 0      | 0        | \$0                  | \$0              |
| Jacobus              | 06/18/2013 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Etters               | 07/22/2013 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Pennville            | 08/07/2013 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Grangeville          | 08/08/2013 | Flood       | 0      | 0        | \$0                  | \$0              |
| Hanover Devener Arpt | 08/13/2013 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Clear Spg            | 10/10/2013 | Flood       | 0      | 0        | \$0                  | \$0              |
| Clear Spg            | 03/30/2014 | Flood       | 0      | 0        | \$0                  | \$0              |
| Bermudian            | 04/30/2014 | Flood       | 0      | 0        | \$0                  | \$0              |
| Dallastown           | 07/14/2014 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Foustown             | 07/28/2016 | Flash Flood | 0      | 0        | \$0                  | \$0              |
| Lincolnway           | 07/17/2017 | Flash Flood | 0      | 0        | \$0                  | \$0              |

**Table 4.3.4.3-1: NOAA Flood and Flash Flood Reported Events  
January 1996 – December 2017**

| Location      | Date       | Type        | Deaths   | Injuries | Property Damage (\$) | Crop Damage (\$) |
|---------------|------------|-------------|----------|----------|----------------------|------------------|
| Mt Royal      | 07/23/2017 | Flash Flood | 0        | 0        | \$0                  | \$0              |
| Railroad      | 07/23/2017 | Flash Flood | 0        | 0        | \$0                  | \$0              |
| <b>Totals</b> |            |             | <b>2</b> | <b>0</b> | <b>\$10,805,000</b>  | <b>\$0</b>       |

Source: NOAA

In addition to the aforementioned past flood events, the National Flood Insurance Program (NFIP) identifies properties that frequently experience flooding. Repetitive loss properties have had at least two (2) paid flood losses of more than \$1,000 over any ten (10) year period since 1978. Severe repetitive loss properties include those insured under the NFIP that have had damage resulting in four (4) or more claim payments, each exceeding \$5,000 or more, or at least two (2) separate claim payments resulting in a cumulative amount exceeding the fair market value of the building. Table 4.3.4.3-2 displays repetitive and severe repetitive loss properties by municipality and by type, as well as the total building and contents payments on losses on the property.

**Table 4.3.4.3-2: Summary of the Number and Type of Repetitive Loss Properties  
for York County by Municipality as of December 31, 2015**

| Municipality                      | Occupancy Type | Total # of Losses on the Property | Total Building and Contents Payments for Losses on the Property (\$) |
|-----------------------------------|----------------|-----------------------------------|--|
| <b>Repetitive Loss Properties</b> |                |                                   |  |
| Conewago Township                 | Single Family  | 2                                 | \$37,711.02  |
| Conewago Township                 | Single Family  | 3                                 | \$21,777.37  |
| Dover Township                    | Single Family  | 2                                 | \$54,866.03  |
| Dover Township                    | Single Family  | 2                                 | \$34,207.26  |
| Dover Township                    | Single Family  | 3                                 | \$85,808.15  |
| Dover Township                    | Single Family  | 2                                 | \$58,943.48  |
| Dover Township                    | Single Family  | 4                                 | \$68,324.27  |
| East Hopewell Township            | Single Family  | 2                                 | \$69,028.69  |
| East Manchester Township          | Single Family  | 3                                 | \$48,921.35  |
| Fairview Township                 | Single Family  | 2                                 | \$8,163.30   |
| Fairview Township                 | Single Family  | 2                                 | \$85,401.56  |
| Newberry Township                 | Single Family  | 2                                 | \$71,921.09  |
| Newberry Township                 | Single Family  | 2                                 | \$49,665.54  |
| Paradise Township                 | Single Family  | 4                                 | \$195,956.23   |
| York Haven Borough                | Single Family  | 2                                 | \$53,558.90  |
| York City                         | Single Family  | 2                                 | \$57,753.14  |

**Table 4.3.4.3-2: Summary of the Number and Type of Repetitive Loss Properties for York County by Municipality as of December 31, 2015**

| Municipality                             | Occupancy Type    | Total # of Losses on the Property | Total Building and Contents Payments for Losses on the Property (\$) |
|--|-------------------|-----------------------------------|--|
| <b>Severe Repetitive Loss Properties</b> |                   |                                   |  |
| Codorus Township                         | Single Family     | 4                                 | \$102,857.71   |
| Codorus Township                         | Single Family     | 4                                 | \$141,632.02   |
| Conewago Township                        | Single Family     | 5                                 | \$110,195.77   |
| Dover Township                           | Single Family     | 5                                 | \$110,367.93   |
| Dover Township                           | Other Residential | 5                                 | \$100,128.95   |
| Dover Township                           | Single Family     | 4                                 | \$68,324.27  |
| Dover Township                           | Single Family     | 4                                 | \$98,046.71  |
| East Manchester Township                 | Single Family     | 4                                 | \$51,962.93  |
| Goldsboro Borough                        | Non-Residential   | 3                                 | \$71,680.27  |
| Hellam Township                          | Single Family     | 7                                 | \$319,384.37   |
| Lower Windsor Township                   | Other Residential | 2                                 | \$15,075.00  |
| Newberry Township                        | 2-4 Family        | 4                                 | \$54,467.49  |
| Newberry Township                        | Single Family     | 4                                 | \$74,209.95  |
| Newberry Township                        | Single Family     | 7                                 | \$110,664.71   |
| Paradise Township                        | Single Family     | 4                                 | \$43,857.26  |
| Paradise Township                        | Single Family     | 4                                 | \$195,956.23   |
| Springettsbury Township                  | Non-Residential   | 6                                 | \$185,692.43   |
| Warrington Township                      | Single Family     | 4                                 | \$137,170.26   |
| Warrington Township                      | Single Family     | 5                                 | \$80,706.81  |
| Wrightsville Borough                     | Single Family     | 2                                 | \$92,349.28  |

Source: PEMA

**4.3.4.4 Future Occurrence**

Based on past occurrences, York County can expect approximately five (5) reportable flooding events per year on average. Storm events producing greater than one-half inch of rain per hour can trigger flash floods. Hurricane and tropical storm-induced floods may be harder to predict based upon historical events. The most controllable factor in the County’s flooding future is the land that is developed and how it is developed. York County has already experienced localized flash flooding from storm water runoff resulting from heavy local downpours. Table 4.3.4.4-1 shows a range of flood recurrence and associated probabilities of occurrence as developed by the U.S. Army Corps of Engineers (USACE).

| Table 4.3.4.4-1: Flood Recurrence Intervals and Associated Probabilities of Occurrence (USACE, 2012) |  |
|--|--|
| Flood Recurrence Interval  | Chance of Occurrence in any Given Year (%) |
| 5 year   | 20   |
| 10 year  | 10   |
| 25 year  | 4  |
| 50 year  | 2  |
| 100 year   | 1  |
| 500 year   | 0.2  |

**4.3.4.5 Vulnerability Assessment**

York County is vulnerable to flooding that causes loss of property, road damage and closures, and injury and loss of life. For purposes of assessing vulnerability, the County focused on community assets within the 100-year floodplain. While floods can be greater or smaller, this standard information was available for all municipalities. Table 4.3.4.5-1 presents the vulnerability of persons, dwelling units, roadways, critical facilities, other structures, and miles of rail and roadway in the affected area. Table 4.3.4.5-2 provides a breakdown of structures by type.

Table 4.3.4.5-1: Flood Vulnerability

| Municipality             | Acres (FEMA 2015) | Dwelling Units (YCPC 2017) | Mobile Homes* (DOA 2016) | Estimated Population (YCPC 2017) | Bridges (BMS 2017) | Total Exposure** (\$) (DOA 2017) | Critical Facilities (YCPC 2017) | Other Structures (YCPC 2017) | Miles of Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) |
|--------------------------|-------------------|----------------------------|--------------------------|----------------------------------|--------------------|----------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------|
| Carroll Township         | 537.89            | 16                         |                          | 45                               | 16                 | \$8,659,578                      | 1                               | 23                           | .31                           | 2.56                        |
| Chanceford Township      | 845.45            | 26                         |                          | 70                               | 41                 | \$1,615,409                      |                                 | 11                           |                               | 6.52                        |
| Codorus Township         | 657.89            | 17                         |                          | 44                               | 26                 | \$5,539,519                      |                                 | 39                           | 1.68                          | 4.08                        |
| Conewago Township        | 951.37            | 54                         | 21                       | 146                              | 19                 | \$10,080,491                     | 4                               | 26                           |                               | 5.13                        |
| Cross Roads Borough      | 4.25              |                            |                          |                                  |                    |                                  |                                 |                              |                               | 0.02                        |
| Delta Borough            | 0.51              |                            |                          |                                  |                    |                                  |                                 |                              |                               | 0.01                        |
| Dillsburg Borough        | 13.97             | 11                         |                          | 26                               |                    | \$2,740,604                      |                                 |                              |                               | 0.21                        |
| Dover Borough            | 14.53             | 1                          |                          | 3                                | 1                  | \$489,649                        |                                 | 2                            |                               | 0.11                        |
| Dover Township           | 1,571.33          | 88                         | 13                       | 223                              | 35                 | \$11,258,895                     |                                 | 46                           |                               | 6.79                        |
| East Hopewell Township   | 503.47            | 6                          |                          | 17                               | 17                 | \$91,402                         |                                 | 2                            |                               | 2.13                        |
| East Manchester Township | 895.32            | 18                         |                          | 51                               | 16                 | \$4,459,859                      | 2                               | 30                           | .49                           | 5.10                        |
| Fairview Township        | 999.49            | 312                        | 60                       | 821                              | 29                 | \$68,717,544                     | 5                               | 104                          | .64                           | 7.85                        |
| Fawn Township            | 537.52            | 5                          |                          | 13                               | 15                 | \$1,203,614                      |                                 | 9                            |                               | 2.35                        |
| Felton Borough           | 55.45             | 33                         |                          | 95                               | 7                  | \$11,755,240                     | 1                               | 32                           |                               | 1.55                        |
| Franklin Township        | 412.27            | 5                          |                          | 13                               | 14                 | \$940,116                        |                                 | 6                            |                               | 2.13                        |
| Glen Rock Borough        | 34.15             | 45                         |                          | 111                              | 4                  | \$11,833,222                     | 3                               | 35                           |                               | 1.32                        |
| Goldsboro Borough        | 57.17             | 24                         |                          | 71                               | 1                  | \$3,506,877                      |                                 | 10                           | .04                           | 0.99                        |
| Hallam Borough           | 85.92             | 22                         | 13                       | 48                               | 4                  | \$4,139,171                      |                                 | 16                           |                               | 0.55                        |
| Hanover Borough          | 39.04             |                            |                          |                                  | 2                  |                                  |                                 |                              |                               | 0.03                        |
| Heidelberg Township      | 902.40            | 13                         |                          | 37                               | 12                 | \$1,679,895                      |                                 | 44                           | 2.05                          | 1.59                        |
| Hellam Township          | 898.10            | 53                         | 1                        | 125                              | 22                 | \$8,128,766                      | 1                               | 35                           | .16                           | 8.82                        |
| Hopewell Township        | 479.77            | 6                          |                          | 17                               | 19                 | \$909,178                        |                                 | 10                           |                               | 1.94                        |

Table 4.3.4.5-1: Flood Vulnerability

| Municipality              | Acres (FEMA 2015) | Dwelling Units (YCPC 2017) | Mobile Homes* (DOA 2016) | Estimated Population (YCPC 2017) | Bridges (BMS 2017) | Total Exposure** (\$) (DOA 2017) | Critical Facilities (YCPC 2017) | Other Structures (YCPC 2017) | Miles of Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) |
|---------------------------|-------------------|----------------------------|--------------------------|----------------------------------|--------------------|----------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------|
| Jackson Township          | 929.60            | 3                          |                          | 8                                | 17                 | \$95,778                         | 1                               | 21                           | 2.82                          | 2.15                        |
| Jacobus Borough           | 7.02              |                            |                          |                                  |                    |                                  |                                 |                              |                               |                             |
| Lewisberry Borough        | 12.23             | 1                          |                          | 2                                | 2                  | \$7,040,496                      | 1                               | 7                            |                               | 0.11                        |
| Lower Chanceford Township | 879.36            | 5                          |                          | 14                               | 12                 | \$1,824,972                      |                                 | 21                           |                               | 2.24                        |
| Lower Windsor Township    | 585.40            | 84                         | 10                       | 217                              | 24                 | \$13,545,880                     | 1                               | 91                           |                               | 6.17                        |
| Manchester Borough        | 14.44             |                            |                          |                                  |                    |                                  |                                 | 1                            | .42                           |                             |
| Manchester Township       | 485.21            | 6                          |                          | 16                               | 15                 | \$10,589,742                     | 3                               | 34                           | .07                           | 2.73                        |
| Manheim Township          | 942.73            | 10                         |                          | 29                               | 13                 | \$942,551                        |                                 | 19                           | 1.24                          | 2.25                        |
| Monaghan Township         | 395.53            | 9                          |                          | 23                               | 10                 | \$1,869,034                      |                                 | 6                            |                               | 1.84                        |
| Mount Wolf Borough        | 34.55             | 9                          |                          | 24                               | 3                  | \$1,943,060                      |                                 | 10                           | .34                           | 0.20                        |
| New Salem Borough         | 2.47              |                            |                          |                                  |                    |                                  |                                 |                              |                               |                             |
| Newberry Township         | 1,149.94          | 59                         |                          | 153                              | 31                 | \$30,321,713                     |                                 | 52                           | .51                           | 4.12                        |
| North Codorus Township    | 1,693.29          | 14                         |                          | 38                               | 25                 | \$2,759,818                      | 1                               | 31                           | .14                           | 5.70                        |
| North Hopewell Township   | 367.50            | 7                          |                          | 17                               | 34                 | \$1,228,779                      |                                 | 9                            |                               | 6.00                        |
| North York Borough        | 12.38             |                            |                          |                                  | 1                  |                                  |                                 |                              |                               | 0.07                        |
| Paradise Township         | 498.78            | 30                         |                          | 78                               | 25                 | \$2,113,301                      |                                 | 26                           |                               | 2.13                        |
| Peach Bottom Township     | 635.01            | 45                         |                          | 127                              | 16                 | \$7,146,531                      | 2                               | 7                            |                               | 3.90                        |
| Penn Township             | 405.95            | 48                         |                          | 128                              | 16                 | \$9,845,361                      | 1                               | 56                           | .01                           | 2.34                        |
| Railroad Borough          | 18.12             | 1                          |                          | 3                                |                    | \$3,493,525                      | 1                               | 4                            |                               | 0.13                        |
| Red Lion Borough          | 0.00              |                            |                          |                                  |                    |                                  |                                 |                              |                               |                             |
| Seven Valleys Borough     | 193.50            | 3                          |                          | 7                                | 4                  | \$1,560,333                      | 1                               | 16                           |                               | 0.47                        |
| Shrewsbury Township       | 542.60            | 22                         | 1                        | 58                               | 30                 | \$12,721,100                     | 1                               | 55                           |                               | 5.38                        |

Table 4.3.4.5-1: Flood Vulnerability

| Municipality             | Acres (FEMA 2015) | Dwelling Units (YCPC 2017) | Mobile Homes* (DOA 2016) | Estimated Population (YCPC 2017) | Bridges (BMS 2017) | Total Exposure** (\$) (DOA 2017) | Critical Facilities (YCPC 2017) | Other Structures (YCPC 2017) | Miles of Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) |
|--------------------------|-------------------|----------------------------|--------------------------|----------------------------------|--------------------|----------------------------------|---------------------------------|------------------------------|-------------------------------|-----------------------------|
| Spring Garden Township   | 359.99            | 22                         |                          | 56                               | 10                 | \$28,813,778                     | 8                               | 73                           | 3.35                          | 3.13                        |
| Spring Grove Borough     | 29.39             |                            |                          |                                  |                    | \$5,951,339                      |                                 | 3                            | .33                           | 0.02                        |
| Springettsbury Township  | 648.43            | 28                         |                          | 69                               | 23                 | \$66,565,047                     | 2                               | 39                           | 1.37                          | 6.93                        |
| Springfield Township     | 875.26            | 4                          |                          | 10                               | 16                 | \$580,929                        | 1                               | 21                           |                               | 3.24                        |
| Warrington Township      | 1,846.90          | 12                         |                          | 29                               | 22                 | \$1,828,732                      | 1                               | 12                           |                               | 4.60                        |
| Washington Township      | 2,056.68          | 13                         |                          | 38                               | 41                 | \$3,122,927                      |                                 | 25                           |                               | 6.46                        |
| Wellsville Borough       | 5.98              |                            |                          |                                  | 1                  |                                  |                                 | 1                            |                               | 0.02                        |
| West Manchester Township | 1,098.90          | 29                         |                          | 69                               | 13                 | \$21,163,345                     |                                 | 32                           | 1.77                          | 3.71                        |
| West Manheim Township    | 843.78            | 1                          |                          | 3                                | 17                 | \$10,552                         |                                 | 16                           |                               | 1.02                        |
| Windsor Borough          | 18.12             | 19                         |                          | 50                               | 6                  | \$2,106,965                      |                                 | 41                           |                               | 0.95                        |
| Windsor Township         | 431.23            | 6                          |                          | 16                               | 15                 | \$10,185,211                     | 2                               | 19                           |                               | 2.69                        |
| Wrightsville Borough     | 66.03             | 18                         | 9                        | 44                               | 1                  | \$11,113,284                     | 1                               | 30                           |                               | 0.58                        |
| Yoe Borough              | 10.19             | 4                          |                          | 10                               | 4                  | \$1,691,952                      | 2                               | 23                           |                               | 0.63                        |
| York City                | 131.00            | 88                         |                          | 231                              | 21                 | \$4,964,121                      |                                 | 11                           | .47                           | 2.43                        |
| York Haven Borough       | 52.53             |                            |                          |                                  | 1                  | \$52,902                         | 1                               | 2                            |                               | 0.38                        |
| York Township            | 787.29            | 43                         |                          | 101                              | 38                 | \$4,109,753                      | 2                               | 48                           |                               | 3.35                        |
| <b>Total</b>             | <b>29,564.56</b>  | <b>1,398</b>               | <b>128</b>               | <b>3,641</b>                     | <b>807</b>         | <b>\$429,051,840</b>             | <b>50</b>                       | <b>1,342</b>                 | <b>18.2</b>                   | <b>149.85</b>               |

\*\*Total Exposure= All building and content losses per County Assessment. Contents=75% of assessed value.

Source: YCPC GIS Data Analysis Using York County Assessment Data, Census Data, FEMA Floodplains, and YCPC Data.

Based on the total number of structures in the 100 year floodplain and County Assessment data, the total exposure for York County is \$429,051,840.



**Table 4.3.4.5-2: Structures in Floodplain by Class (2017)**

| <b>Municipality</b>      | <b>Agricultural</b> | <b>Apartment</b> | <b>Commercial</b> | <b>Exempt</b> | <b>Industrial</b> | <b>Residential</b> | <b>Unknown</b> | <b>Utilities</b> | <b>Total</b> |
|--------------------------|---------------------|------------------|-------------------|---------------|-------------------|--------------------|----------------|------------------|--------------|
| Carroll Township         | 2                   |                  |                   | 7             |                   | 30                 |                |                  | 39           |
| Chanceford Township      | 8                   |                  |                   |               |                   | 29                 |                |                  | 37           |
| Codorus Township         | 17                  | 1                | 6                 | 1             | 4                 | 26                 |                |                  | 55           |
| Conewago Township        | 5                   |                  | 27                | 3             |                   | 44                 | 1              |                  | 80           |
| Cross Roads Borough      |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Delta Borough            |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Dillsburg Borough        |                     |                  |                   |               |                   | 11                 |                |                  | 11           |
| Dover Borough            |                     |                  | 1                 |               |                   | 2                  |                |                  | 3            |
| Dover Township           | 11                  | 2                | 27                | 12            |                   | 82                 |                |                  | 134          |
| East Hopewell Township   | 3                   |                  |                   | 1             |                   | 4                  |                |                  | 8            |
| East Manchester Township | 1                   |                  | 11                | 3             |                   | 32                 |                | 1                | 48           |
| Fairview Township        | 7                   | 25               | 75                | 1             | 5                 | 301                |                | 2                | 416          |
| Fawn Township            | 8                   |                  |                   |               |                   | 6                  |                |                  | 14           |
| Felton Borough           |                     | 1                | 2                 | 5             |                   | 57                 |                |                  | 65           |
| Franklin Township        |                     |                  |                   | 3             |                   | 8                  |                |                  | 11           |
| Glen Rock Borough        | 1                   | 5                | 15                | 7             | 4                 | 47                 | 1              |                  | 80           |
| Goldsboro Borough        |                     |                  | 1                 |               | 1                 | 32                 |                |                  | 34           |
| Hallam Borough           | 1                   | 1                | 18                | 2             |                   | 16                 |                |                  | 38           |
| Hanover Borough          |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Heidelberg Township      | 39                  | 1                | 3                 |               |                   | 14                 |                |                  | 57           |
| Hellam Township          | 25                  |                  | 6                 |               |                   | 57                 |                |                  | 88           |
| Hopewell Township        | 13                  |                  |                   |               |                   | 3                  |                |                  | 16           |

**Table 4.3.4.5-2: Structures in Floodplain by Class (2017)**

| <b>Municipality</b>       | <b>Agricultural</b> | <b>Apartment</b> | <b>Commercial</b> | <b>Exempt</b> | <b>Industrial</b> | <b>Residential</b> | <b>Unknown</b> | <b>Utilities</b> | <b>Total</b> |
|---------------------------|---------------------|------------------|-------------------|---------------|-------------------|--------------------|----------------|------------------|--------------|
| Jackson Township          | 7                   |                  | 2                 |               | 7                 | 8                  |                |                  | 24           |
| Jacobus Borough           |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Lewisberry Borough        |                     |                  |                   | 3             |                   | 5                  |                |                  | 8            |
| Lower Chanceford Township | 14                  |                  | 1                 | 5             |                   | 6                  |                |                  | 26           |
| Lower Windsor Township    | 10                  | 6                | 27                | 5             | 6                 | 120                | 1              |                  | 175          |
| Manchester Borough        |                     |                  |                   |               |                   | 1                  |                |                  | 1            |
| Manchester Township       | 2                   | 1                | 5                 | 18            | 7                 | 7                  |                |                  | 40           |
| Manheim Township          | 17                  |                  |                   |               | 4                 | 8                  |                |                  | 29           |
| Monaghan Township         | 9                   |                  |                   |               |                   | 6                  |                |                  | 15           |
| Mount Wolf Borough        |                     |                  | 4                 |               | 1                 | 14                 |                |                  | 19           |
| New Salem Borough         |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Newberry Township         | 6                   | 2                | 22                | 11            |                   | 70                 |                |                  | 111          |
| North Codorus Township    | 8                   |                  | 6                 |               | 4                 | 23                 |                | 4                | 45           |
| North Hopewell Township   | 3                   |                  |                   |               | 3                 | 10                 |                |                  | 16           |
| North York Borough        |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Paradise Township         |                     |                  | 15                | 3             |                   | 38                 |                |                  | 56           |
| Peach Bottom Township     | 11                  |                  | 30                |               |                   | 10                 |                | 1                | 52           |
| Penn Township             |                     | 23               | 15                | 3             | 7                 | 55                 | 1              |                  | 104          |
| Railroad Borough          |                     |                  | 1                 | 3             |                   | 1                  |                |                  | 5            |
| Red Lion Borough          |                     |                  |                   |               |                   |                    |                |                  | 0            |
| Seven Valleys Borough     | 7                   |                  | 2                 | 3             |                   | 7                  |                |                  | 19           |
| Shrewsbury Township       | 17                  |                  | 6                 | 5             | 3                 | 46                 |                |                  | 77           |

**Table 4.3.4.5-2: Structures in Floodplain by Class (2017)**

| <b>Municipality</b>      | <b>Agricultural</b> | <b>Apartment</b> | <b>Commercial</b> | <b>Exempt</b> | <b>Industrial</b> | <b>Residential</b> | <b>Unknown</b> | <b>Utilities</b> | <b>Total</b> |
|--------------------------|---------------------|------------------|-------------------|---------------|-------------------|--------------------|----------------|------------------|--------------|
| Spring Garden Township   | 1                   |                  | 28                | 8             | 22                | 36                 |                |                  | 95           |
| Spring Grove Borough     |                     |                  |                   |               | 3                 |                    |                |                  | 3            |
| Springettsbury Township  | 5                   |                  | 14                | 11            | 6                 | 31                 |                |                  | 67           |
| Springfield Township     | 12                  |                  |                   | 6             |                   | 7                  |                |                  | 25           |
| Warrington Township      | 9                   |                  |                   |               |                   | 15                 |                |                  | 24           |
| Washington Township      | 22                  |                  |                   |               |                   | 16                 |                |                  | 38           |
| Wellsville Borough       | 1                   |                  |                   |               |                   |                    |                |                  | 1            |
| West Manchester Township | 2                   |                  | 16                | 3             | 5                 | 35                 |                |                  | 61           |
| West Manheim Township    | 3                   |                  |                   | 3             |                   | 11                 |                |                  | 17           |
| Windsor Borough          |                     | 1                | 2                 | 2             | 1                 | 54                 |                |                  | 60           |
| Windsor Township         | 11                  |                  |                   | 4             | 2                 | 8                  |                |                  | 25           |
| Wrightsville Borough     |                     |                  | 12                | 15            | 15                | 5                  | 1              |                  | 48           |
| Yoe Borough              |                     | 4                | 4                 | 2             |                   | 17                 |                |                  | 27           |
| York City                |                     |                  | 8                 | 7             |                   | 84                 |                |                  | 99           |
| York Haven Borough       | 2                   |                  |                   |               |                   |                    |                |                  | 2            |
| York Township            | 14                  |                  |                   | 4             | 3                 | 70                 |                |                  | 91           |
| <b>Total</b>             | <b>334</b>          | <b>73</b>        | <b>412</b>        | <b>169</b>    | <b>113</b>        | <b>1,625</b>       | <b>5</b>       | <b>8</b>         | <b>2,739</b> |

Source: YCPC GIS Analysis using DOA classifications.

#### **4.3.4.6 HAZUS Potential Loss Estimates**

Based on the variety of available data, potential loss estimates were established for flooding. Estimates provided in this section are based on HAZUS-MH: Flood Event Report generated for York County.

Potential loss estimates have four (4) basic components:

- Replacement Value: Current cost of returning an asset to its pre-damaged condition, using present-day cost of labor and materials;
- Content Loss: Value of a building's contents, typically measured as a percentage of the building replacement value;
- Functional Loss: The value of a building's use or function that would be lost if it were damaged or closed; and
- Displacement Cost: The dollar amount required for relocation of the function (business or service) to another structure following a hazard event.

A comprehensive analysis of potential losses was calculated for flood events using HAZUS-MH, a standardized estimation software package available from FEMA. This provided estimates on total economic loss, building damage, content damage, and other economic impacts that can be used in local flood response and mitigation planning. Where possible, the results were improved by incorporating enhanced inventory data and flood hazard information specific to York County.

Using HAZUS-MH, total building-related losses for the 1% annual-chance flood event were estimated to be \$256.06 million. Approximately 39% of these building-related losses were incurred by residential properties, another 31% were industrial properties. About 16% were commercial properties and 15% were attributed to buildings classified as other. Total economic loss, including replacement value, content loss, functional loss, and displacement cost, was estimated at \$259.9 million. The full HAZUS results report can be found in Appendix E.

#### **4.3.5 Hailstorm**

Hail is a form of solid precipitation. A hailstorm consists of balls or irregular lumps of ice, each of which is referred to as a hailstone and falls like rain. Hailstorms occur when ice crystals form within a low pressure front, due to the rapid rise of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. Severe weather warnings are issued for hailstorms when the stones reach a damaging size, as they can cause serious damage to structures and agricultural crops.

##### **4.3.5.1 Location and Extent**

Hailstorm events can occur in all areas of York County. Hail precipitation is often produced at the front of a severe thunderstorm system or in conjunction with a tornado event. There are methods available to detect hail-producing thunderstorms using weather satellites and weather radar imagery.

#### 4.3.5.2 Range of Magnitude

Hail is described qualitatively and quantitatively by its size and can range from 0.2 inches to 4.5 inches. The size of hail is dependent on speed of the upward air movement along the front of a thunderstorm, called the updraft. Table 4.3.5.2-1 provides a description of hailstone size in relation to everyday objects and the associated updraft speed needed to form different sizes of hailstones.

**Table 4.3.5.2-1: Hailstone Size and Relationship to Updraft Speed (NOAA, 2 May 2013)**

| Hailstone Size | Measurement (Inches) | Updraft Speed (MPH) |
|----------------|----------------------|---------------------|
| BB             | < 0.25               | < 24                |
| Pea            | 0.25                 | 24                  |
| Marble         | 0.50                 | 35                  |
| Dime           | 0.70                 | 38                  |
| Penny          | 0.75                 | 40                  |
| Nickel         | 0.88                 | 46                  |
| Quarter        | 1.00                 | 49                  |
| Half Dollar    | 1.25                 | 54                  |
| Walnut         | 1.50                 | 60                  |
| Golf Ball      | 1.75                 | 64                  |
| Hen Egg        | 2.00                 | 69                  |
| Tennis Ball    | 2.50                 | 77                  |
| Baseball       | 2.75                 | 81                  |
| Tea Cup        | 3.00                 | 84                  |
| Grapefruit     | 4.00                 | 98                  |
| Softball       | 4.50                 | 103                 |

Hailstorms can cause significant damage to crops and to property. The damage from hail is dependent on the size, duration and intensity of hail precipitation. Those who do not seek shelter could face serious injury. Automobiles and aircraft are particularly susceptible to damage. Since hail precipitation usually occurs during a thunderstorm, the impacts of other hazards associated with thunderstorms (strong winds, intense precipitation, etc.) often occur simultaneously.

The **potential environmental impacts** of hailstorms can include the following:

- Agricultural crop damage; destruction of crop yield; significant lost revenue;
- Property damage;
- Habitat disruption;
- Damage to trees, shrubbery and other vegetation; and
- In severe cases, injury and even loss of life have been documented in other parts of the world.

**4.3.5.3 Historical Occurrence**

The NOAA website indicates that 142 hail events occurred in York County from 1950 to February of 2017, causing \$4,000 dollars in damage. The damage estimates are as reported and don't account for all damages in York County. Table 4.3.5.3-1 provides a listing of the recorded hailstorm events in York County between 1955 and 2017. An event is that which produces hail of ¼ inches or greater in diameter. The largest recorded hail diameter was four (4) inches in 1980. The PA HMP found that approximately 96% of hailstorm events occurred during the months of April, May, June, July, August, and September. In addition, approximately 87% of historic events occurred during afternoon (noon to 5pm) or evening (5pm to 9pm) hours. Both of these results are consistent with the relationship between hail and thunderstorms, which most often occur during late spring, summer, and early fall months.

**Table 4.3.5.3-1: York County Hail Events 1955 -2017 (NOAA, 2017)**

| Location    | Date     | Size (In) | Deaths | Injuries | Property Damage(\$) | Crop Damage(\$) |
|-------------|----------|-----------|--------|----------|---------------------|-----------------|
| York County | 06/12/55 | 1.25      | 0      | 0        | 0                   | 0               |
| York County | 05/24/62 | 0.75      | 0      | 0        | 0                   | 0               |
| York County | 05/24/62 | 2.5       | 0      | 0        | 0                   | 0               |
| York County | 05/24/62 | 2         | 0      | 0        | 0                   | 0               |
| York County | 07/21/67 | 1.25      | 0      | 0        | 0                   | 0               |
| York County | 06/05/70 | 1.25      | 0      | 0        | 0                   | 0               |
| York County | 06/12/70 | 1         | 0      | 0        | 0                   | 0               |
| York County | 04/14/74 | 1.5       | 0      | 0        | 0                   | 0               |
| York County | 04/14/74 | 1         | 0      | 0        | 0                   | 0               |
| York County | 05/25/79 | 0.75      | 0      | 0        | 0                   | 0               |
| York County | 06/28/79 | 1.25      | 0      | 0        | 0                   | 0               |
| York County | 04/09/80 | 4         | 0      | 0        | 0                   | 0               |
| York County | 05/26/83 | 0.75      | 0      | 0        | 0                   | 0               |
| York County | 06/24/85 | 1         | 0      | 0        | 0                   | 0               |
| York County | 06/24/85 | 1         | 0      | 0        | 0                   | 0               |
| York County | 05/17/88 | 1.75      | 0      | 0        | 0                   | 0               |
| York County | 05/17/88 | 0.75      | 0      | 0        | 0                   | 0               |
| York County | 07/05/90 | 1.75      | 0      | 0        | 0                   | 0               |
| Hanover     | 05/12/93 | 0.75      | 0      | 0        | 0                   | 0               |
| Hanover     | 08/11/93 | 0.75      | 0      | 0        | 0                   | 0               |
| Hanover     | 06/29/94 | 0.75      | 0      | 0        | 0                   | 0               |
| Dillsburg   | 05/29/95 | 0.75      | 0      | 0        | 0                   | 0               |
| Dover       | 05/29/95 | 1.75      | 0      | 0        | 0                   | 0               |
| York Haven  | 06/4/96  | 0.75      | 0      | 0        | 0                   | 0               |

**Table 4.3.5.3-1: York County Hail Events 1955 -2017 (NOAA, 2017)**

| <b>Location</b> | <b>Date</b> | <b>Size (In)</b> | <b>Deaths</b> | <b>Injuries</b> | <b>Property Damage(\$)</b> | <b>Crop Damage(\$)</b> |
|-----------------|-------------|------------------|---------------|-----------------|----------------------------|------------------------|
| Dillsburg       | 06/11/96    |                  | 0             | 0               | 0                          | 0                      |
| Wrightsville    | 05/01/97    | 0.75             | 0             | 0               | 0                          | 0                      |
| Glen Rock       | 04/17/98    | 1                | 0             | 0               | 0                          | 0                      |
| Shrewsbury      | 04/17/98    | 1                | 0             | 0               | 0                          | 0                      |
| York            | 05/31/98    | 0.75             | 0             | 0               | 0                          | 0                      |
| Dover           | 06/02/98    | 1.25             | 0             | 0               | 0                          | 0                      |
| Seven Valleys   | 07/30/99    | 2.5              | 0             | 0               | 0                          | 0                      |
| Manchester      | 08/14/99    | 0.75             | 0             | 0               | 0                          | 0                      |
| Newberrytown    | 08/14/99    | 0.75             | 0             | 0               | 0                          | 0                      |
| Shrewsbury      | 08/26/99    | 0.75             | 0             | 0               | 0                          | 0                      |
| Spring Grove    | 05/10/00    | 0.75             | 0             | 0               | 0                          | 0                      |
| York            | 05/10/00    | 1.75             | 0             | 0               | 0                          | 0                      |
| Thomasville     | 05/24/00    | 1                | 0             | 0               | 0                          | 0                      |
| Etters          | 05/24/00    | 0.75             | 0             | 0               | 0                          | 0                      |
| Shrewsbury      | 05/02/02    | 0.75             | 0             | 0               | 0                          | 0                      |
| Delta           | 05/02/02    | 1.75             | 0             | 0               | 0                          | 0                      |
| Airville        | 05/02/02    | 1                | 0             | 0               | 0                          | 0                      |
| Seven Valleys   | 05/26/02    | 2                | 0             | 0               | 0                          | 0                      |
| Shrewsbury      | 05/26/02    | 0.75             | 0             | 0               | 0                          | 0                      |
| York            | 06/19/02    | 0.75             | 0             | 0               | 0                          | 0                      |
| Dover           | 08/22/03    | 1.75             | 0             | 0               | 0                          | 0                      |
| Newberrytown    | 08/29/03    | 1                | 0             | 0               | 0                          | 0                      |
| York            | 05/09/04    | 1                | 0             | 0               | 0                          | 0                      |
| Wrightsville    | 05/17/04    | 0.75             | 0             | 0               | 0                          | 0                      |
| Dover           | 07/14/04    | 0.75             | 0             | 0               | 0                          | 0                      |
| York            | 08/19/04    | 1.75             | 0             | 0               | 0                          | 0                      |
| Dillsburg       | 06/06/05    | 1                | 0             | 0               | 0                          | 0                      |
| Brogue          | 06/06/05    | 1                | 0             | 0               | 0                          | 0                      |
| Hanover         | 06/09/06    | 1                | 0             | 0               | 0                          | 0                      |
| Jacobus         | 06/09/06    | 0.75             | 0             | 0               | 0                          | 0                      |
| Hanover         | 07/18/06    | 1                | 0             | 0               | 0                          | 0                      |
| Dover           | 07/18/06    | 0.88             | 0             | 0               | 0                          | 0                      |
| Hanover         | 07/18/06    | 0.88             | 0             | 0               | 0                          | 0                      |
| Delta           | 05/27/07    | 0.75             | 0             | 0               | 0                          | 0                      |
| Airville        | 05/27/07    | 0.75             | 0             | 0               | 0                          | 0                      |

Table 4.3.5.3-1: York County Hail Events 1955 -2017 (NOAA, 2017)

| Location             | Date     | Size (In) | Deaths | Injuries | Property Damage(\$) | Crop Damage(\$) |
|----------------------|----------|-----------|--------|----------|---------------------|-----------------|
| East Prospect        | 06/01/07 | 1         | 0      | 0        | 0                   | 0               |
| Etters               | 06/13/07 | 0.75      | 0      | 0        | 0                   | 0               |
| York Haven           | 06/13/07 | 0.88      | 0      | 0        | 0                   | 0               |
| Dillsburg            | 06/19/07 | 0.88      | 0      | 0        | 0                   | 0               |
| York                 | 07/28/07 | 0.75      | 0      | 0        | 0                   | 0               |
| York                 | 07/28/07 | 0.75      | 0      | 0        | 0                   | 0               |
| York                 | 07/28/07 | 0.75      | 0      | 0        | 0                   | 0               |
| Lewisberry           | 06/16/08 | 0.75      | 0      | 0        | 0                   | 0               |
| Red Lion             | 07/27/08 | 1.5       | 0      | 0        | 0                   | 0               |
| Dallastown           | 07/27/08 | 1         | 0      | 0        | 0                   | 0               |
| Felton               | 07/27/08 | 1.25      | 0      | 0        | 0                   | 0               |
| Hanover Devener Arpt | 08/02/08 | 0.88      | 0      | 0        | 0                   | 0               |
| Mt Wolf              | 08/02/08 | 1.75      | 0      | 0        | 0                   | 0               |
| Adamsville           | 08/02/08 | 2         | 0      | 0        | 0                   | 0               |
| East York            | 08/02/08 | 1.75      | 0      | 0        | 0                   | 0               |
| York                 | 08/02/08 | 1.75      | 0      | 0        | 0                   | 0               |
| Dover                | 08/02/08 | 0.75      | 0      | 0        | 0                   | 0               |
| Dover                | 08/10/08 | 0.75      | 0      | 0        | 0                   | 0               |
| York                 | 08/10/08 | 0.88      | 0      | 0        | 0                   | 0               |
| Hanover              | 03/29/09 | 1         | 0      | 0        | 0                   | 0               |
| Adamsville           | 03/29/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Adamsville           | 03/29/09 | 1         | 0      | 0        | 0                   | 0               |
| York                 | 03/29/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Adamsville           | 03/29/09 | 1         | 0      | 0        | 0                   | 0               |
| Clear Spg            | 05/29/09 | 1         | 0      | 0        | 0                   | 0               |
| Lewisberry           | 06/09/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Delta                | 06/09/09 | 0.75      | 0      | 0        | 0                   | 0               |
| Spry                 | 06/10/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Windsor              | 06/10/09 | 0.88      | 0      | 0        | \$3,000             | 0               |
| Spry                 | 06/10/09 | 0.75      | 0      | 0        | 0                   | 0               |
| Zions View           | 06/26/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Glen Rock            | 06/26/09 | 0.88      | 0      | 0        | 0                   | 0               |
| New Freedom          | 06/26/09 | 0.88      | 0      | 0        | 0                   | 0               |
| Shrewsbury           | 06/26/09 | 0.75      | 0      | 0        | 0                   | 0               |
| Hanover              | 07/24/09 | 0.75      | 0      | 0        | 0                   | 0               |



**Table 4.3.5.3-1: York County Hail Events 1955 -2017 (NOAA, 2017)**

| <b>Location</b> | <b>Date</b> | <b>Size (In)</b> | <b>Deaths</b> | <b>Injuries</b> | <b>Property Damage(\$)</b> | <b>Crop Damage(\$)</b> |
|-----------------|-------------|------------------|---------------|-----------------|----------------------------|------------------------|
| Cly             | 05/14/10    | 1                | 0             | 0               | 0                          | 0                      |
| Starview        | 05/14/10    | 2                | 0             | 0               | 0                          | 0                      |
| Wrightsville    | 05/14/10    | 1.75             | 0             | 0               | 0                          | 0                      |
| Wrightsville    | 05/14/10    | 1                | 0             | 0               | 0                          | 0                      |
| Hallam          | 05/14/10    | 1.75             | 0             | 0               | \$1,000                    | 0                      |
| Manchester      | 05/14/10    | 1                | 0             | 0               | 0                          | 0                      |
| Spry            | 05/14/10    | 0.88             | 0             | 0               | 0                          | 0                      |
| Dallastown      | 05/14/10    | 1                | 0             | 0               | 0                          | 0                      |
| Spry            | 05/14/10    | 1.25             | 0             | 0               | 0                          | 0                      |
| Windsor         | 05/14/10    | 1                | 0             | 0               | 0                          | 0                      |
| Hanover         | 05/14/10    | 0.88             | 0             | 0               | 0                          | 0                      |
| New Freedom     | 05/14/10    | 1.25             | 0             | 0               | 0                          | 0                      |
| Roler           | 05/31/10    | 1                | 0             | 0               | 0                          | 0                      |
| Hanover         | 06/04/10    | 1                | 0             | 0               | 0                          | 0                      |
| Dillsburg       | 06/09/11    | 1                | 0             | 0               | 0                          | 0                      |
| Eastmont        | 06/09/11    | 0.88             | 0             | 0               | 0                          | 0                      |
| York            | 06/11/11    | 1                | 0             | 0               | 0                          | 0                      |
| Yocumtown       | 06/12/11    | 0.88             | 0             | 0               | 0                          | 0                      |
| Newberrytown    | 06/12/11    | 1                | 0             | 0               | 0                          | 0                      |
| York            | 07/22/11    | 0.88             | 0             | 0               | 0                          | 0                      |
| Hallam          | 07/22/11    | 0.75             | 0             | 0               | 0                          | 0                      |
| Brogue          | 7/23/11     | 1.75             | 0             | 0               | 0                          | 0                      |
| Siddonsburg     | 08/01/11    | 1                | 0             | 0               | 0                          | 0                      |
| Dover           | 8/19/11     | 0.88             | 0             | 0               | 0                          | 0                      |
| Nashville       | 09/11/11    | 0.75             | 0             | 0               | 0                          | 0                      |
| Glatfelters     | 09/11/11    | 0.75             | 0             | 0               | 0                          | 0                      |
| Dallastown      | 09/11/11    | 0.75             | 0             | 0               | 0                          | 0                      |
| Lehman          | 09/11/11    | 0.88             | 0             | 0               | 0                          | 0                      |
| Red Lion        | 09/11/11    | 1                | 0             | 0               | 0                          | 0                      |
| Dover           | 07/18/12    | 1.75             | 0             | 0               | 0                          | 0                      |
| Strinestown     | 07/18/12    | 0.75             | 0             | 0               | 0                          | 0                      |
| Manchester      | 07/18/12    | 0.75             | 0             | 0               | 0                          | 0                      |
| Yocumtown       | 08/03/12    | 0.88             | 0             | 0               | 0                          | 0                      |
| Etters          | 08/03/12    | 1                | 0             | 0               | 0                          | 0                      |
| Dillsburg       | 08/04/12    | 1.25             | 0             | 0               | 0                          | 0                      |

**Table 4.3.5.3-1: York County Hail Events 1955 -2017 (NOAA, 2017)**

| <b>Location</b> | <b>Date</b> | <b>Size (In)</b> | <b>Deaths</b> | <b>Injuries</b> | <b>Property Damage(\$)</b> | <b>Crop Damage(\$)</b> |
|-----------------|-------------|------------------|---------------|-----------------|----------------------------|------------------------|
| Laurel          | 09/12/13    | 0.75             | 0             | 0               | 0                          | 0                      |
| Wrightsville    | 05/22/14    | 0.88             | 0             | 0               | 0                          | 0                      |
| Hallam          | 05/22/14    | 1                | 0             | 0               | 0                          | 0                      |
| East York       | 05/22/14    | 1.5              | 0             | 0               | 0                          | 0                      |
| Airville        | 05/22/14    | 1                | 0             | 0               | 0                          | 0                      |
| Hollzswam       | 05/22/14    | 0.75             | 0             | 0               | 0                          | 0                      |
| Etters          | 06/23/15    | 0.88             | 0             | 0               | 0                          | 0                      |
| Pleasureville   | 06/28/16    | 1                | 0             | 0               | 0                          | 0                      |
| Airville        | 07/23/16    | 1                | 0             | 0               | 0                          | 0                      |
| Loganville      | 07/23/16    | 1                | 0             | 0               | 0                          | 0                      |
| Yorkshire       | 02/25/17    | 1                | 0             | 0               | 0                          | 0                      |
| Hanover         | 02/25/17    | 0.75             | 0             | 0               | 0                          | 0                      |
| Seitzland       | 05/18/17    | 1                | 0             | 0               | 0                          | 0                      |
| <b>Totals</b>   |             |                  | <b>0</b>      | <b>0</b>        | <b>\$4,000</b>             | <b>\$0</b>             |

Source: NOAA 2017

**4.3.5.4. Future Occurrence**

Hailstorm events will most likely occur several times annually, primarily between May and August, throughout York County. Using events collected between 1950 and 2002, Figure 4.3.5.4-1 shows the number of hail events per square mile across Pennsylvania. It is clear that the southeast and extreme west sections of the Commonwealth can expect to experience a higher number of hailstorm events compared to other areas of Pennsylvania. Note that York County is fully within the range of 40-60 hail events per square mile, as shown on the map. This equates to approximately one (1) event per square mile when an average of 50 hail events is used.

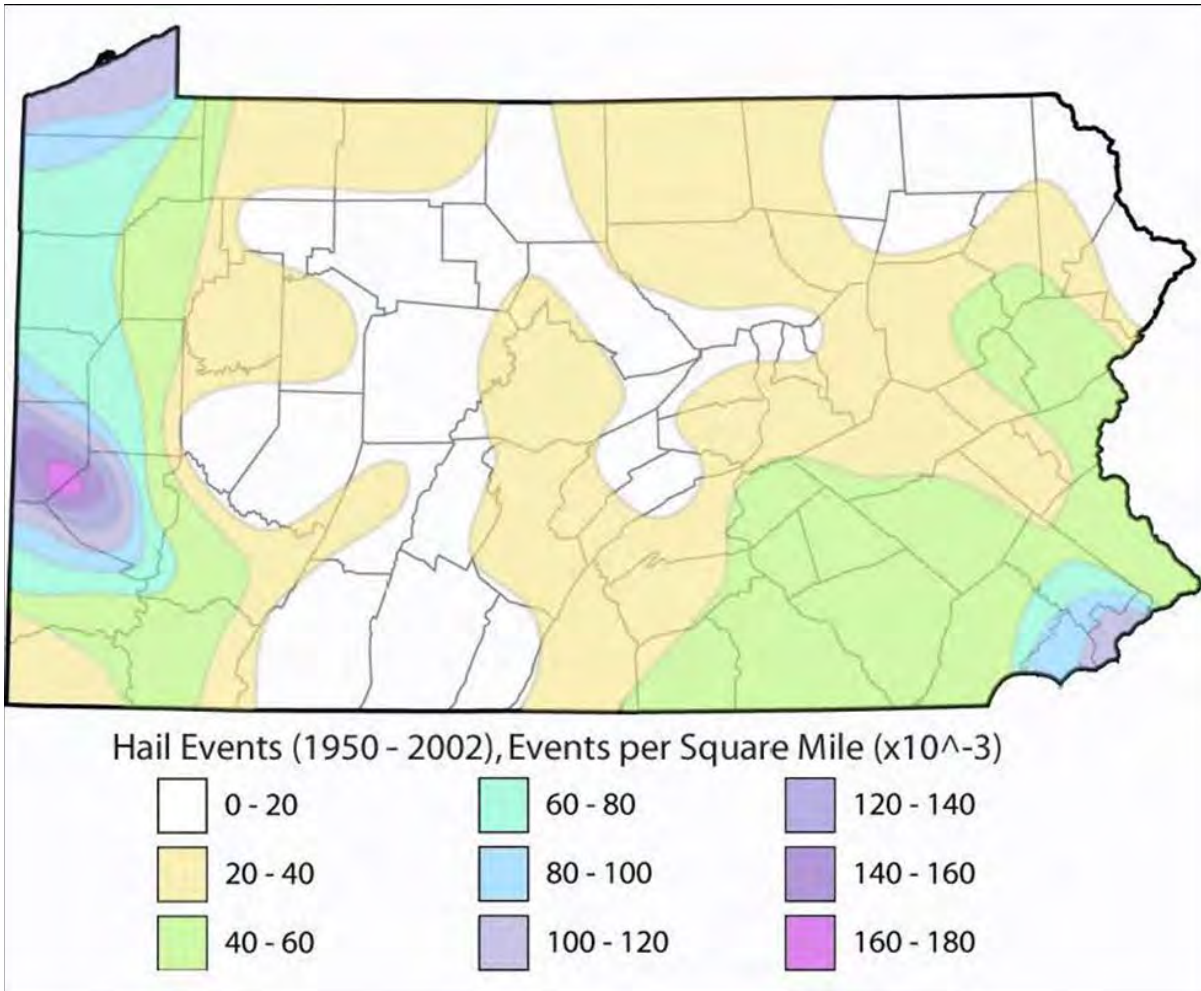


Figure 4.3.5.4-1: Hail Events per Square Mile  
Source: PA State Climatologist, PA HMP

#### 4.3.5.5 Vulnerability Assessment

All of York County is vulnerable to the effects of hailstorms. Damage can either be localized or wide spread depending on the storm. As a hazard, damage to crops and vehicles are typically the most significant impacts of a hailstorm. That said, areas with the most agricultural land and highest agricultural yields are more likely to be affected by hailstorm hazards. According to the 2012 US Census of Agriculture, York County is ranked sixth in the State's total sales of agricultural products. The potential impacted farmland acreage in York County is 360,143 acres with the market value of all agricultural products being \$234,064,000, with \$147,217,000 (63%) being from crop production.

Refer to Table 4.4-2 for York County's total hazard vulnerability, which provides data on the number of agricultural acres and dwelling units by municipality and the total potential losses.

#### 4.3.6 Hurricane, Tropical Storm, Nor'easter

Hurricanes are warm-core tropical cyclones that have maximum sustained surface winds of 74 miles per hour (mph) or more and storm diameter of 250 to 500 miles. Tropical storms are warm-core tropical cyclones that have maximum sustained surface wind speed ranges from 39 mph to 73 mph.

Nor'easters are extra-tropical storms, which typically develop from low-pressure centers off the Atlantic Coast, north of North Carolina, during the winter months.

#### 4.3.6.1 Location and Extent

While York County is located too far inland to be impacted by all of the common hazards associated with a hurricane/tropical storm event (i.e., severe winds and coastal storm surge), it is susceptible to the significant rainfall and associated flooding that can sometimes occur. The National Weather Service describes winds of 40 mph and above as strong, dangerous and damaging storms. Nor'easters can extend well inland and can have winds of this magnitude.

Tropical storm systems (i.e. hurricanes, tropical storms, tropical depressions) impacting PA develop in tropical or sub-tropical waters of the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea. Extra-tropical is a term used to describe a hurricane or tropical storm that's cyclone has lost its "tropical" characteristics. While an extra-tropical storm denotes a change in weather pattern and how the storm is gathering energy, it may still have winds that are of tropical storm or hurricane force. The center of circulation for these storm systems is where wind and precipitation effects are often most intense. These can track inland and move directly through PA, however, due to the size of these storms, the Commonwealth can be affected even when circulation centers pass at a distance of several hundred miles. In either case, these storms are regional events that can impact very large areas encompassing hundreds to thousands of miles over the life of the storm. In general, coastal storm systems affect communities in the eastern portion of PA more often than western communities. These storms could have the potential to impact the entire State.

#### 4.3.6.2 Range of Magnitude

Intense precipitation and wind resulting in flood and wind damage are the most common impacts associated with coastal storm systems in PA. The impact that tropical storm or hurricane events have on an area is typically measured in terms of wind speed. The Saffir-Simpson Scale was developed in an effort to estimate the possible damage a hurricane's sustained winds and storm surge could do to a coastal area. The scale is based on actual conditions at some time during the life of the storm. As the hurricane intensifies or weakens, the scale number is reassessed accordingly. The following table (4.3.6.2-1) shows the scale by category, wind speed, and expected damage.



Figure 4.3.6.2-1: Hurricane Irene, 2011

| Table 4.3.6.2-1: Saffir-Simpson Scale Categories with Associated Wind Speeds and Damages (National Hurricane Center, 2017) |             |  |
|--|-------------|--|
| Category   | Wind Speed  | Types of Damage  |
| 1  | 74-95 mph   | <b>Some Damage</b> – Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.   |
| 2  | 96-110 mph  | <b>Extensive Damage</b> – Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.  |
| 3 (major)  | 111-129 mph | <b>Devastating Damage</b> – Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.   |
| 4 (major)  | 130-156 mph | <b>Catastrophic Damage</b> – Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months. |
| 5 (major)  | >157 mph    | <b>Catastrophic Damage</b> – A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.  |

The **potential environmental impacts** of hurricanes/tropical storms can include the following:

- Agricultural crop damage;
- Property damage;
- Habitat disruption;
- Introduction of chemical and biological contaminants;
- Damage to trees, shrubbery, and other vegetation;
- Changes in land use and cover;
- Injury and loss of life;
- Damage to infrastructure; and
- Economic Disruption.

**4.3.6.3 Historical Occurrence**

York County’s disaster history indicates that there have been ten (10) disaster declarations since 1954, due to flooding associated with hurricane/tropical storm events. These events occurred in 1954

(Hazel), 1972 (Agnes), 1975 (Eloise), 1999 (Floyd), 2003 (Isabel), 2004 (Ivan), 2005 (Katrina), 2006 (Ernesto), 2011 (Irene, Lee) and 2012 (Sandy).

Tropical Storm Agnes of 1972 is still the storm of record for York County. This storm dumped 16 inches of rain on an already saturated landscape in York County, producing severe surface water runoff conditions that caused abnormally high flows in local streams and tributaries. York County experienced approximately \$34 million of damage, most of which was due to flooding.

**4.3.6.4 Future Occurrence**

Although hurricanes can cause flood events consistent with 100- and 500-year levels, their probability of occurrence is measured relative to wind speed. Table 4.3.6.4-1 below presents wind speeds and the probability of winds that reach the strength of tropical storms and hurricane conditions in York County. The table shows that, in York County, the annual probability for strong winds that equal the strength of tropical storms (over 39 mph) is over 90% and the probability for winds at hurricane strength is more than 8% in any given year. However, winds of 119 mph or above have less than 1% chance of occurring in any given year. Upon reviewing the historical data, it can be projected that York County can expect damaging hurricane related storms approximately once every six (6) years and, based upon hurricane wind probabilities, wind related events equal to those of tropical storms on an annual basis.

| Table 4.3.6.4-1: Hurricane Wind Probability for York County |   |                                      |
|---|---|--------------------------------------|
| Wind Speed (mph)<br>[three (3) second gust]                 | Corresponding Saffir-Simpson Hurricane Categories | Annual Probability of Occurrence (%) |
| 45-77   | Tropical Storms and Category 1 Hurricanes         | 91.59176                             |
| 78-118  | Hurricane Categories 1 to 2                       | 8.32249                              |
| 119-138   | Hurricane Categories 3 to 4                       | 0.07660                              |
| 139-163   | Hurricane Categories 4 to 5                       | 0.00860                              |
| 164-194   | Hurricane Category 5                              | 0.00054                              |
| 195-210   | Hurricane Category 5                              | 0.00001                              |
| 211-262   | Hurricane Category 5                              | 0.00000                              |
| 263+  | Hurricane Category 5                              | 0.00000                              |

Source: Tornado and Hurricane Shelter Model of “Benefit Cost Analysis of Hazard Mitigation Projects” Version 1.0 July 2000 FEMA.

**4.3.6.5 Vulnerability Assessment**

All of York County is vulnerable to the impact of flooding and severe winds caused by tropical storms and Nor’easters. As part of the vulnerability assessment, it is important to refer to Refer to Table 4.4-2 for York County’s total hazard vulnerability. This table will indicate the population by municipality, as well as dwelling units, critical facilities, and other buildings that could be impacted by this hazard, and potential dollar losses.

### 4.3.7 Invasive Species

An invasive species is a species that is not indigenous to a given ecosystem and that, when introduced to a non-native environment, is likely to cause economic or environmental harm, or pose a hazard to human health. The Commonwealth of Pennsylvania plays host to a number of invasive pathogens, insects, plants, invertebrates, fish, and higher mammals. These species have largely been introduced by the actions of humans. Invasive species threats are generally divided into two (2) main subsets:

- **Terrestrial Invasive Species** are nonnative arthropods, vascular plants, higher vertebrates, or pathogens that complete their lifecycle on land, instead of in an aquatic environment, and whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.
- **Aquatic Invasive Species** are nonnative viruses, invertebrates, fish, and aquatic plants that threaten the diversity or abundance of native species, the ecological stability of the infested waters, human health and safety, or commercial, agriculture, aquaculture, or recreational activities dependent on such waters.

#### 4.3.7.1 Location and Extent

The PA Invasive Species Council (PISC), the lead organization for invasive species threats in Pennsylvania, identifies a number of species threats that are or could potentially become, significant in PA, but does not prioritize or rank them at this time. Over 100 species have been identified as threats that are, or could potentially become, significant in PA.

Locally, the Penn State Cooperative Extension has identified the following invasive plant species as already present in York County: butterfly bush, Japanese stilt grass, mile-a-minute vine, Japanese barberry, Japanese spiraea, exotic bush, vine honeysuckles, oriental bittersweet, garlic mustard, English ivy, Chinese and Japanese wisteria, and multiflora rose. The gypsy moth, Asian long horned beetle, emerald ash borer, hemlock wooly adelgid, oak splendor beetle, and walnut twig beetle pose the greatest threats to forest resources in York County. Aquatic invasives that threaten York County include the zebra mussel, quagga mussel, northern snakehead, purple loosestrife, didymo, hydrilla, and European water chestnut. The allium leaf miner has also been detected in York County and affects agricultural products, such as leeks and onions. Agricultural Pests include the brown marmorated stink bug, Multicolored Asian lady beetle, and Japanese beetle.

The location and extent of these and other invasive threats depends on the preferred habitat of the species, as well as the species' ease of movement. Some species are a more widespread invasive threat (garlic mustard, mile-a-minute), while others, gypsy moth for example, can have the extent limited by using control methods like spraying.

Most new introductions of invasive species occur because of human activity. There are a few key pathways to introduction in York County:

- Contamination of internationally traded products;
- Hull fouling;
- Discarded live fish bait;

- Intentional release;
- Escape from cultivation;
- Movement of soil, compost, wood, vehicles, or other materials and equipment;
- Unregulated sale of organisms;
- Smuggling activities; and
- Hobby trading or specimen trading.

#### 4.3.7.2 *Range of Magnitude*

The magnitude of invasive species threats ranges from nuisance to widespread killer. Some invasive species are not considered agricultural pests and do not harm humans. Others can cause significant changes in the composition of ecosystems. The magnitude of an invasive species threat is generally amplified when ecosystem or host species is already stressed, as in a time of drought. This already weakened state of the native ecosystem causes it to more easily succumb to an infestation.

The ***potential environmental impacts*** of invasive species include:

- Significant reductions in biodiversity;
- Ill effects to the health of individual host organisms and overall ecosystem;
- Secondary impacts of invasive species that go beyond harm to host species and ecosystems, in particular, forested areas because they prevent soil degradation and erosion, protect watersheds, stabilize slopes, and absorb carbon dioxide;
- Impacts on agricultural interests, including stone fruits and potatoes;
- Economic impacts of controlling the spread of invasive species and damage to the environment;
- Reduction in wildlife habitat;
- Disruption of native plant-pollinator relationships; and
- Hazard to human health.

#### 4.3.7.3 *Past Occurrence*

Invasive species have been entering PA since the arrival of early European settlers. Since 1862, there have been 31 acts and quarantines enacted to prevent the spread of invasive species. Data from PISC indicates that the volume of acts and quarantines has increased. Table 4.3.7.3-1 provides a list of acts and quarantines affecting Pennsylvania.



**Table 4.3.7.3-1: Previous Occurrences of Invasive Species Events Requiring State Action or Quarantine in Pennsylvania**

| Year    | Species  | Year | Species  |
|---------|--|------|--|
| 1862    | Canada Thistle, Chicory, Johnson Grass and Marijuana                                   | 2005 | Eurasian Watermilfoil  |
| 1911    | Chestnut Blight Disease  | 2006 | Chronic Wasting Disease  |
| 1917    | Bovine Tuberculosis  | 2006 | Scrapie  |
| 1919    | European Wart Disease of the Potato  | 2006 | Vesicular Stomatitis   |
| 1923    | Japanese Beetle  | 2007 | Emerald Ash Borer  |
| 1925    | European Corn Borer  | 2007 | Wild Boar, Russian Boar, or Feral Hog  |
| 1927    | Canada Thistle, Wild Garlic, Orange Hock Weed, King-Devil, Sow Thistle, Field Bindweed | 2008 | Viral Hemorrhagic Septicemia Virus   |
| 1933    | White Pine Blister   | 2009 | Avian Influenza  |
| 1933    | Gypsy Moth   | 2009 | Tuberculosis   |
| 1935    | Mosquitos  | 2009 | Emerald Ash Borer (expansion of previous quarantine)   |
| 1953    | Black Stem Rust  | 2009 | West Nile encephalitis, Chronic Wasting Disease, Spring Viremia of Carp, Viral Hemorrhagic Septicemia, Lymphocitic Choriomeningitis Virus, Equine Rhinopneumonitis |
| 1983-84 | Avian Influenza  | 2010 | Firewood   |
| 1992    | Pine Shoot Beetle  | 2010 | Emerald Ash Borer (expansion of previous quarantine)   |
| 1996    | Reptiles and Amphibians  | 2014 | Thousand Canker Disease  |
| 1999    | Plum Pox Virus   | 2014 | Spotted Lanternfly   |
| 2003    | Black Carp, Bighead Carp, Silver Carp  |      |  |

Source: PISC

As previously noted, the Penn State Cooperative Extension has identified the following invasive plant species as already present in York County: butterfly bush, Japanese stilt grass, mile-a-minute vine, Japanese barberry, Japanese spiraea, exotic bush, vine honeysuckles, Oriental bittersweet, garlic mustard, English ivy, Chinese and Japanese wisteria, and multiflora rose. The gypsy moth, Asian long horned beetle, emerald ash borer, hemlock wooly adelgid, oak splendor beetle, and walnut twig beetle pose the greatest threats to forest resources in York County. Aquatic invasives that threaten York County include the zebra mussel, quagga mussel, northern snakehead, purple loosestrife, didymo, hydrilla, and European Water Chestnut. Additionally, the allium leaf miner has also been detected in York County and affects agricultural products, such as leeks and onions.

Additionally, there are plants of special concern in York County. Note, these species will not likely trigger any quarantines, but are primarily of environmental concern. They are: mile-a-minute (*Persicaria perfoliata*), Japanese siltgrass (*Microstegium vimineum*), narrow leaf cattail (*Typha angustifolia*), tree of heaven (*Ailanthus altissima*), fanwort (*Cabomba caroliniana*), princess tree (*Paulownia tomentosa*), purple loosestrife (*Lithium salicaria*), wavy leaf basket grass (*Oplismenus hirtellus ssp undulatifolius*), and mimosa (*Albizia julibrissin*).

**4.3.7.4 Future Occurrence**

According to the PISC, the probability of future occurrence for invasive species threats is on the rise because of the growing volume of transported goods, increasing technology, efficiency and speed of transportation, and expanding international trade agreements. Furthermore, climate change is contributing to the introduction of new invasive species. As maximum and minimum seasonal temperatures change, pests are able to establish themselves in previously inhospitable climates. This also gives introduced species an earlier start and increases the magnitude of their growth. This may shift the dominance of ecosystems in the favor of nonnative species. Given this information and past occurrences, the future spread of invasive species into York County is highly likely.



Figure 4.3.7.4-1: Mile-a-minute Weed (*Persicaria perfoliata*)

**4.3.7.5 Vulnerability Assessment**

The exact vulnerability of York County as related to invasive species depends largely on the invasive species in question and what is being experienced in adjacent counties. It is possible that nearly the entire County may be vulnerable to invasive forest pests, due to the amount of forest cover in the County. Agricultural production can also be vulnerable to the impacts of invasive pests. Per the PA HMP, “invasive species do not pose a direct threat to critical facilities.” Table 4.3.7.5-1: Invasive Species Vulnerability presents data on the total acres of agricultural land, forested land, surface water and the total stream miles that could be impacted by invasive species in each municipality.

| Table 4.3.7.5-1: Invasive Species Vulnerability |                                     |  |                                  |                                     |                                    |
|---|-------------------------------------|--|----------------------------------|-------------------------------------|------------------------------------|
| Municipality                                    | Total Agricultural Acres (DOA 2017) | Agricultural Vulnerability (\$) (2012 Census of Ag.) | Total Forested Acres (YCPC 2004) | Total Lakes/Ponds Acres (YCPC 2017) | Total Miles of Streams (YCPC 2008) |
| Carroll Township                                | 5,343                               | \$4,776,298  | 3,379                            | 36                                  | 26.5                               |
| Chanceford Township                             | 25,259                              | \$22,581,306   | 12,526                           | 49                                  | 96.7                               |
| Codorus Township                                | 18,003                              | \$16,094,928   | 6,853                            | 31                                  | 61.0                               |
| Conewago Township                               | 9,785                               | \$8,748,216  | 6,631                            | 210                                 | 83.4                               |
| Crossroads Borough                              | 837                                 | \$747,935  | 285                              | 1                                   | 3.2                                |
| Dallastown Borough                              | 45                                  | \$40,561   | 33                               | 0                                   | 0.4                                |

Table 4.3.7.5-1: Invasive Species Vulnerability

| Municipality              | Total Agricultural Acres (DOA 2017) | Agricultural Vulnerability (\$) (2012 Census of Ag.) | Total Forested Acres (YCPC 2004) | Total Lakes/Ponds Acres (YCPC 2017) | Total Miles of Streams (YCPC 2008) |
|---------------------------|-------------------------------------|--|----------------------------------|-------------------------------------|------------------------------------|
| Delta Borough             | 14                                  | \$12,237   | 29                               | 0                                   | 0.0                                |
| Dillsburg Borough         | 38                                  | \$34,396   | 50                               | 0                                   | 0.5                                |
| Dover Borough             | 3                                   | \$2,289  | 25                               | 0                                   | 1.2                                |
| Dover Township            | 16,920                              | \$15,126,141   | 6,780                            | 175                                 | 101.5                              |
| East Hopewell Township    | 11,242                              | \$10,050,053   | 4,425                            | 28                                  | 48.1                               |
| East Manchester Township  | 5,914                               | \$5,287,354  | 2,425                            | 183                                 | 41.4                               |
| East Prospect Borough     | 38                                  | \$33,554   | 2                                | 0                                   | 0.0                                |
| Fairview Township         | 11,114                              | \$9,935,570  | 8,526                            | 181                                 | 87.2                               |
| Fawn Grove Borough        | 674                                 | \$602,631  | 145                              | 2                                   | 1.3                                |
| Fawn Township             | 14,441                              | \$12,910,652   | 5,326                            | 39                                  | 61.2                               |
| Felton Borough            | 104                                 | \$92,587   | 111                              | 0                                   | 1.8                                |
| Franklin Township         | 6,701                               | \$5,990,438  | 4,595                            | 56                                  | 24.5                               |
| Franklintown Borough      | 28                                  | \$25,266   | 36                               | 1                                   | 0.0                                |
| Glen Rock Borough         | 79                                  | \$70,299   | 115                              | 0                                   | 1.9                                |
| Goldsboro Borough         | 65                                  | \$57,767   | 25                               | 3                                   | 0.7                                |
| Hallam Borough            | 41                                  | \$36,317   | 43                               | 0                                   | 2.1                                |
| Hanover Borough           | 36                                  | \$32,024   | 38                               | 1                                   | 1.9                                |
| Heidelberg Township       | 5,737                               | \$5,128,809  | 2,531                            | 339                                 | 28.9                               |
| Hellam Township           | 11,677                              | \$10,439,112   | 7,487                            | 77                                  | 54.5                               |
| Hopewell Township         | 13,571                              | \$12,132,852   | 3,983                            | 39                                  | 54.9                               |
| Jackson Township          | 8,311                               | \$7,429,706  | 3,353                            | 183                                 | 32.8                               |
| Jacobus Borough           | 96                                  | \$86,244   | 107                              | 1                                   | 1.7                                |
| Jefferson Borough         | 141                                 | \$126,177  | 17                               | 0                                   | 0.6                                |
| Lewisberry Borough        | 0                                   | \$224  | 0                                | 0                                   | 0.4                                |
| Loganville Borough        | 183                                 | \$163,297  | 120                              | 1                                   | 0.3                                |
| Lower Chanceford Township | 21,731                              | \$19,427,770   | 11,350                           | 24                                  | 91.0                               |
| Lower Windsor Township    | 10,017                              | \$8,955,632  | 5,042                            | 26                                  | 54.3                               |
| Manchester Borough        | 32                                  | \$29,018   | 10                               | 0                                   | 0.8                                |
| Manchester Township       | 2,489                               | \$2,225,397  | 754                              | 71                                  | 38.9                               |
| Manheim Township          | 9,082                               | \$8,119,390  | 5,400                            | 627                                 | 43.1                               |
| Monaghan Township         | 5,740                               | \$5,131,650  | 3,554                            | 64                                  | 34.2                               |
| Mount Wolf Borough        | 107                                 | \$95,771   | 12                               | 0                                   | 1.7                                |
| New Freedom Borough       | 87                                  | \$77,441   | 139                              | 1                                   | 2.8                                |
| New Salem Borough         | 77                                  | \$68,765   | 24                               | 0                                   | 0.3                                |

**Table 4.3.7.5-1: Invasive Species Vulnerability**

| <b>Municipality</b>      | <b>Total Agricultural Acres (DOA 2017)</b> | <b>Agricultural Vulnerability (\$) (2012 Census of Ag.)</b> | <b>Total Forested Acres (YCPC 2004)</b> | <b>Total Lakes/Ponds Acres (YCPC 2017)</b> | <b>Total Miles of Streams (YCPC 2008)</b> |
|--------------------------|--|---|---|--|---|
| Newberry Township        | 10,624                                     | \$9,497,723   | 7,605                                   | 206  | 85.8                                      |
| North Codorus Township   | 14,148                                     | \$12,648,148  | 5,501                                   | 139  | 73.0                                      |
| North Hopewell Township  | 9,161                                      | \$8,189,831   | 4,539                                   | 22   | 45.7                                      |
| North York Borough       | 0  |   | 0                                       | 5  | 0.9                                       |
| Paradise Township        | 9,196                                      | \$8,221,412   | 2,451                                   | 56   | 30.9                                      |
| Peach Bottom Township    | 13,723                                     | \$12,268,575  | 6,730                                   | 79   | 59.0                                      |
| Penn Township            | 2,218                                      | \$1,982,878   | 1,058                                   | 115  | 20.2                                      |
| Railroad Borough         | 279  | \$249,482   | 107                                     | 0  | 2.1                                       |
| Red Lion Borough         | 6  | \$5,514   | 60                                      | 0  | 0.3                                       |
| Seven Valleys Borough    | 511  | \$457,255   | 140                                     | 0  | 4.7                                       |
| Shrewsbury Borough       | 136  | \$121,683   | 50                                      | 1  | 1.6                                       |
| Shrewsbury Township      | 13,755                                     | \$12,296,529  | 5,289                                   | 64   | 58.0                                      |
| Spring Garden Township   | 329  | \$293,939   | 487                                     | 44   | 15.2                                      |
| Spring Grove Borough     | 41   | \$36,800  | 57                                      | 4  | 1.2                                       |
| Springettsbury Township  | 1,655                                      | \$1,479,411   | 1,580                                   | 35   | 30.8                                      |
| Springfield Township     | 12,139                                     | \$10,851,935  | 5,008                                   | 270  | 54.0                                      |
| Stewartstown Borough     | 71   | \$63,305  | 34                                      | 0  | 0.8                                       |
| Warrington Township      | 14,199                                     | \$12,694,054  | 11,164                                  | 576  | 95.6                                      |
| Washington Township      | 15,042                                     | \$13,447,893  | 3,984                                   | 221  | 70.6                                      |
| Wellsville Borough       | 15   | \$13,303  | 0                                       | 0  | 0.3                                       |
| West Manchester Township | 3,308                                      | \$2,956,932   | 1,310                                   | 139  | 29.1                                      |
| West Manheim Township    | 6,279                                      | \$5,613,186   | 4,003                                   | 421  | 39.3                                      |
| West York Borough        | 0  |   | 0                                       | 0  | 0.0                                       |
| Windsor Borough          | 129  | \$115,633   | 66                                      | 1  | 1.2                                       |
| Windsor Township         | 9,908                                      | \$8,857,437   | 4,480                                   | 60   | 43.5                                      |
| Winterstown Borough      | 1,181                                      | \$1,055,757   | 249                                     | 4  | 2.7                                       |
| Wrightsville Borough     | 34   | \$30,801  | 36                                      | 4  | 0.4                                       |
| Yoe Borough              | 4  | \$3,226   | 13                                      | 0  | 0.5                                       |
| York City                | 1  | \$1,111   | 28                                      | 33   | 7.2                                       |
| York Haven Borough       | 57   | \$50,939  | 73                                      | 16   | 1.3                                       |
| York Township            | 6,171                                      | \$5,516,937   | 3,297                                   | 270  | 52.8                                      |
| Yorkana Borough          | 23   | \$20,555  | 2                                       | 0  | 0.4                                       |
| <b>TOTAL</b>             | <b>360,143</b>                             | <b>\$321,968,261</b>  | <b>175,686</b>                          | <b>5,237</b>                               | <b>1,916.9</b>                            |

Source: YCPC GIS analysis using 2012 Census of Agriculture, DOA, and YCPC database.

The only measurable monetary loss is from the loss of agricultural productivity which is valued at \$894 per acre in agricultural production, based on the 2012 Census of Agriculture. York County’s total potential losses in agricultural production is \$321,968,261.

**4.3.8 Landslide**

According to the USGS, a landslide is the downward slope movement of rock, soil, or debris. The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. The primary reason for landslides is identified as gravity acting on an over-steepened slope. Landslides can be caused by natural and/or human factors, which include rock and soil characteristics, existing slope steepness and orientation, precipitation, stream or lake erosion, slope modification, increased load on slope, earthquakes, and a change in drainage patterns. Their effects mainly include distress and damage to property, structures, facilities, and utilities; traffic delays and detours; and maintenance requirements. Injuries and fatalities are fairly rare and usually result from rock falls on to highways and soil falls during excavations.

**4.3.8.1 Location and Extent**

Landslides in Pennsylvania usually include falls, slides, and flows and, depending on material, speed, and rotation, can further be classified as a creep, slump, or avalanche. The table below (4.3.8.1-1) describes the different types of landslides in PA.

| Table 4.3.8.1-1: Types of Landslides in PA |               |                  |                          |              |
|--|---------------|------------------|--------------------------|--------------|
| Type of Movement                           |               | Type of Material |                          |              |
|  |               | Bedrock          | Engineered Soil          |              |
|  |               |                  | Course-grained           | Fine-grained |
| Fall                                       |               | Rockfall         |                          |              |
| Slide                                      | Translational | Rockslide        | Debris Slide             |              |
|  | Rotational    | Rock Slump       | Slump                    |              |
| Flow                                       | Rapid         | Rock Creep       | Debris Avalanche Mudflow |              |
|  | Slow          |                  | Debris Flow              | Earthflow    |
|  |               |                  | Talus Creep              | Soil Creep   |

Source: DCNR

As shown on Figures 4.3.8.1-1 and 4.3.8.1-2, the northwest corner of the County, situated in the South Mountain Section of the Ridge and Valley Province, is associated with landslides that may occur, due to the presence of folded sedimentary rocks and colluvial soil (weathered soil and/or rock material deposited at the base of steep slopes). Landslides in this area may include rockslides, debris slides, debris avalanches, and slumps on lower slopes and stream banks. The remainder of the County is considered to have a low incidence of landslides.

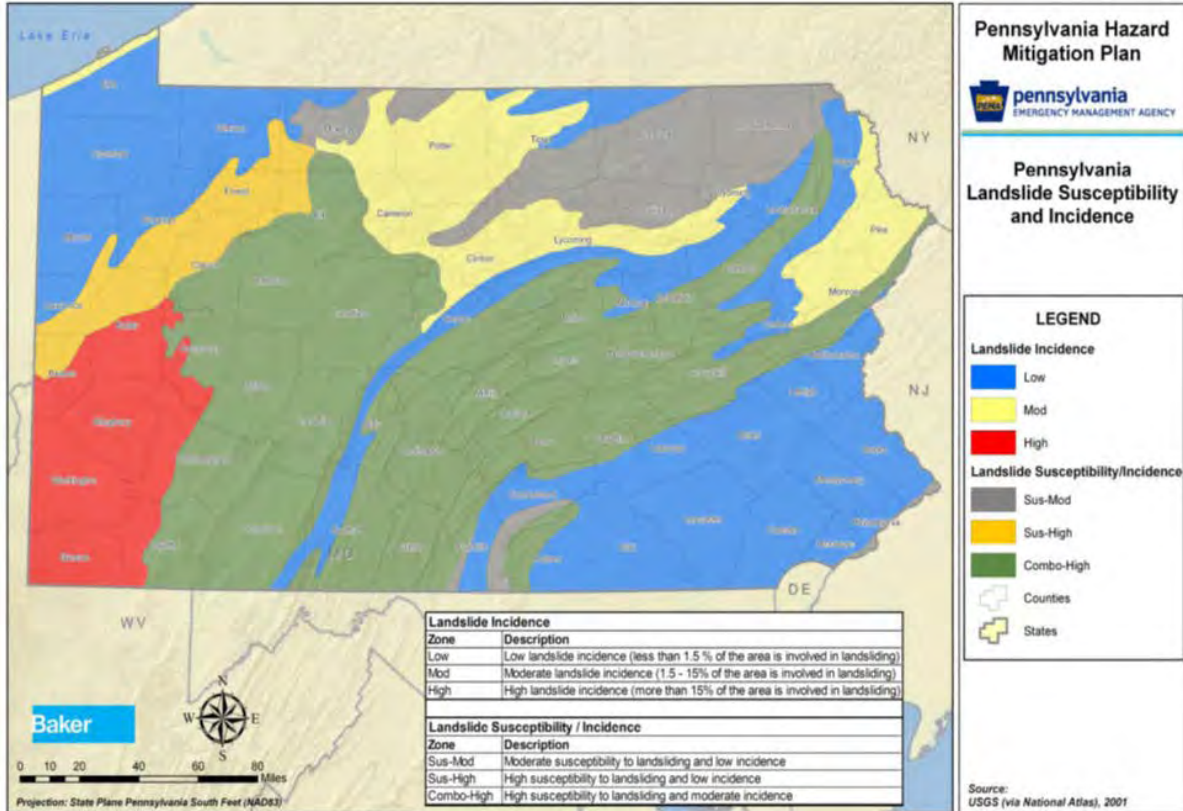


Figure 4.3.8.1-1: PA Landslide Susceptibility and Incidence Source: USGS, PA HMP

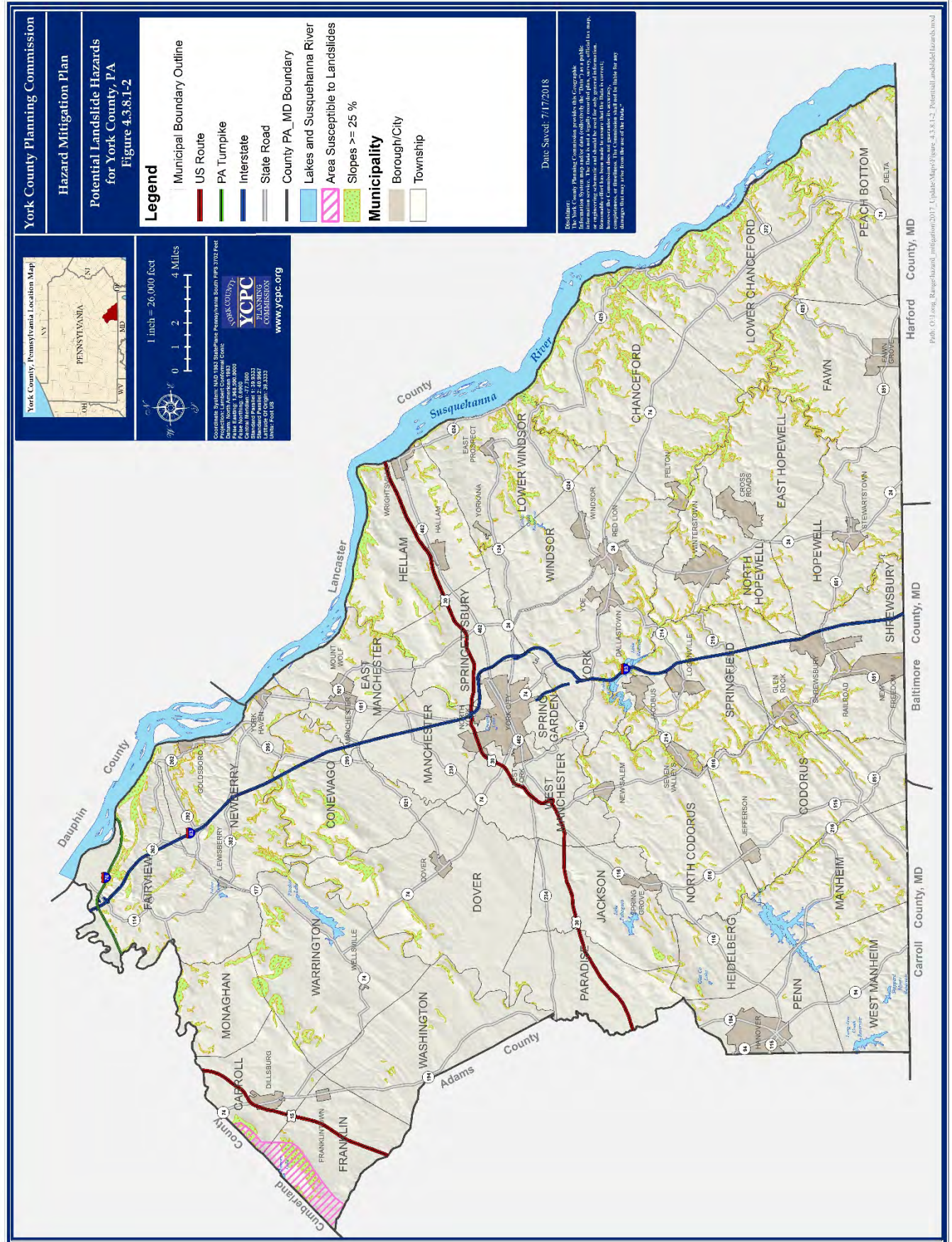
Additionally, Figure 4.3.8.1-2 shows areas associated with slopes greater than 25%, which have a greater potential for failure due to their steepness.

#### 4.3.8.2 Range of Magnitude

There is no documentation to measure the previous magnitude or severity of landslides in York County. Since the incidence and susceptibility to landslides is generally low, the County can reasonably expect only events of low severity would occur. The northwestern section of the County, however, has areas with geologic conditions, which are associated with a moderate susceptibility to landslides. That area is rural, has limited development, and lacks transportation routes, so a landslide would have limited impact.

The **potential environmental impacts** of landslides, dependent on the size and location of the event, could include:

- Changes to topography;
- Damage to vegetation;
- Potential diversion of water in the vicinity of streams and rivers;
- Increased sediment runoff both during and after the landslide event;
- Debris or rock flow could interfere or impair transportation corridors, utilities, and buildings; and
- Potential for injury or death.



**4.3.8.3 Past Occurrence**

Due to the lack of a formal reporting system, the total number of landslides that occur in PA annually is not known. According to DCNR, the susceptibility to landslides in York County is considered generally low. However, given the right combination of factors, a landslide could occur. Any previous landslides were most likely isolated instances caused by human disturbances and none have been declared a major disaster or were part of an official proclamation.

**4.3.8.4 Future Occurrence**

As noted above, DCNR indicates that the landslide susceptibility for York County is considered generally low. This does not imply that landslides cannot happen. Naturally occurring landslides can be expected in the northwestern portion of the County. Additionally, within York County, the three (3) scenarios for human-made landslides have a likely chance of occurring. As with the rest of the State, there is always a chance for landslides in the form of rock falls or flows onto road cuts. Given the increase in development within the County, landslides associated with soil falls during excavations and improper development of steep slopes, if not regulated, could also occur in the County.

**4.3.8.5 Vulnerability Assessment**

Vulnerability to landslides is based on several factors. Table 4.3.8.5-1 presents landslide vulnerability data by municipality. The identified area has the criteria of slope greater than 25% or is part of the landslide susceptible area identified in the PA HMP.

| <b>Table 4.3.8.5-1: Landslide Vulnerability</b> |                                   |   |                                     |  |                                   |
|---|-----------------------------------|---|-------------------------------------|--|-----------------------------------|
| <b>Municipality</b>                             | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure* (DOA 2017)</b> |
| Carroll Township                                | 16                                | 45                                      | 5                                   | 0                                      | \$5,164,304                       |
| Chanceford Township                             | 104                               | 281                                     | 72                                  | 0                                      | \$18,541,025                      |
| Codorus Township                                | 70                                | 180                                     | 83                                  | 1                                      | \$14,596,658                      |
| Conewago Township                               | 79                                | 213                                     | 41                                  | 0                                      | \$12,308,536                      |
| Dover Township                                  | 72                                | 182                                     | 15                                  | 0                                      | \$13,228,420                      |
| East Hopewell Township                          | 7                                 | 19                                      | 2                                   | 0                                      | \$1,273,598                       |
| East Manchester Township                        | 46                                | 131                                     | 15                                  | 0                                      | \$11,155,294                      |
| Fairview Township                               | 107                               | 281                                     | 38                                  | 12                                     | \$26,032,209                      |
| Fawn Township                                   | 15                                | 40                                      | 14                                  | 0                                      | \$2,579,639                       |
| Felton Borough                                  | 8                                 | 23                                      | 4                                   | 0                                      | \$699,020                         |
| Franklin Township                               | 233                               | 585                                     | 117                                 | 0                                      | \$51,151,240                      |
| Glen Rock Borough                               | 61                                | 150                                     | 21                                  | 0                                      | \$8,803,410                       |
| Goldsboro Borough                               | 4                                 | 12                                      | 1                                   | 0                                      | \$582,049                         |
| Heidelberg Township                             | 10                                | 28                                      | 9                                   | 0                                      | \$1,924,177                       |
| Hellam Township                                 | 127                               | 300                                     | 39                                  | 1                                      | \$24,847,683                      |
| Hopewell Township                               | 24                                | 68                                      | 20                                  | 0                                      | \$11,944,470                      |



**Table 4.3.8.5-1: Landslide Vulnerability**

| <b>Municipality</b>       | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure* (DOA 2017)</b> |
|---------------------------|-----------------------------------|---|-------------------------------------|--|-----------------------------------|
| Jackson Township          | 8                                 | 21                                      | 13                                  | 0                                      | \$1,571,519                       |
| Lower Chanceford Township | 55                                | 155                                     | 33                                  | 0                                      | \$12,807,102                      |
| Lower Windsor Township    | 194                               | 501                                     | 93                                  | 1                                      | \$24,193,031                      |
| Manchester Township       | 4                                 | 11                                      | 4                                   | 0                                      | \$474,005                         |
| Manheim Township          | 48                                | 138                                     | 42                                  | 0                                      | \$9,098,427                       |
| Monaghan Township         | 14                                | 36                                      | 10                                  | 0                                      | \$5,780,039                       |
| New Freedom Borough       | 4                                 | 11                                      | 2                                   | 0                                      | \$2,075,517                       |
| Newberry Township         | 261                               | 679                                     | 53                                  | 0                                      | \$29,594,190                      |
| North Codorus Township    | 49                                | 131                                     | 26                                  | 0                                      | \$7,845,144                       |
| North Hopewell Township   | 50                                | 124                                     | 48                                  | 0                                      | \$12,320,490                      |
| Paradise Township         | 4                                 | 10                                      | 1                                   | 0                                      | \$494,042                         |
| Peach Bottom Township     | 162                               | 457                                     | 28                                  | 1                                      | \$103,069,780                     |
| Penn Township             | 7                                 | 19                                      | 1                                   | 0                                      | \$1,607,795                       |
| Railroad Borough          | 21                                | 55                                      | 8                                   | 1                                      | \$4,338,407                       |
| Seven Valleys Borough     | 0                                 | 0                                       | 1                                   | 0                                      | \$182,210                         |
| Shrewsbury Township       | 86                                | 226                                     | 59                                  | 0                                      | \$15,350,142                      |
| Spring Garden Township    | 12                                | 30                                      | 4                                   | 0                                      | \$2,277,888                       |
| Springettsbury Township   | 2                                 | 5                                       | 2                                   | 0                                      | \$799,994                         |
| Springfield Township      | 65                                | 170                                     | 63                                  | 0                                      | \$14,097,966                      |
| Warrington Township       | 18                                | 44                                      | 11                                  | 1                                      | \$4,522,837                       |
| Washington Township       | 7                                 | 20                                      | 6                                   | 0                                      | \$1,079,208                       |
| West Manheim Township     | 9                                 | 27                                      | 7                                   | 0                                      | \$1,599,693                       |
| Windsor Township          | 28                                | 75                                      | 19                                  | 0                                      | \$5,635,263                       |
| Wrightsville Borough      | 7                                 | 17                                      | 7                                   | 0                                      | \$1,424,028                       |
| York Township             | 72                                | 168                                     | 57                                  | 4                                      | \$14,084,964                      |
| <b>TOTAL</b>              | <b>2,170</b>                      | <b>5,669</b>                            | <b>1,094</b>                        | <b>22</b>                              | <b>\$481,155,413</b>              |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using YCPC database and DOA information.

Using the identified areas that are vulnerable to landslides and assessment data, the total exposure for York County is \$481,155,413.

### 4.3.9 Lightning Strike

Lightning forms from the rising and descending of air within a thunderstorm that causes positive and negative charges to separate and produce a buildup of electrical energy between the positively and negatively charged areas that is discharged. The charge then moves downward towards the ground in approximately 50-yard segments known as “step leaders.” Eventually, a connection is made with

something on the surface of the earth and a circuit is completed allowing the charge to flow to the ground and return. This process is estimated to take less than half a second.

**4.3.9.1 Location and Extent**

Lightning is a random act and can occur anywhere in York County. There is no way to predict the location of a strike and lightning has been known to strike more than ten (10) miles away from a storm. Lightning strikes occur primarily during the summer months.

The results of lightning strikes can vary. Lightning can kill or injure people by direct or indirect contact. If not directly struck, individuals are still at risk of death or injury from currents that travel through objects and/or the ground. Lightning strike results also include explosion, burn, or total destruction of objects struck. Lightning strike impacts can be localized to a single structure or widespread through power outages, wildfires, and multiple events associated with the same storm.

**4.3.9.2 Range of Magnitude**

According to NOAA, lightning is the most dangerous and frequently encountered weather hazard. In terms of deaths and injuries, lightning is one of the most dangerous naturally occurring hazards. Every year in the U.S., it is estimated 25 million cloud to ground lightning strikes occur, resulting in nearly 300 people being struck and approximately 30 of those victims dying. The most significant results of a lightning strike likely would be mass injuries or casualties at group outings, power interruptions, and/or large scale fires.

**4.3.9.3 Past Occurrence**

Per the National Climatic Data Center Weather-Related Events Tables, 13 lightning strikes were recorded in York County between June 1994 and May 2017 that resulted in damage. See Table 4.3.9.3-1. Certainly there have been more than 13 lightning strikes in York County, however, most of the strikes either go unreported or do not result in human injury/death or property damages/losses.



Source: noaa.gov

**Table 4.3.9.3-1: Reported Lightning Strikes Causing Injury, Death, or Damage, 1994 - 2017**

| Location   | Date       | Time  | Deaths | Injuries | Property Damage (\$) |
|------------|------------|-------|--------|----------|----------------------|
| York       | 06/06/1994 | 15:10 | 0      | 0        | \$1,000              |
| Lineboro   | 06/29/1994 | 17:00 | 0      | 0        | \$50,000             |
| Hanover    | 07/14/1994 | 17:33 | 0      | 0        | \$50,000             |
| Chanceford | 08/25/1994 | 22:20 | 0      | 2        | \$50,000             |

**Table 4.3.9.3-1: Reported Lightning Strikes Causing Injury, Death, or Damage, 1994 - 2017**

| Location     | Date       | Time  | Deaths | Injuries | Property Damage (\$) |
|--------------|------------|-------|--------|----------|----------------------|
| Franklinton  | 06/11/1995 | 19:05 | 0      | 1        | 0                    |
| York         | 06/25/1995 | 15:00 | 0      | 0        | 0                    |
| Spring Grove | 06/25/1995 | 15:02 | 0      | 1        | 0                    |
| Countywide   | 07/06/1995 | 17:00 | 0      | 1        | \$10,000             |
| York         | 06/13/1998 | 16:30 | 0      | 1        | 0                    |
| Stoverstown  | 06/01/2007 | 18:56 | 0      | 2        | 0                    |
| Lewisberry   | 06/19/2007 | 17:30 | 1      | 1        | 0                    |
| Freysville   | 07/27/2007 | 16:56 | 0      | 0        | \$2,000              |
| Davidsburg   | 06/04/2011 | 21:20 | 0      | 1        | \$5,000              |
| Totals       |            |       | 1      | 10       | \$168,000            |

Source: NOAA

As shown, there was one (1) death and ten (10) injuries attributed to lightning events in York County. Seven (7) of the strikes resulted in fires that damaged homes and one (1) strike resulted in the loss of power to about 7,000 residences after lightning struck a transformer.

The ***potential environmental impacts*** most often associated with lightning strikes include:

- Tree damage/destruction;
- Wildfires;
- Injury or death;
- Property damage; and
- Electric utility damage/Interruption.

#### 4.3.9.4 Future Occurrence

Compared to the State as a whole, York County has a slightly higher occurrence of lightning strike events than a majority of the counties. The State Hazard Mitigation Plan notes that there is a lower risk for lightning strikes in central and north central portions of the State and a greater risk in southeastern Pennsylvania. Given York County's location adjacent to counties in southeastern Pennsylvania with elevated numbers of previous lightning strikes and the slightly elevated number of strikes that have occurred in the County, it would appear that York County has a moderate (approximately 1 event every 5 years) chance of experiencing future lightning strikes that result in injury, fatality, or damage when compared to the rest of the State.

Another way of assessing probability is to look at population and building numbers. It can be reasoned that higher populated and developed areas have increased chances of damage if lightning strikes should occur. This is generally supported by the figures for the State that indicate higher rates of damage from strikes occurring near higher populated and more densely developed areas. The same

holds true for York County with damage from lightning strikes being recorded mostly in the boroughs and York City. Based on this reasoning, it can be concluded that, along with the projected population and development increases in York County, lightning strikes in York County will increase in the future, especially in the more urbanized areas.

#### **4.3.9.5 Vulnerability Assessment**

The potential for lightning strikes and thunderstorms will always exist for all 72 of the municipalities in York County. Outdoor activities and events at large outdoor venues are often postponed or cancelled when lightning strikes. As part of the vulnerability assessment, it is important to refer to Table 4.4-2 for York County’s total hazard vulnerability. This table will indicate the population by municipality, as well as dwelling units, critical facilities and other buildings that could be impacted by this hazard and potential losses (\$).

#### **4.3.10 Pandemic and Infectious Disease**

Pandemic is defined as a disease affecting or attacking the population of an extensive region, including several countries, and/or continent(s). It is further described as extensively epidemic. Generally, pandemic diseases cause sudden, pervasive illness in all age groups on a global scale. Infectious diseases are caused by organisms — such as bacteria, viruses, fungi, or parasites.

##### **4.3.10.1 Location and Extent**

Pandemic and infectious disease events cover a wide geographical area and can affect large populations, potentially including the entire population of York County and PA. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission, and the amount of contact between infected and uninfected individuals. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. The transmission rate of infectious disease will depend on the mode of transmission of a given illness.

Influenza is identified by the PA HMP as a disease of concern in PA that has pandemic potential. A flu pandemic is a widespread occurrence of a new type of the flu. It happens with little warning and can appear at any time of the year. Since it is a new virus, people have little or no defense against it. As a result, the virus spreads easily and quickly from person to person around the world, causing serious illness and death. As stated in the PA Department of Health (DOH) Influenza Pandemic Response Plan, “an influenza pandemic is inevitable and will probably give little warning” (PA DOH, 2005). Influenza, also known as “the flu,” is a contagious disease that is caused by the influenza virus and most commonly attacks the respiratory tract in humans. Influenza is considered to have pandemic potential if it is novel and virulent. Table 4.3.10.1-1 lists the differences between seasonal flu and flu pandemic.

**Table 4.3.10.1-1: Differences between Seasonal Flu and Flu Pandemic**

| Seasonal Flu  | Flu Pandemic  |
|---|---|
| Outbreaks occur every year, usually in winter.                                  | Occurs only rarely (only four 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 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.  |
| Vaccine available at beginning of flu season.                                   | Vaccine would probably not be available in the early stages of a pandemic.  |
| Causes an average of 36,000 deaths each year in the United States.              | Number of deaths could be significantly higher. In the 1918 pandemic, approximately 675,000 people died 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 business, and cancellation of public events. |

Source: PA Department of Health

Infectious diseases of concern in York County include West Nile Virus and Lyme disease. West Nile Virus is a vector-borne disease that can cause headache, high fever, neck stiffness, disorientation, tremors, convulsions, muscle weakness, paralysis, and, in its most serious form, death. The virus spreads via mosquito bite and is aided by warm temperatures and wet climates conducive to mosquito breeding. West Nile Virus has been detected in all 67 counties at least once in the past ten (10) years. The virus is highly temporal with most cases occurring between April and October (DEP, 2009).

According to the CDC, Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans through the bite of infected blacklegged ticks (Deer Tick in PA). Typical symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of exposure to infected ticks. It is found all across the United States, with a particularly high incidence in the East, Midwest, and West Coast. Rates have increased significantly over time. Ticks search for host animals from the leaf litter on the forest floor or from the tips of grasses and shrubs. Ticks crawl onto animals or people as they brush against them. Not all ticks are infected. Within endemic areas, there is considerable variation in tick infection rates depending on the type of habitat, presence of wildlife, and other factors. Tick infection rates can vary from 0% to more than 70% in the same area. This uncertainty about how many ticks are infected makes it hard to predict the risk of Lyme disease in a given region. Risk of Human infection is greatest in late spring and summer.

**4.3.10.2 Range of Magnitude**

The magnitude of a pandemic or infectious disease threat in the Commonwealth will range significantly depending on the aggressiveness of the virus in question and the ease of transmission. In the case of West Nile Virus, slightly less than 80% of cases are clinically asymptomatic. Approximately

20% of cases result in mild infection, called West Nile Fever, lasting two (2) to seven (7) days. However, one in 150 cases results in severe neurological disease or death. The virus is typically more serious in older adults.

Lyme disease is the most commonly reported vector borne illness in the United States. Approximately 30,000 cases of Lyme disease are reported to CDC by State health departments and the District of Columbia each year. Ticks can attach to any part of the human body, but are often found in hard-to-see areas such as the groin, armpits, and scalp. In most cases, the tick must be attached for 36 to 48 hours or more before the Lyme disease bacterium can be transmitted. Most humans are infected through the bites of immature ticks called nymphs. Nymphs are tiny (less than 2 mm) and difficult to see; they feed during the spring and summer months. Adult ticks can also transmit Lyme disease bacteria, but they are much larger and are more likely to be discovered and removed before they have had time to transmit the bacteria. It is not uncommon for patients treated for Lyme disease with a recommended two (2) to four (4) week course of antibiotics to have lingering symptoms of fatigue, pain, or joint and muscle aches at the time they finish treatment. In a small percentage of cases, these symptoms can last for more than six (6) months.

Pandemic influenza is easily transmitted from person-to-person, but advances in medical technologies have greatly reduced the number of deaths caused by influenza over time. In terms of lives lost, the impact of various pandemic influenza outbreaks have had globally over the last century has declined (see Table 4.3.10.3-3). High-risk populations considered more vulnerable include children, the elderly, pregnant women, and chronic disease patients with reduced immune system capacity. The magnitude of a pandemic may be exacerbated by the fact that influenza pandemic will cause outbreaks across the United States, limiting the ability to transfer assistance from one jurisdiction to another. Additionally, effective preventative and therapeutic measures, including vaccines and other medications, will likely be in short supply or will not be available.

**4.3.10.3 Past Occurrence**

In 2000, West Nile virus appeared for the first time in Pennsylvania in birds, mosquitoes and a horse. Pennsylvania has developed a comprehensive network which covers 40 counties and includes trapping mosquitoes, collecting dead birds, and monitoring horses, people and, in past years, chickens. Table 4.3.10.3-1 provides a yearly summary of positive test results by year. A review of the information from the Pennsylvania West Nile Virus Control Program indicated that deaths associated with West Nile Virus occurred in the years 2003, 2004 and 2006.

| <b>Year</b> | <b>Total Positives</b> | <b>Human Cases</b> | <b>Positive Avian Samples</b> | <b>Positive Mosquito Samples</b> | <b>Sentinel Positives</b> | <b>Veterinary Positives</b> |
|-------------|------------------------|--------------------|-------------------------------|----------------------------------|---------------------------|-----------------------------|
| 2001        | 5                      | 0                  | 5                             | 0                                | 0                         | 0                           |
| 2002        | 97                     | 4                  | 28                            | 63                               | 0                         | 2                           |
| 2003        | 169                    | 16                 | 26                            | 85                               | 8                         | 42                          |

**Table 4.3.10.3-1: West Nile Virus Occurrences in York County, 2001-2017 (August)**

| Year  | Total Positives | Human Cases | Positive Avian Samples | Positive Mosquito Samples | Sentinel Positives | Veterinary Positives |
|-------|-----------------|-------------|------------------------|---------------------------|--------------------|----------------------|
| 2004  | 32              | 2           | 1                      | 29                        | 0                  | 0                    |
| 2005  | 11              | 4           | 0                      | 7                         | 0                  | 0                    |
| 2006  | 14              | 3           | 0                      | 11                        | 0                  | 0                    |
| 2007  | 8               | 0           | 0                      | 8                         | -                  | 0                    |
| 2008  | 28              | 0           | 0                      | 28                        | -                  | 0                    |
| 2009  | 18              | 0           | 4                      | 14                        | -                  | 0                    |
| 2010  | 62              | 1           | 0                      | 61                        | -                  | 0                    |
| 2011  | 137             | 0           | 0                      | 137                       | -                  | 0                    |
| 2012  | 389             | 3           | 13                     | 369                       | -                  | 4                    |
| 2013  | 110             | 2           | 0                      | 108                       | -                  | 0                    |
| 2014  | 80              | 0           | 2                      | 78                        | -                  | 0                    |
| 2015  | 280             | 2           | 7                      | 271                       | -                  | 0                    |
| 2016  | 96              | 1           | 0                      | 95                        | -                  | 0                    |
| 2017  | 69              | 0           | 0                      | 69                        | -                  | 0                    |
| Total | 1,605           | 38          | 86                     | 1,433                     | 8                  | 48                   |

Source: PA West Nile Virus Control Program

Lyme disease has been a nationally notifiable condition in the United States since 1991. Reports of Lyme disease are collected and verified by State and local health departments in accordance with their legal mandate and surveillance practices. Table 4.3.10.3-2 provides the number of Lyme disease cases reported in York County from 2000 to 2015 to the CDC.

**Table 4.3.10.3-2: Reported Lyme Disease Occurrences in York County, 2000-2015**

| Year | Reports | Year         | Reports      |
|------|---------|--------------|--------------|
| 2000 | 155     | 2008         | 176          |
| 2001 | 262     | 2009         | 382          |
| 2002 | 314     | 2010         | 193          |
| 2003 | 568     | 2011         | 241          |
| 2004 | 321     | 2012         | 328          |
| 2005 | 402     | 2013         | 219          |
| 2006 | 296     | 2014         | 304          |
| 2007 | 309     | 2015         | 406          |
|      |         | <b>TOTAL</b> | <b>4,876</b> |

Source: CDC

There have been several pandemic influenza outbreaks that have occurred over the past 100 years. A list of these events, worldwide, is shown in the table below.

| Table 4.3.10.3-3: List of Previous Significant Outbreaks of Influenza over the Past Century |                       |                            |
|---|-----------------------|----------------------------|
| Date  | Pandemic Name/Subtype | Worldwide Deaths (approx.) |
| 1918-1920   | Spanish Flu/H1N1      | 50 million                 |
| 1957-1958   | Asian Flu/H2N2        | 1.5-2 million              |
| 1968-1969   | Hong Kong Flu/H3N2    | 1 million                  |
| 2009  | Swine Flu/H1N1        | 12,000 (US)                |

Source: Global Security, 2009; World Health Organization, 2010

There are no true *potential environmental impacts* of pandemic and infectious diseases, except disease related deaths. However, there could be economic and social costs. Widespread illness could have economic impacts by increasing the likelihood of shortages of personnel to perform essential community services and high rates of worker absenteeism could cause social and economic disruptions.

**4.3.10.4 Future Occurrence**

Future occurrences of West Nile Virus are unclear. Instances of the virus have been decreasing due to aggressive planning and control measures. Some scientists suggest that as global temperatures rise and weather conditions become more extreme, the range of the virus in the US may grow.

Reports of cases of Lyme disease continue to increase and it is believed that actual cases of the disease are ten (10) to 12 times those reported. Given this information, the potential for increases in Lyme disease cases in the future is high.

As with West Nile Virus, the precise timing of pandemic influenza is uncertain, but occurrences are most likely when the Influenza Type A virus makes a dramatic change, or antigenic shift, that results in a new or “novel” virus to which the population has no immunity. This emergence of a novel virus is the first step toward a pandemic.

Future pandemics may also emerge from other diseases, especially invasive pathogens to which Pennsylvanians do not have natural immunity. Overall, the probability of future pandemic events is considered likely.

**4.3.10.5 Vulnerability Assessment**

Certain population groups are at higher risk of pandemic flu infection. This population group includes people 65 years and older, children under the age of five (5) years, pregnant women, and people of age that suffer from certain chronic medical conditions. Schools, nursing homes and convalescent facilities, and other institutions providing services to the very young and very old are locations that could be conducive to the quicker transmission of pandemic influenzas. All residents of York County have the potential to come in contact with mosquitos and ticks that spread West Nile Virus and Lyme disease. There is a higher probability for those who spend more time outdoors, especially in areas of stagnate water or heavy vegetation. Table 4.3.10.5-1 presents the vulnerability of pandemic, including potential loss of income due to illness and infectious diseases (West Nile Virus and Lyme Disease).



Table 4.3.10.5-1: Pandemic and Infectious Disease Vulnerability

| Municipality              | Total Population (Census 2016) | Population < 5 yrs. (ACS 2015) | Population > 75 yrs. (ACS 2105) | Number of Households (Census 2015) | Median HH Income (\$) (Census 2015) | Total Potential Income Loss (\$) (2015) |
|---------------------------|--------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------------|---|
| Carroll Township          | 6,634                          | 509                            | 253                             | 2,247                              | \$81,291                            | \$182,660,877                           |
| Chanceford Township       | 6,302                          | 477                            | 276                             | 2,394                              | \$54,023                            | \$129,331,062                           |
| Codorus Township          | 3,883                          | 272                            | 320                             | 1,677                              | \$59,392                            | \$99,600,384                            |
| Conewago Township         | 9,013                          | 544                            | 386                             | 3,043                              | \$63,356                            | \$192,792,308                           |
| Cross Roads Borough       | 556                            | 18                             | 17                              | 186                                | \$67,500                            | \$12,555,000                            |
| Dallastown Borough        | 3,730                          | 259                            | 394                             | 1,663                              | \$44,400                            | \$73,837,200                            |
| Delta Borough             | 619                            | 18                             | 23                              | 311                                | \$45,833                            | \$14,254,063                            |
| Dillsburg Borough         | 2,197                          | 162                            | 202                             | 1,168                              | \$46,322                            | \$54,104,096                            |
| Dover Borough             | 1,856                          | 155                            | 126                             | 865                                | \$51,422                            | \$44,480,030                            |
| Dover Township            | 22,813                         | 1,359                          | 1,066                           | 8,794                              | \$58,065                            | \$510,623,610                           |
| East Hopewell Township    | 2,549                          | 83                             | 120                             | 900                                | \$75,000                            | \$67,500,000                            |
| East Manchester Township  | 9,063                          | 327                            | 355                             | 2,725                              | \$75,542                            | \$205,851,950                           |
| East Prospect Borough     | 1,005                          | 53                             | 25                              | 417                                | \$52,813                            | \$22,023,021                            |
| Fairview Township         | 17,987                         | 1,032                          | 724                             | 6,820                              | \$74,675                            | \$509,283,500                           |
| Fawn Grove Borough        | 471                            | 25                             | 36                              | 1,244                              | \$65,924                            | \$82,009,456                            |
| Fawn Township             | 2,962                          | 101                            | 209                             | 173                                | \$62,000                            | \$10,726,000                            |
| Felton Borough            | 574                            | 32                             | 20                              | 229                                | \$58,438                            | \$13,382,302                            |
| Franklin Township         | 4,606                          | 205                            | 277                             | 2,026                              | \$60,114                            | \$121,790,964                           |
| Franklintown Borough      | 562                            | 48                             | 5                               | 225                                | \$54,904                            | \$12,353,400                            |
| Glen Rock Borough         | 1,712                          | 125                            | 70                              | 796                                | \$59,549                            | \$47,401,004                            |
| Goldsboro Borough         | 1,003                          | 87                             | 37                              | 359                                | \$66,250                            | \$23,783,750                            |
| Hallam Borough            | 2,171                          | 148                            | 89                              | 1,340                              | \$55,923                            | \$74,936,820                            |
| Hanover Borough           | 13,094                         | 1,205                          | 1,411                           | 7,180                              | \$44,251                            | \$317,722,180                           |
| Heidelberg Township       | 3,307                          | 114                            | 199                             | 1,160                              | \$68,500                            | \$79,460,000                            |
| Hellam Township           | 5,879                          | 312                            | 499                             | 2,745                              | \$55,692                            | \$152,874,540                           |
| Hopewell Township         | 5,702                          | 333                            | 306                             | 2,040                              | \$83,939                            | \$171,235,560                           |
| Jackson Township          | 9,177                          | 377                            | 454                             | 3,009                              | \$63,378                            | \$190,704,402                           |
| Jacobus Borough           | 1,847                          | 127                            | 112                             | 687                                | \$80,481                            | \$55,290,447                            |
| Jefferson Borough         | 673                            | 42                             | 54                              | 226                                | \$48,929                            | \$11,057,954                            |
| Lewisberry Borough        | 337                            | 10                             | 29                              | 182                                | \$51,635                            | \$9,397,570                             |
| Loganville Borough        | 1,286                          | 105                            | 58                              | 452                                | \$67,375                            | \$30,453,500                            |
| Lower Chanceford Township | 3,130                          | 207                            | 158                             | 1,283                              | \$64,500                            | \$82,753,500                            |
| Lower Windsor Township    | 7,921                          | 476                            | 316                             | 3,008                              | \$53,640                            | \$161,349,120                           |
| Manchester Borough        | 2,246                          | 226                            | 103                             | 1,192                              | \$51,910                            | \$61,876,720                            |
| Manchester Township       | 18,749                         | 908                            | 1,261                           | 7,321                              | \$71,144                            | \$520,845,224                           |

**Table 4.3.10.5-1: Pandemic and Infectious Disease Vulnerability**

| <b>Municipality</b>      | <b>Total Population (Census 2016)</b> | <b>Population &lt; 5 yrs. (ACS 2015)</b> | <b>Population &gt; 75 yrs. (ACS 2105)</b> | <b>Number of Households (Census 2015)</b> | <b>Median HH Income (\$) (Census 2015)</b> | <b>Total Potential Income Loss (\$) (2015)</b> |
|--------------------------|---------------------------------------|--|---|---|--|--|
| Manheim Township         | 3,600                                 | 142                                      | 194                                       | 1,375                                     | \$82,692                                   | \$113,701,500                                  |
| Monaghan Township        | 2,673                                 | 100                                      | 187                                       | 1,098                                     | \$69,107                                   | \$75,879,486                                   |
| Mount Wolf Borough       | 1,338                                 | 150                                      | 186                                       | 685                                       | \$56,406                                   | \$38,638,110                                   |
| New Freedom Borough      | 4,500                                 | 243                                      | 189                                       | 6,389                                     | \$60,237                                   | \$384,854,193                                  |
| New Salem Borough        | 880                                   | 30                                       | 53  | 1,749                                     | \$84,167                                   | \$147,208,083                                  |
| Newberry Township        | 16,398                                | 823                                      | 581                                       | 319                                       | \$84,167                                   | \$26,849,273                                   |
| North Codorus Township   | 9,246                                 | 359                                      | 596                                       | 3,577                                     | \$71,510                                   | \$255,791,270                                  |
| North Hopewell Township  | 2,697                                 | 141                                      | 230                                       | 1,132                                     | \$57,422                                   | \$65,001,704                                   |
| North York Borough       | 1,557                                 | 103                                      | 49  | 758                                       | \$41,029                                   | \$31,099,982                                   |
| Paradise Township        | 3,985                                 | 139                                      | 273                                       | 1,578                                     | \$69,777                                   | \$110,108,106                                  |
| Peach Bottom Township    | 5,648                                 | 363                                      | 190                                       | 2,078                                     | \$54,714                                   | \$113,695,692                                  |
| Penn Township            | 17,211                                | 836                                      | 1,382                                     | 6,325                                     | \$61,854                                   | \$391,226,550                                  |
| Railroad Borough         | 253                                   | 3  | 13  | 94  | \$57,500                                   | \$5,405,000                                    |
| Red Lion Borough         | 5,662                                 | 440                                      | 567                                       | 2,697                                     | \$41,186                                   | \$111,078,642                                  |
| Seven Valleys Borough    | 425                                   | 26                                       | 47  | 204                                       | \$48,750                                   | \$9,945,000                                    |
| Shrewsbury Borough       | 3,664                                 | 258                                      | 378                                       | 1,452                                     | \$70,625                                   | \$102,547,500                                  |
| Shrewsbury Township      | 7,072                                 | 187                                      | 407                                       | 2,696                                     | \$77,303                                   | \$208,408,888                                  |
| Spring Garden Township   | 11,405                                | 465                                      | 1,104                                     | 9,948                                     | \$57,440                                   | \$571,413,120                                  |
| Spring Grove Borough     | 2,164                                 | 176                                      | 94  | 2,256                                     | \$85,495                                   | \$192,876,720                                  |
| Springettsbury Township  | 24,059                                | 1,188                                    | 2,852                                     | 4,497                                     | \$73,072                                   | \$328,604,784                                  |
| Springfield Township     | 5,727                                 | 360                                      | 320                                       | 938                                       | \$54,741                                   | \$51,347,058                                   |
| Stewartstown Borough     | 1,821                                 | 142                                      | 202                                       | 975                                       | \$55,417                                   | \$54,031,575                                   |
| Warrington Township      | 4,523                                 | 78                                       | 295                                       | 2,020                                     | \$64,232                                   | \$129,748,640                                  |
| Washington Township      | 3,061                                 | 177                                      | 168                                       | 960                                       | \$61,250                                   | \$58,800,000                                   |
| Wellsville Borough       | 252                                   | 14                                       | 21  | 133                                       | \$66,250                                   | \$8,811,250                                    |
| West Manchester Township | 18,207                                | 1,091                                    | 2,142                                     | 8,031                                     | \$56,879                                   | \$456,795,249                                  |
| West Manheim Township    | 9,194                                 | 640                                      | 453                                       | 2,844                                     | \$84,250                                   | \$239,607,000                                  |
| West York Borough        | 4,009                                 | 403                                      | 147                                       | 1,977                                     | \$40,350                                   | \$79,771,950                                   |
| Windsor Borough          | 1,225                                 | 101                                      | 76  | 633                                       | \$38,828                                   | \$24,578,124                                   |
| Windsor Township         | 18,516                                | 1,018                                    | 1,266                                     | 7,081                                     | \$70,119                                   | \$496,512,639                                  |
| Winterstown Borough      | 524                                   | 11                                       | 43  | 238                                       | \$53,214                                   | \$12,664,932                                   |
| Wrightsville Borough     | 2,095                                 | 107                                      | 200                                       | 1,108                                     | \$46,036                                   | \$51,007,888                                   |
| Yoe Borough              | 865                                   | 68                                       | 37  | 462                                       | \$40,893                                   | \$18,892,566                                   |
| York City                | 34,969                                | 3,559                                    | 1,635                                     | 19,059                                    | \$29,025                                   | \$553,187,475                                  |
| York Haven Borough       | 652                                   | 65                                       | 16  | 319                                       | \$42,500                                   | \$13,557,500                                   |

**Table 4.3.10.5-1: Pandemic and Infectious Disease Vulnerability**

| <b>Municipality</b> | <b>Total Population (Census 2016)</b> | <b>Population &lt; 5 yrs. (ACS 2015)</b> | <b>Population &gt; 75 yrs. (ACS 2105)</b> | <b>Number of Households (Census 2015)</b> | <b>Median HH Income (\$) (Census 2015)</b> | <b>Total Potential Income Loss (\$) (2015)</b> |
|---------------------|---------------------------------------|--|---|---|--|--|
| York Township       | 32,917                                | 1,045                                    | 3,117                                     | 12,368                                    | \$59,896                                   | \$740,793,728                                  |
| Yorkana Borough     | 226                                   | 21                                       | 8   | 97  | \$47,321                                   | \$4,590,137                                    |
| <b>Total</b>        | <b>438,840</b>                        | <b>25,553</b>                            | <b>29,708</b>                             | <b>180,237</b>                            | <b>n/a</b>                                 | <b>\$10,629,332,828</b>                        |

Source: YCPC GIS analysis using Census 2015/2016 and ACS 2015 data.

### 4.3.11 Radon Exposure

Radon is an airborne noble gas that naturally occurs from the radioactive decay of uranium into radium. The radium further breaks down into a gas referred to as radon. Sources of radon include soil and rock beneath homes, well water, and building materials. In its natural form as a gas, radon is tasteless, odorless, colorless, and considered extremely toxic. Radon is a proven carcinogen and its effect on humans is the development of lung cancer. According to EPA, about 21,000 lung cancer deaths each year in the U.S. are related to radon, and it is the second leading cause of lung cancer after smoking, and number one among nonsmokers.

#### 4.3.11.1 Location and Extent

Radon in the air is considered ubiquitous and can be found in both indoor and outdoor environments. There is no known safe level of exposure to radon. For most people, the greatest risk of exposure to radon is within their home in rooms that are below, directly in contact with, or immediately above the ground. Risks for developing cancer are associated with different levels of radon in the air and measured in Pico Curies per Liter (pCi/L). Soil gas typically contains from a few hundred to a few thousand pCi/L of radon. Therefore, even a small rate of soil gas inflow can lead to elevated radon concentrations in a house.

The distribution of radon is correlated with the distribution of radium (i.e. 226Ra), its immediate radioactive parent, and with uranium, its original ancestor. Due to the short half-life of radon, the distance that radon atoms can travel from their parent before decay is generally limited to distances of feet or tens of feet. Using aero-radioactivity maps, based on radioactivity measurements made from an aircraft flying at low altitude with instruments that measure the radioactive energy radiating from the ground, uranium content in soil and rocks in this area have been identified. Areas of higher concentration of uranium are associated with metamorphic rocks and numerous fault zones that produce high radon in indoor air and in ground water and granites containing elevated uranium, particularly in fault zones. Additionally, areas of black shales and soils above limestone also contain moderate to high levels of uranium. The USGS publication, "The Geology of Radon" indicates York County lies within or adjacent to areas with these features and has moderate concentrations of uranium. Therefore, it can be concluded that varying levels of radon can be found throughout York County.

**4.3.11.2 Range of Magnitude**

Lung cancer is the only known effect on human health from exposure to radon in air and, thus far, there is no evidence that children are at greater risk of lung cancer than are adults (US EPA, 2010). The main hazard is actually from the radon daughter products (218Po, 214Pb, 214Bi), which may become attached to lung tissue and induce lung cancer by their radioactive decay.

According to the EPA, the average radon concentration in the indoor air of America’s homes is about 1.3 pCi/L. The EPA recommends homes be fixed if the radon level is 4 pCi/L or more. However, because there is no known safe level of exposure to radon, the EPA also recommends that Americans consider fixing their home for radon levels between 2 pCi/L and 4pCi/L. According to Radon.com, York County’s average radon test level is 11.7 pCi/L and 55.7% of the test register above 4.0 pCi/L. Table 4.3.11.2-1 shows the relationship between various radon levels, probability of lung cancer, comparable risks from other hazards, and action thresholds.

| <b>Table 4.3.11.2-1: Radon Risk for Smokers and Non-Smokers (EPA, 2010)</b>  |   |  |  |
|--|---|--|--|
| <b>Radon Level (pCi/L)</b>   | <b>If 1,000 people were exposed to this level over a lifetime...*</b> | <b>Risk of Cancer from radon exposure compares to ... **</b> | <b>Action Threshold</b>                          |
| <b>Smokers</b>   |   |  |  |
| <b>20</b>  | ~260 could get lung cancer  | 250 times the risk of drowning                               | Fix structure                                    |
| <b>10</b>  | ~ 150 could get lung cancer   | 200 times the risk of dying in a home fire                   | Fix structure                                    |
| <b>8</b>   | ~ 120 could get lung cancer   | 30 times the risk of dying in a fall                         | Fix structure                                    |
| <b>4</b>   | ~62 could get lung cancer   | 5 times the risk of dying in a car crash                     | Fix structure                                    |
| <b>2</b>   | ~ 32 could get lung cancer  | 6 times the risk of dying from poison                        | Consider fixing between 2-4 pCi/L                |
| <b>1.3</b>   | ~20 could get lung cancer   | (average indoor radon level)                                 | Reducing radon levels below 2 pCi/l is difficult |
| <b>Non-Smokers</b>   |   |  |  |
| <b>20</b>  | ~36 could get lung cancer   | 35 times the risk of drowning                                | Fix structure                                    |
| <b>10</b>  | ~ 18 could get lung cancer  | 20 times the risk of dying in a home fire                    | Fix structure                                    |
| <b>8</b>   | ~ 15 could get lung cancer  | 4 times the risk of dying in a fall                          | Fix structure                                    |
| <b>4</b>   | ~ 7 could get lung cancer   | The risk of dying in a car crash                             | Fix structure                                    |
| <b>2</b>   | ~ 4 could get lung cancer   | The risk of dying from poison                                | Consider fixing between 2-4 pCi/L                |
| <b>1.3</b>   | ~2 could get lung cancer  | (average indoor radon level)                                 | Reducing radon levels below 2 pCi/l is difficult |
| <b>NOTE:</b> Risk may be lower for former smokers  |   |  |  |
| * Lifetime risk of lung cancer deaths from EPA Assessment of risk from Radon in Homes (EPA 402-R-03-003)   |   |  |  |
| ** Comparison data calculated using Centers for Disease Control and Prevention’s 1999-2001 National Center for Injury Prevention and Control Reports |   |  |  |

**4.3.11.3 Past Occurrence**

Both DEP and EPA provide radon-testing results by zip code. Table 4.3.11.2-2 provides radon test data for the basement level of dwellings submitted to the Department from the certified radon laboratories and testers for past 26 years. It should be noted that this data represents radon concentration measurements conducted under “closed-house” conditions. This type of data would, in general, show higher results compared to a measurement made over an entire year, under “normal living” conditions. The zip code based information does not indicate an individual’s exposure or necessarily imply that the radon levels will apply throughout the zip code area, but they are a good indicator of what has been recorded and can generally be expected. Some zip codes do not provide radon information due there being less than 30 test results or no test results to provide an accurate data sampling.

**Table 4.3.11.2-2: York County Basement Radon Test Results by Zip Code (January 1990 – December 2016)**

| <b>ZIP Code</b> | <b>Count Total # radon readings</b> | <b>MAX Highest radon reading</b> | <b>AVG Average Radon reading</b> |
|-----------------|-------------------------------------|----------------------------------|----------------------------------|
| 17019           | 848                                 | 214.0                            | 7.9                              |
| 17070           | 917                                 | 102.5                            | 8.9                              |
| 17301           | 128                                 | 23.2                             | 3.6                              |
| 17302           | 60                                  | 102.9                            | 18.2                             |
| 17309           | 35                                  | 177.0                            | 26.3                             |
| 17311           |                                     |                                  |                                  |
| 17313           | 501                                 | 249.0                            | 17.7                             |
| 17314           | 234                                 | 386.1                            | 14.2                             |
| 17315           | 709                                 | 165.0                            | 7.3                              |
| 17316           | 390                                 | 199.5                            | 5.3                              |
| 17319           | 607                                 | 113.9                            | 6.4                              |
| 17321           | 108                                 | 79.2                             | 15.2                             |
| 17322           | 196                                 | 288.3                            | 23.9                             |
| 17323           |                                     |                                  |                                  |
| 17327           | 379                                 | 276.0                            | 17.6                             |
| 17329           | 142                                 | 241.0                            | 23.4                             |
| 17331           |                                     |                                  |                                  |
| 17339           | 317                                 | 184                              | 7.5                              |
| 17342           |                                     |                                  |                                  |
| 17345           | 168                                 | 695.6                            | 9.0                              |
| 17346           |                                     |                                  |                                  |

**Table 4.3.11.2-2: York County Basement Radon Test Results by Zip Code (January 1990 – December 2016)**

| ZIP Code | Count Total # radon readings | MAX Highest radon reading | AVG Average Radon reading |
|----------|------------------------------|---------------------------|---------------------------|
| 17347    | 267                          | 200.9                     | 12.4                      |
| 17349    | 661                          | 147.8                     | 10.5                      |
| 17352    | 37                           | 48.8                      | 12.3                      |
| 17355    |                              |                           |                           |
| 17356    | 991                          | 228.0                     | 17.7                      |
| 17360    | 250                          | 248.0                     | 20.2                      |
| 17361    | 494                          | 124.0                     | 9.9                       |
| 17362    | 578                          | 343.3                     | 23.4                      |
| 17363    | 699                          | 158.0                     | 16.1                      |
| 17364    | 92                           | 42.3                      | 6.9                       |
| 17365    | 73                           | 47.3                      | 5.3                       |
| 17366    | 151                          | 237.5                     | 22.4                      |
| 17368    | 192                          | 241.3                     | 23.4                      |
| 17370    | 191                          | 118.0                     | 7.6                       |
| 17371    |                              |                           |                           |
| 17401    | 74                           | 14.9                      | 4.4                       |
| 17402    | 2512                         | 260.0                     | 11.7                      |
| 17403    | 2090                         | 216.0                     | 12.8                      |
| 17404    | 2054                         | 534.0                     | 8.0                       |
| 17405    |                              |                           |                           |
| 17406    | 540                          | 409.5                     | 15.6                      |
| 17407    | 139                          | 157.0                     | 19.1                      |

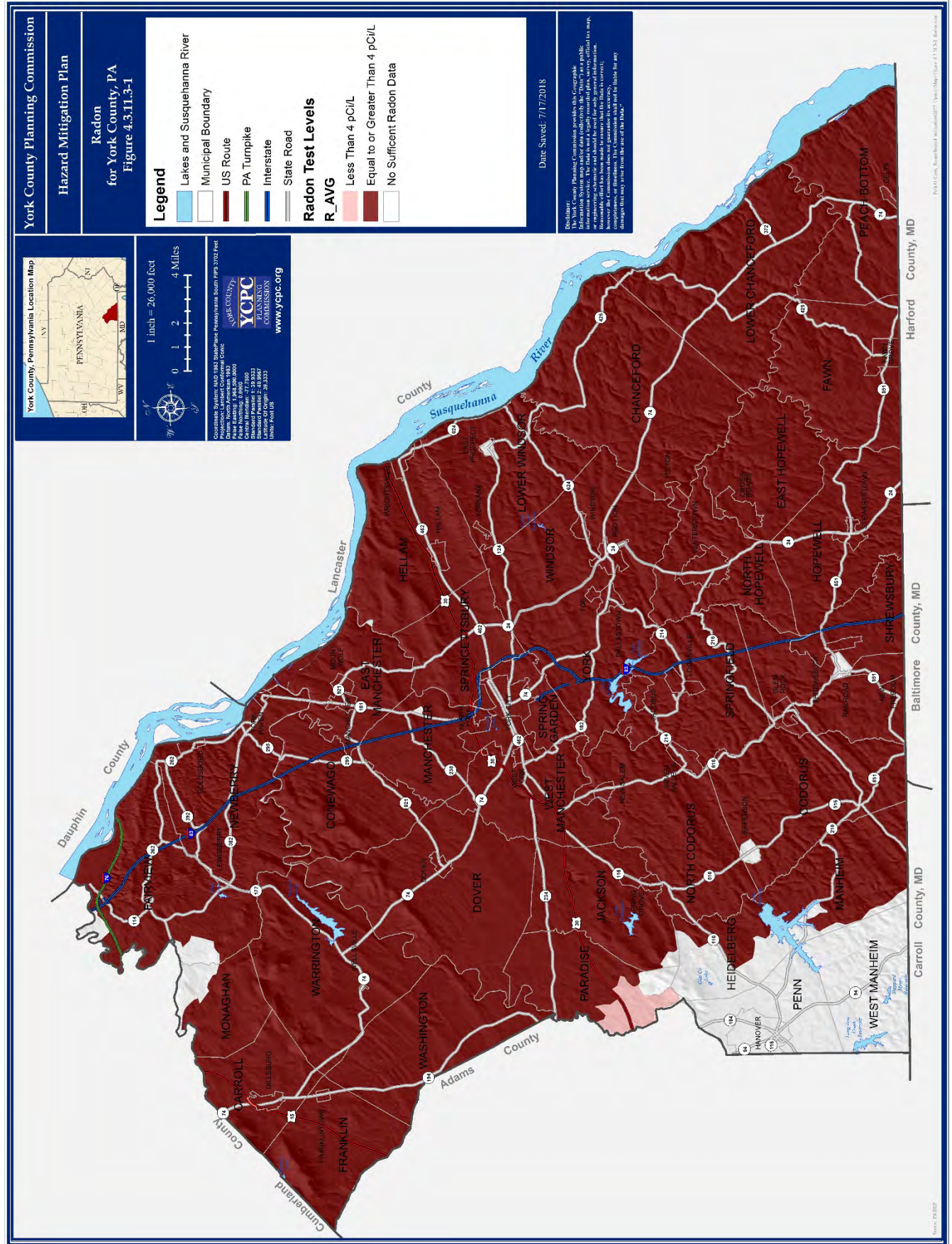
Source: PA DEP



**Protect yourself and your loved ones: Do a home radon test.**

DIY test kits are easy, inexpensive, and sold at hardware stores.

Source: PA DEP



Radon exposure has minimal **potential environmental impacts**. Due to the relatively short half-life of radon, it tends to only affect living and breathing organisms, such as humans or pets, which are routinely in contained areas where the gas is released. Therefore, impacts include health problems and potential death from lung cancer due to exposure to radon.

#### 4.3.11.4 Future Occurrence

EPA and USGS have mapped radon potential in the US to help target resources and assist local governments in determining if radon-resistant features are applicable for new construction. The designations are broken down in three (3) zones and are assigned by county, as shown in Figure 4.3.11.4-1.. Each zone reflects the average short-term measurement of radon that can be expected in a building without radon controls. Zone 1 has the highest potential and readings can be expected to exceed the 4 pCi/L recommended limit. Zone 2 has a moderate potential for radon with levels expected to be between 2 and 4 pCi/L and Zone 3 has a low potential with levels expected to be less than 2 pCi/L. York County is located in Zone 1 and has a high potential for radon exceeding recommended limits.

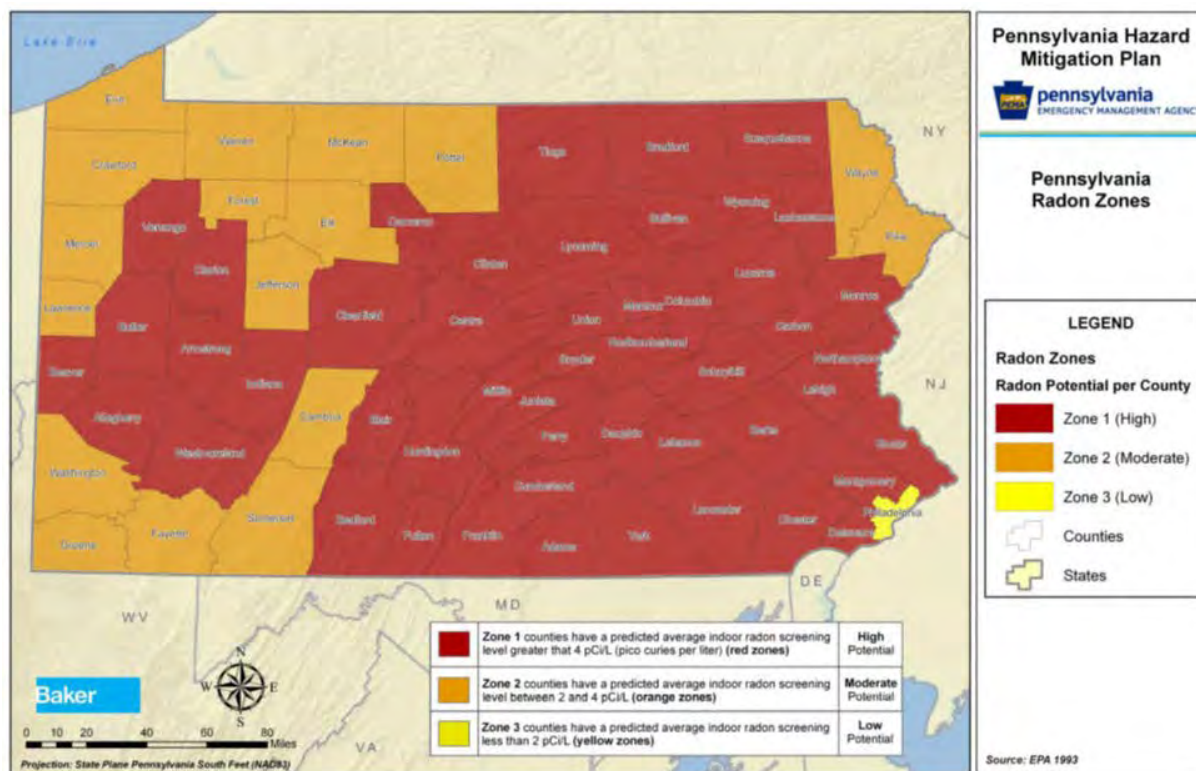


Figure 4.3.11.4-1: Radon Hazard Zones in PA  
 Source: EPA, PA HMP

#### 4.3.11.5 Vulnerability Assessment

Currently, the EPA determines that an average radon mitigation system costs approximately \$1,200. PA DEP estimates that 40% of Pennsylvania homes have elevated radon levels above the recommended 4 pCi/L limit. Using this methodology, radon loss is factored by assuming 40% of homes would be affected by radon at a mitigation average cost of \$1,200 (see Table 4.3.11.5-1).



Table 4.3.11.5-1: Radon Vulnerability

| Municipality              | Total Dwelling Units (DU) (YCPC 2017) | Affected Dwelling Units (DU) 40% (YCPC 2017) | Estimated Pop in Affected Dwelling Units (YCPC 2017) | Cost to Mitigate Based on Total Affected DU (YCPC 2017) X \$1,200 (PA DEP) |
|---------------------------|---------------------------------------|--|--|--|
| Carroll Township          | 2,361                                 | 944  | 2,654  | \$1,133,280  |
| Chanceford Township       | 2,334                                 | 934  | 2,521  | \$1,120,320  |
| Codorus Township          | 1,511                                 | 604  | 1,553  | \$725,280  |
| Conewago Township         | 3,338                                 | 1,335  | 3,605  | \$1,602,240  |
| Cross Roads Borough       | 180                                   | 72   | 222  | \$86,400   |
| Dallastown Borough        | 1,486                                 | 594  | 1,492  | \$713,280  |
| Delta Borough             | 257                                   | 103  | 248  | \$123,360  |
| Dillsburg Borough         | 939                                   | 376  | 879  | \$450,720  |
| Dover Borough             | 725                                   | 290  | 742  | \$348,000  |
| Dover Township            | 9,017                                 | 3,607  | 9,125  | \$4,328,160  |
| East Hopewell Township    | 927                                   | 371  | 1,020  | \$444,960  |
| East Manchester Township  | 3,180                                 | 1,272  | 3,625  | \$1,526,400  |
| East Prospect Borough     | 343                                   | 137  | 402  | \$164,640  |
| Fairview Township         | 6,839                                 | 2,736  | 7,195  | \$3,282,720  |
| Fawn Grove Borough        | 170                                   | 68   | 188  | \$81,600   |
| Fawn Township             | 1,101                                 | 440  | 1,185  | \$528,480  |
| Felton Borough            | 200                                   | 80   | 230  | \$96,000   |
| Franklin Township         | 1,835                                 | 734  | 1,842  | \$880,800  |
| Franklintown Borough      | 212                                   | 85   | 225  | \$101,760  |
| Glen Rock Borough         | 696                                   | 278  | 685  | \$334,080  |
| Goldsboro Borough         | 340                                   | 136  | 401  | \$163,200  |
| Hallam Borough            | 987                                   | 395  | 869  | \$473,760  |
| Hanover Borough           | 5,644                                 | 2,258  | 5,238  | \$2,709,120  |
| Heidelberg Township       | 1,177                                 | 471  | 1,323  | \$564,960  |
| Hellam Township           | 2,491                                 | 996  | 2,352  | \$1,195,680  |
| Hopewell Township         | 2,015                                 | 806  | 2,281  | \$967,200  |
| Jackson Township          | 3,463                                 | 1,385  | 3,671  | \$1,662,240  |
| Jacobus Borough           | 655                                   | 262  | 739  | \$314,400  |
| Jefferson Borough         | 257                                   | 103  | 269  | \$123,360  |
| Lewisberry Borough        | 141                                   | 56   | 135  | \$67,680   |
| Loganville Borough        | 478                                   | 191  | 514  | \$229,440  |
| Lower Chanceford Township | 1,110                                 | 444  | 1,252  | \$532,800  |
| Lower Windsor Township    | 3,070                                 | 1,228  | 3,168  | \$1,473,600  |
| Manchester Borough        | 928                                   | 371  | 898  | \$445,440  |
| Manchester Township       | 6,996                                 | 2,798  | 7,500  | \$3,358,080  |

Table 4.3.11.5-1: Radon Vulnerability

| Municipality             | Total Dwelling Units (DU) (YCPC 2017) | Affected Dwelling Units (DU) 40% (YCPC 2017) | Estimated Pop in Affected Dwelling Units (YCPC 2017) | Cost to Mitigate Based on Total Affected DU (YCPC 2017) X \$1,200 (PA DEP) |
|--------------------------|---------------------------------------|--|--|--|
| Manheim Township         | 1,250                                 | 500  | 1,440  | \$600,000  |
| Monaghan Township        | 1,036                                 | 414  | 1,069  | \$497,280  |
| Mount Wolf Borough       | 505                                   | 202  | 535  | \$242,400  |
| New Freedom Borough      | 1,698                                 | 679  | 1,800  | \$815,040  |
| New Salem Borough        | 319                                   | 128  | 352  | \$153,120  |
| Newberry Township        | 6,307                                 | 2,523  | 6,559  | \$3,027,360  |
| North Codorus Township   | 3,450                                 | 1,380  | 3,698  | \$1,656,000  |
| North Hopewell Township  | 1,092                                 | 437  | 1,079  | \$524,160  |
| North York Borough       | 654                                   | 262  | 623  | \$313,920  |
| Paradise Township        | 1,527                                 | 611  | 1,594  | \$732,960  |
| Peach Bottom Township    | 2,003                                 | 801  | 2,259  | \$961,440  |
| Penn Township            | 6,446                                 | 2,578  | 6,884  | \$3,094,080  |
| Railroad Borough         | 96                                    | 38   | 101  | \$46,080   |
| Red Lion Borough         | 2,274                                 | 910  | 2,265  | \$1,091,520  |
| Seven Valleys Borough    | 175                                   | 70   | 170  | \$84,000   |
| Shrewsbury Borough       | 1,362                                 | 545  | 1,466  | \$653,760  |
| Shrewsbury Township      | 2,689                                 | 1,076  | 2,829  | \$1,290,720  |
| Spring Garden Township   | 4,508                                 | 1,803  | 4,562  | \$2,163,840  |
| Spring Grove Borough     | 826                                   | 330  | 866  | \$396,480  |
| Springettsbury Township  | 9,820                                 | 3,928  | 9,624  | \$4,713,600  |
| Springfield Township     | 2,186                                 | 874  | 2,291  | \$1,049,280  |
| Stewartstown Borough     | 775                                   | 310  | 729  | \$372,000  |
| Warrington Township      | 1,846                                 | 738  | 1,809  | \$886,080  |
| Washington Township      | 1,052                                 | 421  | 1,225  | \$504,960  |
| Wellsville Borough       | 108                                   | 43   | 101  | \$51,840   |
| West Manchester Township | 7,618                                 | 3,047  | 7,283  | \$3,656,640  |
| West Manheim Township    | 3,106                                 | 1,242  | 3,678  | \$1,490,880  |
| West York Borough        | 1,591                                 | 636  | 1,604  | \$763,680  |
| Windsor Borough          | 464                                   | 186  | 490  | \$222,720  |
| Windsor Township         | 6,935                                 | 2,774  | 7,407  | \$3,328,800  |
| Winterstown Borough      | 228                                   | 91   | 210  | \$109,440  |
| Wrightsville Borough     | 862                                   | 345  | 838  | \$413,760  |
| Yoe Borough              | 346                                   | 138  | 346  | \$166,080  |
| York City                | 13,347                                | 5,339  | 13,988   | \$6,406,560  |
| York Haven Borough       | 224                                   | 90   | 261  | \$107,520  |

**Table 4.3.11.5-1: Radon Vulnerability**

| Municipality    | Total Dwelling Units (DU) (YCPC 2017) | Affected Dwelling Units (DU) 40% (YCPC 2017) | Estimated Pop in Affected Dwelling Units (YCPC 2017) | Cost to Mitigate Based on Total Affected DU (YCPC 2017) X \$1,200 (PA DEP) |
|-----------------|---------------------------------------|--|--|--|
| York Township   | 14,067                                | 5,627  | 13,167   | \$6,752,160  |
| Yorkana Borough | 87                                    | 35   | 90   | \$41,760   |
| <b>Total</b>    | <b>170,282</b>                        | <b>68,113</b>                                | <b>175,536</b>                                       | <b>\$81,735,360</b>  |

Source: YCPC GIS analysis using YCPC database, Census 2016, and PA DEP average cost for radon mitigation.

### 4.3.12 Subsidence, Sinkhole

According to DCNR, land subsidence is the downward movement of surface material that involves little or no horizontal movement. This movement is caused by the dissolution and transportation of underlying material, by water, into voids within carbonate bedrock or by the collapse of a cave or mine roof. The addition or removal of water causing the downward movement can be caused by both natural (weathering) and human-made (mining, groundwater pumping, utility line failure, and storm water drainage) disturbances. This process results in either a sinkhole, which exhibits a distinct break in the ground surface, or a surface depression. The occurrence of sinkholes or surface depressions usually depends on numerous factors, such as rock type, geologic structure, hydrology, surface material, and land use. Areas formed of limestone, dolomite, and marble that exhibit such features as caves, closed and surface depressions, sinkholes, and underground drainage channels are referred to as karst topography.

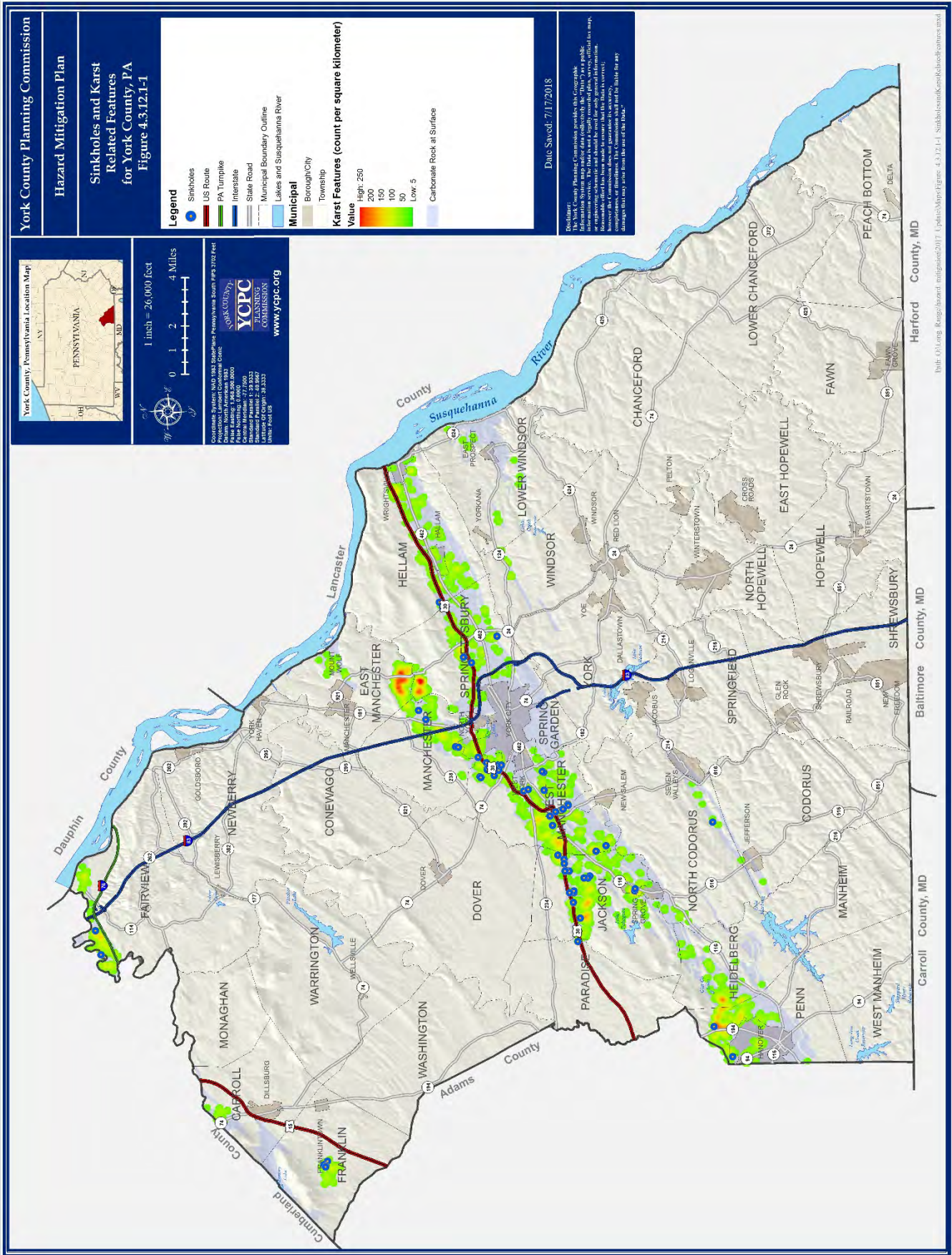
The primary problems with land subsidence are damage to public/private property and the disruption of utility services and transportation corridors. Additionally, these areas are highly susceptible to groundwater contamination, due to direct recharge to aquifers and interconnections of underground channels that allow pollutants to easily migrate to other areas. All of these can pose problems to public health and safety.

#### 4.3.12.1 Location and Extent

There are several areas of Karst topography in York County. The most significant area is the York-Hanover Valley, which has underlying limestone, caves, and several identified sinkholes. Additional areas of karst topography are located in northern areas of York County and areas just south of the York-Hanover Valley. See Figure 4.3.12.1-1: Sinkholes and Karst Related Features. This map shows the location of sinkholes, carbonate geology, and other Karst related features throughout York County.

#### 4.3.12.2 Range of Magnitude

Perhaps the best way to identify the severity or potential problems that may occur from land subsidence in York County is to examine the density of previously identified Karst features. In 2003, DCNR published Map 68 titled “Density of Mapped Karst Features in South-Central and Southeastern Pennsylvania.” See Figure 4.3.12.2-1. This map is based on grid cells that are color coded to identify



the number of Karst features per ten (10) acres, square kilometer, or square mile. Although there is no guarantee that future sinkholes or depression will occur in these areas, or that it will not occur outside of these areas, DCNR's map provides the best available view of the potential for their occurrence if development or disturbance of the natural setting should take place.

As can be seen on Figure 4.3.12.2-1, a significant portion of the York-Hanover Valley has areas with 13 to 100 Karst features per square mile. Higher proportions of Karst features in the range of 300 to 600 features per square mile appear to be mainly located in East Manchester, Franklin, Heidelberg, Jackson, Penn, Springettsbury, and West Manchester Townships.

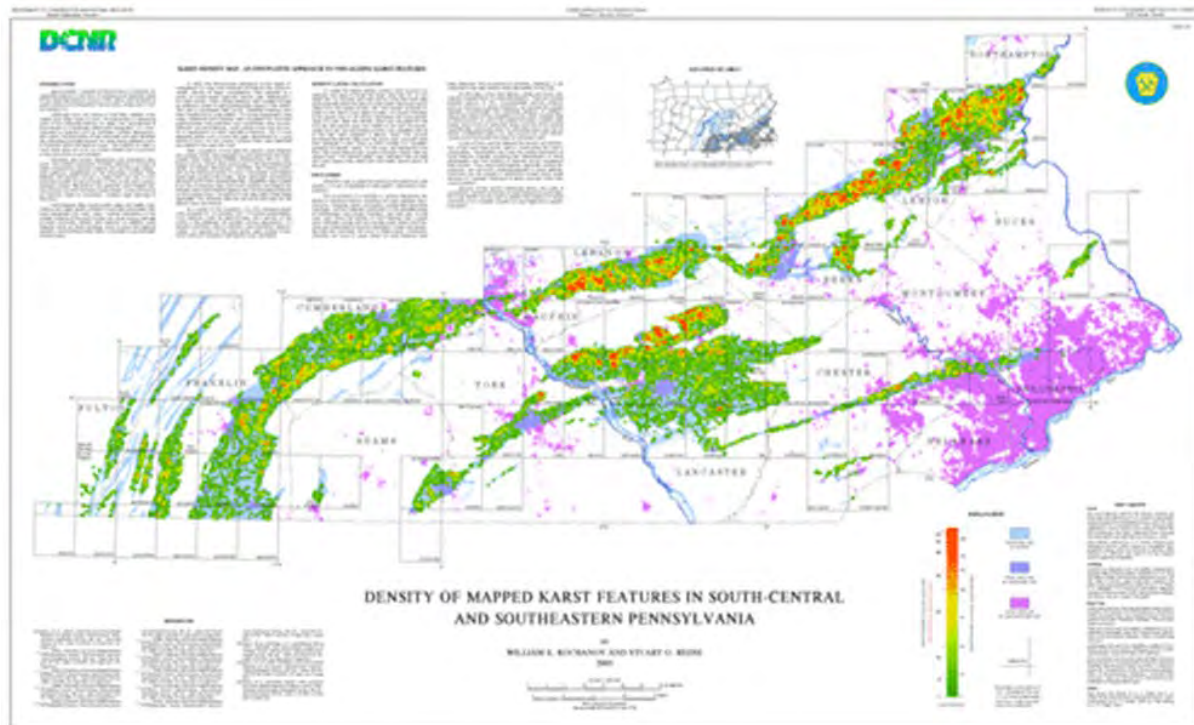


Figure 4.3.12.2-1: Density of Mapped Karst Features in South-Central and Southeastern PA  
Source: DCNR, PA HMP

#### 4.3.12.3 Past Occurrence

DCNR, as part of Open File Report 9506, which is titled "Sinkholes and Karst-Related Features of York County, PA," documented previously formed features, such as caves, depressions, individual sinkholes, clusters of sinkholes, and mining operations, that could be considered indicators of where subsidence is mostly likely to occur. Sinkholes and/or Karst related features have been documented in York County, within the Boroughs of Hallam, Hanover, North York, Spring Grove, and Wrightsville, as well as in Carroll, Codorus, East Manchester, Fairview, Franklin, Heidelberg, Hellam, Jackson, Lower Windsor, Manchester, North Codorus, Paradise, Penn, Spring Garden, Springettsbury, West Manchester, and Windsor Townships, and York City. Previously, approximately 61 sinkholes have been identified in York County. Table 4.3.12.3-1, Sinkholes in York County, provides the Federal Information Processing Number, Quadrangle, Municipality, and Latitude/Longitude for each sinkhole. None of the previous sinkholes or depressions was declared a major disaster or was part of an official proclamation.

**Table 4.3.12.3-1: Sinkholes in York County**

| <b>Sinkhole Number</b> | <b>Quadrangle<br/>7.5 minute</b> | <b>Municipality</b>      | <b>Latitude</b> | <b>Longitude</b> |
|------------------------|----------------------------------|--------------------------|-----------------|------------------|
| 0688-26                | Lemoyne                          | Fairview Township        | 40 12' 40"      | 76 53' 29"       |
| 0688-27                | Lemoyne                          | Fairview Township        | 40 12' 28"      | 76 54' 41"       |
| 0735-01                | Dillsburg                        | Franklin Township        | 40 04' 30"      | 77 04' 04"       |
| 0735-02                | Dillsburg                        | Franklin Township        | 40 04' 26"      | 77 04' 11"       |
| 0735-03                | Dillsburg                        | Franklin Township        | 40 04' 25"      | 77 04' 09"       |
| 0735-04                | Dillsburg                        | Franklin Township        | 40 04' 22"      | 77 04' 24"       |
| 0738-02                | York Haven                       | Manchester Township      | 40 00' 56"      | 76 43' 18"       |
| 0738-03                | York Haven                       | Manchester Township      | 40 00' 40"      | 76 43' 44"       |
| 0738-04                | York Haven                       | Springettsbury Township  | 40 00' 00"      | 76 43' 30"       |
| 0738-05                | York Haven                       | Hellam Township          | 40 00' 07"      | 76 38' 30"       |
| 0783-01                | Abbottstown                      | Paradise Township        | 39 55' 17"      | 76 38' 15"       |
| 0783-02                | Abbottstown                      | Jackson Township         | 39 55' 11"      | 76 53' 08"       |
| 0784-01                | West York                        | Jackson Township         | 39 53' 12"      | 76 51' 52"       |
| 0784-02                | West York                        | Jackson Township         | 39 53' 11"      | 76 51' 46"       |
| 0784-03                | West York                        | West Manchester Township | 39 54' 13"      | 76 49' 44"       |
| 0784-04                | West York                        | West Manchester Township | 39 54' 34"      | 76 50' 00"       |
| 0784-05                | West York                        | Jackson Township         | 39 54' 49"      | 76 51' 09"       |
| 0784-06                | West York                        | Jackson Township         | 39 54' 53"      | 76 51' 15"       |
| 0784-07                | West York                        | Jackson Township         | 39 55' 02"      | 76 51' 15"       |
| 0784-08                | West York                        | Jackson Township         | 39 55' 26"      | 76 52' 23"       |
| 0784-09                | West York                        | Jackson Township         | 39 55' 24"      | 76 51' 25"       |
| 0784-10                | West York                        | Jackson Township         | 39 55' 24"      | 76 51' 20"       |
| 0784-11                | West York                        | Jackson Township         | 39 55' 34"      | 76 51' 26"       |
| 0784-12                | West York                        | Jackson Township         | 39 55' 34"      | 76 50' 54"       |
| 0784-13                | West York                        | Jackson Township         | 39 55' 43"      | 76 50' 55"       |
| 0784-14                | West York                        | Jackson Township         | 39 55' 42"      | 76 50' 52"       |
| 0784-15                | West York                        | Jackson Township         | 39 55' 44"      | 76 50' 33"       |
| 0784-16                | West York                        | Jackson Township         | 39 55' 44"      | 76 50' 22"       |
| 0784-17                | West York                        | Jackson Township         | 39 55' 58"      | 76 50' 10"       |
| 0784-18                | West York                        | West Manchester Township | 39 56' 02"      | 76 48' 07"       |
| 0784-19                | West York                        | West Manchester Township | 39 56' 14"      | 76 48' 19"       |
| 0784-20                | West York                        | West Manchester Township | 39 56' 09"      | 76 48' 46"       |

Table 4.3.12.3-1: Sinkholes in York County

| Sinkhole Number | Quadrangle 7.5 minute | Municipality             | Latitude   | Longitude  |
|-----------------|-----------------------|--------------------------|------------|------------|
| 0784-21         | West York             | West Manchester Township | 39 55' 16" | 76 48' 00" |
| 0784-22         | West York             | West Manchester Township | 39 55' 04" | 76 47' 50" |
| 0784-23         | West York             | West Manchester Township | 39 55' 05" | 76 47' 47" |
| 0784-24         | West York             | West Manchester Township | 39 56' 29" | 76 46' 14" |
| 0784-25         | West York             | West Manchester Township | 39 56' 27" | 76 46' 16" |
| 0784-26         | West York             | West Manchester Township | 39 56' 26" | 76 47' 07" |
| 0784-27         | West York             | West Manchester Township | 39 57' 10" | 76 47' 08" |
| 0784-28         | West York             | West Manchester Township | 39 58' 14" | 76 46' 24" |
| 0784-29         | West York             | West Manchester Township | 39 58' 17" | 76 46' 04" |
| 0784-30         | West York             | West Manchester Township | 39 58' 04" | 76 46' 09" |
| 0784-31         | West York             | West Manchester Township | 39 58' 05" | 76 46' 07" |
| 0784-32         | West York             | West Manchester Township | 38 58' 24" | 76 45' 59" |
| 0784-33         | West York             | West Manchester Township | 39 58' 29" | 76 46' 08" |
| 0784-34         | West York             | West Manchester Township | 39 58' 29" | 76 46' 03" |
| 0784-35         | West York             | West Manchester Township | 39 58' 30" | 76 45' 47" |
| 0784-36         | West York             | West Manchester Township | 39 57' 58" | 76 45' 54" |
| 0784-37         | West York             | West Manchester Township | 39 58' 05" | 76 45' 54" |
| 0784-38         | West York             | Manchester Township      | 39 58' 48" | 76 45' 32" |
| 0784-39         | West York             | Manchester Township      | 39 59' 37" | 76 45' 01" |
| 0784-40         | West York             | Manchester Township      | 39 59' 31" | 76 45' 03" |
| 0784-41         | West York             | West Manchester Township | 39 58' 45" | 76 46' 27" |
| 0784-42         | West York             | West Manchester Township | 39 58' 42" | 76 46' 29" |
| 0784-43         | West York             | West Manchester Township | 39 57' 00" | 76 47' 04" |
| 0785-01         | York                  | Springettsbury Township  | 39 59' 17" | 76 40' 50" |
| 0785-02         | York                  | Springettsbury Township  | 39 59' 00" | 76 41' 06" |
| 0785-03         | York                  | Springettsbury Township  | 39 58' 04" | 76 39' 52" |
| 0828-01         | Hanover               | Penn Township            | 39 49' 44" | 76 49' 40" |
| 0828-02         | Hanover               | Penn Township            | 39 50' 29" | 76 58' 15" |
| 0828-03         | Seven Valleys         | North Codorus Township   | 39 50' 22" | 76 48' 41" |

Source: DCNR

The **potential environmental impact** most often associated with subsidence and sinkholes is an increased potential for groundwater contamination, due to lack of soil substrate, which would

normally slow migrating contaminants. Vegetation can be damaged during abrupt subsidence events. Damage can also occur to buildings and infrastructure resulting in environmental impacts and potential injury or loss of life.

**4.3.12.4 Future Occurrence**

The future occurrence of land subsidence in the form of sinkholes or surface depressions is dependent upon the existence of a combination of natural occurring features that are acted upon by either natural or human-made disturbances. Given the abundance of Karst related features in certain parts of the County, an increasing population, and the attractiveness of Karst topography areas for development due to its relatively flat surfaces, it can be expected that there is a high probability of land subsidence occurring in York County in any given year.

**4.3.12.5 Vulnerability Assessment**

Sinkholes can affect residential properties as well as infrastructure. Table 4.3.12.5-1 presents the sinkhole vulnerability in the potentially affected areas of York County.

**Table 4.3.12.5-1: Subsidence, Sinkhole Vulnerability**

| Municipality              | Dwelling Units (YCPC 2017) | Estimated Population (YCPC 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Bridges (BMS 2017) | Miles of Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) | Total Exposure* (\$) (DOA 2017) |
|---------------------------|----------------------------|----------------------------------|------------------------------|---------------------------------|--------------------|-------------------------------|-----------------------------|---------------------------------|
| Carroll Township          | 440                        | 1,236                            | 163                          | 0                               | 9                  | 0.9                           | 10.5                        | \$87,406,403                    |
| Codorus Township          | 27                         | 69                               | 13                           | 0                               | 1                  | 0.1                           | 1.7                         | \$8,963,847                     |
| Dillsburg Borough         | 1                          | 2                                | 3                            | 0                               | 0                  | 0                             | 0.0                         | \$758,572                       |
| Dover Township            |                            |                                  |                              |                                 | 1                  | 0                             | 0.1                         |                                 |
| East Manchester Township  | 615                        | 1,753                            | 155                          | 2                               | 5                  | 2.7                           | 15.2                        | \$124,912,499                   |
| East Prospect Borough     | 233                        | 683                              | 101                          | 3                               | 0                  | 0                             | 3.5                         | \$32,551,274                    |
| Fairview Township         | 607                        | 1,596                            | 251                          | 13                              | 15                 | 0.7                           | 20.7                        | \$254,417,766                   |
| Franklin Township         | 145                        | 364                              | 102                          | 0                               | 1                  | 0                             | 6.3                         | \$36,675,102                    |
| Hallam Borough            | 973                        | 2,141                            | 260                          | 6                               | 11                 | 0                             | 9.8                         | \$160,775,812                   |
| Hanover Borough           | 5644                       | 13,094                           | 2,970                        | 79                              | 5                  | 5.9                           | 85.8                        | \$1,505,459,416                 |
| Heidelberg Township       | 235                        | 660                              | 348                          | 2                               | 14                 | 4.4                           | 14.9                        | \$51,625,212                    |
| Hellam Township           | 1072                       | 2,530                            | 654                          | 13                              | 41                 | 0.3                           | 54.1                        | \$273,293,150                   |
| Jackson Township          | 1775                       | 4,704                            | 1,108                        | 18                              | 23                 | 10.4                          | 42.7                        | \$395,620,327                   |
| Jefferson Borough         | 118                        | 309                              | 89                           | 2                               | 7                  | 0                             | 3.2                         | \$21,066,505                    |
| Lower Chanceford Township | 2                          | 6                                | 0                            | 0                               | 0                  | 0                             | 0.1                         | \$116,322                       |
| Lower Windsor Township    | 402                        | 1,037                            | 314                          | 5                               | 19                 | 0                             | 15.8                        | \$76,360,768                    |
| Manchester Township       | 2641                       | 7,078                            | 494                          | 25                              | 30                 | 1.8                           | 44.5                        | \$695,831,481                   |
| Manheim Township          | 0                          | 0                                | 0                            | 0                               | 1                  | 0                             | 0.0                         |                                 |
| Mt. Wolf Borough          | 0                          | 0                                | 0                            | 0                               | 0                  | 0                             | 0.1                         |                                 |



**Table 4.3.12.5-1: Subsidence, Sinkhole Vulnerability**

| Municipality             | Dwelling Units (YCPC 2017) | Estimated Population (YCPC 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Bridges (BMS 2017) | Miles of Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) | Total Exposure* (\$) (DOA 2017) |
|--------------------------|----------------------------|----------------------------------|------------------------------|---------------------------------|--------------------|-------------------------------|-----------------------------|---------------------------------|
| North Codorus Township   | 114                        | 306                              | 233                          | 2                               | 27                 | 2.5                           | 14.2                        | \$33,732,231                    |
| North York Borough       | 114                        | 271                              | 132                          | 0                               | 3                  | 0                             | 2.3                         | \$24,979,354                    |
| Paradise Township        | 13                         | 34                               | 11                           | 0                               | 5                  | 0                             | 0.4                         | \$2,280,496                     |
| Penn Township            | 2766                       | 7,385                            | 1,388                        | 19                              | 28                 | 5.6                           | 46.1                        | \$717,265,095                   |
| Seven Valleys Borough    | 73                         | 177                              | 81                           | 2                               | 2                  | 0.7                           | 1.8                         | \$12,438,911                    |
| Spring Garden Township   | 3616                       | 9,148                            | 1,302                        | 50                              | 34                 | 12.1                          | 71.3                        | \$1,256,754,170                 |
| Spring Grove Borough     | 533                        | 1,396                            | 363                          | 14                              | 5                  | 3.3                           | 7.8                         | \$150,726,707                   |
| Springettsbury Township  | 6156                       | 15,082                           | 1,392                        | 116                             | 93                 | 6.2                           | 108.2                       | \$2,168,423,674                 |
| Springfield Township     | 7                          | 18                               | 4                            | 0                               | 2                  | 0.2                           | 0.5                         | \$1,872,640                     |
| West Manchester Township | 2517                       | 6,016                            | 1,353                        | 58                              | 42                 | 20.9                          | 83.9                        | \$977,523,610                   |
| West Manheim Township    | 0                          | 0                                | 0                            | 0                               | 2                  | 0                             | 0.1                         |                                 |
| West York Borough        | 1085                       | 2,734                            | 791                          | 7                               | 1                  | 2.4                           | 12.7                        | \$164,758,300                   |
| Windsor Township         | 104                        | 278                              | 24                           | 0                               | 5                  | 0                             | 3.5                         | \$21,730,068                    |
| Wrightsville Borough     | 853                        | 2,073                            | 501                          | 14                              | 1                  | 0                             | 13.4                        | \$149,620,658                   |
| York City                | 13092                      | 34,301                           | 3,470                        | 111                             | 32                 | 8.8                           | 147.8                       | \$2,431,848,990                 |
| York Township            | 66                         | 154                              | 24                           | 0                               | 2                  | 0                             | 1.7                         | \$17,528,014                    |
| <b>Total</b>             | <b>46,039</b>              | <b>116,637</b>                   | <b>18,094</b>                | <b>561</b>                      | <b>467</b>         | <b>90.1</b>                   | <b>844.4</b>                | <b>\$11,857,317,374</b>         |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using YCPC, BMS and EMA data.

Based on identified subsidence/sinkhole areas and assessment data, York County’s potential total exposure to sinkholes is \$11,857,317,374.

### 4.3.13 Tornado, Windstorm

According to ready.gov, a tornado is a “violently rotating column of air that extends from a thunderstorm to the ground and is often—although not always—visible as a funnel cloud.” Tornadoes can occur at any time during the day or night, but are most frequent during late afternoon into early evening, the warmest hours of the day, and are most likely to occur during the spring and early summer months of March through June. Tornado movement is characterized in two ways: direction and speed of spinning winds and forward movement of the tornado, also known as the storm track. Most tornadoes have wind speeds of 110 mph (175 km/h) or less, are approximately 250 feet (75 m) across, and travel a few miles (several kilometers) before dissipating. Some attain wind speeds of more than 300 mph (480 km/h), stretch more than a mile (1.6 km) across, and stay on the ground for dozens of miles (more than 100 km). Others never touch the ground and are short lived, while some may touch the ground several times. Most tornadoes in the United States occur east of the Rocky Mountains with concentrations in the central and southern plains, the Gulf Coast, and Florida.

A windstorm is defined as a storm with very strong wind, but little or no rain or snow. Damaging winds are often called “straight-line” winds to differentiate the damage they cause from tornado damage. Straight-line winds are caused by the movement of air from areas of higher pressure to areas of lower pressure. Stronger winds are the result of greater differences in pressure. Windstorms are generally defined as sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration. Wind events can vary in spatial size from small microscale events, which take place over only a few hundred meters to large-scale wind events often associated with warm or cold fronts.

**4.3.13.1 Location and Extent**

Tornadoes and windstorms can affect any area of the County. Tornado events are usually localized, however, severe thunderstorms may result in conditions favorable to the formation of numerous or long-lived tornadoes. Straight-line winds or windstorms are experienced on a region-wide scale and aren’t confined to a geographic area. While these wind events are usually accompanied by tornadoes, this is not always true, as is the case in past events in York County.

**4.3.13.2 Range of Magnitude**

In an average year, 1,200 tornadoes are reported nationwide, resulting in 70 deaths (NOAA 30 Year Average) and many injuries. With wind speeds in excess of 250 mph, tornadoes are considered nature’s most violent storms. Damage paths can be as wide as one (1) mile and over 50 miles long. Annually, tornadoes account for an average of more than \$1 billion in damages across the U.S. Damage and death can be significant when tornadoes move through more populated and developed areas. The destruction caused by tornadoes ranges from very minor to very extensive, depending on the duration, size and intensity of the storm. Most typically, tornadoes cause the greatest damage to structures of lighter construction, like mobile homes.

The Enhanced Fujita Scale, or EF Scale, measures tornado strength and associated damage. The EF Scale provides engineered wind estimates and better damage descriptions. It classifies US tornadoes into six (6) intensity categories, as shown in Table 4.3.13.2-1.

| Table 4.3.13.2-1: Enhanced Fujita Scale (EF-Scale) Categories with Associated Wind Speeds and Description of Damage |                  |                |   |
|---|------------------|----------------|---|
| EF-Scale Number   | Wind Speed (MPH) | F-Scale Number | Type of Damage Possible   |
| EF0   | 65-85            | F0-F1          | <b>Minor damage:</b> peels back some roofs; some damage to gutters and siding; branches broken off trees; shallow rooted trees pushed over. Confirmed tornadoes with no reported damage are always rated EF0. |
| EF1   | 86-110           | F1             | <b>Moderate damage:</b> roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors, windows and other broken glass.  |
| EF2   | 111-135          | F1-F2          | <b>Considerable damage:</b> roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or   |

| Table 4.3.13.2-1: Enhanced Fujita Scale (EF-Scale) Categories with Associated Wind Speeds and Description of Damage |                  |                |  |
|---|------------------|----------------|--|
| EF-Scale Number   | Wind Speed (MPH) | F-Scale Number | Type of Damage Possible  |
|   |                  |                | uprooted; light-object missiles generated; cars lifted off the ground.   |
| EF3   | 136-165          | F2-F3          | <b>Severe damage:</b> 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 blown away some distance. |
| EF4   | 166-200          | F3             | <b>Devastating damage:</b> well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.  |
| EF5   | >200             | F3-F6          | <b>Extreme damage:</b> strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100m (300 ft.); steel reinforced concrete structures badly damaged; high-rise buildings have significant structural deformation. |

Source: PA HMP

Figure 4.3.13.2-1 shows wind speed zones developed by the American Society of Civil Engineers based on information including 40 years of tornado history and over 100 years of hurricane history. It identifies worst-case wind speeds that could occur across the United States to be used as the basis for design and evaluation of the structural integrity of shelters and critical facilities. York County falls

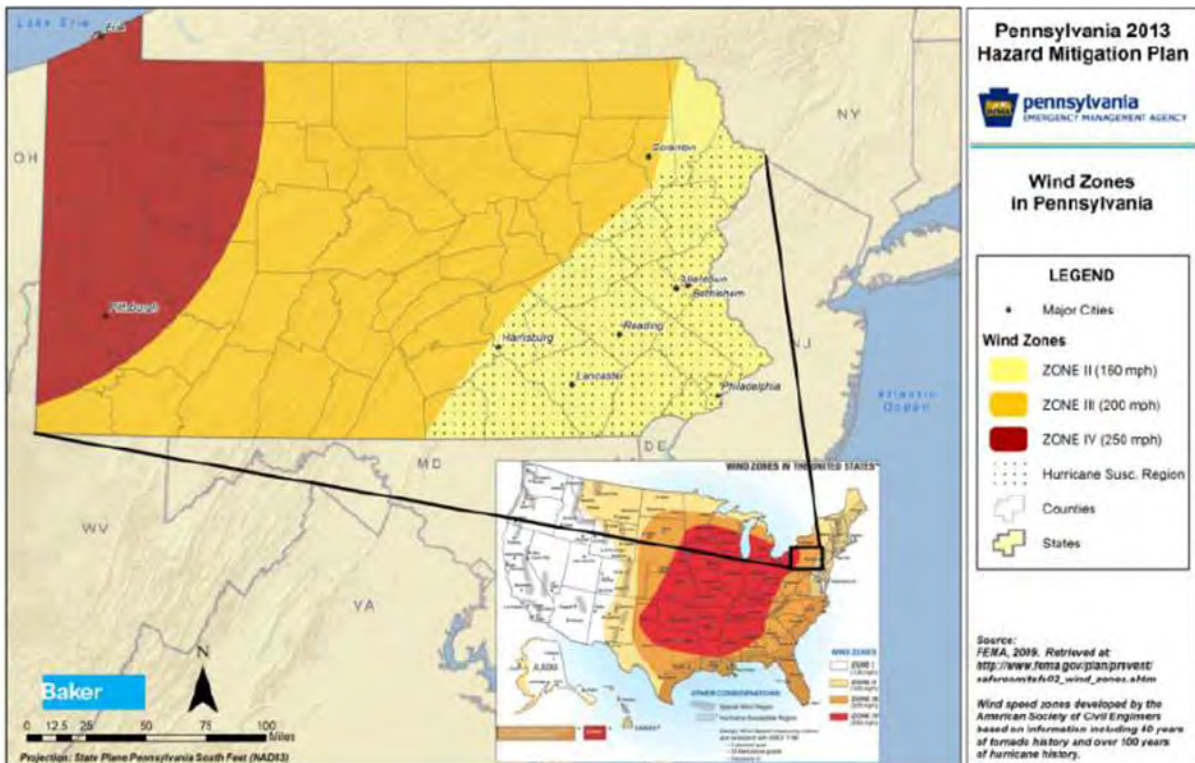


Figure 4.3.13.2-1: Design Wind Speeds for Community Shelters across the United States (FEMA 2009, PA 2013 HMP)

within Zone II, meaning design wind speeds for shelters and critical facilities should be able to withstand a 3-second gust of up to 160 mph, regardless of whether the gust is the result of a tornado, hurricane, tropical storm, or windstorm event. It should also be noted that York County is identified as being in a Hurricane Susceptible Region.

The impacts of tornado/wind hazards are ultimately dependent on the amount of persons and property present in the area where the event occurs. Tornado/wind events are often so extensive that property damage and/or loss and human injury and/or fatality are inevitable if evacuation or proper construction standards remain unimplemented.

**4.3.13.3 Past Occurrence**

Analysis of York County’s disaster history indicated that in March 1976, the County experienced a tornado with enough force to warrant a disaster declaration. Coordination with the NCDC revealed that this particular tornado event was categorized as an F1 according to the Fujita Tornado Scale, was on the ground for approximately two (2) miles, was approximately 50 feet in width, and resulted in an estimated \$25,000 in damage.

According to NOAA data, there have been 25 additional documented tornadoes in York County since 1952. The first of these occurred in April 1952 and the most recent occurred in February of 2017 near Hallam Borough. Of the 26 documented tornadoes that have occurred in York County since 1952, one (1) has been categorized as F3, 11 have been categorized as F2, eight (8) have been categorized as F1, and six (6) have been categorized as F0. According to NOAA records, tornadoes have caused damage estimated at \$14,710,000 and injured 12 people.



Figure 4.3.13.3-1: Damage from Windsor Borough Tornado, 2011

| Table 4.3.13.3-1: York County Tornadoes 1950 through 2017 (NOAA) |            |          |        |          |                 |        |       |
|--|------------|----------|--------|----------|-----------------|--------|-------|
| Location   | Date       | EF-Scale | Deaths | Injuries | Property Damage | Length | Width |
| Hanover Borough  | 04/05/1952 | F3       | 0      | 4        | \$2,500,000     | 17.5   | 33    |
| York City  | 06/13/1956 | F2       | 0      | 2        | \$25,000        | 0      | 33    |
| Springettsbury Township  | 07/29/1961 | F2       | 0      | 0        | \$2,500,000     | 8.8    | 500   |
| Dover Borough  | 03/27/1963 | F2       | 0      | 0        | \$25,000        | 17     | 20    |
| Dover Borough  | 08/26/1965 | F1       | 0      | 0        | \$25,000        | 0      | 33    |
| East Manchester Township   | 07/27/1969 | F2       | 0      | 0        | \$250,000       | 0.3    | 100   |
| Not Listed   | 06/28/1973 | F1       | 0      | 0        | \$0             | 0      | 33    |
| Springfield Township   | 03/21/1976 | F1       | 0      | 0        | \$25,000        | 2      | 50    |

**Table 4.3.13.3-1: York County Tornadoes 1950 through 2017 (NOAA)**

| Location                | Date       | EF-Scale | Deaths | Injuries | Property Damage | Length | Width |
|-------------------------|------------|----------|--------|----------|-----------------|--------|-------|
| Not Listed              | 08/28/1978 | F2       | 0      | 0        | \$2,500         | 1.9    | 33    |
| Washington Township     | 06/07/1980 | F2       | 0      | 0        | \$2,500,000     | 3.3    | 33    |
| Springettsbury Township | 06/15/1989 | F2       | 0      | 3        | \$250,000       | 9      | 100   |
| Fairview Township       | 05/13/1990 | F1       | 0      | 0        | \$2,500,000     | 2      | 40    |
| Heidelberg Township     | 06/08/1990 | F2       | 0      | 1        | \$250,000       | 1      | 60    |
| North York Borough      | 05/06/1991 | F0       | 0      | 0        | \$2,500         | 0.3    | 50    |
| Monaghan Township       | 10/09/1992 | F2       | 0      | 0        | \$2,500,000     | 2      | 100   |
| Dover Township          | 07/21/1994 | F0       | 0      | 0        | \$50,000        | 1      | 200   |
| Loganville Borough      | 06/02/1998 | F0       | 0      | 0        | \$0             | 4      | 25    |
| West Manheim Township   | 09/24/2001 | F2       | 0      | 0        | \$900,000       | 5      | 200   |
| Dover Township          | 07/14/2004 | F1       | 0      | 0        | \$100,000       | 5      | 100   |
| Felton Borough          | 08/04/2004 | F0       | 0      | 0        | \$0             | 0.8    | 25    |
| Dillsburg Borough       | 08/31/2005 | F1       | 0      | 0        | \$0             | 0.5    | 100   |
| Lincolnway              | 04/16/2011 | EF0      | 0      | 2        | \$20,000        | 0.49   | 200   |
| Fortney                 | 04/28/2011 | EF2      | 0      | 0        | \$50,000        | 2.62   | 100   |
| Windsor Borough         | 06/12/2011 | EF1      | 0      | 0        | \$10,000        | 1.75   | 100   |
| Adamsville              | 06/01/2012 | EF0      | 0      | 0        | \$25,000        | 0.04   | 25    |
| Hellam Township         | 02/25/2017 | EF1      | 0      | 0        | \$200,000       | 1.7    | 100   |
| <b>Totals</b>           |            |          | 0      | 12       | \$14,710,000    |        |       |

Regarding windstorms, coordination with the NCDC indicated that between 1955 and the end of 2017, York County reported 423 occurrences of thunderstorm-related wind, high wind, or strong wind events. Given the large number of occurrences, wind events are provided in Appendix F. These events resulted in three (3) deaths, 35 injuries, approximately \$2.7 million in damages, and a reported \$5,000 in crop damages. These numbers are based on reported information and are most likely much higher for property and crop damage. Figure 4.3.13.3-2 provides a dot reference map for the beginning location of tornado and wind events in York County.

The **potential environmental impacts** of tornadoes and windstorms can include:

- Severe damage to plant species, including uprooting or total destruction of trees;
- Increased wildfire threat;
- Release of hazardous materials into the environment;
- Property damage; and
- Injury and death.



**4.3.13.4 Future Occurrence**

Table 4.3.13.4-1 shows the probability of being in the path of a tornado in York County. This probability was calculated using a 54-county region encompassing a 70-mile area surrounding York County. This method provided a sufficient number of historical tornado events in order to calculate future probability. The tornado F-Scale was utilized. This Scale is no longer used in the U.S., however it is the only information found which addresses future occurrence specific to York County.

| <b>Table 4.3.13.4-1: Probability of Being in the Path of a Tornado in York County</b> |                            |  |                        |
|---|----------------------------|--|------------------------|
| <b>F-Scale Classification</b>   | <b>Wind Estimate (MPH)</b> | <b>Typical Damage</b>  | <b>Probability (%)</b> |
| <b>F0</b>   | < 73                       | Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.   | 0.00053                |
| <b>F1</b>   | 73-112                     | Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.   | 0.00592                |
| <b>F2</b>   | 113-157                    | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.                         | 0.00680                |
| <b>F3</b>   | 158-206                    | Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.   | 0.00359                |
| <b>F4</b>   | 207-260                    | Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.  | 0.01176                |
| <b>F5</b>   | 261-318                    | Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur. | 0.00000                |
| <b>Total/Overall</b>  |                            |  | 0.02861                |

Source: Benefit Cost Analysis of Hazard Mitigation Projects – Tornado and Hurricane Shelter Model, Version 1.0 – July 2000 FEMA, NOAA.

According to the National Weather Service, PA has an annual average of ten (10) tornadoes with two (2) related deaths. While the chance of being hit by a tornado is small, the impact when a tornado does hit is damaging.

PEMA used historical events, between 1950 and 2000, to show that approximately 73% of windstorms in Pennsylvania occurred between the months of May and August and 74% of windstorms occurred between 2 p.m. and 9 p.m. These results are expected, given that severe wind events are most often associated with thunderstorm events, which are usually experienced during the late afternoon or evening in the late spring and summer months. Using events collected between 1950 and 2002, Figure 4.3.13.4-1 shows the number of wind events per square mile across Pennsylvania.

York County experienced approximately 20-30 events per square mile during that time period. Using this information, there is a high likelihood of wind events impacting York County in the future.

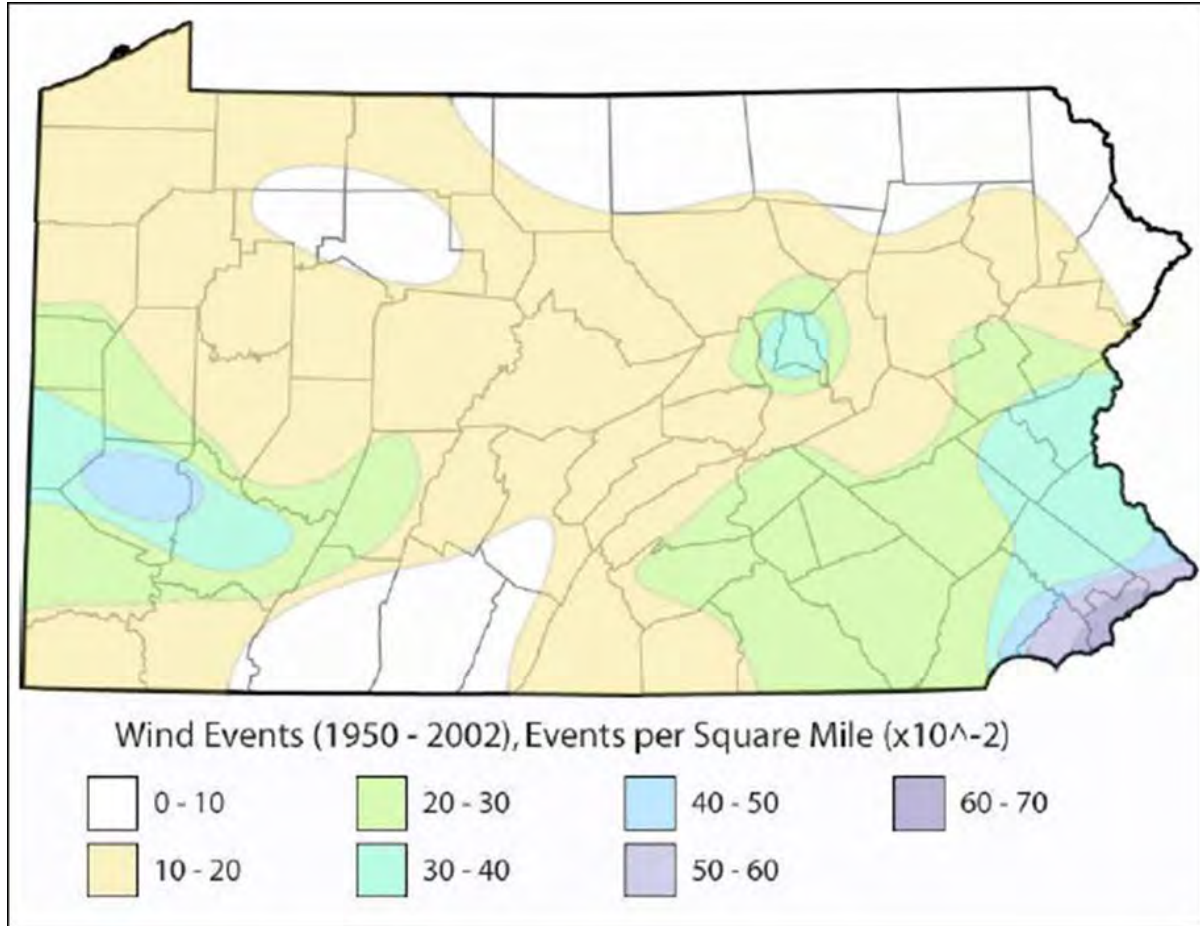


Figure 4.3.13.4-1: Wind Events per Square Mile in Pennsylvania (Pennsylvania State Climatologist)

#### 4.3.13.5 Vulnerability Assessment

High winds and tornadoes can affect the entire County. The age conditions and building quality of homes can make structures more susceptible to damage from high winds and tornadoes. The frequency of windstorms and mild tornadoes is rather constant, however, the vulnerability increases in more densely developed and/or populated areas. It is important to identify the critical facilities and other assets that are most vulnerable to tornadoes and high winds. Manufactured housing and mobile homes are most vulnerable to this hazard.

As part of the vulnerability assessment, it is important to refer to Table 4.4-2 for York County's total hazard vulnerability. This table will indicate the population by municipality, as well as dwelling units, mobile homes, critical facilities and other buildings that could be impacted by this hazard and the total potential losses.

#### 4.3.14 Wildfire

Wildfires are fires that occur in rural environments where development is sparse and the main fuel source is vegetative and wooded. These fires often begin unnoticed and can spread quickly



endangering existing structures, transportation routes, and utility lines. Most wildfires are caused by human carelessness, negligence, and ignorance. Wildfires can also be the result of arson, lightning strikes, and spontaneous combustion, as well as be transportation related (railroads).

**4.3.14.1 Location and Extent**

The greatest potential for wildfires to occur is in the spring and fall months when fuel is available or under dry/drought conditions. Wildfires have a greater potential to occur where there are significant amounts of fuel in the form of trees, shrubs, and brush. Figure 4.3.14.1-1 shows the potential wildfire areas in York County.

**4.3.14.2 Range of Magnitude**

Wildfires can range from small fires that can be brought under control and managed by local firefighters to large impact fires that can impact many acres of land. Wildfires that are uncontrolled can result in the loss of human lives, livestock, pets, wildlife, buildings, infrastructure, timber, natural habitat, and scenic/recreational areas. The Bureau of Forestry conducts jurisdictional assessments of wildfire hazard throughout Pennsylvania. An analysis was completed in 2009 and represents the best available information on areas of wildfire hazards. Wildfire hazard is defined by fuel, topography, and local weather that impact wildfire ignition and/or behavior. In other words, the wildfire hazard expresses which jurisdictions are most vulnerable to wildfires. Several municipalities in York County are considered to be highly vulnerable to wildfires. Figure 4.3.14.2-1 provides the Wildfire Assessment for Pennsylvania.

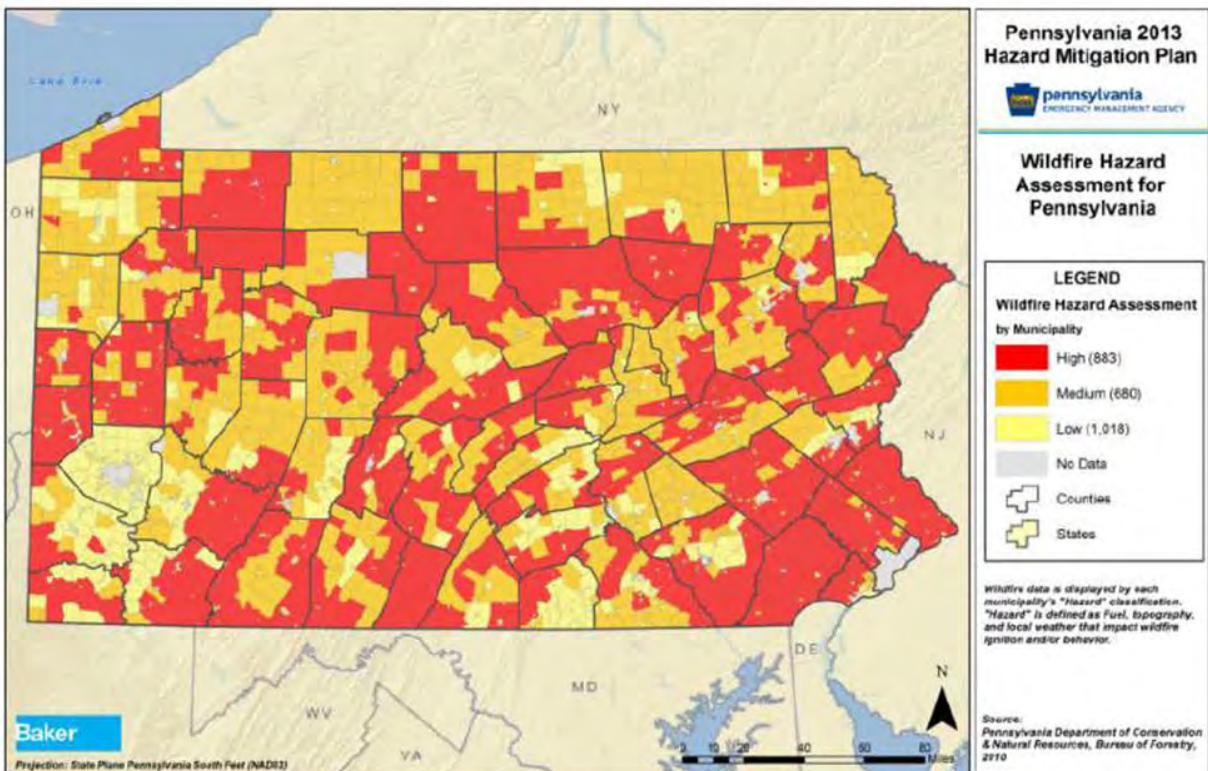


Figure 4.3.14.2-1: Wildfire Assessment of Pennsylvania  
 Source: PA HMP, PA DCNR (Bureau of Forestry)



**4.3.14.3 Past Occurrence**

The best available data regarding wildfires comes from the fire alarms for wildfires tracked by the York County Department of Emergency Services. Table 4.3.14.3-1 provides this data from October 2013 to September 2017. Data prior to October 29, 2013, was not available due to a new system put in place to track 911 calls at that time. However, this brief period provides a good snap shot of the number of wildfire/brushfire calls received on a monthly and yearly basis. The month of April has had the highest number of reported calls. April, March, and November appear to have a higher than average number of calls most likely due to spring clean-up and dry conditions in the fall with leaf litter on the ground. There are approximately 300 wildfire/brushfire reports on average per year. The following map shows known wildfire locations in PA from 2008-2013.

| Table 4.3.14.3-1: Fire Alarms for Wildfires, York County, 2013-2017 |           |            |            |            |            |              |
|---|-----------|------------|------------|------------|------------|--------------|
| Month   | 2013      | 2014       | 2015       | 2016       | 2017       | Total        |
| January   |           | 5          | 11         | 9          | 10         | 35           |
| February  |           | 17         | 12         | 5          | 59         | 93           |
| March   |           | 49         | 24         | 57         | 24         | 154          |
| April   |           | 77         | 110        | 47         | 35         | 269          |
| May   |           | 16         | 48         | 10         | 20         | 94           |
| June  |           | 13         | 10         | 24         | 17         | 64           |
| July  |           | 24         | 7          | 34         | 27         | 92           |
| August  |           | 11         | 16         | 19         | 12         | 58           |
| September   |           | 16         | 17         | 25         | 1          | 59           |
| October   | 2         | 25         | 11         | 19         |            | 57           |
| November  | 42        | 43         | 40         | 44         |            | 169          |
| December  | 3         | 9          | 7          | 16         |            | 35           |
| <b>Total</b>  | <b>47</b> | <b>305</b> | <b>313</b> | <b>309</b> | <b>205</b> | <b>1,179</b> |

Source: York County Department of Emergency Services

The **potential environmental impacts** resulting from wildfires include:

- Vegetation loss, potential for erosion;
- Silting of streambeds and reservoirs;
- Flooding due to ground-cover loss following a fire event;
- Loss of life/injury; and
- Property damage.

**4.3.14.4 Future Occurrence**

The potential of a wildfire occurring in York County at a smaller scale of a forest or brush fire is high in any given year. The likelihood of one of those fires attaining significant size or severity is unpredictable and largely dependent on environmental factors including weather conditions

(drought) and the firefighting response. Per the PA HMP, it is noted that 98% of wildfires are human caused; so future occurrence also depends on human activity.

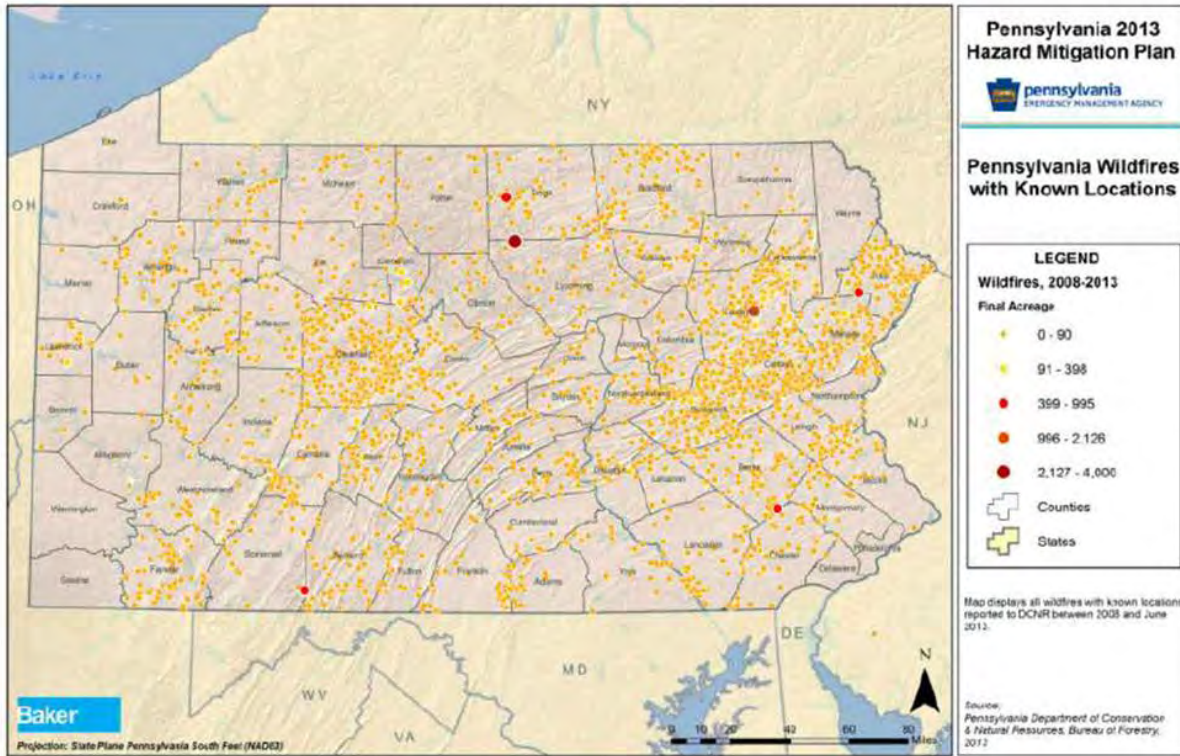


Figure 4.3.14.3-1: Pennsylvania Wildfires with Known Locations (2008-2013)  
 Source: DCNR, Bureau of Forestry, PA HMP

**4.3.14.5 Vulnerability Assessment**

Forested and shrub areas are most prone to wildfires. Table 4.3.14.5-1 presents relevant data regarding York County’s vulnerability to wildfires in these areas.

| Table 4.3.14.5-1: Wildfire Vulnerability |  |  |                                 |                            |
|--|--|--|---------------------------------|----------------------------|
| Municipality                             | Wildfire Affected Area (acres) (YCPC 2017) | Structures: Residential/ Other (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure* (DOA 2017) |
| Carroll Township                         | 6,340.3                                    | 163/197                                    | 9                               | \$56,483,163               |
| Chanceford Township                      | 27,918.6                                   | 473/1,037                                  | 4                               | \$111,605,102              |
| Codus Township                           | 19,300.4                                   | 414/1,086                                  | 1                               | \$119,022,985              |
| Conewago Township                        | 11,660.7                                   | 292/396                                    | 11                              | \$78,071,669               |
| Cross Roads Borough                      | 883.3                                      | 20/37                                      | 0                               | \$5,416,810                |
| Dallastown Borough                       | 45.4                                       | 1/6  | 0                               | \$242,550                  |
| Delta Borough                            | 13.7                                       | 1/2  | 0                               | \$318,150                  |
| Dillsburg Borough                        | 38.5                                       | 0/0  | 0                               | \$0                        |
| Dover Borough                            | 2.6  | 0/0  | 0                               | \$0                        |

**Table 4.3.14.5-1: Wildfire Vulnerability**

| <b>Municipality</b>       | <b>Wildfire Affected Area (acres) (YCPC 2017)</b> | <b>Structures: Residential/ Other (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure* (DOA 2017)</b> |
|---------------------------|---|---|--|-----------------------------------|
| Dover Township            | 19,182.4  | 409/971   | 0                                      | \$129,620,879                     |
| East Hopewell Township    | 11,727.0  | 190/344   | 0                                      | \$48,131,159                      |
| East Manchester Township  | 6,222.4   | 102/259   | 3                                      | \$29,647,209                      |
| East Prospect Borough     | 37.5  | 1/3   | 0                                      | \$301,788                         |
| Fairview Township         | 13,158.3  | 388/408   | 8                                      | \$124,310,699                     |
| Fawn Grove Borough        | 725.8   | 14/28   | 0                                      | \$4,044,249                       |
| Fawn Township             | 15,444.4  | 254/477   | 0                                      | \$71,518,092                      |
| Felton Borough            | 183.8   | 9/21  | 0                                      | \$1,733,515                       |
| Franklin Township         | 8,919.8   | 207/329   | 4                                      | \$64,836,904                      |
| Franklintown Borough      | 28.3  | 1/1   | 0                                      | \$261,555                         |
| Glen Rock Borough         | 78.6  | 5/5   | 0                                      | \$1,117,007                       |
| Goldsboro Borough         | 64.6  | 2/2   | 0                                      | \$495,232                         |
| Hallam Borough            | 41.9  | 1/10  | 2                                      | \$435,540                         |
| Hanover Borough           | 35.8  | 0/3   | 0                                      | \$0                               |
| Heidelberg Township       | 7,109.7   | 160/304   | 5                                      | \$48,711,618                      |
| Hellam Township           | 13,868.5  | 273/526   | 4                                      | \$89,098,650                      |
| Hopewell Township         | 14,221.5  | 216/539   | 0                                      | \$72,507,898                      |
| Jackson Township          | 9,552.1   | 262/565   | 7                                      | \$65,531,802                      |
| Jacobus Borough           | 96.7  | 7/11  | 0                                      | \$4,641,647                       |
| Jefferson Borough         | 141.1   | 3/6   | 0                                      | \$842,992                         |
| Lewisberry Borough        | 0.3   | 0/0   | 0                                      | \$0                               |
| Loganville Borough        | 179.5   | 7/15  | 0                                      | \$2,278,973                       |
| Lower Chanceford Township | 24,448.6  | 312/805   | 5                                      | \$87,898,134                      |
| Lower Windsor Township    | 11,684.8  | 345/732   | 6                                      | \$102,028,827                     |
| Manchester Borough        | 32.5  | 0/0   | 0                                      | \$0                               |
| Manchester Township       | 2,492.6   | 45/145  | 0                                      | \$21,775,968                      |
| Manheim Township          | 11,379.6  | 275/617   | 3                                      | \$80,202,810                      |
| Monaghan Township         | 6,519.9   | 195/286   | 1                                      | \$77,381,450                      |
| Mount Wolf Borough        | 107.7   | 3/3   | 0                                      | \$688,048                         |
| New Freedom Borough       | 86.6  | 3/7   | 0                                      | \$226,678                         |
| New Salem Borough         | 76.9  | 3/16  | 0                                      | \$671,440                         |
| Newberry Township         | 12,492.2  | 318/484   | 9                                      | \$96,715,525                      |
| North Codorus Township    | 15,390.0  | 303/927   | 6                                      | \$81,807,126                      |
| North Hopewell Township   | 10,498.7  | 220/448   | 1                                      | \$66,119,125                      |

**Table 4.3.14.5-1: Wildfire Vulnerability**

| <b>Municipality</b>      | <b>Wildfire Affected Area (acres) (YCPC 2017)</b> | <b>Structures: Residential/ Other (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure* (DOA 2017)</b> |
|--------------------------|---|---|--|-----------------------------------|
| North York Borough       | 0.0   | 0/0   | 0                                      | \$0                               |
| Paradise Township        | 10,171.8  | 233/595   | 0                                      | \$70,300,908                      |
| Peach Bottom Township    | 15,435.9  | 360/431   | 2                                      | \$69,773,322                      |
| Penn Township            | 2,862.6   | 46/133  | 1                                      | \$17,146,444                      |
| Railroad Borough         | 303.9   | 8/28  | 0                                      | \$1,989,172                       |
| Red Lion Borough         | 6.2   | 0/0   | 0                                      | \$0                               |
| Seven Valleys Borough    | 550.5   | 6/19  | 0                                      | \$2,117,272                       |
| Shrewsbury Borough       | 136.1   | 3/11  | 0                                      | \$1,286,058                       |
| Shrewsbury Township      | 14,968.9  | 276/698   | 13                                     | \$106,360,464                     |
| Spring Garden Township   | 329.0   | 9/26  | 0                                      | \$3,414,338                       |
| Spring Grove Borough     | 41.2  | 2/3   | 0                                      | \$327,005                         |
| Springettsbury Township  | 2,179.1   | 56/92   | 3                                      | \$31,506,687                      |
| Springfield Township     | 13,497.2  | 241/702   | 4                                      | \$77,249,444                      |
| Stewartstown Borough     | 72.0  | 1/4   | 0                                      | \$266,350                         |
| Warrington Township      | 18,828.6  | 378/597   | 9                                      | \$110,142,745                     |
| Washington Township      | 15,867.3  | 321/901   | 0                                      | \$94,844,884                      |
| Wellsville Borough       | 14.9  | 3/4   | 0                                      | \$1,548,523                       |
| West Manchester Township | 3,904.4   | 55/136  | 3                                      | \$19,199,148                      |
| West Manheim Township    | 8,234.3   | 174/409   | 0                                      | \$53,768,876                      |
| West York Borough        | 0.0   | 0/0   | 0                                      | \$0                               |
| Windsor Borough          | 129.9   | 3/12  | 0                                      | \$892,448                         |
| Windsor Township         | 10,949.2  | 278/611   | 5                                      | \$79,025,896                      |
| Winterstown Borough      | 1,230.5   | 22/73   | 0                                      | \$4,347,944                       |
| Wrightsville Borough     | 34.2  | 1/7   | 0                                      | \$678,072                         |
| Yoe Borough              | 3.6   | 0/0   | 0                                      | \$0                               |
| York City                | 1.2   | 0/0   | 0                                      | \$0                               |
| York Haven Borough       | 67.1  | 1/2   | 1                                      | \$331,170                         |
| York Township            | 6,918.7   | 209/580   | 4                                      | \$72,065,495                      |
| Yorkana Borough          | 23.1  | 0/0   | 0                                      | \$0                               |
| <b>Total</b>             | <b>409,195.1</b>                                  | <b>8,583/18,132</b>                               | <b>139</b>                             | <b>\$2,565,325,633</b>            |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using YCPC and DOA data.

### 4.3.15 Winter Storm

Winter storms typically fall into one (1) of the following categories:

- **Heavy Snowstorm:** Accumulations of four (4) inches or more in a six (6)-hour period, or six (6) or more inches in a 12 hour period.
- **Sleet Storm:** Significant accumulations of solid pellets, which form from the freezing of raindrops or partially melted snowflakes, causing slippery surfaces that pose hazards to pedestrians and motorists.
- **Ice Storm:** Significant accumulations of rain or drizzle freezing on objects (trees, power lines, roadways, etc.) as it strikes them, causing slippery surfaces and damage from the sheer weight of ice accumulation.
- **Blizzard:** Wind velocity of 35 miles per hour or more, temperatures below freezing, considerable blowing snow with visibility frequently below one-quarter ( $\frac{1}{4}$ ) mile prevailing over an extended period of time.
- **Severe Blizzard:** Wind velocity of 45 miles per hour, temperatures of ten (10) degrees Fahrenheit or lower, a high density of blowing snow, with visibility frequently measured in feet, prevailing over an extended period time.



Figure 4.3.15.1-1: Winter Storm, February 2010

#### 4.3.15.1 Location and Extent

Winter storms are regional events. An event most often impacts a large swath or all of York County. In many cases, surrounding counties, states, and even the larger northeastern U.S. region are affected.

#### 4.3.15.2 Range of Magnitude

Winter storms consist of cold weather, heavy snow or ice, and (sometimes) strong winds. Due to their regular occurrence, these storms are considered hazards only when they result in damage to specific structures or cause disruption to traffic, communications, electric power, or other utilities.

Winter storms can adversely affect roadways, utilities, and business activities, and cause loss of life, frostbite and freezing conditions. They can result in the closing of secondary roads, particularly in rural locations, loss of utility services, and depletion of oil heating supplies.

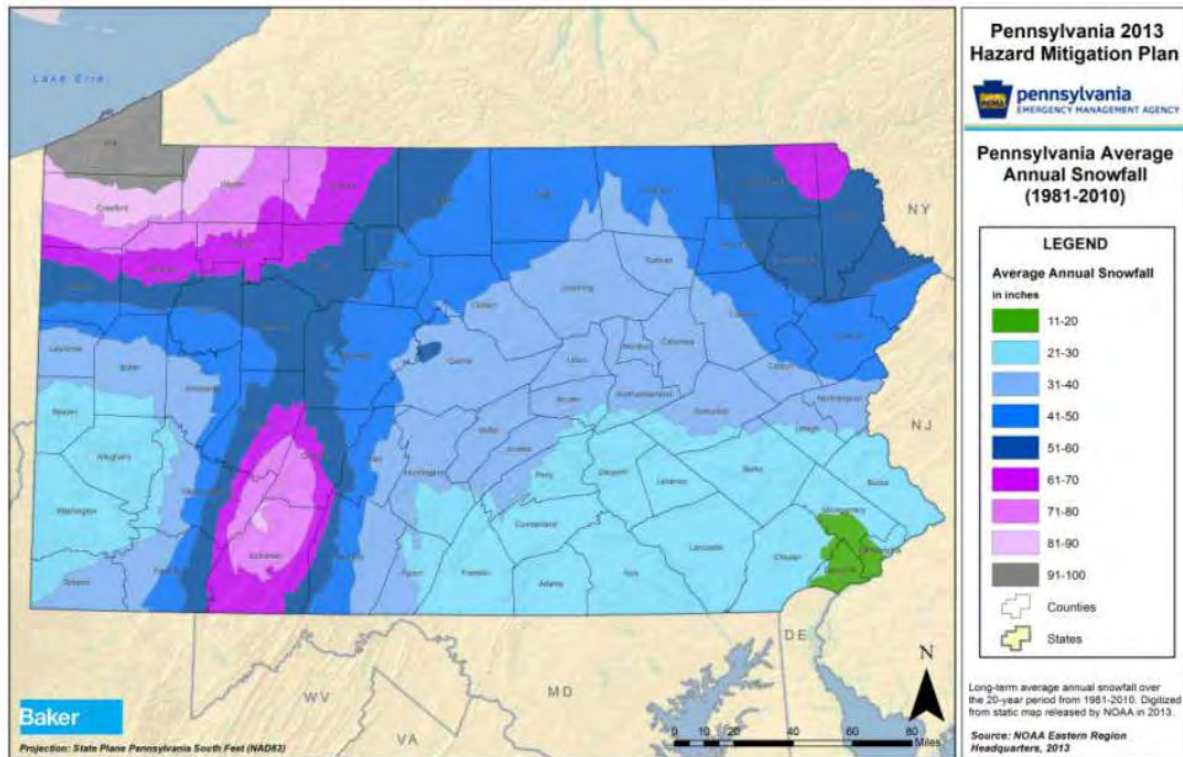
The Northeast Snowfall Impact Scale (NESIS) characterizes and ranks high-impact Northeast snowstorms. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. NESIS values are calculated using a geographical information system (GIS) taking into consideration the distribution of snowfall and corresponding population information. This results in an indication of a storm's societal impacts. This scale was developed because of the impact Northeast snowstorms can have on the rest of the country in terms of transportation and economic impact. Table 4.3.15.2-1 provides the NESIS categories corresponding values and descriptive impact.

**Table 4.3.15.2-1: Northeast Snowfall Impact Scale (NESIS)**

| Category | NESIS Value | Description |
|----------|-------------|-------------|
| 1        | 1-2.499     | Notable     |
| 2        | 2.5-3.99    | Significant |
| 3        | 4-5.99      | Major       |
| 4        | 6-9.99      | Crippling   |
| 5        | 10.0+       | Extreme     |

Source: NOAA

Figure 4.3.15.2-1 shows the average annual snowfall for PA. Note that York County is in the 21-30 inches category for average annual snowfall. Figure 4.3.15.2-2 provides the average annual precipitation for York County by month. Snow usually occurs from November through April. The highest snowfall totals can be expected in January and February, with average total amounts during these months between approximately 10 and 10.5 inches.



**Figure 4.3.15.2-1: Pennsylvania Average Annual Snowfall**

Source: NOAA 2013, PA HMP



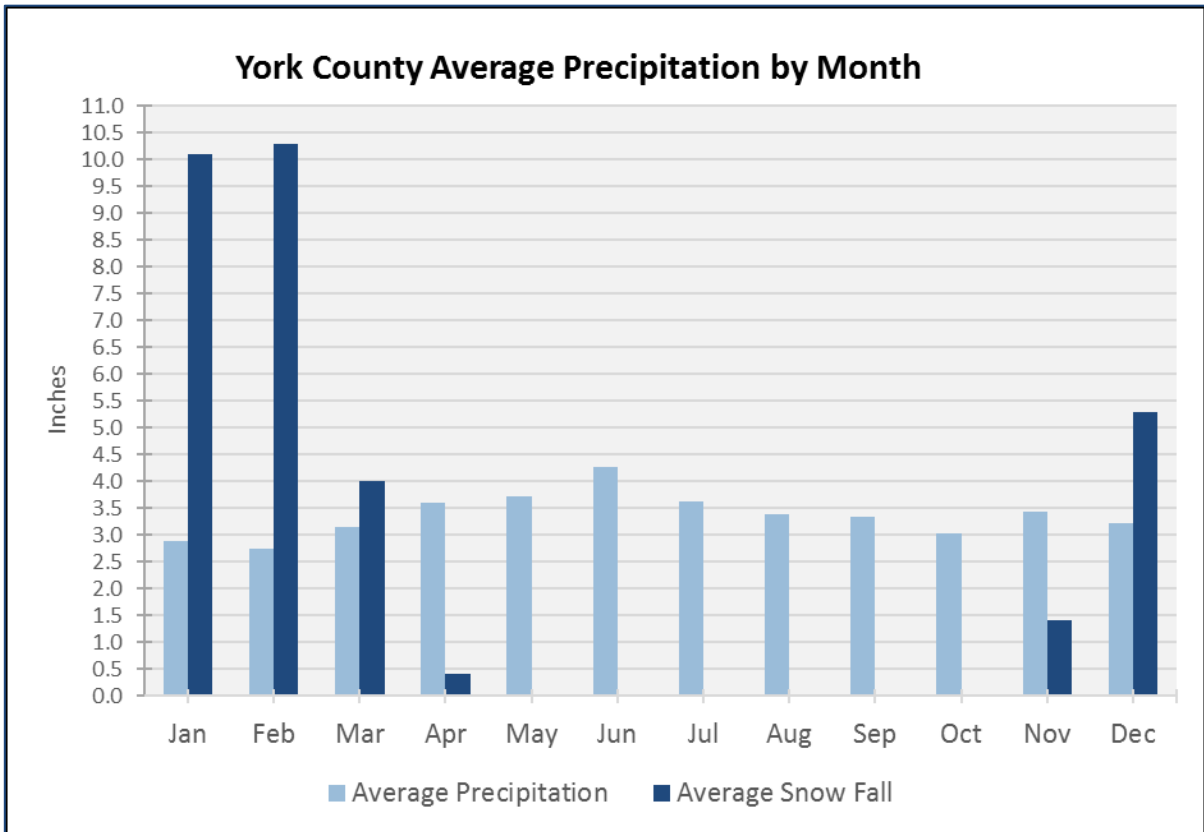


Figure 4.3.15.2-2: York County Average Precipitation by Month  
 Source: United States Department of Agriculture/Natural Resources Conservation Service

### 4.3.15.3 Past Occurrence

Analysis of York County’s disaster history indicates that there have been 19 disaster declarations since 1958 due to severe winter storms (including heavy snow and blizzards). NOAA has recorded 61 reported winter storm related events since 1996, which include blizzards, heavy snow, and ice storms. Table 4.3.15.3-1 provides a listing of these events. No deaths, injuries, or property damage were reported, but could have occurred. Additionally, indirect results, such as vehicle accidents resulting in death or injury, may also have occurred.

| Date       | Event Type   | Deaths | Injuries | Property Damage |
|------------|--------------|--------|----------|-----------------|
| 01/07/1996 | Blizzard     | 0      | 0        | 0               |
| 01/12/1996 | Heavy Snow   | 0      | 0        | 0               |
| 02/02/1996 | Heavy Snow   | 0      | 0        | 0               |
| 02/16/1996 | Heavy Snow   | 0      | 0        | 0               |
| 11/28/1996 | Heavy Snow   | 0      | 0        | 0               |
| 02/13/1997 | Winter Storm | 0      | 0        | 0               |
| 01/15/1998 | Ice Storm    | 0      | 0        | 0               |
| 01/28/1998 | Ice Storm    | 0      | 0        | 0               |

**Table 4.3.15.3-1: York County Winter Storm Events, 1996-2017**

| <b>Date</b> | <b>Event Type</b> | <b>Deaths</b> | <b>Injuries</b> | <b>Property Damage</b> |
|-------------|-------------------|---------------|-----------------|------------------------|
| 01/02/1999  | Winter Storm      | 0             | 0               | 0                      |
| 01/08/1999  | Winter Storm      | 0             | 0               | 0                      |
| 01/14/1999  | Winter Storm      | 0             | 0               | 0                      |
| 03/14/1999  | Heavy Snow        | 0             | 0               | 0                      |
| 01/25/2000  | Heavy Snow        | 0             | 0               | 0                      |
| 01/30/2000  | Heavy Snow        | 0             | 0               | 0                      |
| 02/13/2000  | Ice Storm         | 0             | 0               | 0                      |
| 02/18/2000  | Winter Storm      | 0             | 0               | 0                      |
| 12/13/2000  | Winter Storm      | 0             | 0               | 0                      |
| 01/20/2001  | Heavy Snow        | 0             | 0               | 0                      |
| 02/05/2001  | Heavy Snow        | 0             | 0               | 0                      |
| 01/06/2002  | Heavy Snow        | 0             | 0               | 0                      |
| 01/19/2002  | Heavy Snow        | 0             | 0               | 0                      |
| 12/05/2002  | Heavy Snow        | 0             | 0               | 0                      |
| 12/10/2002  | Ice Storm         | 0             | 0               | 0                      |
| 12/25/2002  | Heavy Snow        | 0             | 0               | 0                      |
| 01/02/2003  | Ice Storm         | 0             | 0               | 0                      |
| 02/06/2003  | Heavy Snow        | 0             | 0               | 0                      |
| 02/16/2003  | Heavy Snow        | 0             | 0               | 0                      |
| 12/05/2003  | Heavy Snow        | 0             | 0               | 0                      |
| 01/25/2004  | Heavy Snow        | 0             | 0               | 0                      |
| 02/06/2004  | Ice Storm         | 0             | 0               | 0                      |
| 01/22/2005  | Winter Storm      | 0             | 0               | 0                      |
| 02/24/2005  | Heavy Snow        | 0             | 0               | 0                      |
| 03/01/2005  | Heavy Snow        | 0             | 0               | 0                      |
| 12/09/2005  | Heavy Snow        | 0             | 0               | 0                      |
| 02/12/2006  | Heavy Snow        | 0             | 0               | 0                      |
| 02/13/2007  | Winter Storm      | 0             | 0               | 0                      |
| 03/16/2007  | Heavy Snow        | 0             | 0               | 0                      |
| 12/13/2007  | Winter Storm      | 0             | 0               | 0                      |
| 12/15/2007  | Winter Storm      | 0             | 0               | 0                      |
| 02/01/2008  | Winter Storm      | 0             | 0               | 0                      |
| 02/12/2008  | Ice Storm         | 0             | 0               | 0                      |
| 01/27/2009  | Winter Storm      | 0             | 0               | 0                      |
| 03/01/2009  | Heavy Snow        | 0             | 0               | 0                      |
| 12/19/2009  | Winter Storm      | 0             | 0               | 0                      |

**Table 4.3.15.3-1: York County Winter Storm Events, 1996-2017**

| Date       | Event Type     | Deaths | Injuries | Property Damage |
|------------|----------------|--------|----------|-----------------|
| 02/05/2010 | Winter Storm   | 0      | 0        | 0               |
| 02/09/2010 | Winter Storm   | 0      | 0        | 0               |
| 01/26/2011 | Heavy Snow     | 0      | 0        | 0               |
| 02/01/2011 | Winter Storm   | 0      | 0        | 0               |
| 02/21/2011 | Heavy Snow     | 0      | 0        | 0               |
| 10/29/2011 | Heavy Snow     | 0      | 0        | 0               |
| 12/14/2013 | Winter Storm   | 0      | 0        | 0               |
| 01/02/2014 | Heavy Snow     | 0      | 0        | 0               |
| 01/20/2014 | Heavy Snow     | 0      | 0        | 0               |
| 02/03/2014 | Heavy Snow     | 0      | 0        | 0               |
| 02/04/2014 | Winter Storm   | 0      | 0        | 0               |
| 02/13/2014 | Heavy Snow     | 0      | 0        | 0               |
| 03/30/2014 | Winter Weather | 0      | 0        | 0               |
| 11/25/2014 | Heavy Snow     | 0      | 0        | 0               |
| 01/22/2016 | Winter Storm   | 0      | 0        | 0               |
| 02/15/2016 | Winter Storm   | 0      | 0        | 0               |
| 03/13/2017 | Winter Storm   | 0      | 0        | 0               |

Source: NOAA

The most recent significant York County winter storm occurred on January 22, 2016. Considered a Nor'easter, it produced record-breaking snowfall across portions of southern Pennsylvania, with a large swath of 20+ inches of snow and localized areas of 30+ inches of accumulation. There was a sharp gradient in snowfall accumulation amounts from south to north across central Pennsylvania, with Harrisburg receiving two and a half (2.5) feet of snow, while Williamsport only had a trace. The storm was rated as a Category 4 (Crippling) on the Regional Snowfall Index for the northeastern United States. For York County, heavy snowfall amounts of 25 to 32 inches were observed across the County, along with near-blizzard conditions.

The **potential environmental impacts** of winter storms include:

- Damage to shrubbery and trees due to heavy snow;
- Salt and chemicals used to de-ice roadways can impair adjacent surface and ground water;
- Building or structure collapse due to weight of snow;
- Threats of hypothermia and frostbite to humans and animals enduring blizzard conditions; and
- Rapid melting can lead to surface water runoff and severe flooding.

#### **4.3.15.3 Future Occurrence**

Winter storms are a regular, annual occurrence in York County and future occurrence should be considered highly likely. The recent past history indicates several events per year are also highly likely.

#### **4.3.15.5 Vulnerability Assessment**

Winter storm events would likely impact the entire County. The most common effects of very heavy snowstorms with accumulating snow exceeding six (6) or more inches in a 12-hour period are traffic accidents, power supply and communication interruption. Another potential impact would be failure in design or maintenance of roofing systems. Age of housing structures should also be considered.

As part of the vulnerability assessment, it is important to refer to Table 4.4-2 for York County's total hazard vulnerability. This table indicates the population by municipality, as well as dwelling units, mobile homes, critical facilities, and other buildings, that could be impacted by this hazard, and the total potential losses. Also of consideration is the total number of dwelling units built prior to 1960.

### **HUMAN-MADE HAZARDS**

#### **4.3.16 Civil Disturbance**

Civil disturbance can be characterized as a disturbance of the peace or of public order. These disturbances are usually caused when the actions of an individual or group have an unwanted or negative effect on others, such as social injustice, a response to an unwanted result (sporting event or court ruling), racial discrimination, or when a large number of intoxicated people are gathered. The results of civil disturbance can be property damage/loss and injury/death.

##### **4.3.16.1 Location and Extent**

Civil disturbance is a threat to all areas of York County, with a greater chance in urban areas where there are government buildings, economically depressed areas, areas where the presence or sense of racial discrimination exists, or areas where a large group of intoxicated individuals could gather, such as stadiums or colleges. Given this information and past history, the likely areas for civil disturbance in York County are the Greater York Area, consisting of York City, North York Borough, West York Borough, and portions of adjoining Manchester, Spring Garden, Springettsbury, and West Manchester Townships, and the Hanover Area, consisting of Hanover Borough and portions of Penn Township.

##### **4.3.16.2 Range of Magnitude**

Civil disturbances can take the form of small gatherings or large groups blocking or impeding access to a building, or disrupting normal activities by generating noise and intimidating people. They can range from a peaceful sit-in to a full-scale riot, in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. Often that which was intended to be a peaceful demonstration to the public and the government can escalate into general chaos.

There are two types of large gatherings typically associated with civil disturbances: a crowd, and a mob. A crowd may be defined as a casual, temporary collection of people without a strong, cohesive relationship. Crowds can be classified into four (4) categories (Blumer, 1946):

- **Casual Crowd:** A casual crowd is merely a group of people who happen to be in the same place at the same time. Violent conduct does not occur.
- **Cohesive Crowd:** A cohesive crowd consists of members who are involved in some type of unified behavior. Members of this group are involved in some type of common activity, such as worshipping, dancing, or watching a sporting event. Although they may have intense internal discipline, they require substantial provocation to arouse to action.
- **Expressive Crowd:** An expressive crowd is one held together by a common commitment or purpose. Although they may not be formally organized, they are assembled as an expression of common sentiment or frustration. Members wish to be seen as a formidable influence. One of the best examples of this type is a group assembled to protest.
- **Aggressive Crowd:** An aggressive crowd is comprised of individuals who have assembled for a specific purpose. This crowd often has leaders who attempt to arouse the members or motivate them to action. Members are noisy and threatening and will taunt authorities. They may be more impulsive and emotional, and require only minimal stimulation to arouse violence. Examples of this type of crowd could include demonstrators and strikers, though not all demonstrators and strikers are aggressive.

A mob can be defined as a large disorderly crowd or throng. Mobs are usually emotional, loud, tumultuous, violent and lawless. Similar to crowds, mobs have different levels of commitment and can be classified into four (4) categories (Alvarez and Bachman, 2007):

- **Aggressive Mob:** An aggressive mob is one that attacks, riots and terrorizes. The object of violence may be a person, property, or both. An aggressive mob is distinguished from an aggressive crowd only by lawless activity. Examples of aggressive mobs are the inmate mobs in prisons and jails, mobs that act out their frustrations after political defeat, or violent mobs at political protests or rallies.
- **Escape Mob:** An escape mob is attempting to flee from something such as a fire, bomb, flood, or other catastrophe. Members of escape mobs are generally difficult to control and can be characterized by unreasonable terror.
- **Acquisitive Mob:** An acquisitive mob is one motivated by a desire to acquire something. Riots caused by other factors often turn into looting sprees. This mob exploits a lack of control by authorities in safeguarding property.
- **Expressive Mob:** An expressive mob is one that expresses fervor or revelry following some sporting event, religious activity, or celebration. Members experience a release of pent up emotions in highly charged situations.

#### **4.3.16.3 Past Occurrence**

Over the past 265 years, PA has had a dozen instances of civil disturbance that were notable enough to be recorded in the State's history (Klein, 1973). A review of past declarations revealed one (1) occurrence of civil disorder that included York County, which was the Trucker's Strike that occurred in February of 1974 and received a Gubernatorial Proclamation. Three (3) local instances of disturbances have occurred in York County. In 1969, a period of civil disorder that lasted approximately one (1) week occurred. It was mainly in the City of York and it was racially motivated. The result of the rioting was the loss of two (2) lives, injuries to several individuals, the loss and damage of property (homes, businesses, and cars) and further racial tension. In 1991, a two (2) day

race riot occurred in Hanover Borough. Spurred by tension over interracial relationships, taunting, and the involvement of a biker group. The crowd, consisting of approximately 400 people began fighting and resulted in 53 arrests and the Borough declaring a State of Emergency with a curfew. According to press reports, in January of 2002, white nationalist/supremacist and anti-hate groups/anarchists clashed in downtown York. It was estimated that 350 people were involved in the skirmish, with 25 being arrested and eight (8) needing treatment at local hospitals. Several police officers also reported minor injuries.

The ***potential environmental impacts*** of civil disturbance activities depend upon the factors that surround the events. There may be minor injuries to first responders and damage or vandalism to property, facilities and infrastructure.

#### ***4.3.16.4 Future Occurrence***

A difficulty when discussing future instances of civil disturbance is that no one can predict what event may cause a disturbance. Civil disturbance is always a possibility as long as there is discrimination or other perceived social or economic injustices. However, it may be possible to recognize the potential for an event to occur in the near-term. For example, an upcoming significant sporting event at one of the colleges or universities in the Commonwealth, or a concert at a large venue may result in gathering of large crowds. Local law enforcement should anticipate these types of events and be prepared to handle a crowd so that peaceful gatherings are prevented from turning into unruly public disturbances. Civil disturbance events significant enough to be recorded in State history are extremely rare. As noted under Past Occurrences, there has been just three (3) recorded events in York County in the past 265 years. Therefore, the probability of future events is considered low.

#### ***4.3.16.5 Vulnerability Assessment***

As part of the vulnerability assessment, it is important to refer to Table 4.4-2 for York County's total hazard vulnerability. This table presents countywide data by municipality, including population, homes, other structures and critical facilities that could be impacted by this hazard and total potential losses.

#### ***4.3.17 Dam Failure***

Dam failures can produce an extremely dangerous flood situation due to the large volume of high-velocity water that is released and the minimal amount of time (if any) for conducting warning and evacuation procedures. Breaching often occurs within hours after the first visible signs of a failure. As such, three (3) of the top four (4) killer floods in the US (including the 1877 Johnstown flood in Pennsylvania) were the result of dam failures. Dam failures typically occur for one (1) of three (3) reasons, as follows:

- Foundation failure due to seepage, settling and earthquake
- Deficient design, construction, materials or operation
- Exceeded capacity of the dam's spillway due to flooding

**4.3.17.1 Location and Extent**

Dam failure presents a potential flooding hazard for York County, due to the presence of 15 dams located throughout the County with the potential to affect life and property (as listed in Table 4.3.17.1-1). These dams are used for drinking water supply, flood control, recreation, and industrial water supply. Each has Emergency Action Plans (EAP) in place, which are periodically updated.

**Table 4.3.17.1-1: Dams with Inundation Areas in York County by High to Low Hazard**

| <b>Dam</b>                      | <b>Location</b>                                 | <b>Flood Source</b>         | <b>Hazard</b> |
|---------------------------------|---|-----------------------------|---------------|
| Cabin Creek Dam                 | Windsor Township                                | Cabin Creek                 | High          |
| Conewago (Pinchot) Dam          | Warrington Township                             | Beaver Creek                | High          |
| Lake Marburg Dam                | Manheim and Heidelberg Townships                | West Branch Codorus Creek   | High          |
| Lake Meade Dam                  | Adams County                                    | Mud Run Creek               | High          |
| Lake Pahagaco                   | Jackson Township                                | Munch Creek                 | High          |
| Lake Redman Dam                 | Springfield and York Townships                  | Codorus Creek               | High          |
| Lake Williams Dam               | Springfield and York Townships                  | Codorus Creek               | High          |
| Lawrence Baker Sheppard Dam     | West Manheim Township                           | Long Arm Creek              | High          |
| Sheppard Myers Dam              | West Manheim Township                           | South Branch Conewago Creek | High          |
| Indian Rock Dam                 | West Manchester Township                        | West Branch Codorus Creek   | High          |
| Yoe Borough Basin #1 and #2 Dam | York Township                                   | Mill Creek                  | High          |
| Cherry Tree Farm Dam            | Shrewsbury Township                             | Codorus Creek               | Significant   |
| Kinsley Detention Basin Dam     | York Township                                   | Codorus Creek               | Significant   |
| Spring Grove Mill Dam           | Spring Grove Borough and North Codorus Township | Codorus Creek               | Significant   |
| Holtwood Dam*                   | Lower Chanceford Township                       | Susquehanna River           | Low           |
| Longstown Village Dam           | Windsor Township                                | Kreutz Creek                | Low           |
| Safe Harbor Dam*                | Chanceford Township                             | Susquehanna River           | Low           |
| York Haven Dam*                 | York Haven Borough                              | Susquehanna River           | Low           |

*\*It should be noted that the three (3) power generation dams on the Susquehanna River (York Haven, Safe Harbor, and Holtwood) affect York County, however, catastrophic failure of these dams is considered to have such a small impact due to minimal rises in river levels that the Federal government does not require EAPs.*

**Source:** York County EMA and National Inventory of Dams

Previously this Plan included a map of the inundation areas for each dam. This information has been removed due to the sensitivity of the data.

**4.3.17.2 Range of Magnitude**

Dam failure could potentially be a major event. A worst-case scenario in York County would be a catastrophic event that rapidly releases impounded water. The National Inventory of Dams identifies dams by their hazard potential. A “High” hazard rating indicates that there would be probable loss of life and probable economic and environmental losses. A “Significant” hazard rating anticipates no loss of life, but economic and environmental losses are expected. The “Low” hazard ranking indicates no loss of life expected and little economic and environmental losses. Table 4.3.17.1-1 provides the hazard rating for each dam in York County.

The **potential environmental impacts** of dam failure would occur in the inundation area and would be similar to the impacts of flooding (see 4.3.4.2).

**4.3.17.3 Past Occurrence**

To date, there appears to have been no recorded dam failures in York County. No information is available on the safety status of the dams, due to the sensitivity of this information.

**4.3.17.4 Future Occurrence**

DEP requires dam owners to file an annual inspection completed by a certified engineer. In addition to the official DEP inspection report, dam owners are required to perform inspections and keep inspection and maintenance records. Since the implications of a dam failure can be severe, it is important that strong inspection and maintenance programs continue. These programs, coupled with York County’s dam safety record, indicate the probability of future dam failures in the County is low.

**4.3.17.5 Vulnerability Assessment**

When considering the vulnerability of communities to dam failure, the starting point is the inundation area. Table 4.3.17.5-1 presents the dam failure vulnerability. Note that the affected area is the inundation area.

| <b>Municipality</b>      | <b>Dwelling Units in Affected Area (YCPC 2017)</b> | <b>Estimated Pop In Affected Area (YCPC 2017)</b> | <b>Other Structures in Affected Area (YCPC 2017)</b> | <b>Critical Facilities in Affected Area (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
|--------------------------|--|---|--|---|---------------------------------------|
| Codorus Township         | 5  | 13  | 8  | 0   | \$879,726                             |
| Conewago Township        | 34   | 92  | 18   | 3   | \$3,641,293                           |
| Dover Township           | 27   | 68  | 49   | 0   | \$4,498,759                           |
| East Manchester Township | 137  | 390   | 53   | 1   | \$26,271,471                          |
| Heidelberg Township      | 76   | 214   | 129  | 1   | \$12,950,579                          |
| Jackson Township         | 84   | 223   | 140  | 1   | \$34,329,384                          |
| Lower Windsor Township   | 20   | 52  | 23   | 1   | \$1,859,286                           |
| Manchester Township      | 373  | 1,000   | 360  | 11  | \$234,004,733                         |



Table 4.3.17.5-1: Dam Failure Vulnerability

| Municipality             | Dwelling Units in Affected Area (YCPC 2017) | Estimated Pop In Affected Area (YCPC 2017) | Other Structures in Affected Area (YCPC 2017) | Critical Facilities in Affected Area (YCPC 2017) | Total Exposure (\$) (DOA 2017) |
|--------------------------|---|--|---|--|--------------------------------|
| Manheim Township         | 8   | 23   | 10  | 0  | \$1,590,645                    |
| Newberry Township        | 102   | 265  | 50  | 0  | \$14,837,664                   |
| North Codorus Township   | 35  | 94   | 78  | 2  | \$17,329,127                   |
| North York Borough       | 620   | 1476                                       | 526   | 1  | \$118,662,159                  |
| Paradise Township        | 32  | 84   | 38  | 0  | \$3,398,064                    |
| Shrewsbury Township      | 1   | 3  | 2   | 0  | \$230,808                      |
| Spring Garden Township   | 366   | 926  | 406   | 17   | \$265,881,078                  |
| Spring Grove Borough     | 172   | 451  | 186   | 6  | \$65,373,797                   |
| Springettsbury Township  | 483   | 1183                                       | 230   | 13   | \$296,387,821                  |
| Springfield Township     | 2   | 5  | 11  | 0  | \$1,279,390                    |
| Warrington Township      | 15  | 37   | 12  | 1  | \$2,049,879                    |
| Washington Township      | 21  | 61   | 25  | 0  | \$5,033,771                    |
| West Manchester Township | 237   | 566  | 403   | 12   | \$252,499,973                  |
| West Manheim Township    | 34  | 101  | 61  | 1  | \$7,182,931                    |
| West York Borough        | 561   | 1414                                       | 335   | 4  | \$80,531,189                   |
| Windsor Township         | 1   | 3  | 4   | 1  | \$1,629,792                    |
| Yoe Borough              | 29  | 73   | 40  | 3  | \$4,345,462                    |
| York City                | 6,821                                       | 17,871                                     | 1,954   | 66   | \$1,164,428,325                |
| York Haven Borough       | 0   | 0  | 2   | 1  | \$155,837                      |
| York Township            | 36  | 84   | 39  | 0  | \$6,220,024                    |
| <b>TOTAL</b>             | <b>10,332</b>                               | <b>26,769</b>                              | <b>5,192</b>                                  | <b>146</b>                                       | <b>\$2,627,482,967</b>         |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using YCPC and DOA database.

Based on the inundation areas and County Assessment data, York County's total dam failure exposure is \$2,627,482,967.

#### 4.3.18 Environmental Hazards

Environmental hazards in PA focus mainly on hazardous material releases, coal mining, and drilling for oil and natural gas. These hazards result from human activities and industries and can result in injury and death to humans and damage to property.

Additional environmental hazards include superfund facilities, manure spills, and product defect or contamination. These additional hazards are included in the definition of environmental hazards, but were not profiled in the PA HMP update. Likewise, they are not profiled in this York County HMP update.

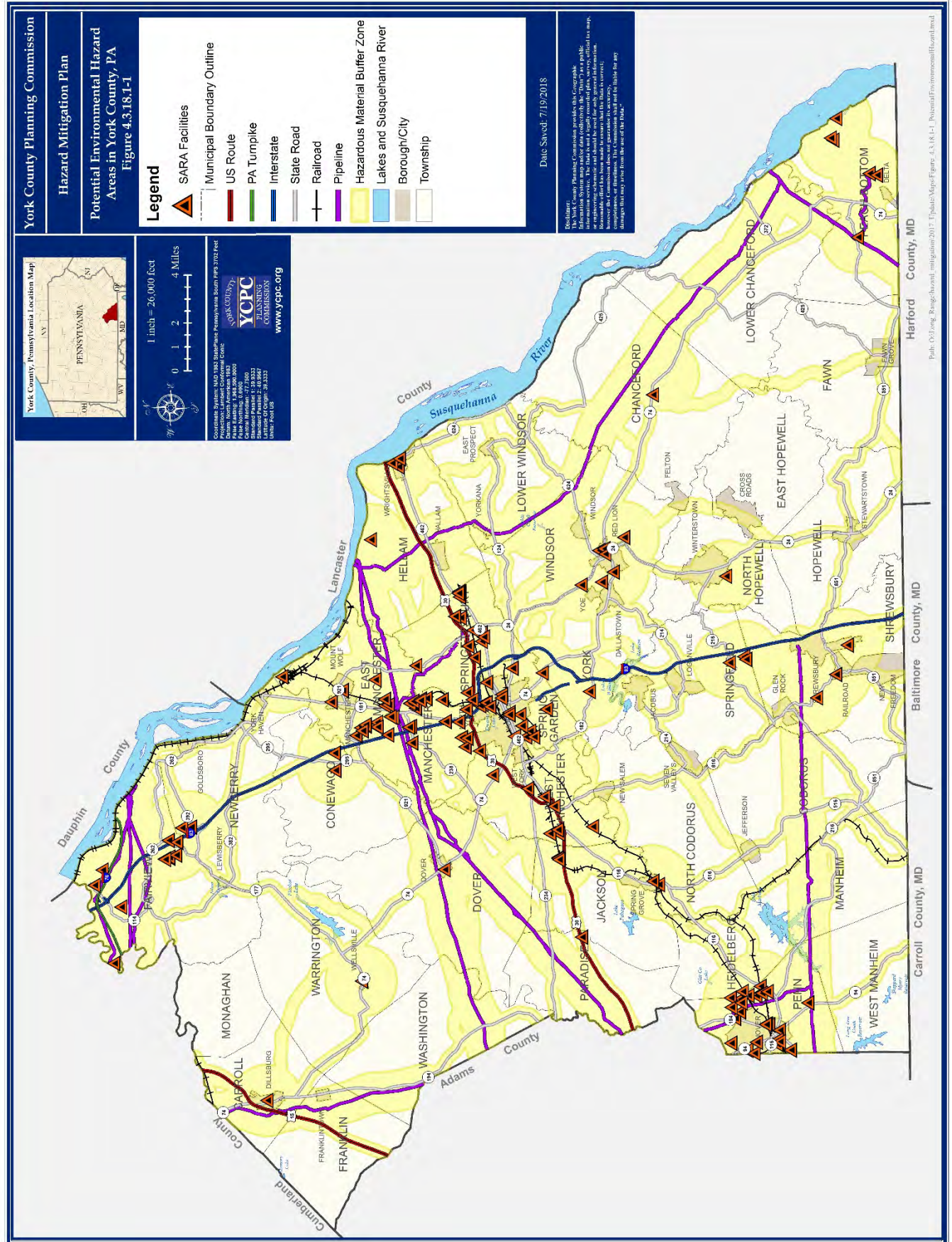
#### ***4.3.18.1 Location and Extent***

For purposes of this HMP update, environmental hazards are limited to hazardous material releases from storage or transportation, as no coal mining and oil or natural gas drilling exist in the County. Hazardous material releases pose threats to the natural environment, the built environment, and public safety through the diffusion of harmful substances, materials, or products. Hazardous materials include toxic chemicals, infectious substances, biohazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive.

There are 3,200 miles of road, 160 miles of railroad, and 204 miles of pipeline in York County that could be used to transport hazardous materials. The 2015 York County Hazardous Materials Commodity Flow Study indicated that an average of 1,172 vehicular hazardous materials movements per day take place in the County. This represents 1,173,172 pounds of hazardous materials moving through the County each day. Transport of hazardous materials is heaviest through the I-83 corridor. US 30, I-76, and US 15 also contribute significantly to the total of hazardous materials transported. Local HAZMAT transport is also heavy on PA Routes 74 and 94 and US Routes 15 and 30. Rail freight contributes an additional 24 hazardous material movements per day. This represents a minimum of 24,024 pounds of hazardous material each day, with the heaviest movements being in the Goldsboro and York Haven Boroughs area. In addition, hazardous materials can be transported by aircraft, which opens up the entire County to risk if there should be a crash.

Facilities that use, manufacture, or store hazardous materials in PA must comply with Title III of the Federal Superfund Amendments and Reauthorization Act (SARA), also known as the Emergency Planning and Community Right-to-Know Act (EPCRA), and PA's reporting requirements under the Hazardous Materials Emergency Planning and Response Act (1990-165), as amended. These legislations require that all owners or operators of facilities that manufacture, produce, use, import, export, store, supply, or distribute any extremely hazardous substance, at or above the threshold planning quantity, as established by EPA, shall report to the county where the facility is located and Commonwealth that the facility is subject to the requirement to assist the Local Emergency Planning Committee (LEPC) in the development of an Off-site Emergency Response Plan. The community right-to-know reporting requirements keep communities abreast of the presence and release of chemicals at individual facilities. As of 2017, there were 143 SARA Facilities in York County.

Figure 4.3.18.1-1 shows the location of major transportation routes and facilities storing hazardous materials.



#### 4.3.18.2 Range of Magnitude

Hazardous material releases can contaminate air, water, and soils, possibly resulting in death and/or injuries. 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.

Such releases can affect nearby populations and contaminate critical or sensitive environmental areas. Exacerbating conditions that can enhance or magnify the effects of a hazard include:

- Weather conditions - affects how the hazard develops;
- Micro-meteorological effects of buildings and terrain - alters dispersion of materials; and
- Non-compliance with applicable codes (e.g. fire and building codes) and maintenance failures (e.g. fire protection and containment features) - can substantially increase the damage to the facility itself and to surrounding buildings.

The severity of the incident is dependent not only on the circumstances described above, but also with the type of material released and the distance and related response time for emergency response teams. The areas within closest proximity to the releases are generally at greatest risk, yet depending on the agent, a release can travel great distances or remain present in the environment for a long period of time, resulting in extensive impacts on people and the environment.

The **potential environmental impacts** of the environmental hazards (chemical releases and spills) vary based upon the severity of the incident, type of material released, and the distance and related response time for emergency response teams. The areas within closest proximity to the releases are generally at greatest risk. However, a release can travel great distances or exist over a long time (e.g., nuclear radiation), resulting in far-reaching effects to people and the environment. Impacts can include:

- Hydrologic effects – surface and groundwater contamination;
- Other effects on water, such as changes in water quality and temperatures;
- Damage to streams, lakes, ponds, estuaries, and wetland ecosystems;
- Air quality effects – pollutants, smoke, and dust;
- Loss of quality in landscape;
- Reduced soil quality;
- Damage to plant communities – loss of biodiversity; damage to vegetation;
- Damage to animal species – animal fatalities, degradation of wildlife and aquatic habitat, pollution of drinking water for wildlife, loss of biodiversity, and disease;
- Property damage; and
- Injury/loss of life.

**4.3.18.3 Past Occurrence**

Perhaps the best way to track past hazardous material releases is to examine the previous haz-mat incident calls received by York County EMA. Table 4.3.18.3-1 provides a listing of haz-mat calls received between the year 2004 and September of 2017. For that time period, the County received 801 haz-mat related calls. This averages out to about 57 events per year.

|              |            |
|--------------|------------|
| 2004         | 47         |
| 2005         | 83         |
| 2006         | 93         |
| 2007         | 58         |
| 2008         | 66         |
| 2009         | 43         |
| 2010         | 51         |
| 2011         | 35         |
| 2012         | 56         |
| 2013         | 53         |
| 2014         | 51         |
| 2015         | 72         |
| 2016         | 53         |
| 2017         | 40*        |
| <b>Total</b> | <b>801</b> |

\*As of September 2017

Source: York County EMA

**4.3.18.4 Future Occurrence**

While hazardous material release incidents in York County have occurred in the past, they are generally considered difficult to predict. An occurrence is largely dependent upon the accidental or intentional actions of a person or group. Intentional acts are addressed under the terrorism hazard. The York County Hazardous Materials Commodity Flow Study predicts approximately 24 HAZMAT releases from road and rail transportation annually. Based on past events and projected events, the likelihood of future hazardous material releases is high.

**4.3.18.5 Vulnerability Assessment**

Incidents involving hazardous materials would be difficult to predict. Data in Table 4.3.18.5-1 shows the number of acres, bridges, critical facilities, and dwelling units, and estimated population of the environmental hazard areas. Environmental hazard areas are determined by considering the hazardous routes, active rail line, existing transmission pipelines, and SARA facilities in the County. A buffer of one-quarter (1/4) mile for major transportation routes and rail lines, 1.5 miles of hazardous materials sites, and .85 miles of large transmission pipelines was used to determine vulnerability.

**Table 4.3.18.5-1: Environmental Hazard Vulnerability**

| <b>Municipality</b>      | <b>Total Acres (YCPC 2017)</b> | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Bridges (BMS 2017)</b> | <b>Miles of Pipeline (NPMS 2017)</b> | <b>Miles of Railroad (YCPC 2017)</b> | <b>Miles of Roadway (EMA 2017)</b> | <b>SARA Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
|--------------------------|--------------------------------|-----------------------------------|---|-------------------------------------|--|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| Carroll Township         | 6,240.5                        | 1,863                             | 5,235                                   | 684                                 | 25                                     | 22                        | 3.51                                 | 2                                    | 59                                 | 0                                  | \$589,997,061                         |
| Chanceford Township      | 11,865.3                       | 895                               | 2,417                                   | 1,076                               | 6                                      | 13                        | 6.10                                 |                                      | 67                                 | 0                                  | \$170,017,515                         |
| Codorus Township         | 9,390.1                        | 779                               | 2,002                                   | 925                                 | 4                                      | 24                        | 4.94                                 | 4                                    | 60                                 | 0                                  | \$184,538,086                         |
| Conewago Township        | 6,365.6                        | 2,395                             | 6,467                                   | 883                                 | 14                                     | 18                        | 2.42                                 |                                      | 53                                 | 2                                  | \$702,920,236                         |
| Cross Roads Borough      | 505.1                          | 116                               | 358                                     | 94                                  |  |                           |                                      |                                      | 4                                  | 0                                  | \$25,780,240                          |
| Dallastown Borough       | 503.9                          | 1,486                             | 3,730                                   | 860                                 | 13                                     |                           |                                      |                                      | 20                                 | 0                                  | \$278,102,643                         |
| Delta Borough            | 122.2                          | 179                               | 431                                     | 74                                  | 3                                      |                           |                                      |                                      | 3                                  | 0                                  | \$29,489,520                          |
| Dillsburg Borough        | 512.5                          | 939                               | 2,197                                   | 419                                 | 9                                      |                           |                                      |                                      | 15                                 | 1                                  | \$197,955,010                         |
| Dover Borough            | 344.5                          | 725                               | 1,856                                   | 278                                 | 14                                     | 1                         | 1.44                                 |                                      | 10                                 | 1                                  | \$127,463,821                         |
| Dover Township           | 15,790.0                       | 7,144                             | 18,074                                  | 2,674                               | 37                                     | 34                        | 24.83                                |                                      | 129                                | 0                                  | \$1,474,307,384                       |
| East Hopewell Township   | 485.6                          | 34                                | 94                                      | 25                                  |  | 3                         |                                      |                                      | 3                                  | 0                                  | \$6,307,455                           |
| East Manchester Township | 10,516.6                       | 3,008                             | 8,573                                   | 1,008                               | 37                                     | 22                        | 14.39                                | 27                                   | 75                                 | 13                                 | \$873,823,312                         |
| East Prospect Borough    | 214.7                          | 343                               | 1,005                                   | 135                                 | 4                                      |                           |                                      |                                      | 5                                  | 0                                  | \$51,143,005                          |
| Fairview Township        | 15,875.5                       | 5,664                             | 14,896                                  | 1,817                               | 62                                     | 64                        | 21.83                                | 13                                   | 155                                | 11                                 | \$1,558,683,729                       |
| Fawn Grove Borough       | 582.8                          | 150                               | 416                                     | 172                                 | 1                                      | 7                         |                                      |                                      | 4                                  | 0                                  | \$61,126,117                          |
| Fawn Township            | 3,478.8                        | 305                               | 820                                     | 338                                 | 5                                      |                           |                                      |                                      | 22                                 | 0                                  | \$100,585,020                         |
| Felton Borough           | 143.1                          | 78                                | 224                                     | 74                                  | 1                                      | 4                         |                                      |                                      | 2                                  | 0                                  | \$18,550,948                          |
| Franklin Township        | 3,756.5                        | 635                               | 1,594                                   | 362                                 | 6                                      | 11                        | 2.77                                 |                                      | 30                                 | 0                                  | \$118,736,120                         |
| Franklintown Borough     | 161.9                          | 212                               | 562                                     | 108                                 | 3                                      |                           |                                      |                                      | 4                                  | 0                                  | \$29,672,291                          |
| Glen Rock Borough        | 450.0                          | 633                               | 1,557                                   | 259                                 | 6                                      | 4                         |                                      |                                      | 10                                 | 0                                  | \$139,533,925                         |

**Table 4.3.18.5-1: Environmental Hazard Vulnerability**

| <b>Municipality</b>       | <b>Total Acres (YCPC 2017)</b> | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Bridges (BMS 2017)</b> | <b>Miles of Pipeline (NPMS 2017)</b> | <b>Miles of Railroad (YCPC 2017)</b> | <b>Miles of Roadway (EMA 2017)</b> | <b>SARA Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
|---------------------------|--------------------------------|-----------------------------------|---|-------------------------------------|--|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| Goldsboro Borough         | 281.8                          | 340                               | 1,003                                   | 181                                 | 4                                      | 1                         |                                      | 2                                    | 6                                  | 0                                  | \$56,652,082                          |
| Hallam Borough            | 427.5                          | 987                               | 2,171                                   | 268                                 | 6                                      | 5                         |                                      |                                      | 10                                 | 0                                  | \$163,963,690                         |
| Hanover Borough           | 2,363.4                        | 5,644                             | 13,094                                  | 2,970                               | 79                                     | 4                         | 0.16                                 | 5                                    | 86                                 | 10                                 | \$1,505,459,416                       |
| Heidelberg Township       | 4,850.7                        | 524                               | 1,472                                   | 622                                 | 5                                      | 14                        |                                      | 11                                   | 25                                 | 1                                  | \$110,972,597                         |
| Hellam Township           | 15,991.8                       | 2,226                             | 5,253                                   | 1,348                               | 18                                     | 32                        | 17.52                                | 1                                    | 115                                | 2                                  | \$498,407,758                         |
| Hopewell Township         | 4,671.7                        | 813                               | 2,301                                   | 470                                 | 14                                     | 12                        |                                      |                                      | 42                                 | 0                                  | \$406,742,709                         |
| Jackson Township          | 7,499.9                        | 2,453                             | 6,500                                   | 1,614                               | 30                                     | 21                        | 0.95                                 | 11                                   | 57                                 | 3                                  | \$567,827,444                         |
| Jacobus Borough           | 487.9                          | 548                               | 1,545                                   | 361                                 | 7                                      |                           |                                      |                                      | 9                                  | 0                                  | \$149,390,567                         |
| Jefferson Borough         | 281.2                          | 228                               | 597                                     | 186                                 | 4                                      | 3                         |                                      |                                      | 6                                  | 0                                  | \$44,650,322                          |
| Lewisberry Borough        | 91.0                           | 141                               | 337                                     | 101                                 | 3                                      | 2                         |                                      |                                      | 4                                  | 0                                  | \$28,338,801                          |
| Loganville Borough        | 569.0                          | 451                               | 1,213                                   | 299                                 | 6                                      | 1                         |                                      |                                      | 8                                  | 0                                  | \$108,174,633                         |
| Lower Chanceford Township | 12,043.3                       | 706                               | 1,991                                   | 709                                 | 3                                      | 3                         | 18.86                                |                                      | 67                                 | 0                                  | \$131,355,077                         |
| Lower Windsor Township    | 9,558.9                        | 2,152                             | 5,552                                   | 1,775                               | 19                                     | 26                        | 4.38                                 |                                      | 73                                 | 0                                  | \$394,471,055                         |
| Manchester Borough        | 494.0                          | 928                               | 2,246                                   | 377                                 | 7                                      |                           |                                      | 1                                    | 13                                 | 0                                  | \$165,649,345                         |
| Manchester Township       | 9,952.1                        | 6,896                             | 18,481                                  | 1,598                               | 57                                     | 38                        | 17.89                                | 4                                    | 141                                | 19                                 | \$2,453,874,089                       |
| Manheim Township          | 6,822.5                        | 561                               | 1,616                                   | 565                                 | 5                                      | 19                        | 3.92                                 | 4                                    | 39                                 | 0                                  | \$155,454,242                         |
| Monaghan Township         | 36.4                           | 4                                 | 10                                      | 1                                   |  | 1                         |                                      |                                      | 0                                  | 0                                  | \$1,417,972                           |
| Mount Wolf Borough        | 335.6                          | 505                               | 1,338                                   | 240                                 | 9                                      | 5                         |                                      | 1                                    | 10                                 | 1                                  | \$79,147,699                          |
| New Freedom Borough       | 837.7                          | 1,015                             | 2,690                                   | 485                                 | 10                                     | 3                         |                                      |                                      | 17                                 | 0                                  | \$310,963,274                         |
| New Salem Borough         | 296.5                          | 309                               | 853                                     | 168                                 | 4                                      |                           |                                      |                                      | 4                                  | 0                                  | \$69,282,197                          |

**Table 4.3.18.5-1: Environmental Hazard Vulnerability**

| <b>Municipality</b>     | <b>Total Acres (YCPC 2017)</b> | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Bridges (BMS 2017)</b> | <b>Miles of Pipeline (NPMS 2017)</b> | <b>Miles of Railroad (YCPC 2017)</b> | <b>Miles of Roadway (EMA 2017)</b> | <b>SARA Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
|-------------------------|--------------------------------|-----------------------------------|---|-------------------------------------|--|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| Newberry Township       | 9,544.2                        | 4,000                             | 10,400                                  | 1,512                               | 34                                     | 30                        |                                      | 10                                   | 97                                 | 2                                  | \$700,853,859                         |
| North Codorus Township  | 8,359.7                        | 1,375                             | 3,685                                   | 1,146                               | 10                                     | 32                        |                                      | 4                                    | 57                                 | 0                                  | \$304,747,178                         |
| North Hopewell Township | 4,195.1                        | 407                               | 1,005                                   | 310                                 | 5                                      | 12                        |                                      |                                      | 33                                 | 0                                  | \$102,217,889                         |
| North York Borough      | 202.6                          | 654                               | 1,557                                   | 534                                 | 1                                      | 1                         |                                      |                                      | 9                                  | 0                                  | \$125,609,783                         |
| Paradise Township       | 7,068.4                        | 855                               | 2,232                                   | 920                                 | 8                                      | 20                        | 11.53                                |                                      | 47                                 | 1                                  | \$164,231,024                         |
| Peach Bottom Township   | 13,029.6                       | 1,449                             | 4,086                                   | 816                                 | 12                                     | 21                        | 15.20                                |                                      | 84                                 | 6                                  | \$360,148,186                         |
| Penn Township           | 8,100.1                        | 6,376                             | 17,024                                  | 2,463                               | 47                                     | 29                        | 9.12                                 | 6                                    | 100                                | 13                                 | \$1,703,364,589                       |
| Railroad Borough        | 408.3                          | 96                                | 253                                     | 84                                  | 3                                      | 2                         |                                      |                                      | 4                                  | 1                                  | \$34,932,589                          |
| Red Lion Borough        | 841.7                          | 2,274                             | 5,662                                   | 1,092                               | 18                                     | 1                         |                                      |                                      | 34                                 | 4                                  | \$414,746,089                         |
| Seven Valleys Borough   | 485.7                          | 154                               | 374                                     | 144                                 | 3                                      | 4                         |                                      |                                      | 4                                  | 0                                  | \$26,705,690                          |
| Shrewsbury Borough      | 1,148.4                        | 1,362                             | 3,664                                   | 581                                 | 17                                     | 2                         | 0.37                                 |                                      | 23                                 | 1                                  | \$410,838,341                         |
| Shrewsbury Township     | 12,468.0                       | 2,198                             | 5,781                                   | 1,245                               | 36                                     | 40                        | 3.59                                 |                                      | 102                                | 1                                  | \$752,232,826                         |
| Spring Garden Township  | 4,332.4                        | 4,507                             | 11,403                                  | 1,462                               | 53                                     | 19                        |                                      | 12                                   | 89                                 | 8                                  | \$1,638,873,994                       |
| Spring Grove Borough    | 498.2                          | 826                               | 2,164                                   | 525                                 | 16                                     | 2                         |                                      | 3                                    | 13                                 | 2                                  | \$203,882,621                         |
| Springettsbury Township | 10,412.4                       | 9,776                             | 23,951                                  | 2,076                               | 137                                    | 64                        | 4.75                                 | 6                                    | 167                                | 15                                 | \$3,109,008,431                       |
| Springfield Township    | 8,036.9                        | 1,361                             | 3,566                                   | 830                                 | 14                                     | 41                        |                                      |                                      | 68                                 | 3                                  | \$403,515,971                         |
| Stewartstown Borough    | 424.4                          | 678                               | 1,593                                   | 289                                 | 9                                      |                           |                                      |                                      | 11                                 | 0                                  | \$164,436,290                         |
| Warrington Township     | 9,348.9                        | 920                               | 2,254                                   | 832                                 | 17                                     | 15                        |                                      |                                      | 62                                 | 0                                  | \$175,020,871                         |
| Washington Township     | 8,388.9                        | 588                               | 1,711                                   | 710                                 | 1                                      | 21                        | 9.75                                 |                                      | 46                                 | 0                                  | \$123,373,068                         |
| Wellsville Borough      | 89.6                           | 108                               | 252                                     | 92                                  | 3                                      | 2                         |                                      |                                      | 3                                  | 1                                  | \$31,800,977                          |



**Table 4.3.18.5-1: Environmental Hazard Vulnerability**

| <b>Municipality</b>      | <b>Total Acres (YCPC 2017)</b> | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Bridges (BMS 2017)</b> | <b>Miles of Pipeline (NPMS 2017)</b> | <b>Miles of Railroad (YCPC 2017)</b> | <b>Miles of Roadway (EMA 2017)</b> | <b>SARA Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
|--------------------------|--------------------------------|-----------------------------------|---|-------------------------------------|--|---------------------------|--------------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------------------------------------|
| West Manchester Township | 12,430.9                       | 6,952                             | 16,615                                  | 2,215                               | 79                                     | 39                        |                                      | 19                                   | 149                                | 11                                 | \$1,885,193,564                       |
| West Manheim Township    | 2,700.4                        | 1,431                             | 4,236                                   | 623                                 | 15                                     | 4                         | 1.02                                 |                                      | 28                                 | 0                                  | \$375,404,481                         |
| West York Borough        | 335.8                          | 1,591                             | 4,009                                   | 1,032                               | 9                                      | 1                         |                                      | 2                                    | 17                                 | 0                                  | \$231,416,024                         |
| Windsor Borough          | 348.9                          | 464                               | 1,225                                   | 202                                 | 3                                      | 8                         |                                      |                                      | 8                                  | 0                                  | \$61,331,662                          |
| Windsor Township         | 13,549.5                       | 6,014                             | 16,057                                  | 2,137                               | 30                                     | 16                        | 2.66                                 |                                      | 126                                | 3                                  | \$3,285,259,888                       |
| Winterstown Borough      | 1,428.8                        | 224                               | 515                                     | 202                                 | 5                                      |                           |                                      |                                      | 11                                 | 1                                  | \$46,667,608                          |
| Wrightsville Borough     | 425.5                          | 862                               | 2,095                                   | 510                                 | 14                                     | 1                         |                                      |                                      | 14                                 | 2                                  | \$151,003,246                         |
| Yoe Borough              | 142.0                          | 346                               | 865                                     | 195                                 | 3                                      | 4                         |                                      |                                      | 6                                  | 0                                  | \$38,025,514                          |
| York City                | 3,410.9                        | 13,347                            | 34,969                                  | 3,556                               | 113                                    | 29                        |                                      | 9                                    | 151                                | 11                                 | \$2,464,233,333                       |
| York Haven Borough       | 215.0                          | 224                               | 652                                     | 145                                 | 5                                      | 1                         |                                      | 1                                    | 5                                  | 0                                  | \$23,469,519                          |
| York Township            | 12,165.8                       | 11,507                            | 26,926                                  | 2,446                               | 83                                     | 50                        |                                      |                                      | 169                                | 3                                  | \$21,167,024,335                      |
| Yorkana Borough          | 108.8                          | 87                                | 226                                     | 59                                  | 1                                      |                           | 0.15                                 |                                      | 1                                  | 0                                  | \$12,515,171                          |
| <b>Total</b>             | <b>319,843.9</b>               | <b>138,027</b>                    | <b>353,781</b>                          | <b>57,588</b>                       | <b>1,344</b>                           | <b>928</b>                | <b>204.07</b>                        | <b>160</b>                           | <b>3,200</b>                       | <b>153</b>                         | <b>\$54,833,013,018</b>               |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using YCPC, BMS, NPMS, EMA, and DOA data layers.

Based on the potential environmental hazard areas identified in Figure 4.3.18.1-1 and County Assessment data, the total exposure for York County due to Environmental Hazards is \$54,833,013,018.

#### **4.3.19 Levee Failure**

A levee is defined as a human-made embankment, usually an earthen structure built to provide flood protection from temporary high water (flooding). Flood levees are typically linear structures constructed adjacent to a river for the purpose of preventing water from overflowing the river channel and spreading into the flood plain and beyond. The construction of flood levees is the oldest, most widespread, and likely the most important method of flood protection provided to flood-prone communities in Pennsylvania. The area behind a maintained and certified levee that is designed to protect the area from a one percent (1%) annual-chance flood is called a Levee Protected Area.

Levees require maintenance to continue to provide the level of protection they were designed and built to protect. Maintenance responsibility belongs to a variety of entities including local, State and Federal government and private land owners. Well maintained levees may obtain certification through independent inspections. Levee owners need to both maintain levees and pay for an independent inspection in order to have the levee certified as providing flood protection. The impacts of an un-certified levee include levee failure and insurance rate increases because FEMA identifies that the structures are not designed to protect to the 1%-annual-chance flood height on Flood Insurance Rate Maps. From a historical perspective, levees have long been constructed to protect property rather than people. Evacuation has been seen as the primary means for prevention of loss of life and the structural soundness of levees has traditionally been viewed in this context.

##### **4.3.19.1 Location and Extent**

The National Levee Database (NLD), developed by USACE, incorporates the best available data on the location and condition of our nation's levees and floodwalls and displays it in an easy-to use map interface. The database helps facilitate linking levee safety activities, such as flood risk, communication, levee system evaluations for the NFIP, levee system inspections, floodplain management, and risk assessments. As of April 2012, the NLD includes detailed information on more than 14,700 miles of levee systems that are associated with USACE programs, but this is just a fraction of the total number of levees nationwide. More information and more levees will be added with contributions of information from other federal agencies, states, and communities. The ultimate goal is to expand the database to include all the nation's levees and provide a single, comprehensive source of information.

Table 4.3.19.1-1 provides the levee data for York County. York County is identified as having eight (8) levee segments. The total length of the levees is 7.35 miles. All of the levees were constructed and are operated by USACE. Construction of the levees was completed in October of 1951. A majority of the levee segments protect urban areas. The total area protected by the levees is 370.68 acres.

Table 4.3.19.1-1: York County Levees (USACE)

| Levee Name            | Segment(s) | Length (Miles) | Inspection Type | Inspection Date | Inspection Rating* | Construction/ Operation | Leveed Area Type | Leveed Area Acreage |
|-----------------------|------------|----------------|-----------------|-----------------|--------------------|-------------------------|------------------|---------------------|
| York Northeast        | 1          | 0.76           | Periodic        | 20-May-15       | UNACCEPTABLE       | USACE                   | Urban            | 96.07               |
| York Northwest        | 1          | 1.49           | Periodic        | 21-May-15       | UNACCEPTABLE       | USACE                   | Rural            | 20.63               |
| York East Loucks Mill | 1          | 0.86           |                 |                 |                    | USACE                   | Agricultural     | 53.24               |
| York West Willis Run  | 1          | 0.8            |                 |                 |                    | USACE                   | Urban            | 38.85               |
| York East Downtown    | 1          | 1.15           |                 |                 |                    | USACE                   | Urban            | 38.34               |
| York Southeast        | 1          | 1.22           |                 |                 |                    | USACE                   | Urban            | 49.43               |
| York Southwest        | 1          | 0.16           |                 |                 |                    | USACE                   | Urban            | 28.66               |
| York West Downtown    | 1          | 0.91           |                 |                 |                    | USACE                   | Urban            | 45.46               |

\*Unacceptable means that one or more items that make up the levee system are rated as unacceptable and may prevent the system from performing as intended during a flood, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe.

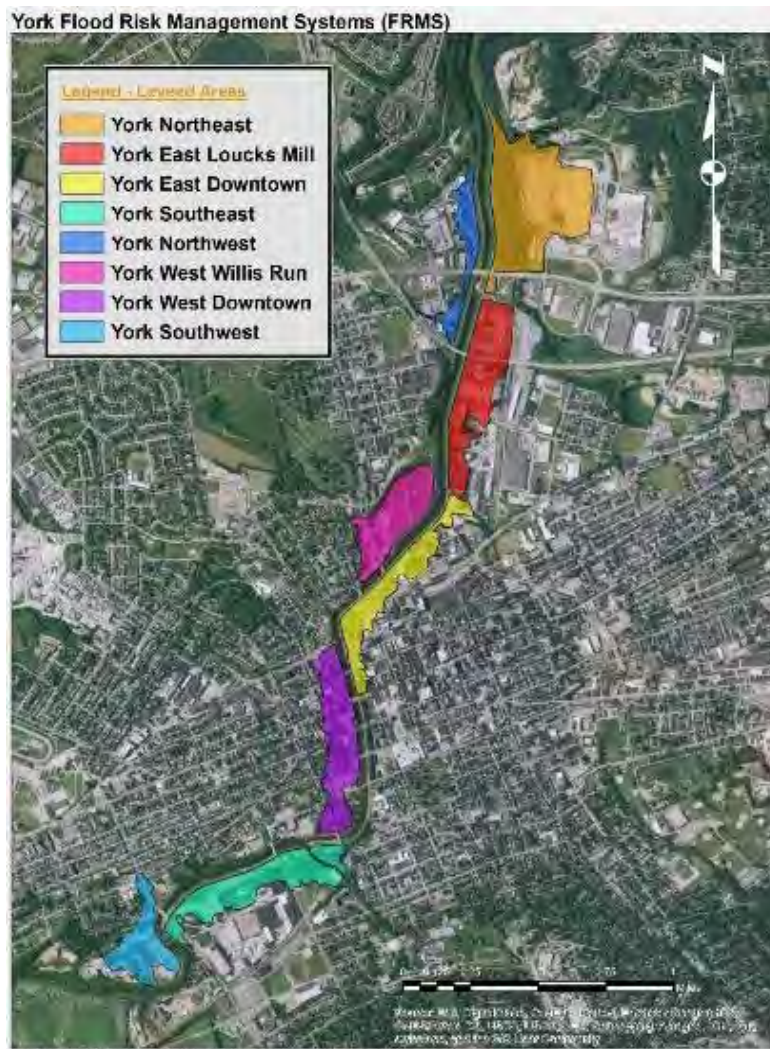


Figure 4.3.19.1-1: York County Leveed Area  
Source: USACE National Levee Database

#### 4.3.19.2 Range of Magnitude

Flood-related hazards due to levees range in magnitude from overtopping, when the water level rises over the top of the levee, to back-ending, when water flows around the back of the levee outside of the edge of the levee system, to total failure as seen during Hurricane Katrina. Levees are typically designed with three (3) feet of freeboard to prevent overtopping, but older levees were not built to that standard.

A levee failure causes flooding in landward areas adjacent to the levee system. The failure of a levee or other flood protection structure could be devastating, depending on the level of flooding for which the structure is designed and the amount of landward development present. In some instances, the magnitude of flooding could be more severe under a levee failure event compared to a normal flooding event. If an abrupt failure occurs, the rushing waters of a flood wave could result in catastrophic losses.

Properties located in the area of reduced-risk landward of a levee system are not subject to the mandatory flood insurance purchase requirement of the National Flood Insurance Program. Thus, regardless of whether a levee is accredited, there is concern that properties in these areas lack flood insurance. In the event of a failure, it is likely that inundated properties will not be insured.

The worst-case levee failure is one which occurs abruptly with little warning and results in deep, fast-moving flood waters through a highly-developed or highly-populated area. While any levee may be overtopped and fail, it is these levees with large protected areas that have the potential to cause the most damage.

The ***potential environmental impacts*** of levee failure include the following:

- Water Contamination;
- Failure of wastewater and drinking water systems;
- Contaminated and flood damaged building materials and contents;
- Contaminated sediment;
- Property damage; and
- Injury/loss of life.

#### 4.3.19.3 Past Occurrence

There is no comprehensive list of levee failures in Pennsylvania, and historically few, if any, have been reported. However, during Hurricane Agnes in 1972, there was a considerable amount of flooding in York City.

#### 4.3.19.4 Future Occurrence

Similarly to dam failures, given certain circumstances, a levee failure can occur at any time. However, the probability of future occurrence can be reduced through proper design, construction, and maintenance measures. The age of the levee can increase the potential for failures if not maintained.

Given the variable nature of storms and the previous occurrence of flooding behind the York County levees, there is a moderate chance that levee failure could occur in the future.

**4.3.19.5 Vulnerability Assessment**

Using the leveed areas identified in Figure 4.3.19.1-1, data was generated for the number of residential structures, other structures, critical facilities, and total population that could be affected by a levee failure by municipality. Table 4.3.19.5-1 below provides this information.

| Table 4.3.19.5-1: Levee Vulnerability |                                    |                                  |                              |                                 |                                |
|---------------------------------------|------------------------------------|----------------------------------|------------------------------|---------------------------------|--------------------------------|
| Municipality                          | Residential Structures (YCPC 2017) | Estimated Population (YCPC 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure (\$) (DOA 2017) |
| Manchester Township                   | 0                                  | 0                                | 32                           | 1                               | \$1,638,035                    |
| North York Borough                    | 29                                 | 69                               | 23                           | 0                               | \$3,148,389                    |
| Spring Garden Township                | 0                                  | 0                                | 31                           | 1                               | \$18,963,472                   |
| Springettsbury Township               | 0                                  | 0                                | 5                            | 0                               | \$1,389,552                    |
| West Manchester Township              | 9                                  | 22                               | 24                           | 0                               | \$4,954,076                    |
| York City                             | 222                                | 582                              | 209                          | 9                               | \$80,931,382                   |
| <b>Total</b>                          | <b>260</b>                         | <b>672</b>                       | <b>324</b>                   | <b>11</b>                       | <b>\$111,024,906</b>           |

*\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.*

Source: YCPC GIS analysis using DOA and YCPC data layers.

Based on the identified levee areas shown in figure 4.3.19.1-1 and York County Assessment data, the total exposure to levee failure in York County is \$111,024,906.

**4.3.20 Mass Food and Animal Feed Contamination**

Mass food or animal feed contamination hazards occur when food or food sources are contaminated with pathogenic bacteria, viruses, or parasites, as well as chemical or natural toxins. They may lead to foodborne illnesses and/or interruptions in the food supply. Contamination may occur due to natural foodborne illnesses and chemical, biological, radiological, or nuclear exposure (C-BRNE). Most foodborne illnesses are caused by Campylobacter in poultry, E. Coli in beef, leafy greens, and raw milk, Listeria in deli meats, unpasteurized soft cheeses, and produce, Salmonella in eggs, poultry, meat, and produce, Vibrio in raw oysters, Norovirus in many foods, and Toxoplasma in meats (CDC, 2013). Contamination usually occurs accidentally during the production/preparation process but can also be the result of intentional acts.



Source: CDC

**4.3.20.1 Location and Extent**

These events can happen at any time and in any place in York County and are sometimes regional or even national events. York County has 2,171 farms (2012 Census of Agriculture), a high concentration of snack food production, known as the “Snack Food Capital of the World”, and retail food establishments from corner convenience marts to farmers’ markets to large grocery store chains. Figure 4.3.20.1-1 shows how foods can be become contaminated.

| Steps               | Definition  | Example of Contamination   |
|---------------------|---|--|
| <b>Production</b>   | Growing the plants we harvest or raising the animals we use for food                                | If fields are sprayed with contaminated water, fruits and vegetables can be contaminated before harvest.   |
| <b>Processing</b>   | Changing plants or animals into what we recognize and buy as food.                                  | If contaminated water or ice is used to wash, pack, or chill fruits or vegetables, the contamination can spread to those items.  |
| <b>Distribution</b> | Moving food from the farm or production plant to the consumer or a kitchen.                         | If refrigerated food is left on a loading dock for long time in warm weather, it could reach temperatures that allow bacteria to grow.                                       |
| <b>Preparation</b>  | Getting the food ready to eat. This may occur in the kitchen of a restaurant, home, or institution. | If a cook uses a knife to cut raw chicken and then uses the same knife without washing it to slice tomatoes, the tomatoes can be contaminated by pathogens from the chicken. |

Figure 4.3.20.1-1: Sources of Food Contamination  
Source: Foodsafety.gov

In addition, a major concern of mass food and animal feed contamination hazards is that, in general, places generally only have a three-day supply of food. The food supply chain is very vulnerable to interruption. An interruption in the food supply would be a major vulnerability for the health and survival of York communities.

**4.3.20.2 Range of Magnitude**

Like invasive species, mass food and animal feed contamination hazards can vastly vary based on the type of contamination, the method of contamination, and the origin of contamination. Different pathogens and chemicals that can contaminate human food and animal feed have varying degrees of aggressiveness that can range from a sore stomach to serious illness, hospitalization, and even death. For example, according to the CDC’s 2017 foodborne illness estimates, Norovirus is responsible for 19-21million illnesses each year in the U.S. but the number of deaths it causes is significantly lower (570-800 deaths).

The PA HMP notes that a possible worst case scenario would be if there was large-scale campylobacter or salmonella outbreak found in Pennsylvania’s poultry farms. An event like this would cause human suffering but would also have a crippling effect on the State’s poultry production and farm-based

economy. The same could be true for York County's many farming operations and food processing facilities.

The **potential environmental impacts** of mass food and animal feed contamination include the following:

- Mass kill off of animals and potential environmental degradation from resulting waste;
- Potential for spread of infectious disease;
- Public health impacts including illness, hospitalization, and possible death; and
- Agricultural economy impacts from loss of sales and unsold product.

#### **4.3.20.3 Past Occurrence**

According to the U.S. Department of Agriculture, mass food and animal feed contamination events are difficult to capture as they occur because of the lapse in time between infection and manifestation of an illness. Usually, they are isolated events. The CDC notes that between 1998 and 2015 there were 573 outbreaks, 23,923 illnesses, 2,750 hospitalizations, and 92 deaths in Pennsylvania. The Year 2011 had the highest number of deaths (36), while 2004 had the most outbreaks (62) and illnesses (3,126), and 2008 had the most hospitalizations (517). Research of past food recalls did show that there had been at least one (1) recall for food potentially contaminated with salmonella that originated in York County.

#### **4.3.20.4 Future Occurrence**

The CDC estimates that one (1) in six (6) people gets sick from contaminated food each year, but those events are expected to be individualized and small in scope. The focus of this as a hazard is on large-scale contamination and illness. With the aggressive testing and food safety outreach the Department of Agriculture conducts, the overall probability of a mass food or animal feed contamination event is unlikely according to the State HMP.

#### **4.3.20.5 Vulnerability Assessment**

According to [foodsafety.gov](http://foodsafety.gov), food poisoning or foodborne illness can affect anyone who eats food contaminated by bacteria, viruses, parasites, toxins, or other substances. But, certain groups of people are more susceptible to foodborne illness and include cancer patients, children under five (5) years of age, diabetes patients, HIV/AIDS patients, older adults, persons with autoimmune diseases, and pregnant women. For the purposes of this vulnerability assessment we will focus on populations of the elderly and the very young which are more vulnerable to this kind of an event as they are usually the most susceptible to foodborne illnesses. As part of the vulnerability assessment, it is important to refer to Table 4.4-2 for York County's total hazard vulnerability. This table will present countywide data by municipality, including populations younger than five (5) and older than 75.

Additional losses due to a mass food or animal feed contamination event stem from lost wages and productivity, not losses to buildings or land. Losses are difficult to estimate because the exact rates of absenteeism and cost of treating a widespread disease will depend on the virus or bacterium in question, the availability of vaccination or treatment, and the severity of symptoms. According to a

2015 United States Department of Agriculture (USDA) Report, foodborne illnesses cost the U.S. an estimated \$15.5 billion (2013 dollars) per year in healthcare, workplace and other economic losses. It would be reasonable to assume a portion of these losses occur in York County.

**4.3.21 Nuclear Incidents**

Nuclear power plants split uranium atoms inside a reactor in a process called fission. At a nuclear energy facility, the heat from fission is used to produce steam, which spins a turbine to generate electricity. According to the Nuclear Energy Institute, nuclear power plants generate 19% of the U.S. electricity and accounts for 38.6% of the electricity in Pennsylvania. Nuclear power is an important source of energy in PA. PA has the second largest number of nuclear power plants in the U.S. (nine (9) plants at five (5) sites) and ranks second in the nation in nuclear generating capacity according to PA DEP.

**4.3.21.1 Location and Extent**

The Peach Bottom Atomic Power Station, located in Peach Bottom Township is the only nuclear facility located in York County. The facility operates two (2) units, both of which have been in operation since 1974. York County is within the Ingestion Exposure Pathway Emergency Planning Zone (EPZ) of four (4) nuclear power plants. The ingestion exposure pathway EPZ has a radius of about 50 miles from the reactor site. These areas have predetermined protective action plans and are designed to avoid or reduce dose from potential ingestion of radioactive materials. These actions include a ban of contaminated food and water. The entire County lies within the Ingestion Exposure Pathway EPZ of both the Peach Bottom Atomic Power Station (PBAPS) and Three Mile Island Nuclear Generating Station (TMI). Additionally, four (4) municipalities in the southeastern corner of the County lie within the Limerick Generating Station’s Ingestion Exposure Pathway EPZ. These municipalities include Delta Borough, Peach Bottom Township, Lower Chanceford Township and Chanceford Township. Areas of Peach Bottom Township and Delta Borough also appear to be in the Ingestion Exposure Pathway for the Hope Creek and Salmon 1 & 2 Nuclear Power Plants (see Figure 4.3.21.1-1).

Portions of York County are within the Plume-Exposure Pathway EPZ of the TMI facility and PBAPS, as shown in Table 4.3.21.1-1. The plume exposure pathway EPZ has a radius of about 10 miles from the reactor site. Predetermined protective action plans are in place for this EPZ and are designed to avoid or reduce dose from potential exposure of radioactive materials. These actions include sheltering, evacuation, and the use of potassium iodide where appropriate.

**Table 4.3.21.1-1: County Residents within a Plume Exposure Pathway EPZ**

| Municipality  | Population within Plume Exposure Pathway EPZ | Mass Care Population* |
|---|--|-----------------------|
| <b>Three Mile Island Nuclear Generating Station</b> |  |                       |
| Conewago Township                                   | 7,472  | 1,494                 |
| Dover Township                                      | 1,530  | 306                   |
| East Manchester Township                            | 7,287  | 1,457                 |
| Fairview Township                                   | 16,223                                       | 3,246                 |



| <b>Table 4.3.21.1-1: County Residents within a Plume Exposure Pathway EPZ</b> |   |                              |
|---|---|------------------------------|
| <b>Municipality</b>   | <b>Population within Plume Exposure Pathway EPZ</b> | <b>Mass Care Population*</b> |
| Goldsboro Borough   | 942   | 188                          |
| Hellam Township   | 977   | 195                          |
| Lewisberry Borough  | 362   | 72                           |
| Manchester Borough  | 2,771   | 554                          |
| Manchester Township   | 15,759  | 3,151                        |
| Mount Wolf Borough  | 1,393   | 279                          |
| Newberry Township   | 15,332  | 3,067                        |
| Springettsbury Township   | 345   | 69                           |
| Warrington Township   | 989   | 198                          |
| York Haven Borough  | 709   | 142                          |
| <b>York County Total</b>  | <b>72,091</b>                                       | <b>14,418</b>                |
| <b>Peach Bottom Atomic Power Station</b>                                      |   |                              |
| Delta Borough   | 728   | 146                          |
| Peach Bottom Township   | 4,813   | 963                          |
| Fawn Township   | 3,091   | 618                          |
| Fawn Grove Borough  | 460   | 92                           |
| Lower Chanceford Township   | 3,028   | 606                          |
| <b>York County Total</b>  | <b>12,120</b>                                       | <b>2,425</b>                 |

\*Twenty percent (20%) of the population within the Plume Exposure Pathway EPZ

Source: PEMA

Figure 4.3.21.1-1, below, depicts the nuclear power plants within and adjacent to Pennsylvania. Note the EPZ zones, as discussed in detail in the previous part of this section.

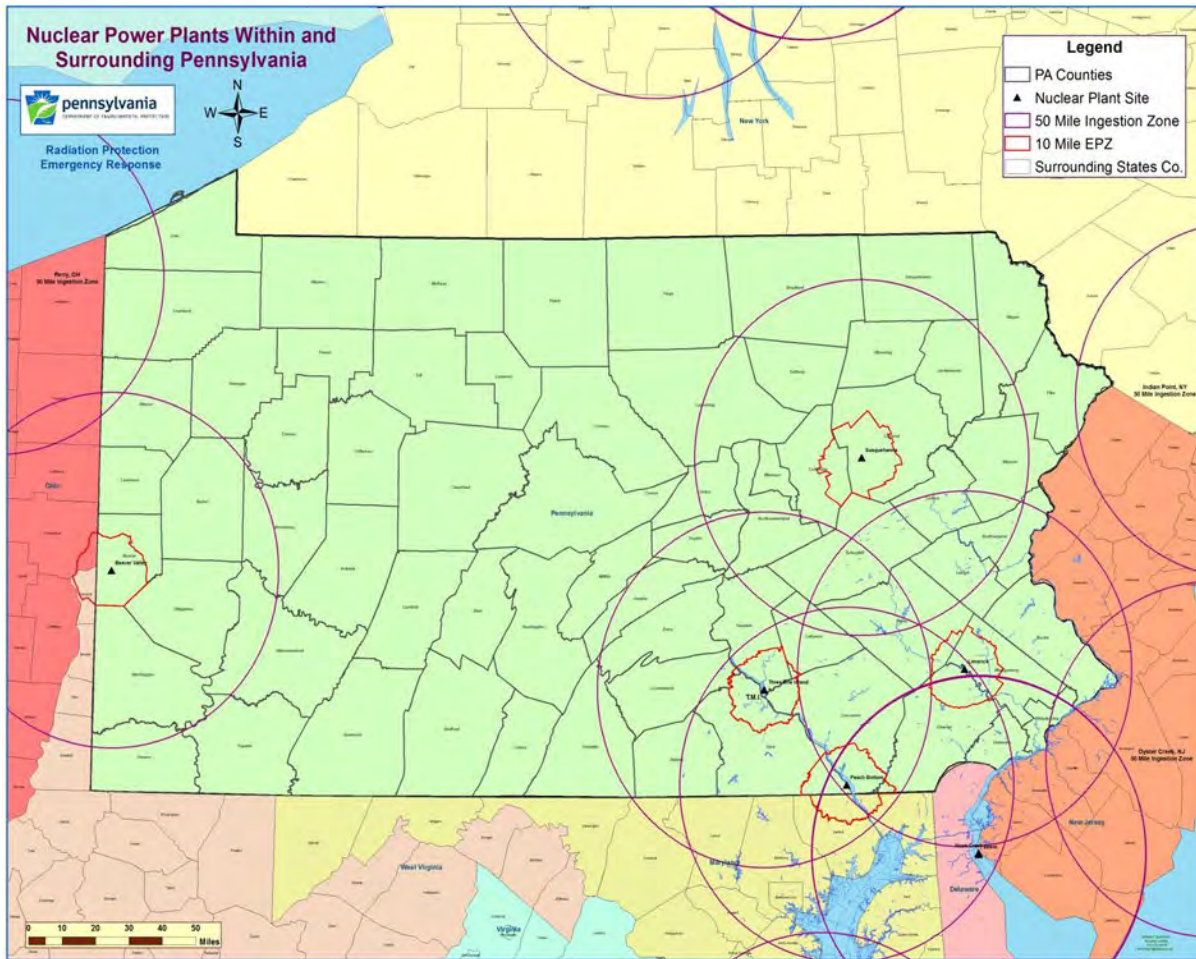


Figure 4.3.21.1-1: Nuclear Power Plants within and Surrounding PA  
Source: PA DEP

4.3.21.2

### Range of Magnitude

The magnitude and severity a nuclear accident would have on York County is a function of several factors. The duration of primary exposure could range in length from hours to months. The type of accident and/or extent of damage to the facility would obviously be a contributing factor. Which facility the accident occurs at will help determine the magnitude to which York County is affected. An accident at Limerick, which is farther away from the County, would not be as severe as a similar accident from Peach Bottom Atomic Power Station (PBAPS) or Three Mile Island (TMI), which are substantially closer to York County. Prevailing weather conditions and wind direction would determine the dispersion characteristics of the radiological plume. The impact a nuclear accident would have upon York County should be measured not only in radiological and health effects, but also in psychological, social, and economic affects. A nuclear accident at either PBAPS or TMI has the potential to be the most devastating hazard to which York County could be exposed.

The magnitude of a nuclear incident differs for those within the Plume Exposure Pathway EPZ and those within the Ingestion Exposure Pathway EPZ. The Plume Exposure Pathway refers to whole-body external exposure to gamma radiation from a radioactive plume and from deposited materials and inhalation exposure from the passing radioactive plume. The duration of primary exposures could range in length from hours to days. The Ingestion Exposure Pathway refers to exposure primarily from ingestion of water or foods, such as milk and fresh vegetables, that have been contaminated with radiation. Nuclear accidents themselves are classified into three (3) categories:

- **Criticality Accidents:** Involves loss of control of nuclear assemblies or power reactors;
- **Loss-of-coolant Accidents:** Occurs whenever a reactor coolant system experiences a break or opening large enough so that the coolant inventory in the system cannot be maintained by the normally operating make-up system; and
- **Loss-of-containment Accidents:** Involves the release of radioactivity from materials such as tritium, fission products, plutonium, and natural, depleted, or enriched uranium. Points of release have been containment vessels at fixed facilities or damaged packages during transportation accidents.

Nuclear facilities must notify the appropriate authorities in the event of an accident. The Nuclear Regulatory Commission uses four (4) classification levels for nuclear incidents (Nuclear Regulatory Commission, 2008):

- **Unusual Event:** Under this category, events are in process or have occurred which indicate potential degradation in the level of safety of the plant. No release of radioactive material requiring offsite response or monitoring is expected unless further degradation occurs;
- **Alert:** If an alert is declared, events are in process or have occurred which involve an actual or potential substantial degradation in the level of safety of the plant. Any releases of radioactive material from the plant are expected to be limited to a small fraction of the EPA Protective Action Guides (PAGs);
- **Site Area Emergency:** A site area emergency involves events in process or which have occurred that result in actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material are not expected to exceed the EPA PAGs except near the site boundary; and
- **General Emergency:** A general emergency involves actual or imminent substantial core damage or melting of reactor fuel with the potential for loss of containment integrity. Radioactive releases during a general emergency can reasonably be expected to exceed the EPA PAGs for more than the immediate site area.

The TMI accident in March 1979 remains the nation's only nuclear incident at the Emergency level and remains the worst nuclear incident on record in PA and in the US. During this incident, equipment malfunctions, design-related problems, and worker errors led to a partial meltdown of the TMI Unit 2 reactor core. The nuclear industry has adopted pre-determined site-specific Emergency Action Levels (EALs). The EALs provide the framework and guidance to observe, address, and classify the severity of site-specific events and conditions that are communicated to off-site emergency response organizations (Nuclear Regulatory Commission, 2008). There are additional EALs that address the issues of security, such as threats of airborne attack, hostile action within the facility, or facility attack. The EALs ensure that appropriate notifications for the security threat are made in a timely manner.



Figure 4.3.19.2-1: Three Mile Island

Each facility is also equipped with a public alerting system, which includes a number of sirens to alert the public located in the Plume Exposure Pathway EPZ. The counties of each specific EPZ activate this notification system. Emergency notifications and instructions are communicated to the public via the Emergency Alert System as activated by the Commonwealth of Pennsylvania Emergency Operations Center. State officials also have the capability to send emergency messages as text messages to mobile devices.

The ***potential environmental impacts*** of a nuclear incident are primarily the long-term effects of radioactive contamination in the environment. Such impacts include, but are not limited to, the following:

- Radioactive contamination of agricultural and orchard products;
- Contamination of soil and water, particularly areas underlain by limestone and glacial sediments;
- Property contamination; and
- Health concerns of the population near the incident; depending on duration of primary exposure, external radiation, inhalation, and ingestion of radioactive isotopes can cause adverse health effects including psychological effects, chronic health concerns (cancers) and even death.

#### ***4.3.21.3 Past Occurrence***

There have been two (2) nuclear accidents above the "Alert" classification at TMI. TMI is located in Dauphin County on an island in the Susquehanna River adjacent to Newberry Township (York County). In March 1979, a "Site Area Emergency" classification event occurred at the TMI Unit 2. The resulting contamination and the state of the reactor core led to the development of a ten (10)-year clean-up and scientific effort. Despite the severity of the damage, no injuries due to radiation exposure were reported. However, residual health effects, due to radiation exposure, are still in dispute and being

studied. There were, however, significant health effects reported, due to the psychological stress on individuals in the area.

A second event at TMI occurred on February 7, 1993, when a vehicle intrusion to TMI’s protected area necessitated a “Site Area Emergency” declaration. Table 4.3.21.3-1 below lists the dates and classifications of declared emergencies at PBAPS and TMI since the commercial operations began at each facility.

| <b>Table 4.3.21.3-1: Nuclear Power Plant Emergency Declaration History</b> |                       |
|--|-----------------------|
| <b>Date</b>  | <b>Classification</b> |
| <b>Peach Bottom Atomic Power Station</b>                                   |                       |
| 04/26/1984   | Unusual Event         |
| 06/18/1986   | Unusual Event         |
| 05/11/1990   | Unusual Event         |
| 07/27/1990   | Unusual Event         |
| 07/04/1992   | Unusual Event         |
| 10/15/1992   | Unusual Event         |
| 03/02/1993   | Unusual Event         |
| 08/10/1994   | Unusual Event         |
| 08/09/1995   | Unusual Event         |
| 01/20/1996   | Unusual Event         |
| 06/02/2002   | Unusual Event         |
| 09/15/2003   | Unusual Event         |
| 08/15/2006   | Unusual Event         |
| 10/07/2006   | Unusual Event         |
| 02/27/2007   | Unusual Event         |
| 08/08/2007   | Alert                 |
| 08/23/2011   | Unusual Event         |
| 08/24/2011   | Unusual Event         |
| <b>Three Mile Island</b>   |                       |
| 03/28/1979   | Site Area Emergency   |
| 02/07/1993   | Site Area Emergency   |
| 08/25/1994   | Unusual Event         |
| 06/21/1997   | Unusual Event         |
| 07/02/2003   | Unusual Event         |
| 08/23/2011   | Unusual Event         |
| 08/24/2011   | Unusual Event         |
| 10/15/2015   | Alert                 |

Source: Exelon and Amergen and U.S. NRC

**4.3.21.4 Future Occurrence**

At the 100+ nuclear facilities in the US, a number of “unusual event” and “alert” classification level events that require notification of local emergency managers occur annually. Of these events, “alert” level incidents occur less frequently. Review of the disaster declaration history for PBAPS and TMI nuclear power plants indicates the probability of an emergency declaration is high. However, the probability of the declaration being classified as a “site area” or “general” incident capable of harming the public safety or requiring the initiation of evacuation plans is low.

**4.3.21.5 Vulnerability Assessment**

A total of 19 municipalities are considered to be vulnerable to the effects of incidents at TMI or PBAPS, as defined by the Plume Exposure Pathways (ten (10) mile radius) for population and infrastructure, and all of York County is within the Ingestion Exposure Pathway (50 miles) for Agricultural Contamination for at least two (2) nuclear facilities. Table 4.3.21.5-1 provides detail on the County’s vulnerability for municipalities in the Plume Exposure Pathway. For the Ingestion Exposure Pathway, agricultural acreage and values contained in the York County Total Vulnerability Table (Table 4.4-2) should be consulted.

**Table 4.3.21.5-1: Nuclear Incident Plume-Exposure Pathway Vulnerability**

| <b>Municipality</b>       | <b>Dwelling Units (10 Mile Radius) (YCPC 2017)</b> | <b>Estimated Population (10 mile Radius) (YCPC 2017)</b> | <b>Other Structures (10 mile radius) (YCPC 2017)</b> | <b>Critical Facilities (10 mile radius) (YCPC 2017)</b> | <b>Bridges (10 mile radius) (BMS 2017)</b> | <b>Miles of Railroad (10 mile radius) (YCPC 2017)</b> | <b>Miles of Roadway (10 mile radius) (EMA 2017)</b> | <b>Total EPZ Exposure (\$) (DOA 2017)</b> |
|---------------------------|--|--|--|---|--|---|---|---|
| Conewago Township         | 2,817  | 7,606  | 1,352  | 19  | 25   |   | 84.28   | \$798,513,351                             |
| Delta Borough             | 257  | 619  | 114  | 3   |  |   | 4.47  | \$42,507,665                              |
| Dover Township            | 273  | 691  | 195  | 1   | 2  |   | 13.55   | \$43,469,932                              |
| East Manchester Township  | 3,180  | 9,063  | 1,087  | 37  | 25   | 26.89   | 78.93   | \$895,735,600                             |
| Fairview Township         | 6,128  | 16,117   | 2,129  | 60  | 63   | 13.18   | 171.28  | \$1,637,089,678                           |
| Fawn Grove Borough        | 115  | 319  | 122  |   |  |   | 3.31  | \$25,612,281                              |
| Fawn Township             | 508  | 1,367  | 423  |   | 14   |   | 34.33   | \$113,215,039                             |
| Goldsboro Borough         | 340  | 1,003  | 181  | 4   | 1  | 2.22  | 6.45  | \$56,652,082                              |
| Hellam Township           | 275  | 649  | 92   |   | 2  | .60   | 14.77   | \$31,758,138                              |
| Lewisberry Borough        | 141  | 337  | 101  | 3   | 2  |   | 3.51  | \$28,338,801                              |
| Lower Chanceford Township | 914  | 2,577  | 1,008  | 7   | 10   |   | 92.88   | \$180,301,329                             |
| Manchester Borough        | 928  | 2,246  | 377  | 7   |  | .54   | 13.18   | \$165,649,345                             |
| Manchester Township       | 1,666  | 4,465  | 779  | 30  | 22   | 1.98  | 53.98   | \$858,342,793                             |
| Mount Wolf Borough        | 505  | 1,338  | 240  | 9   | 5  | .76   | 9.60  | \$79,147,699                              |
| Newberry Township         | 6,307  | 16,398   | 2,454  | 37  | 48   | 10.44   | 157.18  | \$1,116,236,140                           |

**Table 4.3.21.5-1: Nuclear Incident Plume-Exposure Pathway Vulnerability**

| <b>Municipality</b>     | <b>Dwelling Units (10 Mile Radius) (YCPC 2017)</b> | <b>Estimated Population (10 mile Radius) (YCPC 2017)</b> | <b>Other Structures (10 mile radius) (YCPC 2017)</b> | <b>Critical Facilities (10 mile radius) (YCPC 2017)</b> | <b>Bridges (10 mile radius) (BMS 2017)</b> | <b>Miles of Railroad (10 mile radius) (YCPC 2017)</b> | <b>Miles of Roadway (10 mile radius) (EMA 2017)</b> | <b>Total EPZ Exposure (\$) (DOA 2017)</b> |
|-------------------------|--|--|--|---|--|---|---|---|
| Peach Bottom Township   | 2,003  | 5,648  | 1,060  | 12  | 29   |   | 118.49  | \$465,791,737                             |
| Springettsbury Township | 140  | 343  | 126  | 3   | 3  |   | 5.48  | \$144,711,629                             |
| Warrington Township     | 293  | 718  | 248  | 8   | 9  |   | 18.49   | \$54,924,558                              |
| York Haven Borough      | 224  | 652  | 145  | 5   | 1  | 1.33  | 4.83  | \$23,469,519                              |
| <b>Total</b>            | <b>27,014</b>                                      | <b>72,155</b>  | <b>12,233</b>  | <b>245</b>  | <b>261</b>                                 | <b>57.93</b>  | <b>888.97</b>                                       | <b>\$6,761,467,316</b>                    |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using BMS, EMA, DOA, and YCPC data layers.

Based on the identified plume exposure area and York County Assessment data, the total exposure for York County, due to a nuclear incident, is \$6,761,467,316. Agricultural losses within the 50 mile ingestion zone are estimated at \$323,040,071 for 361,747 acres of farmland using the 2012 Census of Agriculture value of \$893 per acre in agricultural production.

### 4.3.22 Terrorism

The definition of terrorism varies by agency. The Intelligence Community relies on Title 22, Section 2656f(d), of the US Code, which defines terrorism as premeditated and politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents. The Homeland Security Act of 2002 defines terrorism as any activity that is dangerous to human life or potentially destructive of critical infrastructure or key resources and is a violation of the criminal laws of the United States or of any State or other subdivision of the United States. It further defines terrorism as acts intended to intimidate or coerce a civilian population, to influence the policy of a government by intimidation or coercion or to affect the conduct of a government by mass destruction, assassination, or kidnapping. The Federal Bureau of Investigation (FBI) further characterizes terrorism as either domestic or international, depending on the origin, base, and objectives of the terrorist organization. The origin of the terrorist or person causing the hazard is far less relevant to mitigation planning than the hazard itself and its consequences. FEMA identifies acts of terrorism as threats of terrorism, assassinations, kidnappings, hijackings, bomb scares and bombings, cyberattacks (computer-based), and the use of chemical, biological, nuclear and radiological weapons. For the purposes of this Plan, we rely on the general definition provided by FEMA.

#### 4.3.22.1 Location and Extent

Terrorism is a threat everywhere, but there are a number of important considerations in evaluating terrorism hazards, such as the existence of facilities, landmarks, or other buildings of international, national, or regional importance. High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might

also target large public gatherings, water and food supplies, utilities, and corporate centers. Furthermore, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail (FEMA, April 2009). Nonetheless, terrorism can take many forms and terrorists have a wide range of personal, political, or cultural agendas.

In York County, particular locations of concern could be agricultural areas, SARA Title III facilities, transportation routes and facilities, military and government facilities, venues that host a large number of people, power generation facilities, public utilities, and any other critical facilities. The extent could range from impacting one location to the entire county depending on the type of terroristic act.

#### **4.3.22.2 Range of Magnitude**

The range and severity of terrorist incidents depends upon the type of method used, the proximity of the device to people, animals, or other assets and the duration of exposure to the incident or device. Terrorist attacks can take many forms, including agri-terrorism, arson/incendiary attack, armed attack, assassination, biological agent, chemical agent, cyberterrorism, conventional bomb, hijackings, intentional hazardous material release, kidnapping, nuclear bomb and radiological agent (FEMA April 2009). According the PA HMP, explosives have been the traditional method of conducting terrorism, but intelligence suggests that the possibility of biological or chemical terrorism is increasing.

For example, biological agents are organisms or toxins that have illness-producing effects on people, livestock, and crops. Some biological agents can't be easily detected and may take time to develop. Therefore, it can be difficult to know that a biological attack has occurred until victims display symptoms. In other cases, the effects are immediate. Those affected by a biological agent require the immediate attention of professional medical personnel. Some agents are contagious, which may result in the need for victims to be quarantined. This is of particular concern, given the large amount of agricultural land and food production in York County.

The **potential environmental impacts** of terrorism can range from quite minor to very catastrophic, depending on the method of attack and the population density of the attack site. There might be significant losses of humans and animals, as well as economic losses. Dependent on the type of attack, community and health services may be impacted and exacerbate the impact of the attack itself. Urban fires and lasting contamination of the environment could also occur. Public water sources could also be impacted.

#### **4.3.22.3 Past Occurrence**

York County has experienced terrorist incidents in the past. Most of these events have involved bomb threats/explosives or white powder found in a package which could indicate a toxic substance. The most recent well documented case happened in 2015 when a man planned to ambush State Police in the southern part of the County with guns and explosives. His arrest resulted in the first conviction of a York County resident for terrorism according to a local newspaper. Table 4.3.22.3-1 provides a list of 911 calls related terrorism.



**Table 4.3.22.3-1: Terrorist Incidents October 2013 through September 2017**

| <b>Reported Event</b>       | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| Bomb/Explosive              | 4           | 23          | 20          | 34          | 13          |
| Opened White Powder Package | 0           | 4           | 0           | 2           | 4           |
| <b>Total</b>                | <b>4</b>    | <b>27</b>   | <b>20</b>   | <b>36</b>   | <b>17</b>   |

Source: York County 911

**4.3.22.4 Future Occurrence**

The probability of terrorism occurring cannot be quantified with as great a level of accuracy as that of many natural hazards. Furthermore, these incidents generally occur at a specific location, thus, planning should be asset-specific, identifying potentially at-risk critical facilities and systems in the community. Once a comprehensive list of critical assets has been developed, it should be prioritized so that efforts can be directed to protect the most important assets first. Then, beginning with the highest-priority assets, the vulnerabilities of each facility or system to each type of hazard should be assessed. For the purpose of developing a realistic prioritization for hazard mitigation projects related to terrorism, three (3) elements should be considered in concert: the relative importance of the various facilities and systems in the asset inventory, the vulnerabilities of those facilities, and threats that are known to exist. An additional important consideration in estimating the likelihood of a terrorist incident is the existence of facilities, landmarks, or other buildings of national importance.

While York County has many notable landmarks from a local historic perspective, it does not contain any sites with national symbolism. There are critical assets and segments of the infrastructure, which, if incapacitated or destroyed, would have a debilitating effect on the County. These critical assets include government services/military installations, schools, emergency services, water supply systems, transportation networks, telecommunications infrastructure, electrical power systems, and gas and oil facilities. Given the existence of these facilities and past terroristic threats, it is likely that there will be future terroristic threats in the future intended to disrupt the operation of these facilities.

**4.3.22.5 Vulnerability Assessment**

All communities in York County are vulnerable on some level, either directly or indirectly, to a terrorist attack. Since the probability of terrorism occurring cannot be quantified in the same way as that of many of the natural hazards, it is not possible to assess vulnerability in terms of likelihood of occurrence and at-risk structures. Instead, vulnerability is assessed in terms of specific assets. By identifying potentially at-risk targets, planning efforts can be put into place to reduce the risk of attacks. FEMA’s guidance encourages site specific assessments be done based on the relative importance of a particular site to the surrounding community or population and threats that are known to exist. Table 4.3.22.5-1 presents information from FEMA on assessing terrorism vulnerability. Table 4.4-2, York County’s Total Hazard Vulnerability, provides a listing of all assets that could be impacted and potential total losses.

**Table 4.3.22.5-1: Assessing Terrorism Vulnerability**

| <b>Inherent Vulnerability of each critical asset is based on:</b>   |   |
|---|---|
| Visibility  | <i>How aware is the public of the existence of the facility?</i>  |
| Utility   | <i>How valuable might the place be in meeting the objectives of a potential terrorist?</i>  |
| Accessibility   | <i>How accessible is the place to the public?</i>   |
| Asset Mobility  | <i>Is the asset’s location fixed or mobile?</i>   |
| Presence of Hazardous Materials   | <i>Are flammable, explosive, biological, chemical and or radiological materials on site? If so, are they secured?</i>   |
| Potential for Collateral Damage   | <i>What are the potential consequences for the surrounding area if the asset is attacked or damaged?</i>  |
| Occupancy   | <i>What is the potential for mass casualties based on the maximum number of individuals on site at any time?</i>  |
| <b>Tactical Vulnerability of each asset is based on:</b>  |   |
| Site Perimeter (Site Planning and Landscape Design and Parking Security)  | <ul style="list-style-type: none"> <li>• <i>Is the facility designed with security in mind, both site-specific and with regard to adjacent land uses?</i></li> <li>• <i>Are vehicle access and parking managed in a way that separates vehicles and structures?</i></li> </ul>  |
| Building Envelope (Structural Engineering)  | <ul style="list-style-type: none"> <li>• <i>Is the building’s envelope designed to be blast-resistant?</i></li> <li>• <i>Does it provide collective protection against chemical, biological and radiological contaminants?</i></li> </ul>   |
| Facility Interior (Architectural and Interior Space Planning, Mechanical Engineering, Electrical Engineering, Fire protection Engineering, Electronic and Organized Security) | <ul style="list-style-type: none"> <li>• <i>Does the security screening cover all public and private areas? Are public and private areas separated? Are critical building systems and activities separated?</i></li> <li>• <i>Are utilities and HVAC systems protected and/or backed up with redundant systems?</i></li> <li>• <i>Are emergency power and telecom available? Are fire alarms operational? Is lighting sufficient?</i></li> <li>• <i>Are the water supply and fire suppression systems adequate, code compliant and protected? Are on-site personnel trained appropriately? Are first responders aware of the nature of the operations at the facility?</i></li> <li>• <i>Are systems and personnel in place to monitor and protect the facility?</i></li> </ul> |

Source: Integrating Human Hazards into Mitigation Planning (FEMA)

### 4.3.23 Urban Fire and Explosion

Urban fires are fires that occur in the built environment where there is a higher density of buildings and people, which could lead to more significant impacts from fires. According to the U.S. Fire Administration, the two (2) major causes of urban residential fires in the northeast are cooking and heating fires. Fires in non-residential structures were mainly attributed to cooking or unintentional/carelessness. Urban fire and explosion also includes vehicle fires and explosions, such as overpressure rupture, overheating, or other explosions that do not ignite.

**4.3.23.1 Location and Extent**

The potential for urban fires to occur is equal across the County, assuming building codes are in place and enforced. The potential for significant impacts from urban fires is higher in the Boroughs and in the City where older structures that predate building codes are located at greater densities and higher populations. Urban fires and explosions often begin as a result of other hazards, particularly storms, lightning strikes, drought, transportation accidents, hazardous materials releases, criminal activity (arson), and terrorism. Figure 4.3.23.1-1 identifies areas of urban fire potential in York County.

**4.3.23.2 Range of Magnitude**

Uncontrolled urban fires can result in the loss of human lives, pets, buildings, residences and infrastructure. In general, the current extensive networks of roads and streets coupled with the number of local fire departments should provide swift access to fire events. Any blockage by damage, debris, and operations is often localized and temporary. However, urban fires have the potential to cause extensive damage to residential, commercial, or public property. Damage ranges from minor smoke and/or water damage to the destruction of buildings. People are often displaced for several months to years depending on the magnitude of the event.

Urban fires and explosions can also cause injuries and death. Between 2012 and 2016, York County averaged two (2) civilian fire deaths per year according to the Office of the State Fire Commissioner.

The **potential environmental impacts** of urban fires can be water, air and soil pollution, specifically if the fire event or explosion releases dangerous materials. Other consequences include, but are not limited to, economic impacts (loss of wages, damage/destruction of business and personal assets, and lost investments) and loss of life/injury.

**4.3.23.3 Past Occurrence**

The best available historical information for urban fires comes in the form of fire alarm records tracked by York County Emergency Management Services. Table 4.3.23.3-1, below, provides a summary of fire alarms responded to for the years October 2013 through September 2017. Residential structure fires accounted for over half of the reported fires.

| Table 4.3.23.3-1: Urban (Building) Fires in York County, 2013-2017 |            |              |              |              |            |              |
|--|------------|--------------|--------------|--------------|------------|--------------|
| Fire Type  | 2013       | 2014         | 2015         | 2016         | 2017       | Total        |
| Appliance Fire   | 229        | 149          | 112          | 140          | 92         | 722          |
| Chimney Fire   | 25         | 114          | 84           | 70           | 43         | 336          |
| Shed Fire  | 7          | 27           | 22           | 25           | 20         | 101          |
| Structure Fire Entrapment  | 5          | 26           | 16           | 20           | 20         | 87           |
| Structure Fire High Risk   | 45         | 222          | 201          | 175          | 157        | 800          |
| Structure Fire Residential   | 139        | 660          | 598          | 624          | 454        | 2,475        |
| <b>Total</b>   | <b>450</b> | <b>1,198</b> | <b>1,033</b> | <b>1,054</b> | <b>786</b> | <b>4,521</b> |

Source: York County 911



**4.3.23.4 Future Occurrence**

Many factors contribute to the cause of urban fires and explosions. Given the amount of development within York County, the potential of an urban fire occurring within York County in any given year is high. Due to the various factors, the more urban areas in the County are considered at risk to one degree or another. Minor urban fires are more common and major fires will continue to occur several times a year, particularly in more densely developed areas with aging building stock. However, the probability of future occurrences may decrease, since new buildings are constructed to meet building codes that address fire prevention and detection.

**4.3.23.5 Vulnerability Assessment**

The vulnerability assessment for urban fires was completed using a spatial analysis and GIS as shown on Map 4.3.23.1-1. This Map identifies existing growth areas, boroughs, and York City as having highest potential for impact of urban fires due to age of structures, density of structures, and higher population densities. Table 4.3.23.5-1 provides a vulnerability summary of the residential structures, other structures, population, and critical facilities within these areas.

| <b>Table 4.3.23.5-1: Urban Fire Vulnerability</b> |                                   |   |                                     |  |                                       |
|---|-----------------------------------|---|-------------------------------------|--|---------------------------------------|
| <b>Municipality</b>                               | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
| Carroll Township                                  | 1,211                             | 3,403                                   | 351                                 | 19                                     | \$440,739,662                         |
| Conewago Township                                 | 2,137                             | 5,770                                   | 602                                 | 7                                      | \$643,219,460                         |
| Cross Roads Borough                               | 180                               | 556                                     | 129                                 |  | \$40,392,895                          |
| Dallastown Borough                                | 1,486                             | 3,730                                   | 860                                 | 13                                     | \$278,102,643                         |
| Delta Borough                                     | 257                               | 619                                     | 114                                 | 3                                      | \$42,507,665                          |
| Dillsburg Borough                                 | 939                               | 2,197                                   | 419                                 | 9                                      | \$197,955,010                         |
| Dover Borough                                     | 725                               | 1,856                                   | 278                                 | 14                                     | \$127,463,821                         |
| Dover Township                                    | 6,845                             | 17,318                                  | 1,855                               | 35                                     | \$1,180,732,145                       |
| East Hopewell Township                            |                                   |   |                                     |  | \$90,982                              |
| East Manchester Township                          | 3,036                             | 8,653                                   | 891                                 | 34                                     | \$849,255,525                         |
| East Prospect Borough                             | 343                               | 1,005                                   | 135                                 | 4                                      | \$51,143,005                          |
| Fairview Township                                 | 4,873                             | 12,816                                  | 1,469                               | 47                                     | \$1,365,694,586                       |
| Fawn Grove Borough                                | 170                               | 471                                     | 189                                 | 4                                      | \$66,782,117                          |
| Felton Borough                                    | 200                               | 574                                     | 164                                 | 1                                      | \$44,251,680                          |
| Franklin Township                                 | 561                               | 1,408                                   | 199                                 | 3                                      | \$100,622,790                         |
| Franklintown Borough                              | 212                               | 562                                     | 108                                 | 3                                      | \$29,672,291                          |
| Glen Rock Borough                                 | 696                               | 1,712                                   | 286                                 | 7                                      | \$151,838,574                         |
| Goldsboro Borough                                 | 340                               | 1,003                                   | 181                                 | 4                                      | \$56,652,082                          |

Table 4.3.23.5-1: Urban Fire Vulnerability

| Municipality            | Dwelling Units (YCPC 2017) | Estimated Population (YCPC 2017) | Other Structures (YCPC 2017) | Critical Facilities (YCPC 2017) | Total Exposure (\$) (DOA 2017) |
|-------------------------|----------------------------|----------------------------------|------------------------------|---------------------------------|--------------------------------|
| Hallam Borough          | 987                        | 2,171                            | 268                          | 6                               | \$163,963,690                  |
| Hanover Borough         | 5,644                      | 13,094                           | 2,970                        | 79                              | \$1,505,459,416                |
| Heidelberg Township     | 111                        | 312                              | 104                          | 1                               | \$22,575,527                   |
| Hellam Township         | 782                        | 1,846                            | 295                          | 10                              | \$187,143,092                  |
| Hopewell Township       | 1,175                      | 3,325                            | 447                          | 13                              | \$529,648,153                  |
| Jackson Township        | 2,189                      | 5,801                            | 1,035                        | 24                              | \$523,811,505                  |
| Jacobus Borough         | 655                        | 1,847                            | 386                          | 7                               | \$182,223,878                  |
| Jefferson Borough       | 257                        | 673                              | 211                          | 4                               | \$51,728,760                   |
| Lewisberry Borough      | 141                        | 337                              | 101                          | 3                               | \$28,338,801                   |
| Loganville Borough      | 478                        | 1,286                            | 303                          | 6                               | \$114,220,689                  |
| Manchester Borough      | 928                        | 2,246                            | 377                          | 7                               | \$165,649,345                  |
| Manchester Township     | 6,996                      | 18,749                           | 1,618                        | 57                              | \$2,501,623,571                |
| Monaghan Township       | 430                        | 1,109                            | 179                          | 2                               | \$82,795,010                   |
| Mount Wolf Borough      | 505                        | 1,338                            | 240                          | 9                               | \$79,147,699                   |
| New Freedom Borough     | 1,698                      | 4,500                            | 554                          | 12                              | \$521,913,355                  |
| New Salem Borough       | 319                        | 880                              | 172                          | 4                               | \$71,364,242                   |
| Newberry Township       | 3,429                      | 8,915                            | 786                          | 25                              | \$672,209,454                  |
| North Codorus Township  | 1,966                      | 5,269                            | 1,121                        | 10                              | \$420,143,211                  |
| North York Borough      | 654                        | 1,557                            | 534                          | 1                               | \$125,609,783                  |
| Paradise Township       | 446                        | 1,164                            | 265                          | 2                               | \$80,421,327                   |
| Peach Bottom Township   | 356                        | 1,004                            | 183                          | 6                               | \$120,302,634                  |
| Penn Township           | 6,105                      | 16,300                           | 2,311                        | 45                              | \$1,619,311,769                |
| Railroad Borough        | 96                         | 253                              | 84                           | 3                               | \$34,932,589                   |
| Red Lion Borough        | 2,274                      | 5,662                            | 1,092                        | 18                              | \$414,746,089                  |
| Seven Valleys Borough   | 175                        | 425                              | 158                          | 3                               | \$31,117,947                   |
| Shrewsbury Borough      | 1,362                      | 3,664                            | 581                          | 17                              | \$410,838,341                  |
| Shrewsbury Township     | 1,374                      | 3,614                            | 357                          | 18                              | \$468,234,273                  |
| Spring Garden Township  | 4,508                      | 11,405                           | 1,462                        | 53                              | \$1,639,299,332                |
| Spring Grove Borough    | 826                        | 2,164                            | 525                          | 16                              | \$203,882,621                  |
| Springettsbury Township | 9,595                      | 23,508                           | 1,867                        | 135                             | \$3,020,877,720                |

| <b>Table 4.3.23.5-1: Urban Fire Vulnerability</b> |                                   |   |                                     |  |                                       |
|---|-----------------------------------|---|-------------------------------------|--|---------------------------------------|
| <b>Municipality</b>                               | <b>Dwelling Units (YCPC 2017)</b> | <b>Estimated Population (YCPC 2017)</b> | <b>Other Structures (YCPC 2017)</b> | <b>Critical Facilities (YCPC 2017)</b> | <b>Total Exposure (\$) (DOA 2017)</b> |
| Springfield Township                              | 1,451                             | 3,802                                   | 503                                 | 14                                     | \$479,043,061                         |
| Stewartstown Borough                              | 775                               | 1,821                                   | 324                                 | 9                                      | \$186,765,294                         |
| Warrington Township                               | 268                               | 657                                     | 292                                 | 9                                      | \$55,135,100                          |
| Wellsville Borough                                | 108                               | 252                                     | 92                                  | 3                                      | \$31,800,977                          |
| West Manchester Township                          | 7,455                             | 17,817                                  | 2,095                               | 79                                     | \$2,016,916,716                       |
| West Manheim Township                             | 2,339                             | 6,923                                   | 779                                 | 17                                     | \$632,898,231                         |
| West York Borough                                 | 1,591                             | 4,009                                   | 1,032                               | 9                                      | \$231,416,024                         |
| Windsor Borough                                   | 464                               | 1,225                                   | 202                                 | 3                                      | \$61,331,662                          |
| Windsor Township                                  | 5,460                             | 14,578                                  | 1,352                               | 33                                     | \$3,239,729,262                       |
| Winterstown Borough                               | 228                               | 524                                     | 211                                 | 5                                      | \$48,076,358                          |
| Wrightsville Borough                              | 862                               | 2,095                                   | 510                                 | 14                                     | \$151,003,246                         |
| Yoe Borough                                       | 346                               | 865                                     | 195                                 | 3                                      | \$38,025,514                          |
| York City   | 13,347                            | 34,969                                  | 3,556                               | 113                                    | \$2,464,233,333                       |
| York Haven Borough                                | 224                               | 652                                     | 145                                 | 5                                      | \$23,469,519                          |
| York Township                                     | 13,573                            | 31,761                                  | 2,303                               | 84                                     | \$22,615,508,926                      |
| Yorkana Borough                                   | 87                                | 226                                     | 59                                  | 1                                      | \$12,515,171                          |
| <b>Total</b>                                      | <b>129,250</b>                    | <b>330,249</b>                          | <b>42,466</b>                       | <b>1,204</b>                           | <b>\$53,948,519,150</b>               |

\*Total Exposure = All building and content losses per County Assessment. Content losses = 75% of assessed value.

Source: YCPC GIS analysis using DOA and YCPC data layers.

The total urban fire exposure for York County based on these areas and County Assessment data is \$53,948,519,150.

#### **4.4 HAZARD VULNERABILITY SUMMARY**

Table 4.4-1 below provides a summary of hazard vulnerability by municipality.

Table 4.4-1: Hazard Vulnerability by Municipality

| Municipality             | Drought | Earthquake | Extreme Temperatures | Flood/Flash Flood/Ice Jam | Hailstorm | Hurricane/Tropical Storm/Nor' Easter | Invasive Species | Landslide | Lightning Strike | Pandemic And Infectious Disease | Radon Exposure | Subsidence/ Sinkhole | Tornado/ Windstorm | Wildfire | Winter Storms | Civil Disturbance | Dam Failure | Environmental Hazards | Levee Failure | Mass Food and Animal Feed Contamination | Nuclear Incidents | Terrorism | Urban Fires/Explosions |
|--------------------------|---------|------------|----------------------|---------------------------|-----------|--------------------------------------|------------------|-----------|------------------|---------------------------------|----------------|----------------------|--------------------|----------|---------------|-------------------|-------------|-----------------------|---------------|---|-------------------|-----------|------------------------|
| Carroll Township         | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Chanceford Township      | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         |                        |
| Codorus Township         | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         |                        |
| Conewago Township        | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| Cross Roads Borough      | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Dallastown Borough       | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Delta Borough            | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Dillsburg Borough        | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Dover Borough            | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Dover Township           | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| East Hopewell Township   | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| East Manchester Township | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| East Prospect Borough    | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Fairview Township        | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Fawn Grove Borough       | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Fawn Township            | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         |                        |
| Felton Borough           | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Franklin Township        | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Franklintown Borough     | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |



Table 4.4-1: Hazard Vulnerability by Municipality

| Municipality              | Drought | Earthquake | Extreme Temperatures | Flood/Flash Flood/Ice Jam | Hailstorm | Hurricane/Tropical Storm/Nor'Easter | Invasive Species | Landslide | Lightning Strike | Pandemic And Infectious Disease | Radon Exposure | Subsidence/ Sinkhole | Tornado/ Windstorm | Wildfire | Winter Storms | Civil Disturbance | Dam Failure | Environmental Hazards | Levee Failure | Mass Food and Animal Feed Contamination | Nuclear Incidents | Terrorism | Urban Fires/Explosions |
|---------------------------|---------|------------|----------------------|---------------------------|-----------|-------------------------------------|------------------|-----------|------------------|---------------------------------|----------------|----------------------|--------------------|----------|---------------|-------------------|-------------|-----------------------|---------------|---|-------------------|-----------|------------------------|
| Glen Rock Borough         | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Goldsboro Borough         | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Hallam Borough            | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Hanover Borough           | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Heidelberg Township       | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Hellam Township           | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Hopewell Township         | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Jackson Township          | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Jacobus Borough           | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Jefferson Borough         | X       | X          | X                    |                           | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Lewisberry Borough        | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Loganville Borough        | X       | X          | X                    |                           | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Lower Chanceford Township | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         |                        |
| Lower Windsor Township    | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         |                        |
| Manchester Borough        | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Manchester Township       | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       | X                 | X         | X                      |
| Manheim Township          | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         |                        |
| Monaghan Township         | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Mount Wolf Borough        | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |

Table 4.4-1: Hazard Vulnerability by Municipality

| Municipality            | Drought | Earthquake | Extreme Temperatures | Flood/Flash Flood/Ice Jam | Hailstorm | Hurricane/Tropical Storm/Nor' Easter | Invasive Species | Landslide | Lightning Strike | Pandemic And Infectious Disease | Radon Exposure | Subsidence/ Sinkhole | Tornado/ Windstorm | Wildfire | Winter Storms | Civil Disturbance | Dam Failure | Environmental Hazards | Levee Failure | Mass Food and Animal Feed Contamination | Nuclear Incidents | Terrorism | Urban Fires/Explosions |
|-------------------------|---------|------------|----------------------|---------------------------|-----------|--------------------------------------|------------------|-----------|------------------|---------------------------------|----------------|----------------------|--------------------|----------|---------------|-------------------|-------------|-----------------------|---------------|---|-------------------|-----------|------------------------|
| New Freedom Borough     | X       | X          | X                    |                           | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| New Salem Borough       | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Newberry Township       | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| North Codorus Township  | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| North Hopewell Township | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         |                        |
| North York Borough      | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       |                   | X         | X                      |
| Paradise Township       | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Peach Bottom Township   | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       | X                 | X         | X                      |
| Penn Township           | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Railroad Borough        | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Red Lion Borough        | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Seven Valleys Borough   | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Shrewsbury Borough      | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Shrewsbury Township     | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Spring Garden Township  | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       |                   | X         | X                      |
| Spring Grove Borough    | X       | X          | X                    | X                         | X         | X                                    | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Springettsbury Township | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       | X                 | X         | X                      |
| Springfield Township    | X       | X          | X                    | X                         | X         | X                                    | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Stewartstown Borough    | X       | X          | X                    |                           | X         | X                                    | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |

**Table 4.4-1: Hazard Vulnerability by Municipality**

| Municipality             | Drought | Earthquake | Extreme Temperatures | Flood/Flash Flood/Ice Jam | Hailstorm | Hurricane/Tropical Storm/Nor'Easter | Invasive Species | Landslide | Lightning Strike | Pandemic And Infectious Disease | Radon Exposure | Subsidence/ Sinkhole | Tornado/ Windstorm | Wildfire | Winter Storms | Civil Disturbance | Dam Failure | Environmental Hazards | Levee Failure | Mass Food and Animal Feed Contamination | Nuclear Incidents | Terrorism | Urban Fires/Explosions |
|--------------------------|---------|------------|----------------------|---------------------------|-----------|-------------------------------------|------------------|-----------|------------------|---------------------------------|----------------|----------------------|--------------------|----------|---------------|-------------------|-------------|-----------------------|---------------|---|-------------------|-----------|------------------------|
| Warrington Township      | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| Washington Township      | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         |                        |
| Wellsville Borough       | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| West Manchester Township | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       |                   | X         | X                      |
| West Manheim Township    | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| West York Borough        | X       | X          | X                    |                           | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Windsor Borough          | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Windsor Township         | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Winterstown Borough      | X       | X          | X                    |                           | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Wrightsville Borough     | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |
| Yoe Borough              | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| York City                | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     | X             | X                                       |                   | X         | X                      |
| York Haven Borough       | X       | X          | X                    | X                         | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 | X           | X                     |               | X                                       | X                 | X         | X                      |
| York Township            | X       | X          | X                    | X                         | X         | X                                   | X                | X         | X                | X                               | X              | X                    | X                  | X        | X             | X                 | X           | X                     |               | X                                       |                   | X         | X                      |
| Yorkana Borough          | X       | X          | X                    |                           | X         | X                                   | X                |           | X                | X                               | X              |                      | X                  | X        | X             | X                 |             | X                     |               | X                                       |                   | X         | X                      |

Source: YCPC

Table 4.4-2 provides a summary of the total countywide hazard vulnerability to be used for hazards that impact the County, as a whole.

The next step is to develop risk factors for profiled hazards. This assists in the setting of goals and priorities for mitigation based on vulnerabilities.

#### 4.4.1 Methodology

A Risk Factor (RF) is a tool used to measure the degree of risk for identified hazards in the planning area. The RF can also be used to assist local community officials in ranking and prioritizing those hazards that pose the most significant threat to their area. The RF system relies mainly on historical data, local knowledge, general consensus opinions from the planning team, and data collected throughout the development of the hazard profiles in Section 4.3. The RF approach produces a numerical value that allows identified hazards to be ranked against one another with the higher RF value determining the greater hazard risk.

The RF values were obtained by assigning varying degrees of risk to five (5) categories for each of the 23 hazards profiled in this HMP update. Those categories include: probability, impact, spatial extent, warning time, and duration.

To collect the data, an online evaluation tool (Survey Monkey) was developed. Local Planning Team members were asked to evaluate each of the 23 hazards and to assign values of risk for each of the five (5) categories based on the information provided in Table 4.4.1-1: Summary of Risk Factor (RF) Approach.

To calculate the risk factor values, the average value of each category of each hazard was applied to the following formula (weighting factor) to determine the RF value for each hazard.

$$\text{Risk Factor Value} = [(\text{Probability} \times 0.3) + (\text{Impact} \times 0.3) + (\text{Spatial Extent} \times 0.2) + (\text{Warning Time} \times 0.1) + (\text{Duration} \times 0.1)]$$

According to the weighting scheme applied, the highest possible RF value is 4.0.

Table 4.4-2: York County Total Hazard Vulnerability

| Municipality             | Total Population (Census 2016) | Population < 5 years of age (ACS 2015) | Population > 75 years of age (ACS 2015) | Total Land Area (Acres) (YCPC 2017) | Total Dwelling Units (YCPC 2017) | Dwellings Built Prior to 1960 (DOA 2017) | Total Other Structures (YCPC 2017) | Total Mobile Homes (DOA 2016) | Total Exposure* (Buildings and Content*) (DOA 2017) | Total Households (Census 2015) | Median Household Income (Census 2015) | Total Potential Income Loss Exposure** (2015) | Total Critical Facilities (YCPC 2017) | Total Wells (PAGWIS 2009) | Forested Area (Acres) (YCPC 2004) | Total Lake/Pond Area (Acres) (YCPC 2017) | Total Stream Miles (YCPC 2008) | Total River Miles (YCPC 2008) | Agricultural Area (Acres) (DOA 2017) | Agricultural Exposure (2012 Census of Agriculture) | Total Bridges (BMS 2017) | Miles of Active Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) | Miles of Pipeline (NPMS 2017) | Total SARA Facilities (YCPC 2017) |
|--------------------------|--------------------------------|--|---|-------------------------------------|----------------------------------|--|------------------------------------|-------------------------------|---|--------------------------------|---------------------------------------|---|---------------------------------------|---------------------------|-----------------------------------|--|--------------------------------|-------------------------------|--------------------------------------|--|--------------------------|--------------------------------------|-----------------------------|-------------------------------|-----------------------------------|
| Carroll Township         | 6,300                          | 509                                    | 253                                     | 9,580.86                            | 2,361                            | 421                                      | 913                                | 0                             | \$728,480,557                                       | 2,247                          | \$81,291                              | \$182,660,877                                 | 30                                    | 824                       | 3,379                             | 36                                       | 26.5                           | 0                             | 5,343                                | \$4,776,298  | 25                       | 2                                    | 75.25                       | 3.51                          | 0                                 |
| Chanceford Township      | 6,151                          | 477                                    | 276                                     | 31,018.30                           | 2,334                            | 644                                      | 2,245                              | 79                            | \$438,086,852                                       | 2,394                          | \$54,023                              | \$129,331,062                                 | 11                                    | 934                       | 12,526                            | 49                                       | 96.7                           | 6.70                          | 25,259                               | \$22,581,306                                       | 64                       | 0                                    | 165.56                      | 6.1                           | 0                                 |
| Codorus Township         | 3,876                          | 272                                    | 320                                     | 21,441.72                           | 1,511                            | 535                                      | 1,809                              | 0                             | \$361,792,963                                       | 1,677                          | \$59,392                              | \$99,600,384                                  | 4                                     | 662                       | 6,853                             | 31                                       | 61                             | 0                             | 18,003                               | \$16,094,928                                       | 32                       | 4                                    | 123.28                      | 4.94                          | 0                                 |
| Conewago Township        | 8,050                          | 544                                    | 386                                     | 15,780.87                           | 3,338                            | 639                                      | 1,516                              | 353                           | \$865,093,546                                       | 3,043                          | \$63,356                              | \$192,792,308                                 | 20                                    | 598                       | 6,631                             | 210                                      | 83.4                           | 0                             | 9,785                                | \$8,748,216  | 25                       | 0                                    | 92.94                       | 2.42                          | 2                                 |
| Cross Roads Borough      | 514                            | 18                                     | 17                                      | 1,157.06                            | 180                              | 48                                       | 129                                | 0                             | \$40,392,895  | 186                            | \$67,500                              | \$12,555,000                                  | 0                                     | 56                        | 285                               | 1  | 3.2                            | 0                             | 837                                  | \$747,935  | 0                        | 0                                    | 8.11                        | 0                             | 0                                 |
| Dallastown Borough       | 3,812                          | 259                                    | 394                                     | 503.86                              | 1,486                            | 887                                      | 860                                | 0                             | \$278,102,643                                       | 1,663                          | \$44,400                              | \$73,837,200                                  | 13                                    | 19                        | 33                                | 0  | 0.4                            | 0                             | 45                                   | \$40,561   | 0                        | 0                                    | 20.31                       | 0                             | 0                                 |
| Delta Borough            | 721                            | 18                                     | 23                                      | 168.39                              | 257                              | 217                                      | 114                                | 0                             | \$42,507,665  | 311                            | \$45,833                              | \$14,254,063                                  | 9                                     | 25                        | 29                                | 0  | 0                              | 0                             | 14                                   | \$12,237   | 0                        | 0                                    | 4.47                        | 0                             | 0                                 |
| Dillsburg Borough        | 2,564                          | 162                                    | 202                                     | 512.47                              | 939                              | 339                                      | 419                                | 120                           | \$197,955,010                                       | 1,168                          | \$46,322                              | \$54,104,096                                  | 14                                    | 27                        | 50                                | 0  | 0.5                            | 0                             | 38                                   | \$34,396   | 0                        | 0                                    | 14.94                       | 0                             | 1                                 |
| Dover Borough            | 1,986                          | 155                                    | 126                                     | 344.55                              | 725                              | 262                                      | 278                                | 0                             | \$127,463,821                                       | 865                            | \$51,422                              | \$44,480,030                                  | 40                                    | 108                       | 25                                | 0  | 1.2                            | 0                             | 3                                    | \$2,289  | 1                        | 0                                    | 9.60                        | 1.44                          | 1                                 |
| Dover Township           | 21,464                         | 1,359                                  | 1,066                                   | 26,761.18                           | 9,017                            | 1,575                                    | 3,822                              | 774                           | \$1,794,636,831                                     | 8,794                          | \$58,065                              | \$510,623,610                                 | 1                                     | 1,088                     | 6,780                             | 175                                      | 101.5                          | 0                             | 16,920                               | \$15,126,141                                       | 45                       | 0                                    | 189.95                      | 24.83                         | 0                                 |
| East Hopewell Township   | 2,441                          | 83                                     | 120                                     | 13,184.74                           | 927                              | 189                                      | 566                                | 0                             | \$205,648,946                                       | 900                            | \$75,000                              | \$67,500,000                                  | 37                                    | 543                       | 4,425                             | 28                                       | 48.1                           | 0                             | 11,242                               | \$10,050,053                                       | 24                       | 0                                    | 70.78                       | 0                             | 0                                 |
| East Manchester Township | 7,560                          | 327                                    | 355                                     | 11,056.41                           | 3,180                            | 555                                      | 1,087                              | 217                           | \$895,735,600                                       | 2,725                          | \$75,542                              | \$205,851,950                                 | 4                                     | 309                       | 2,425                             | 183                                      | 41.4                           | 5.25                          | 5,914                                | \$5,287,354  | 25                       | 27                                   | 78.93                       | 14.39                         | 13                                |
| East Prospect Borough    | 933                            | 53                                     | 25                                      | 214.67                              | 343                              | 157                                      | 135                                | 0                             | \$51,143,005  | 417                            | \$52,813                              | \$22,023,021                                  | 63                                    | 2                         | 2                                 | 0  | 0                              | 0                             | 38                                   | \$33,554   | 0                        | 0                                    | 5.37                        | 0                             | 0                                 |
| Fairview Township        | 17,294                         | 1,032                                  | 724                                     | 22,765.06                           | 6,839                            | 1,437                                    | 2,297                              | 300                           | \$1,852,330,757                                     | 6,820                          | \$74,675                              | \$509,283,500                                 | 4                                     | 1,654                     | 8,526                             | 181                                      | 87.2                           | 6.43                          | 11,114                               | \$9,935,570  | 73                       | 13                                   | 191.69                      | 21.83                         | 11                                |
| Fawn Grove Borough       | 456                            | 25                                     | 36                                      | 1,057.48                            | 170                              | 115                                      | 188                                | 0                             | \$66,782,117  | 1,244                          | \$65,924                              | \$82,009,456                                  | 6                                     | 54                        | 145                               | 2  | 1.3                            | 0                             | 674                                  | \$602,631  | 1                        | 0                                    | 5.38                        | 0                             | 0                                 |
| Fawn Township            | 3,140                          | 101                                    | 209                                     | 17,368.62                           | 1,101                            | 290                                      | 972                                | 0                             | \$295,517,060                                       | 173                            | \$62,000                              | \$10,726,000                                  | 1                                     | 651                       | 5,326                             | 39                                       | 61.2                           | 0                             | 14,441                               | \$12,910,652                                       | 30                       | 0                                    | 84.32                       | 0                             | 0                                 |
| Felton Borough           | 503                            | 32                                     | 20                                      | 402.39                              | 200                              | 120                                      | 164                                | 0                             | \$44,251,680  | 229                            | \$58,438                              | \$13,382,302                                  | 7                                     | 93                        | 111                               | 0  | 1.8                            | 0                             | 104                                  | \$92,587   | 7                        | 0                                    | 5.20                        | 0                             | 0                                 |
| Franklin Township        | 4,888                          | 205                                    | 277                                     | 12,210.38                           | 1,835                            | 278                                      | 1,082                              | 276                           | \$372,262,777                                       | 2,026                          | \$60,114                              | \$121,790,964                                 | 3                                     | 777                       | 4,595                             | 56                                       | 24.5                           | 0                             | 6,701                                | \$5,990,438  | 19                       | 0                                    | 72.30                       | 2.77                          | 0                                 |
| Franklintown Borough     | 490                            | 48                                     | 5                                       | 161.95                              | 212                              | 72                                       | 108                                | 0                             | \$29,672,291  | 225                            | \$54,904                              | \$12,353,400                                  | 7                                     | 10                        | 36                                | 1  | 0                              | 0                             | 28                                   | \$25,266   | 0                        | 0                                    | 3.60                        | 0                             | 0                                 |
| Glen Rock Borough        | 2,041                          | 125                                    | 70                                      | 511.94                              | 696                              | 418                                      | 286                                | 0                             | \$151,838,574                                       | 796                            | \$59,549                              | \$47,401,004                                  | 4                                     | 18                        | 115                               | 0  | 1.9                            | 0                             | 79                                   | \$70,299   | 4                        | 0                                    | 11.56                       | 0                             | 0                                 |
| Goldsboro Borough        | 935                            | 87                                     | 37                                      | 281.81                              | 340                              | 132                                      | 181                                | 0                             | \$56,652,082  | 359                            | \$66,250                              | \$23,783,750                                  | 6                                     | 28                        | 25                                | 3  | 0.7                            | 1.15                          | 65                                   | \$57,767   | 1                        | 2                                    | 6.45                        | 0                             | 0                                 |
| Hallam Borough           | 2,658                          | 148                                    | 89                                      | 427.51                              | 987                              | 295                                      | 268                                | 24                            | \$163,963,690                                       | 1,340                          | \$55,923                              | \$74,936,820                                  | 79                                    | 12                        | 43                                | 0  | 2.1                            | 0                             | 41                                   | \$36,317   | 5                        | 0                                    | 10.05                       | 0                             | 0                                 |
| Hanover Borough          | 15,561                         | 1,205                                  | 1,411                                   | 2,363.43                            | 5,644                            | 3,588                                    | 2,970                              | 0                             | \$1,505,459,416                                     | 7,180                          | \$44,251                              | \$317,722,180                                 | 12                                    | 103                       | 38                                | 1  | 1.9                            | 0                             | 36                                   | \$32,024   | 4                        | 5                                    | 85.71                       | 0.16                          | 10                                |
| Heidelberg Township      | 3,076                          | 114                                    | 199                                     | 9,322.38                            | 1,177                            | 341                                      | 913                                | 0                             | \$262,885,710                                       | 1,160                          | \$68,500                              | \$79,460,000                                  | 18                                    | 738                       | 2,531                             | 339                                      | 28.9                           | 0                             | 5,737                                | \$5,128,809  | 15                       | 11                                   | 48.89                       | 0                             | 1                                 |
| Hellam Township          | 5,997                          | 312                                    | 499                                     | 18,057.91                           | 2,491                            | 700                                      | 1,447                              | 239                           | \$563,964,126                                       | 2,745                          | \$55,692                              | \$152,874,540                                 | 17                                    | 683                       | 7,487                             | 77                                       | 54.5                           | 7.94                          | 11,677                               | \$10,439,112                                       | 35                       | 1                                    | 126.54                      | 17.52                         | 2                                 |
| Hopewell Township        | 5,454                          | 333                                    | 306                                     | 17,127.54                           | 2,015                            | 313                                      | 1,299                              | 106                           | \$740,427,461                                       | 2,040                          | \$83,939                              | \$171,235,560                                 | 31                                    | 638                       | 3,983                             | 39                                       | 54.9                           | 0                             | 13,571                               | \$12,132,852                                       | 30                       | 0                                    | 113.38                      | 0                             | 0                                 |
| Jackson Township         | 7,959                          | 377                                    | 454                                     | 14,605.48                           | 3,463                            | 664                                      | 2,402                              | 341                           | \$753,192,646                                       | 3,009                          | \$63,378                              | \$190,704,402                                 | 7                                     | 818                       | 3,353                             | 183                                      | 32.8                           | 0                             | 8,311                                | \$7,429,706  | 28                       | 11                                   | 95.04                       | 0.95                          | 3                                 |
| Jacobus Borough          | 1,848                          | 127                                    | 112                                     | 591.30                              | 655                              | 247                                      | 386                                | 0                             | \$182,223,878                                       | 687                            | \$80,481                              | \$55,290,447                                  | 4                                     | 7                         | 107                               | 1  | 1.7                            | 0                             | 96                                   | \$86,244   | 0                        | 0                                    | 10.15                       | 0                             | 0                                 |
| Jefferson Borough        | 734                            | 42                                     | 54                                      | 389.05                              | 257                              | 122                                      | 211                                | 0                             | \$51,728,760  | 226                            | \$48,929                              | \$11,057,954                                  | 3                                     | 7                         | 17                                | 0  | 0.6                            | 0                             | 141                                  | \$126,177  | 3                        | 0                                    | 6.49                        | 0                             | 0                                 |
| Lewisberry Borough       | 363                            | 10                                     | 29                                      | 91.04                               | 141                              | 79                                       | 101                                | 0                             | \$28,338,801  | 182                            | \$51,635                              | \$9,397,570                                   | 6                                     | 61                        | 0                                 | 0  | 0.4                            | 0                             | 0.25                                 | \$224  | 2                        | 0                                    | 3.51                        | 0                             | 0                                 |

Table 4.4-2: York County Total Hazard Vulnerability

| Municipality            | Total Population (Census 2016) | Population < 5 years of age (ACS 2015) | Population > 75 years of age (ACS 2015) | Total Land Area (Acres) (YCPC 2017) | Total Dwelling Units (YCPC 2017) | Dwellings Built Prior to 1960 (DOA 2017) | Total Other Structures (YCPC 2017) | Total Mobile Homes (DOA 2016) | Total Exposure* (Buildings and Content*) (DOA 2017) | Total Households (Census 2015) | Median Household Income (Census 2015) | Total Potential Income Loss Exposure** (2015) | Total Critical Facilities (YCPC 2017) | Total Wells (PAGWIS 2009) | Forested Area (Acres) (YCPC 2004) | Total Lake/Pond Area (Acres) (YCPC 2017) | Total Stream Miles (YCPC 2008) | Total River Miles (YCPC 2008) | Agricultural Area (Acres) (DOA 2017) | Agricultural Exposure (2012 Census of Agriculture) | Total Bridges (BMS 2017) | Miles of Active Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) | Miles of Pipeline (NPMS 2017) | Total SARA Facilities (YCPC 2017) |
|-------------------------|--------------------------------|--|---|-------------------------------------|----------------------------------|--|------------------------------------|-------------------------------|---|--------------------------------|---------------------------------------|---|---------------------------------------|---------------------------|-----------------------------------|--|--------------------------------|-------------------------------|--------------------------------------|--|--------------------------|--------------------------------------|-----------------------------|-------------------------------|-----------------------------------|
| Loganville Borough      | 1,230                          | 105                                    | 58                                      | 632.20                              | 478                              | 191                                      | 303                                | 0                             | \$114,220,689                                       | 452                            | \$67,375                              | \$30,453,500                                  | 8                                     | 5                         | 120                               | 1  | 0.3                            | 0                             | 183                                  | \$163,297  | 2                        | 0                                    | 9.61                        | 0                             | 0                                 |
| Lower Chanceford Twp    | 3,076                          | 207                                    | 158                                     | 26,584.64                           | 1,110                            | 382                                      | 1,235                              | 26                            | \$216,466,578                                       | 1,283                          | \$64,500                              | \$82,753,500                                  | 21                                    | 419                       | 11,350                            | 24                                       | 91                             | 9.41                          | 21,731                               | \$19,427,770                                       | 16                       | 0                                    | 120.20                      | 18.86                         | 0                                 |
| Lower Windsor Township  | 7,483                          | 476                                    | 316                                     | 16,054.90                           | 3,070                            | 831                                      | 2,437                              | 386                           | \$576,573,373                                       | 3,008                          | \$53,640                              | \$161,349,120                                 | 7                                     | 1,021                     | 5,042                             | 26                                       | 54.3                           | 4.83                          | 10,017                               | \$8,955,632  | 45                       | 0                                    | 109.05                      | 4.38                          | 0                                 |
| Manchester Borough      | 2,746                          | 226                                    | 103                                     | 493.96                              | 928                              | 372                                      | 377                                | 84                            | \$165,649,345                                       | 1,192                          | \$51,910                              | \$61,876,720                                  | 57                                    | 2                         | 10                                | 0  | 0.8                            | 0                             | 32                                   | \$29,018   | 0                        | 1                                    | 13.18                       | 0                             | 0                                 |
| Manchester Township     | 18,567                         | 908                                    | 1,261                                   | 10,137.36                           | 6,996                            | 1,444                                    | 1,618                              | 0                             | \$2,501,623,571                                     | 7,321                          | \$71,144                              | \$520,845,224                                 | 6                                     | 309                       | 754                               | 71                                       | 38.9                           | 0                             | 2,489                                | \$2,225,397  | 41                       | 4                                    | 142.70                      | 17.89                         | 19                                |
| Manheim Township        | 3,458                          | 142                                    | 194                                     | 14,346.86                           | 1,250                            | 284                                      | 1,193                              | 0                             | \$313,586,323                                       | 1,375                          | \$82,692                              | \$113,701,500                                 | 3                                     | 900                       | 5,400                             | 627                                      | 43.1                           | 0                             | 9,082                                | \$8,119,390  | 27                       | 4                                    | 74.08                       | 3.92                          | 0                                 |
| Monaghan Township       | 2,659                          | 100                                    | 187                                     | 8,280.00                            | 1,036                            | 238                                      | 693                                | 81                            | \$264,447,807                                       | 1,098                          | \$69,107                              | \$75,879,486                                  | 9                                     | 579                       | 3,554                             | 64                                       | 34.2                           | 0                             | 5,740                                | \$5,131,650  | 16                       | 0                                    | 42.65                       | 0                             | 0                                 |
| Mount Wolf Borough      | 1,381                          | 150                                    | 186                                     | 335.58                              | 505                              | 416                                      | 240                                | 0                             | \$79,147,699  | 685                            | \$56,406                              | \$38,638,110                                  | 12                                    | 6                         | 12                                | 0  | 1.7                            | 0                             | 107                                  | \$95,771   | 5                        | 1                                    | 9.60                        | 0                             | 1                                 |
| New Freedom Borough     | 4,651                          | 243                                    | 189                                     | 1,332.86                            | 1,698                            | 374                                      | 554                                | 0                             | \$521,913,355                                       | 6,389                          | \$60,237                              | \$384,854,193                                 | 4                                     | 9                         | 139                               | 1  | 2.8                            | 0                             | 87                                   | \$77,441   | 4                        | 0                                    | 28.68                       | 0                             | 0                                 |
| New Salem Borough       | 775                            | 30                                     | 53                                      | 302.05                              | 319                              | 105                                      | 172                                | 0                             | \$71,364,242  | 1,749                          | \$84,167                              | \$147,208,083                                 | 37                                    | 8                         | 24                                | 0  | 0.3                            | 0                             | 77                                   | \$68,765   | 0                        | 0                                    | 4.36                        | 0                             | 0                                 |
| Newberry Township       | 15,495                         | 823                                    | 581                                     | 19,654.76                           | 6,307                            | 896                                      | 2,454                              | 993                           | \$1,116,236,140                                     | 319                            | \$84,167                              | \$26,849,273                                  | 19                                    | 1,199                     | 7,605                             | 206                                      | 85.8                           | 4.75                          | 10,624                               | \$9,497,723  | 48                       | 10                                   | 157.07                      | 0                             | 2                                 |
| North Codorus Township  | 9,035                          | 359                                    | 596                                     | 20,687.89                           | 3,450                            | 860                                      | 2,706                              | 120                           | \$709,270,268                                       | 3,577                          | \$71,510                              | \$255,791,270                                 | 5                                     | 1,371                     | 5,501                             | 139                                      | 73                             | 0                             | 14,148                               | \$12,648,148                                       | 45                       | 4                                    | 125.87                      | 0                             | 0                                 |
| North Hopewell Township | 2,801                          | 141                                    | 230                                     | 12,008.69                           | 1,092                            | 233                                      | 889                                | 130                           | \$237,050,276                                       | 1,132                          | \$57,422                              | \$65,001,704                                  | 1                                     | 489                       | 4,539                             | 22                                       | 45.7                           | 0                             | 9,161                                | \$8,189,831  | 38                       | 0                                    | 81.75                       | 0                             | 0                                 |
| North York Borough      | 2,021                          | 103                                    | 49                                      | 202.55                              | 654                              | 591                                      | 534                                | 0                             | \$125,609,783                                       | 758                            | \$41,029                              | \$31,099,982                                  | 13                                    | 4                         | 0                                 | 5  | 0.9                            | 0                             | 0                                    | \$0  | 1                        | 0                                    | 8.81                        | 0                             | 0                                 |
| Paradise Township       | 3,912                          | 139                                    | 273                                     | 12,947.66                           | 1,527                            | 441                                      | 1,413                              | 105                           | \$300,323,849                                       | 1,578                          | \$69,777                              | \$110,108,106                                 | 12                                    | 792                       | 2,451                             | 56                                       | 30.9                           | 0                             | 9,196                                | \$8,221,412  | 38                       | 0                                    | 77.42                       | 11.53                         | 1                                 |
| Peach Bottom Township   | 4,951                          | 363                                    | 190                                     | 18,888.33                           | 2,003                            | 319                                      | 1,060                              | 3                             | \$465,791,737                                       | 2,078                          | \$54,714                              | \$113,695,692                                 | 47                                    | 576                       | 6,730                             | 79                                       | 59                             | 6.21                          | 13,723                               | \$12,268,575                                       | 29                       | 0                                    | 118.49                      | 15.2                          | 6                                 |
| Penn Township           | 16,282                         | 836                                    | 1,382                                   | 8,405.46                            | 6,446                            | 1,732                                    | 2,481                              | 40                            | \$1,732,363,790                                     | 6,325                          | \$61,854                              | \$391,226,550                                 | 3                                     | 370                       | 1,058                             | 115                                      | 20.2                           | 0                             | 2,218                                | \$1,982,878  | 30                       | 6                                    | 103.30                      | 9.12                          | 13                                |
| Railroad Borough        | 279                            | 3                                      | 13                                      | 408.34                              | 96                               | 68                                       | 84                                 | 0                             | \$34,932,589  | 94                             | \$57,500                              | \$5,405,000                                   | 18                                    | 2                         | 107                               | 0  | 2.1                            | 0                             | 279                                  | \$249,482  | 2                        | 0                                    | 3.50                        | 0                             | 1                                 |
| Red Lion Borough        | 6,303                          | 440                                    | 567                                     | 841.65                              | 2,274                            | 1,510                                    | 1,092                              | 20                            | \$414,746,089                                       | 2,697                          | \$41,186                              | \$111,078,642                                 | 3                                     | 10                        | 60                                | 0  | 0.3                            | 0                             | 6                                    | \$5,514  | 1                        | 0                                    | 33.57                       | 0                             | 4                                 |
| Seven Valleys Borough   | 504                            | 26                                     | 47                                      | 698.69                              | 175                              | 131                                      | 158                                | 0                             | \$31,117,947  | 204                            | \$48,750                              | \$9,945,000                                   | 17                                    | 16                        | 140                               | 0  | 4.7                            | 0                             | 511                                  | \$457,255  | 4                        | 0                                    | 4.79                        | 0                             | 0                                 |
| Shrewsbury Borough      | 3,858                          | 258                                    | 378                                     | 1,148.42                            | 1,362                            | 328                                      | 581                                | 0                             | \$410,838,341                                       | 1,452                          | \$70,625                              | \$102,547,500                                 | 36                                    | 266                       | 50                                | 1  | 1.6                            | 0                             | 136                                  | \$121,683  | 2                        | 0                                    | 22.89                       | 0.37                          | 1                                 |
| Shrewsbury Township     | 6,697                          | 187                                    | 407                                     | 18,626.00                           | 2,689                            | 468                                      | 1,644                              | 13                            | \$1,070,505,606                                     | 2,696                          | \$77,303                              | \$208,408,888                                 | 53                                    | 684                       | 5,289                             | 64                                       | 58                             | 0                             | 13,755                               | \$12,296,529                                       | 52                       | 0                                    | 139.04                      | 3.59                          | 1                                 |
| Spring Garden Township  | 12,963                         | 465                                    | 1,104                                   | 4,338.46                            | 4,508                            | 3,298                                    | 1,462                              | 0                             | \$1,639,299,332                                     | 9,948                          | \$57,440                              | \$571,413,120                                 | 16                                    | 39                        | 487                               | 44                                       | 15.2                           | 0                             | 329                                  | \$293,939  | 19                       | 12                                   | 90.67                       | 0                             | 8                                 |
| Spring Grove Borough    | 2,168                          | 176                                    | 94                                      | 498.18                              | 826                              | 408                                      | 525                                | 0                             | \$203,882,621                                       | 2,256                          | \$85,495                              | \$192,876,720                                 | 137                                   | 12                        | 57                                | 4  | 1.2                            | 0                             | 41                                   | \$36,800   | 2                        | 3                                    | 12.58                       | 0                             | 2                                 |
| Springettsbury Township | 26,864                         | 1,188                                  | 2,852                                   | 10,455.21                           | 9,820                            | 3,704                                    | 2,076                              | 19                            | \$3,109,008,431                                     | 4,497                          | \$73,072                              | \$328,604,784                                 | 19                                    | 313                       | 1,580                             | 35                                       | 30.8                           | 0                             | 1,655                                | \$1,479,411  | 64                       | 6                                    | 167.70                      | 4.75                          | 15                                |
| Springfield Township    | 5,600                          | 360                                    | 320                                     | 17,088.40                           | 2,186                            | 407                                      | 1,577                              | 68                            | \$661,489,149                                       | 938                            | \$54,741                              | \$51,347,058                                  | 9                                     | 544                       | 5,008                             | 270                                      | 54                             | 0                             | 12,139                               | \$10,851,935                                       | 51                       | 0                                    | 117.67                      | 0                             | 3                                 |
| Stewartstown Borough    | 2,302                          | 142                                    | 202                                     | 543.76                              | 775                              | 320                                      | 324                                | 0                             | \$186,765,294                                       | 975                            | \$55,417                              | \$54,031,575                                  | 20                                    | 31                        | 34                                | 0  | 0.8                            | 0                             | 71                                   | \$63,305   | 0                        | 0                                    | 12.75                       | 0                             | 0                                 |
| Warrington Township     | 4,594                          | 78                                     | 295                                     | 23,126.75                           | 1,846                            | 443                                      | 1,585                              | 28                            | \$365,161,135                                       | 2,020                          | \$64,232                              | \$129,748,640                                 | 1                                     | 993                       | 11,164                            | 576                                      | 95.6                           | 0                             | 14,199                               | \$12,694,054                                       | 32                       | 0                                    | 112.33                      | 0                             | 0                                 |
| Washington Township     | 2,675                          | 177                                    | 168                                     | 17,965.79                           | 1,052                            | 301                                      | 1,432                              | 55                            | \$230,994,449                                       | 960                            | \$61,250                              | \$58,800,000                                  | 3                                     | 469                       | 3,984                             | 221                                      | 70.6                           | 0                             | 15,042                               | \$13,447,893                                       | 45                       | 0                                    | 86.60                       | 9.75                          | 0                                 |
| Wellsville Borough      | 260                            | 14                                     | 21                                      | 89.57                               | 108                              | 80                                       | 92                                 | 0                             | \$31,800,977  | 133                            | \$66,250                              | \$8,811,250                                   | 80                                    | 25                        | 0                                 | 0  | 0.3                            | 0                             | 15                                   | \$13,303   | 2                        | 0                                    | 3.13                        | 0                             | 1                                 |

Table 4.4-2: York County Total Hazard Vulnerability

| Municipality             | Total Population (Census 2016) | Population < 5 years of age (ACS 2015) | Population > 75 years of age (ACS 2015) | Total Land Area (Acres) (YCPC 2017) | Total Dwelling Units (YCPC 2017) | Dwellings Built Prior to 1960 (DOA 2017) | Total Other Structures (YCPC 2017) | Total Mobile Homes (DOA 2016) | Total Exposure* (Buildings and Content*) (DOA 2017) | Total Households (Census 2015) | Median Household Income (Census 2015) | Total Potential Income Loss Exposure** (2015) | Total Critical Facilities (YCPC 2017) | Total Wells (PAGWIS 2009) | Forested Area (Acres) (YCPC 2004) | Total Lake/Pond Area (Acres) (YCPC 2017) | Total Stream Miles (YCPC 2008) | Total River Miles (YCPC 2008) | Agricultural Area (Acres) (DOA 2017) | Agricultural Exposure (2012 Census of Agriculture) | Total Bridges (BMS 2017) | Miles of Active Railroad (YCPC 2017) | Miles of Roadway (EMA 2017) | Miles of Pipeline (NPMS 2017) | Total SARA Facilities (YCPC 2017) |
|--------------------------|--------------------------------|--|---|-------------------------------------|----------------------------------|--|------------------------------------|-------------------------------|---|--------------------------------|---------------------------------------|---|---------------------------------------|---------------------------|-----------------------------------|--|--------------------------------|-------------------------------|--------------------------------------|--|--------------------------|--------------------------------------|-----------------------------|-------------------------------|-----------------------------------|
| West Manchester Township | 18,870                         | 1,091                                  | 2,142                                   | 12,797.03                           | 7,618                            | 2,501                                    | 2,292                              | 132                           | \$2,060,303,027                                     | 8,031                          | \$56,879                              | \$456,795,249                                 | 20                                    | 340                       | 1,310                             | 139                                      | 29.1                           | 0                             | 3,308                                | \$2,956,932  | 41                       | 19                                   | 156.11                      | 0                             | 11                                |
| West Manheim Township    | 8,339                          | 640                                    | 453                                     | 12,880.61                           | 3,106                            | 404                                      | 1,575                              | 1                             | \$848,971,364                                       | 2,844                          | \$84,250                              | \$239,607,000                                 | 9                                     | 867                       | 4,003                             | 421                                      | 39.3                           | 0                             | 6,279                                | \$5,613,186  | 21                       | 0                                    | 83.66                       | 1.02                          | 0                                 |
| West York Borough        | 4,559                          | 403                                    | 147                                     | 335.85                              | 1,591                            | 1,454                                    | 1,032                              | 0                             | \$231,416,024                                       | 1,977                          | \$40,350                              | \$79,771,950                                  | 3                                     | 3                         | 0                                 | 0  | 0                              | 0                             | \$0                                  | 1  | 2                        | 16.51                                | 0                           | 0                             |                                   |
| Windsor Borough          | 1,474                          | 101                                    | 76                                      | 348.88                              | 464                              | 333                                      | 202                                | 0                             | \$61,331,662  | 633                            | \$38,828                              | \$24,578,124                                  | 36                                    | 2                         | 66                                | 1  | 1.2                            | 0                             | 129                                  | \$115,633  | 8                        | 0                                    | 8.13                        | 0                             | 0                                 |
| Windsor Township         | 17,970                         | 1,018                                  | 1,266                                   | 17,440.89                           | 6,935                            | 1,185                                    | 2,507                              | 311                           | \$3,534,302,639                                     | 7,081                          | \$70,119                              | \$496,512,639                                 | 5                                     | 960                       | 4,480                             | 60                                       | 43.5                           | 0                             | 9,908                                | \$8,857,437  | 21                       | 0                                    | 150.75                      | 2.66                          | 3                                 |
| Winterstown Borough      | 622                            | 11                                     | 43                                      | 1,537.47                            | 228                              | 88                                       | 211                                | 6                             | \$48,076,358  | 238                            | \$53,214                              | \$12,664,932                                  | 14                                    | 62                        | 249                               | 4  | 2.7                            | 0                             | 1,181                                | \$1,055,757  | 0                        | 0                                    | 11.96                       | 0                             | 1                                 |
| Wrightsville Borough     | 2,285                          | 107                                    | 200                                     | 425.53                              | 862                              | 625                                      | 510                                | 28                            | \$151,003,246                                       | 1,108                          | \$46,036                              | \$51,007,888                                  | 3                                     | 6                         | 36                                | 4  | 0.4                            | 1.29                          | 34                                   | \$30,801   | 1                        | 0                                    | 13.90                       | 0                             | 2                                 |
| Yoe Borough              | 1,010                          | 68                                     | 37                                      | 141.96                              | 346                              | 206                                      | 195                                |                               | \$38,025,514  | 462                            | \$40,893                              | \$18,892,566                                  | 113                                   | 0                         | 13                                | 0  | 0.5                            | 0                             | 4                                    | \$3,226  | 4                        | 0                                    | 5.55                        | 0                             | 0                                 |
| York City                | 43,859                         | 3,559                                  | 1,635                                   | 3,410.89                            | 13,347                           | 11,468                                   | 3,556                              | 0                             | \$2,464,233,333                                     | 19,059                         | \$29,025                              | \$553,187,475                                 | 5                                     | 106                       | 28                                | 33                                       | 7.2                            | 0                             | 1                                    | \$1,111  | 29                       | 9                                    | 150.62                      | 0                             | 11                                |
| York Haven Borough       | 698                            | 65                                     | 16                                      | 215.01                              | 224                              | 165                                      | 145                                | 8                             | \$23,469,519  | 319                            | \$42,500                              | \$13,557,500                                  | 88                                    | 44                        | 73                                | 16                                       | 1.3                            | 0.58                          | 57                                   | \$50,939   | 1                        | 1                                    | 4.83                        | 0                             | 0                                 |
| York Township            | 28,469                         | 1,045                                  | 3,117                                   | 16,367.47                           | 14,067                           | 1,976                                    | 2,956                              | 492                           | \$22,771,243,661                                    | 12,368                         | \$59,896                              | \$740,793,728                                 | 1                                     | 457                       | 3,297                             | 270                                      | 52.8                           | 0                             | 6,171                                | \$5,516,937  | 69                       | 0                                    | 207.18                      | 0                             | 3                                 |
| Yorkana Borough          | 230                            | 21                                     | 8                                       | 108.84                              | 87                               | 58                                       | 59                                 | 0                             | \$12,515,171  | 97                             | \$47,321                              | \$4,590,137                                   | 30                                    | 2                         | 2                                 | 0  | 0.4                            | 0                             | 23                                   | \$20,555   | 0                        | 0                                    | 1.49                        | 0.15                          | 0                                 |
| Total                    | 443,744                        | 25,553                                 | 29,708                                  | 582,595.71                          | 170,282                          | 57,317                                   | 77,399                             | 5,978                         | \$63,295,604,463                                    | 180,237                        | n/a                                   | \$10,629,332,828                              | 1,437                                 | 25,859                    | 175,686                           | 5,237                                    | 1,916.90                       | 54.54                         | 360,143                              | \$321,968,261                                      | 1,355                    | 160                                  | 4,584.49                    | 204.07                        | 153                               |

\*Content value = 75% of assessment value.

\*\*Total potential income exposure = Total Households x Median Household Income

Source: YCPC GIS Analysis using US Census, American Community Survey (ACS), YCPC Data, Pennsylvania Groundwater Information System (PAGWIS), York County Department of Assessment (DOA), Census of Agriculture, Bridge Management System (BMS), York County EMA, and National Pipeline Mapping System (NPMS).

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**Table 4.4.1-1: Summary of Risk Factor (RF) Approach**

| Risk Assessment Category  | Degree of Risk    |  |       | Weight Value |
|---|-------------------|--|-------|--------------|
|   | Level             | Criteria   | Index |              |
| <b>PROBABILITY</b><br><i>What is the likelihood of a hazard event occurring in a given year?</i>  | UNLIKELY          | Less than 1% annual probability  | 1     | 30%          |
|   | POSSIBLE          | Between 1-49.9% annual probability   | 2     |              |
|   | LIKELY            | Between 50-90% annual probability  | 3     |              |
|   | HIGHLY LIKELY     | Greater than 90% annual probability  | 4     |              |
| <b>IMPACT</b><br><i>In terms of injuries, damage or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard occurs?</i> | MINOR             | Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.                          | 1     | 30%          |
|   | LIMITED           | Minor injuries only. More than 10% of the property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.            | 2     |              |
|   | CRITICAL          | Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week. | 3     |              |
|   | CATASTROPHIC      | High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities. 30 days or more. | 4     |              |
| <b>SPATIAL EXTENT</b><br><i>How large of an area could be impacted by a hazard event? Are impacts localized or regional?</i>  | NEGLIGIBLE        | Less than 1% of the area affected  | 1     | 20%          |
|   | SMALL             | Between 1-10.9% of the area affected   | 2     |              |
|   | MODERATE          | Between 11-25% of the area affected  | 3     |              |
|   | LARGE             | Greater than 25% of the area affected  | 4     |              |
| <b>WARNING TIME</b><br><i>Is there usually some lead time associated with the hazard event? Have warning measures been implemented?</i>                                       | > 24 hours        | <i>SELF-DEFINED ( Levels of warning time and criteria that define them may be adjusted based on the particular hazard.)</i>  | 1     | 10%          |
|   | 12-24 hours       |  | 2     |              |
|   | 6-12 hours        |  | 3     |              |
|   | Less than 6 hours |  | 4     |              |
| <b>DURATION</b><br><i>How long does the hazard event usually last?</i>  | Less than 6 hours | <i>SELF-DEFINED</i>  | 1     | 10%          |
|   | Less than 24 hrs. |  | 2     |              |
|   | Less than 1 week  |  | 3     |              |
|   | More than 1 week  |  | 4     |              |

Source: PEMA

**4.4.2 Ranking Results**

Using the methodology described in Section 4.4.1, the results of the York County risk factor ranking process are shown in Table 4.4.2-1: Hazard Prioritization Matrix. Hazards identified as “high” risk have risk factors greater or equal to 2.8. Risk factors ranging from 2.5-2.7 were deemed “moderate” hazards and hazards with a risk factor of 2.4 or less were considered to be “low” risk.

| Table 4.4.2-1: Hazard Prioritization Matrix |   |                          |        |                |              |          |             |
|---|---|--------------------------|--------|----------------|--------------|----------|-------------|
| Hazard Risk                                 | Hazard                                  | Risk Assessment Category |        |                |              |          | Risk Factor |
|   |   | Probability              | Impact | Spatial Extent | Warning Time | Duration |             |
| High  | Nuclear Incidents                       | 1.4                      | 3.1    | 3.7            | 3.2          | 3.7      | 3.1         |
|   | Flood/Flash Flood/Ice Jam               | 3.7                      | 2.4    | 2.8            | 1.7          | 2.4      | 3.0         |
|   | Winter Storms                           | 3.4                      | 2.2    | 3.6            | 1.2          | 2.7      | 2.9         |
|   | Environmental Hazards                   | 3.1                      | 1.8    | 2.5            | 3.5          | 2.1      | 2.9         |
|   | Radon Exposure                          | 3.6                      | 1.9    | 3.1            | 1.0          | 3.9      | 2.9         |
|   | Urban Fires/Explosions                  | 2.9                      | 2.1    | 1.8            | 4.0          | 1.8      | 2.8         |
|   | Pandemic And Infectious Disease         | 2.3                      | 2.3    | 3.5            | 1.6          | 3.6      | 2.8         |
|   | Extreme Temperatures                    | 3.2                      | 1.8    | 3.6            | 1.1          | 3.1      | 2.8         |
|   | Terrorism                               | 2.4                      | 2.1    | 2.2            | 3.9          | 1.8      | 2.8         |
| Moderate                                    | Mass Food and Animal Feed Contamination | 1.5                      | 1.9    | 3.0            | 3.4          | 3.5      | 2.7         |
|   | Hurricane/Tropical Storm/Nor’Easter     | 2.5                      | 2.3    | 3.6            | 1.1          | 2.3      | 2.6         |
|   | Tornado/ Windstorm                      | 2.7                      | 2.1    | 2.2            | 2.8          | 1.4      | 2.6         |
|   | Dam Failure                             | 1.2                      | 2.7    | 2.6            | 3.3          | 2.1      | 2.6         |
|   | Hailstorm                               | 3.1                      | 1.4    | 2.2            | 3.2          | 1.0      | 2.5         |
|   | Wildfire                                | 2.7                      | 1.4    | 1.7            | 3.6          | 1.8      | 2.5         |
| Low   | Lightning Strike                        | 3.3                      | 1.6    | 1.4            | 2.9          | 1.0      | 2.4         |
|   | Drought                                 | 2.2                      | 1.3    | 3.3            | 1.4          | 4.0      | 2.4         |
|   | Levee Failure                           | 1.2                      | 2.4    | 2.4            | 3.0          | 2.3      | 2.4         |
|   | Subsidence/Sinkhole                     | 2.1                      | 1.6    | 1.8            | 3.6          | 2.0      | 2.4         |
|   | Invasive Species                        | 2.4                      | 1.5    | 2.5            | 1.3          | 3.9      | 2.3         |
|   | Earthquake                              | 1.8                      | 1.1    | 2.2            | 3.7          | 1.0      | 2.2         |
|   | Civil Disturbance                       | 1.4                      | 1.7    | 1.7            | 3.2          | 1.9      | 2.1         |
|   | Landslide                               | 1.1                      | 1.0    | 1.3            | 3.6          | 1.1      | 1.7         |

Based on these results, there were nine (9) high risk hazards, six (6) moderate risk hazards, and eight (8) low risk hazards.

A risk assessment for the entire County does not mean that each municipality is at the same amount of risk for each hazard. A survey was used to gather each municipality’s ranking of the identified hazard, based on frequency and severity (see Appendix D). These rankings then were applied to a risk matrix, as shown in Table 4.4.2-2, to arrive at a ranking of high, moderate, or low. Table 4.4.2-3 shows the 72 municipalities in York County and indicates whether their risk is greater than (↑), less than (↓), or equal to (=) the risk factor assigned to the County as a whole.

| <b>Table 4.4.2-2: Hazard Risk Matrix</b> |                  |          |          |          |
|--|------------------|----------|----------|----------|
| <b>Severity</b>                          | High             | Moderate | High     | High     |
|  | Moderate         | Low      | Moderate | High     |
|  | Low              | Low      | Low      | Moderate |
|  | Ranking          | Low      | Moderate | High     |
|  | <b>Frequency</b> |          |          |          |

Source: PEMA

**Table 4.4.2-2: Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk\***

| Municipality             | Identified Hazard and Corresponding Countywide Risk Factor |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
|--------------------------|--|---------------------------|---------------|-----------------------|----------------|------------------------|---------------------------------|----------------------|-----------|---|--------------------------------------|--------------------|-------------|-----------|----------|------------------|---------|---------------|---------------------|------------------|------------|-------------------|-----------|
|                          | Nuclear Incidents  | Flood/Flash Flood/Ice Jam | Winter Storms | Environmental Hazards | Radon Exposure | Urban Fires/Explosions | Pandemic And Infectious Disease | Extreme Temperatures | Terrorism | Mass Food and Animal Feed Contamination | Hurricane/Tropical Storm/ Nor Easter | Tornado/ Windstorm | Dam Failure | Hailstorm | Wildfire | Lightning Strike | Drought | Levee Failure | Subsidence/Sinkhole | Invasive Species | Earthquake | Civil Disturbance | Landslide |
|                          | 3.1  | 3.0                       | 2.9           | 2.9                   | 2.9            | 2.8                    | 2.8                             | 2.8                  | 2.8       | 2.7                                     | 2.6                                  | 2.6                | 2.6         | 2.5       | 2.5      | 2.4              | 2.4     | 2.4           | 2.4                 | 2.3              | 2.2        | 2.1               | 1.7       |
| Carroll Township         | ↓  | =                         | =             | ↓                     | =              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | =                                    | ↑                  | ↓           | ↓         | ↓        | =                | ↑       | =             | =                   | =                | =          | =                 | =         |
| Chanceford Township      |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Codus Township           |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Conewago Township        | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Crossroads Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Dallastown Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Delta Borough            | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | =                                    | =                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Dillsburg Borough        | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Dover Borough            | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Dover Township           | =  | =                         | =             | ↓                     | ↓              | ↓                      | ↓                               | =                    | ↓         | =                                       | ↑                                    | =                  | =           | ↑         | =        | =                | ↑       | =             | ↑                   | =                | ↑          | =                 | =         |
| East Hopewell Township   | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| East Manchester Township | ↓  | ↓                         | =             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↑                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | ↑                   | =                | =          | =                 | =         |
| East Prospect Borough    | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Fairview Township        | =  | ↓                         | ↓             | =                     | =              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | ↑                | =       | =             | =                   | =                | =          | =                 | =         |
| Fawn Grove Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Fawn Township            | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | =                                    | =                  | ↓           | =         | ↓        | ↑                | =       | =             | =                   | =                | =          | =                 | =         |
| Felton Borough           | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Franklin Township        | ↓  | ↓                         | =             | ↓                     | ↓              | ↓                      | =                               | ↓                    | ↓         | ↓                                       | =                                    | ↑                  | ↓           | ↓         | ↓        | =                | ↑       | =             | =                   | =                | =          | =                 | =         |





**Table 4.4.2-2: Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk\***

| Municipality             | Identified Hazard and Corresponding Countywide Risk Factor |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
|--------------------------|--|---------------------------|---------------|-----------------------|----------------|------------------------|---------------------------------|----------------------|-----------|---|--------------------------------------|--------------------|-------------|-----------|----------|------------------|---------|---------------|---------------------|------------------|------------|-------------------|-----------|
|                          | Nuclear Incidents  | Flood/Flash Flood/Ice Jam | Winter Storms | Environmental Hazards | Radon Exposure | Urban Fires/Explosions | Pandemic And Infectious Disease | Extreme Temperatures | Terrorism | Mass Food and Animal Feed Contamination | Hurricane/Tropical Storm/ Nor Easter | Tornado/ Windstorm | Dam Failure | Hailstorm | Wildfire | Lightning Strike | Drought | Levee Failure | Subsidence/Sinkhole | Invasive Species | Earthquake | Civil Disturbance | Landslide |
|                          | 3.1  | 3.0                       | 2.9           | 2.9                   | 2.9            | 2.8                    | 2.8                             | 2.8                  | 2.8       | 2.7                                     | 2.6                                  | 2.6                | 2.6         | 2.5       | 2.5      | 2.4              | 2.4     | 2.4           | 2.4                 | 2.3              | 2.2        | 2.1               | 1.7       |
| Springettsbury Township  | ↓  | =                         | =             | =                     | ↓              | ↓                      | ↓                               | =                    | ↓         | ↓                                       | ↑                                    | ↑                  | ↓           | ↑         | ↓        | ↑                | ↑       | =             | ↑                   | =                | =          | ↑                 | =         |
| Springfield Township     | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Stewartstown Borough     |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Warrington Township      | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| Washington Township      |  | ↓                         | ↓             |                       | ↓              | ↓                      |                                 | ↓                    |           |   | ↓                                    | ↓                  |             |           |          | =                | =       |               |                     |                  | =          |                   |           |
| Wellsville Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| West Manchester Township | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| West Manheim Township    | ↓  | ↓                         | =             | ↓                     | ↓              | ↓                      | ↓                               | =                    | ↓         | ↓                                       | =                                    | =                  | ↓           | ↑         | =        | ↑                | ↑       | =             | ↑                   | =                | =          | =                 | =         |
| West York Borough        |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Windsor Township         | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | =                                    | =                  | ↓           | =         | ↓        | ↑                | ↑       | =             | =                   | =                | =          | =                 | =         |
| Windsor Borough          |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Winterstown Borough      |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Wrightsville Borough     | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | =                                    | =                  | ↓           | ↓         | ↓        | =                | =       | =             | ↑                   | =                | =          | =                 | =         |
| Yoe Borough              | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |
| York City                | ↓  | =                         | =             | =                     | ↓              | =                      | =                               | ↓                    | ↓         | ↓                                       | =                                    | ↓                  | ↓           | ↓         | ↓        | ↑                | =       | =             | =                   | ↑                | =          | =                 | =         |
| York Haven Borough       |  |                           |               |                       |                |                        |                                 |                      |           |   |                                      |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| York Township            | ↓  | ↓                         | =             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | ↑                | ↑       | =             | =                   | =                | =          | =                 | =         |
| Yorkana Borough          | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                    | ↓                  | ↓           | ↓         | ↓        | =                | =       | =             | =                   | =                | =          | =                 | =         |

\*Blank spaces mean no ranking was provided by the municipality for that hazard.

### **4.4.3 Future Development and Vulnerability**

Risk to natural and human-made hazard events will increase or decrease with changes in land use and development and population. Population change is perhaps the most significant indicator of changes in vulnerability in the future. Looking at the changes in population from 2016-2030, the County's total population is projected to increase by 61,215(13.8%). This equates to an additional 24,986 dwelling units, when using the County's average household size of 2.45 based on 2016 Census Estimates. Dover, York, Windsor, Manchester, Newberry, Springettsbury, West Manchester, Fairview, and Penn Townships, respectively, are projected to have the most growth at over 1,000 dwelling units each. An additional eight (8) municipalities are projected to have no gain or a loss in population with no net gain in dwelling units. Table 4.4.3-1 illustrates how the population of York County and its municipalities are expected to change in the coming years. The most recent population projections by the YCPC were completed in October 2011. Also included is the number of additional dwelling units (DUs) that would be needed to accommodate the population increases, 2016-2030. This is roughly determined by dividing the municipal projected population change by the County's average household size.

In order to conduct an evaluation of and refine the growth management policies for the County, the YCPC applied for and received funding, under the Pennsylvania Community Transportation Initiative, to study the positive and negative impacts of different growth scenarios to the Year 2040. The purpose of this Study was to examine existing and alternative scenario growth pattern impacts and then use that information to guide planning, policy, and investment decisions in the future. One of the scenarios examined was the Current Trend which provided a built-out based on current policies and planning through the Year 2040. This information provides a very good indicator of the future types and location of development in York County. Overlaying the projected development areas with identified hazard areas can assist in identifying potential new development that could be at risk to these hazards. Calculating new development impacts was not feasible due to the maps being generated using CommunityVIZ, a GIS program that creates a dot matrix not based on individual parcels. Figure 4.4.3-1 depicts projected future development in York County.



Table 4.4.3-1: Population and Housing Projections, York County, 2016-2030

| Municipality             | 2016 US Census Estimate | 2020 YCPC Projected Population | 2030 YCPC Projected Population | Additional DUs 2016-2030 |
|--------------------------|-------------------------|--------------------------------|--------------------------------|--------------------------|
| Carroll Township         | 6,300                   | 7,446                          | 8,007                          | 697                      |
| Chanceford Township      | 6,151                   | 6,275                          | 7,314                          | 475                      |
| Codorus Township         | 3,876                   | 4,073                          | 4,304                          | 175                      |
| Conewago Township        | 8,050                   | 10,219                         | 10,158                         | 860                      |
| Crossroads Borough       | 514                     | 515                            | 520                            | 2                        |
| Dallastown Borough       | 3,812                   | 4,069                          | 4,110                          | 122                      |
| Delta Borough            | 721                     | 731                            | 731                            | 4                        |
| Dillsburg Borough        | 2,564                   | 2,934                          | 3,123                          | 228                      |
| Dover Borough            | 1,986                   | 2,091                          | 2,296                          | 127                      |
| Dover Township           | 21,464                  | 22,713                         | 26,172                         | 1,922                    |
| East Hopewell Township   | 2,441                   | 2,598                          | 3,104                          | 271                      |
| East Manchester Township | 7,560                   | 8,024                          | 9,296                          | 709                      |
| East Prospect Borough    | 933                     | 970                            | 1,038                          | 43                       |
| Fairview Township        | 17,294                  | 18,412                         | 20,081                         | 1,138                    |
| Fawn Grove Borough       | 456                     | 453                            | 449                            | -3                       |
| Fawn Township            | 3,140                   | 3,491                          | 3,992                          | 348                      |
| Felton Borough           | 503                     | 537                            | 537                            | 14                       |
| Franklin Township        | 4,888                   | 4,820                          | 5,947                          | 432                      |
| Franklintown Borough     | 490                     | 516                            | 521                            | 13                       |
| Glen Rock Borough        | 2,041                   | 2,116                          | 2,196                          | 63                       |
| Goldsboro Borough        | 935                     | 968                            | 978                            | 18                       |
| Hallam Borough           | 2,658                   | 2,686                          | 2,713                          | 22                       |
| Hanover Borough          | 15,561                  | 16,053                         | 16,375                         | 332                      |
| Heidelberg Township      | 3,076                   | 3,336                          | 3,750                          | 275                      |
| Hellam Township          | 5,997                   | 6,244                          | 6,431                          | 177                      |
| Hopewell Township        | 5,454                   | 5,713                          | 6,170                          | 292                      |
| Jackson Township         | 7,959                   | 8,278                          | 9,034                          | 439                      |
| Jacobus Borough          | 1,848                   | 1,857                          | 1,894                          | 19                       |
| Jefferson Borough        | 734                     | 756                            | 788                            | 22                       |
| Lewisberry Borough       | 363                     | 364                            | 367                            | 2                        |
| Loganville Borough       | 1,230                   | 1,248                          | 1,273                          | 18                       |

Table 4.4.3-1: Population and Housing Projections, York County, 2016-2030

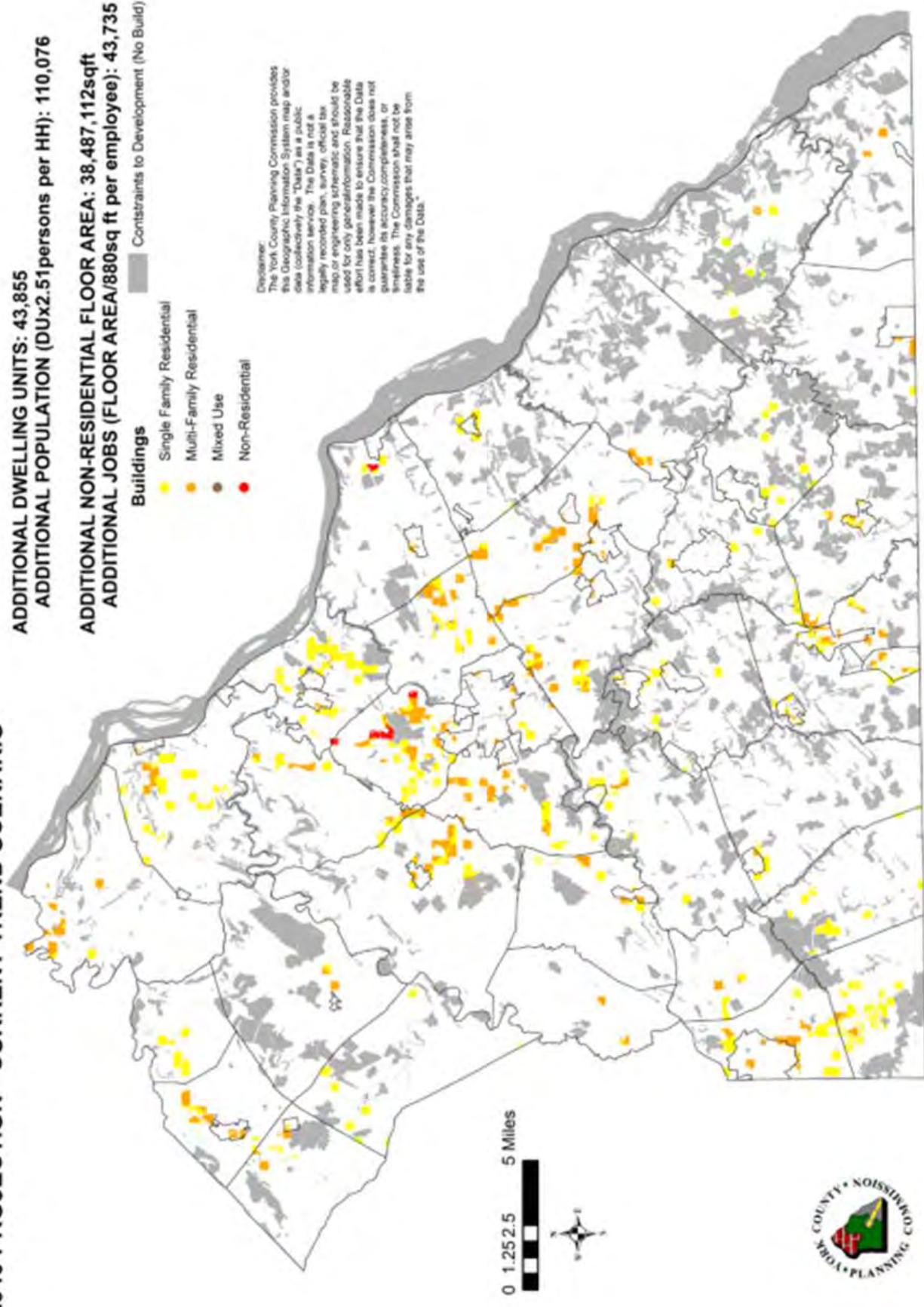
| Municipality              | 2016 US Census Estimate | 2020 YCPC Projected Population | 2030 YCPC Projected Population | Additional DUs 2016-2030 |
|---------------------------|-------------------------|--------------------------------|--------------------------------|--------------------------|
| Lower Chanceford Township | 3,076                   | 3,183                          | 3,586                          | 208                      |
| Lower Windsor Township    | 7,483                   | 7,419                          | 7,716                          | 95                       |
| Manchester Borough        | 2,746                   | 2,800                          | 2,837                          | 37                       |
| Manchester Township       | 18,567                  | 20,061                         | 22,392                         | 1,561                    |
| Manheim Township          | 3,458                   | 3,823                          | 4,309                          | 347                      |
| Monaghan Township         | 2,659                   | 2,998                          | 3,333                          | 275                      |
| Mount Wolf Borough        | 1,381                   | 1,411                          | 1,404                          | 9                        |
| New Freedom Borough       | 4,651                   | 4,797                          | 5,277                          | 256                      |
| New Salem Borough         | 775                     | 750                            | 765                            | -4                       |
| Newberry Township         | 15,495                  | 16,187                         | 19,226                         | 1,523                    |
| North Codorus Township    | 9,035                   | 9,837                          | 10,915                         | 767                      |
| North Hopewell Township   | 2,801                   | 3,006                          | 3,486                          | 280                      |
| North York Borough        | 2,021                   | 1,924                          | 1,827                          | -79                      |
| Paradise Township         | 3,912                   | 3,871                          | 4,429                          | 211                      |
| Peach Bottom Township     | 4,951                   | 5,385                          | 6,411                          | 596                      |
| Penn Township             | 16,282                  | 16,410                         | 18,945                         | 1,087                    |
| Railroad Borough          | 279                     | 271                            | 273                            | -2                       |
| Red Lion Borough          | 6,303                   | 6,339                          | 6,590                          | 117                      |
| Seven Valleys Borough     | 504                     | 526                            | 536                            | 13                       |
| Shrewsbury Borough        | 3,858                   | 4,014                          | 4,609                          | 307                      |
| Shrewsbury Township       | 6,697                   | 6,777                          | 7,048                          | 143                      |
| Spring Garden Township    | 12,963                  | 12,651                         | 12,904                         | -24                      |
| Spring Grove Borough      | 2,168                   | 2,264                          | 2,393                          | 92                       |
| Springettsbury Township   | 26,864                  | 28,730                         | 30,313                         | 1,408                    |
| Springfield Township      | 5,600                   | 5,410                          | 5,680                          | 33                       |
| Stewartstown Borough      | 2,302                   | 2,163                          | 2,443                          | 58                       |
| Warrington Township       | 4,594                   | 4,642                          | 5,371                          | 317                      |
| Washington Township       | 2,675                   | 2,880                          | 3,247                          | 233                      |
| Wellsville Borough        | 260                     | 243                            | 243                            | -7                       |
| West Manchester Township  | 18,870                  | 20,648                         | 22,301                         | 1,400                    |
| West Manheim Township     | 8,339                   | 8,646                          | 9,524                          | 484                      |

| <b>Table 4.4.3-1: Population and Housing Projections, York County, 2016-2030</b> |                                |                                       |                                       |                                 |
|--|--------------------------------|---------------------------------------|---------------------------------------|---------------------------------|
| <b>Municipality</b>  | <b>2016 US Census Estimate</b> | <b>2020 YCPC Projected Population</b> | <b>2030 YCPC Projected Population</b> | <b>Additional DUs 2016-2030</b> |
| West York Borough  | 4,559                          | 4,635                                 | 4,723                                 | 67                              |
| Windsor Borough  | 1,474                          | 1,324                                 | 1,350                                 | -51                             |
| Windsor Township   | 17,970                         | 20,460                                | 22,454                                | 1,830                           |
| Winterstown Borough  | 622                            | 654                                   | 709                                   | 36                              |
| Wrightsville Borough   | 2,285                          | 2,399                                 | 2,287                                 | 1                               |
| Yoe Borough  | 1,010                          | 1,028                                 | 1,025                                 | 6                               |
| York City  | 43,859                         | 43,958                                | 44,398                                | 220                             |
| York Haven Borough   | 698                            | 688                                   | 733                                   | 14                              |
| York Township  | 28,469                         | 28,488                                | 33,061                                | 1,874                           |
| Yorkana Borough  | 230                            | 219                                   | 217                                   | -5                              |
| <b>Total</b>   | <b>443,744</b>                 | <b>464,425</b>                        | <b>504,959</b>                        | <b>24,986</b>                   |

Figure 4.4.3-1

**2040 PROJECTION - CURRENT TREND SCENARIO**

**ADDITIONAL BUILDINGS: 27,736**  
**ADDITIONAL DWELLING UNITS: 43,855**  
**ADDITIONAL POPULATION (DUx2.51persons per HH): 110,076**  
**ADDITIONAL NON-RESIDENTIAL FLOOR AREA: 38,487,112sqft**  
**ADDITIONAL JOBS (FLOOR AREA/880sq ft per employee): 43,735**



## CHAPTER FIVE – CAPABILITY ASSESSMENT

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A capability assessment is very important. By performing a capability assessment, York County can formulate a comprehensive set of mitigation strategies. The capability assessment has two (2) parts: an inventory of the planning and regulatory tools in place in the County and an analysis of its capacity to use them effectively. This assessment process can help to identify existing gaps, conflicts, and weaknesses that may need addressed through future hazard mitigation planning goals, objectives, and actions. The assessment also evaluates the proposed mitigation actions in consideration with the local ability to implement them.

### 5.1 UPDATE PROCESS SUMMARY – 2018

Within York County, numerous resources can be accessed to support the mitigation of hazards. The 2013 York County HMP included a list of resources, as well as the existence of local plans and ordinances in the municipalities. This data was updated to reflect the existence of the most critical local planning tools available within each municipality. It also summarizes the capabilities of organizations and programs outside the County, as well as addresses the capabilities and processes involved with implementation of the National Flood Insurance Program (NFIP). This update process identifies the strengths and points out the weaknesses.

In order to assess municipal capability, a survey was sent to all 72 municipalities within the County. This survey asked municipalities to identify planning and regulatory tools, administrative and technical resources, financial resources, education and outreach methods available to the municipality. Municipalities were also asked to do a self-assessment of their capabilities in these categories. In order to gauge municipal involvement and interest in mitigation projects, they were also asked about projects undertaken in the last ten (10) years, funding sources for those projects, and willingness to assist residents and others with hazard mitigation grant applications. 55 survey responses from 50 of 72 municipalities were received. Some municipalities submitted multiple surveys. A summary of these surveys is included in Appendix D.

### 5.2 CAPABILITY ASSESSMENT FINDINGS

Capability assessment findings are within the following categories: Planning and Regulatory Capability, Administrative and Technical Capability, Fiscal Capability, Education and Outreach Capability, and Community Political Capability. This section also discusses existing limitations.

#### 5.2.1 Planning and Regulatory Capability

Many of the planning and regulatory capabilities of a municipality are used for hazard mitigation. These are some of the most important capabilities available to municipalities for implementation of mitigation strategies, as identified in the capability survey (see Appendix D), and include comprehensive plans, zoning ordinances, subdivision and land development ordinances, stormwater management ordinances, building codes and local emergency operation plans. Table 5.2.1-1 indicates the tools each municipality has adopted.

**Table 5.2.1-1: Summary of Planning Tools by Municipality (2017)**

| <b>Municipality</b>       | <b>Comprehensive Plan</b> | <b>Zoning Ordinance</b> | <b>Subdivision and Land Development Ordinance</b> | <b>Stormwater Management Ordinance</b> | <b>Building Codes</b> | <b>Local Emergency Operations Plan (EOP)</b> |
|---------------------------|---------------------------|-------------------------|---|--|-----------------------|--|
| Carroll Township          | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Chanceford Township       | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Codorus Township          | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Conewago Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Cross Roads Borough       | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Dallastown Borough        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Delta Borough             | Y                         | Y                       | Y-County  | N                                      | Y                     | Y  |
| Dillsburg Borough         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Dover Borough             | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Dover Township            | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| East Hopewell Township    | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| East Manchester Township  | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| East Prospect Borough     | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Fairview Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Fawn Grove Borough        | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Fawn Township             | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Felton Borough            | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Franklin Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Franklintown Borough      | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Glen Rock Borough         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Goldsboro Borough         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Hallam Borough            | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Hanover Borough           | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Heidelberg Township       | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Hellam Township           | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Hopewell Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Jackson Township          | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Jacobus Borough           | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Jefferson Borough         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Lewisberry Borough        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Loganville Borough        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Lower Chanceford Township | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Lower Windsor Township    | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |

**Table 5.2.1-1: Summary of Planning Tools by Municipality (2017)**

| <b>Municipality</b>      | <b>Comprehensive Plan</b> | <b>Zoning Ordinance</b> | <b>Subdivision and Land Development Ordinance</b> | <b>Stormwater Management Ordinance</b> | <b>Building Codes</b> | <b>Local Emergency Operations Plan (EOP)</b> |
|--------------------------|---------------------------|-------------------------|---|--|-----------------------|--|
| Manchester Borough       | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Manchester Township      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Manheim Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Monaghan Township        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Mt Wolf Borough          | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| New Freedom Borough      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| New Salem Borough        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Newberry Township        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| North Codorus Township   | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| North Hopewell Township  | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| North York Borough       | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Paradise Township        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Peach Bottom Township    | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Penn Township            | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Railroad Borough         | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Red Lion Borough         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Seven Valleys Borough    | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Shrewsbury Borough       | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Shrewsbury Township      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Spring Garden Township   | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Spring Grove Borough     | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Springettsbury Township  | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Springfield Township     | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Stewartstown Borough     | Y                         | Y                       | Y   | N                                      | Y                     | Y  |
| Warrington Township      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Washington Township      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Wellsville Borough       | Y                         | N                       | Y   | Y                                      | Y                     | Y  |
| West Manchester Township | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| West Manheim Township    | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| West York Borough        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Windsor Borough          | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Windsor Township         | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Winterstown Borough      | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |

**Table 5.2.1-1: Summary of Planning Tools by Municipality (2017)**

| <b>Municipality</b>  | <b>Comprehensive Plan</b> | <b>Zoning Ordinance</b> | <b>Subdivision and Land Development Ordinance</b> | <b>Stormwater Management Ordinance</b> | <b>Building Codes</b> | <b>Local Emergency Operations Plan (EOP)</b> |
|----------------------|---------------------------|-------------------------|---|--|-----------------------|--|
| Wrightsville Borough | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Yoe Borough          | Y                         | Y                       | Y-County  | Y                                      | Y                     | Y  |
| York City            | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| York Haven Borough   | N                         | N                       | Y-County  | Y                                      | Y                     | Y  |
| York Township        | Y                         | Y                       | Y   | Y                                      | Y                     | Y  |
| Yorkana Borough      | N                         | Y                       | Y-County  | Y                                      | Y                     | Y  |

**Comprehensive Plan** – Comprehensive plans serve as the guide for influencing the location, type, and extent of future development by establishing the basis for decision making and review processes on matters of zoning, subdivision and land development. All but two (2) municipalities have adopted a comprehensive plan.

**Zoning Ordinance** – Zoning ordinances allow municipalities to regulate land use and to protect the health, safety and welfare of the residents. Zoning is used for a variety of things, including but not limited to, creating buffers between structures and high-risk areas and limiting development (by type or by density) in sensitive areas. As shown in Table 5.2.1-1, all but two (2) municipalities in the County have zoning ordinances.

**Subdivision and Land Development Ordinance** – Subdivision and land development ordinances (SALDO) are in place to regulate land uses, including housing, commercial, industrial, and other uses. SALDOs include guidelines related to how land could be divided, placement of roads, and location of infrastructure. All municipalities in York County have a SALDO, including four (4) municipalities that fall under the jurisdiction of the County’s SALDO.

**Building Code** – Building codes regulate construction standards for new construction and rehabilitation. All municipalities in York County abide by the Uniform Construction Code (UCC).

**Local Emergency Operations Plan (EOP)** – Local EOP’s describe who will do what, as well as when, with what resources, and by what authority--before, during, and immediately after an emergency. Their focus is on measures that are essential for protecting the public. These include warnings, emergency public information, evacuation, and shelter. All municipalities in York County have a Local Emergency Operation Plan.

**Stormwater Management Ordinance** – The Stormwater Management Act (Act 167) enables the regulation of development and activities that cause accelerated runoff. Additionally, the Act encourages watershed-based planning and management of stormwater. There are currently 61



municipalities in York County that have adopted a stormwater management ordinance, either as a stand-alone ordinance or as part of their SALDO. All municipalities are required to have a stormwater management ordinance. Currently, 11 municipalities have not met this requirement.

**5.2.1.1 Participation in the National Flood Insurance Program (NFIP)**

Floods are a common and costly natural hazard. Because of that, flood damage coverage is often not available under standard homeowner or renter insurance policies. To protect property against flood losses, the NFIP was established. Administered by FEMA, the NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing relatively affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase of flood insurance.

According to the Standard Operating Guide (SOG), there are three (3) basic components of the NFIP. They include floodplain identification and mapping risk, responsible floodplain management, and flood insurance. Appendix D identifies staff resources and compliance history as indicated by the municipalities as part of the NFIP survey. In regards to regulation, all of York County’s FIRMs are digital. Municipal floodplain regulations are based on a model ordinance provided by FEMA and are administered according to FEMA regulations. National Flood Insurance is only available in communities that apply for participation in the NFIP and agree to implement the prescribed flood mitigation measures. Table 5.2.1.1-1 presents data on York County’s municipalities’ participation in the NFIP.

**Table 5.2.1.1-1: York County Municipal NFIP Participation as of 1/31/2017**

| <b>Municipality</b>      | <b>Comm. ID #</b> | <b>Date of Entry</b> | <b>Current Effective Map</b> | <b>Policies In Force</b> | <b>Total Premium Paid (\$)</b> | <b>Total Claims</b> | <b>Total Payments (\$)</b> |
|--------------------------|-------------------|----------------------|------------------------------|--------------------------|--------------------------------|---------------------|----------------------------|
| Carroll Township         | 422216            | 03/02/81             | 12/16/15                     | 19                       | \$22,708                       | 9                   | \$98,022                   |
| Chanceford Township      | 422217            | 10/15/81             | 12/16/15                     | 13                       | \$10,745                       | 17                  | \$120,600                  |
| Codorus Township         | 421142            | 07/05/83             | 12/16/15                     | 18                       | \$18,080                       | 29                  | \$376,151                  |
| Conewago Township        | 420918            | 03/18/80             | 12/16/15                     | 47                       | \$80,025                       | 63                  | \$472,415                  |
| Cross Roads Borough      |                   |                      |                              |                          |                                |                     |                            |
| Dallastown Borough       | 422739            | 09/27/96             | 12/16/15                     | 3                        | \$1,092                        | 0                   | \$0                        |
| Delta Borough            | 422211            | 09/01/83             | 12/16/15                     | 0                        | \$0                            | 0                   | \$0                        |
| Dillsburg Borough        | 420919            | 09/28/79             | 12/16/15                     | 11                       | \$3,978                        | 0                   | \$0                        |
| Dover Borough            | 422569            | 12/19/80             | 12/16/15                     | 0                        | \$0                            | 4                   | \$8,416                    |
| Dover Township           | 420920            | 03/02/81             | 12/16/15                     | 65                       | \$38,146                       | 110                 | \$1,103,902                |
| East Hopewell Township   | 422218            | 04/16/81             | 12/16/15                     | 4                        | \$1,545                        | 3                   | \$72,029                   |
| East Manchester Township | 420921            | 11/19/80             | 12/16/15                     | 12                       | \$9,833                        | 21                  | \$163,666                  |
| East Prospect Borough    |                   |                      |                              |                          |                                |                     |                            |
| Fairview Township        | 420923            | 02/15/78             | 12/16/15                     | 182                      | \$196,574                      | 138                 | \$1,687,173                |
| Fawn Grove Borough       | 422570A           | 06/25/76             | 12/16/15                     | 0                        | \$0                            | 0                   | \$0                        |

Table 5.2.1.1-1: York County Municipal NFIP Participation as of 1/31/2017

| Municipality              | Comm. ID # | Date of Entry | Current Effective Map | Policies In Force | Total Premium Paid (\$) | Total Claims | Total Payments (\$) |
|---------------------------|------------|---------------|-----------------------|-------------------|-------------------------|--------------|---------------------|
| Fawn Township             | 422219     | 04/01/81      | 12/16/15              | 4                 | \$2,098                 | 3            | \$20,526            |
| Felton Borough            | 420922     | 04/01/81      | 12/16/15              | 22                | \$23,625                | 29           | \$155,425           |
| Franklin Township         | 422220     | 01/19/83      | 12/16/15              | 4                 | \$3,497                 | 6            | \$4,103             |
| Franklintown Borough      |            |               |                       |                   |                         |              |                     |
| Glen Rock Borough         | 420924     | 07/16/81      | 12/16/15              | 31                | \$42,602                | 76           | \$409,876           |
| Goldsboro Borough         | 420925     | 02/15/80      | 12/16/15              | 27                | \$41,538                | 50           | \$601,009           |
| Hallam Borough            | 420926     | 02/15/80      | 12/16/15              | 21                | \$17,231                | 20           | \$395,749           |
| Hanover Borough           | 422212     | 01/06/82      | 12/16/15              | 10                | \$5,924                 | 4            | \$3,253             |
| Heidelberg Township       | 422221     | 09/30/81      | 12/16/15              | 5                 | \$5,041                 | 2            | \$1,474             |
| Hellam Township           | 420927     | 03/18/80      | 12/16/15              | 72                | \$52,524                | 108          | \$960,942           |
| Hopewell Township         | 422222     | 09/16/81      | 12/16/15              | 9                 | \$6,112                 | 6            | \$19,573            |
| Jackson Township          | 422223     | 09/30/81      | 12/16/15              | 10                | \$9,517                 | 6            | \$12,450            |
| Jacobus Borough           | 420928A    | 06/30/76      | 12/16/15              | 1                 | \$415                   | 4            | \$2,611             |
| Jefferson Borough         |            |               |                       |                   |                         |              |                     |
| Lewisberry Borough        | 420929     | 11/17/82      | 12/16/15              | 1                 | \$498                   | 2            | \$19,497            |
| Loganville Borough        | 422213     | 08/12/85      | 12/16/15              | 1                 | \$157                   | 1            | \$0                 |
| Lower Chanceford Township | 420930     | 12/15/80      | 12/16/15              | 5                 | \$2,443                 | 28           | \$529,747           |
| Lower Windsor Township    | 421187     | 03/02/83      | 12/16/15              | 58                | \$67,418                | 142          | \$1,745,317         |
| Manchester Borough        | 422747     |               | 12/16/15              | 2                 | \$676                   | 0            | \$0                 |
| Manchester Township       | 420931     | 12/01/81      | 12/16/15              | 36                | \$55,657                | 31           | \$236,774           |
| Manheim Township          | 422224     | 04/04/83      | 12/16/15              | 5                 | \$3,693                 | 2            | \$0                 |
| Monaghan Township         | 422225     | 08/15/80      | 12/16/15              | 9                 | \$5,314                 | 5            | \$19,269            |
| Mount Wolf Borough        | 421021     | 05/15/80      | 12/16/15              | 6                 | \$10,592                | 6            | \$220,120           |
| New Freedom Borough       | 420932     | 03/02/79      | 12/16/15              | 2                 | \$827                   | 3            | \$17,104            |
| New Salem Borough         | 422743     |               | 12/16/15              | 1                 | \$154                   | 0            | \$0                 |
| Newberry Township         | 422226     | 07/20/80      | 12/16/15              | 62                | \$41,137                | 99           | \$913,409           |
| North Codorus Township    | 422227     | 10/15/81      | 12/16/15              | 10                | \$15,981                | 12           | \$156,225           |
| North Hopewell Township   | 422228     | 04/01/81      | 12/16/15              | 8                 | \$6,338                 | 5            | \$5,526             |
| North York Borough        | 420933     | 05/02/77      | 12/16/15              | 1                 | \$360                   | 0            | \$0                 |
| Paradise Township         | 420934     | 09/02/81      | 12/16/15              | 18                | \$21,161                | 58           | \$473,240           |
| Peach Bottom Township     | 422229     | 09/30/81      | 12/16/15              | 8                 | \$6,071                 | 9            | \$89,722            |
| Penn Township             | 421025     | 15/15/81      | 12/16/15              | 30                | \$28,572                | 10           | \$5,470             |
| Railroad Borough          | 430935     | 09/28/79      | 12/16/15              | 1                 | \$316                   | 2            | \$6,025             |
| Red Lion Borough          | 422214     | 06/22/84      | 12/16/15              | 3                 | \$1,798                 | 1            | \$7,717             |
| Seven Valleys Borough     | 420936     | 09/28/79      | 12/16/15              | 5                 | \$6,797                 | 13           | \$79,039            |
| Shrewsbury Borough        |            |               |                       |                   |                         |              |                     |
| Shrewsbury Township       | 422230     | 09/16/81      | 12/16/15              | 21                | \$19,094                | 7            | \$52,883            |
| Spring Garden Township    | 420937     | 06/15/77      | 12/16/15              | 42                | \$88,470                | 35           | \$1,024,820         |

**Table 5.2.1.1-1: York County Municipal NFIP Participation as of 1/31/2017**

| Municipality             | Comm. ID # | Date of Entry | Current Effective Map | Policies In Force | Total Premium Paid (\$) | Total Claims | Total Payments (\$) |
|--------------------------|------------|---------------|-----------------------|-------------------|-------------------------|--------------|---------------------|
| Spring Grove Borough     | 420938     | 08/15/83      | 12/16/15              | 2                 | \$3,948                 | 2            | \$5,107             |
| Springettsbury Township  | 421031     | 12/15/77      | 12/16/15              | 60                | \$109,165               | 42           | \$302,847           |
| Springfield Township     | 422231     | 04/01/81      | 12/16/15              | 11                | \$4,231                 | 3            | \$861               |
| Stewartstown Borough     |            |               |                       |                   |                         |              |                     |
| Warrington Township      | 422232     | 03/16/83      | 12/16/15              | 10                | \$5,564                 | 15           | \$199,433           |
| Washington Township      | 421150     | 03/02/83      | 12/16/15              | 15                | \$12,503                | 10           | \$71,605            |
| Wellsville Borough       | 420940B    | 12/31/82      | 12/16/15              | 0                 | \$0                     | 0            | \$0                 |
| West Manchester Township | 422233     | 06/15/81      | 12/16/15              | 44                | \$52,397                | 21           | \$236,446           |
| West Manheim Township    | 422234     | 03/16/83      | 12/16/15              | 7                 | \$4,198                 | 2            | \$0                 |
| West York Borough        | 420941     | 07/31/79      | 12/16/15              | 2                 | \$1,492                 | 3            | \$43,872            |
| Windsor Borough          | 420942     | 11/30/82      | 12/16/15              | 27                | \$28,530                | 34           | \$249,046           |
| Windsor Township         | 422235     | 06/01/83      | 12/16/15              | 11                | \$4,075                 | 17           | \$120,239           |
| Winterstown Borough      |            |               |                       |                   |                         |              |                     |
| Wrightsville Borough     | 420943     | 12/18/79      | 12/16/15              | 11                | \$14,365                | 71           | \$688,770           |
| Yoe Borough              | 420944     | 12/10/82      | 12/16/15              | 7                 | \$5,156                 | 2            | \$2,562             |
| York Haven Borough       | 420946     | 12/18/79      | 12/16/15              | 1                 | \$351                   | 4            | \$53,559            |
| York City                | 420945     | 06/15/77      | 12/16/15              | 55                | \$43,968                | 63           | \$476,031           |
| York Township            | 421032     | 05/17/89      | 12/16/15              | 44                | \$24,417                | 49           | \$200,810           |
| Yorkana Borough          |            |               |                       |                   |                         |              |                     |

Source: PEMA

For most communities that participate in the NFIP (see Table 5.2.1.1-1), FEMA has prepared a detailed Flood Insurance Study (FIS). The FIS presents water surface elevations for floods of various magnitudes. The water surface elevation of the 1% annual flood event is called the base flood elevation (BFE). BFEs and the boundaries of the 1% and .02% flood events are shown on the participating community's Flood Insurance Rate Map (FIRM). For



Figure 5.2.1.1-1: Flash Flooding, Hellam Township 2012

participation in the NFIP, FEMA has established the 1% annual flood event floodplain as the regulatory standard for local floodplain management purposes.

Since the development of flood prone lands contribute to increased flooding, development in floodplain areas should be regulated closely and structural and nonstructural measures should be assessed to determine flood reduction potential. As development occurs outside the floodplain, the effects of this development on the floodplain need to be considered.

64 of the 72 municipalities in York County participate in the NFIP. The Program is managed by the local participating municipalities through ordinance adoption and floodplain regulation. Local municipalities also implement various ordinances (zoning, SALDO, floodplain) which have specific relevance to the floodplain.

The PA Floodplain Management Act (Act 166) requires municipal participation and compliance with the NFIP. It also establishes higher regulatory standards for new or improved structures, which are used in the production or storage of dangerous materials by prohibiting them in the floodway. Additionally, Act 166 established the requirement that a special permit be obtained prior to any expansion or construction of a mobile home park, hospital, nursing home, and jail/prison, if this structure is located within a special flood hazard area.

DCED provides suggested ordinance documentation to assist municipalities in meeting the minimum requirements of the NFIP, along with the PA Floodplain Management Act. These suggested provisions include:

- Prohibiting manufactured homes in the floodway;
- Prohibiting manufactured homes within the area measured 50 feet landward from the top of bank of any watercourses within a special flood hazard area;
- Special requirement for recreational vehicles in special flood hazard areas;
- Special requirement for accessory structures;
- Prohibiting new construction and development within the area measured 50 feet landward from the top of bank of any watercourses within a special flood hazard area; and
- Providing the County Conservation District review and comment on all applications or plans for construction or development in identified floodplains.

The York County Digital Flood Insurance Rate Map (DFIRM) became official on December 16, 2015. The YCPC provided residents and municipal officials with mapping assistance and an on-line mapping tool. Public meetings were also held to inform municipalities and residents. There are currently no municipalities in York County participating in the NFIP Community Rating System.

### **5.2.2 Administrative and Technical Capability**

Administrative capability considers the sufficiency of departmental and personnel resources to implement mitigation-related activities. Technical capability considers the knowledge and expertise of local government employees to implement mitigation activities effectively. Technical capability also includes an evaluation of the technical resources available as related to hazard mitigation. Figure 5.2.2-1 provides a summary of the administrative capability identified through the Capability Survey.

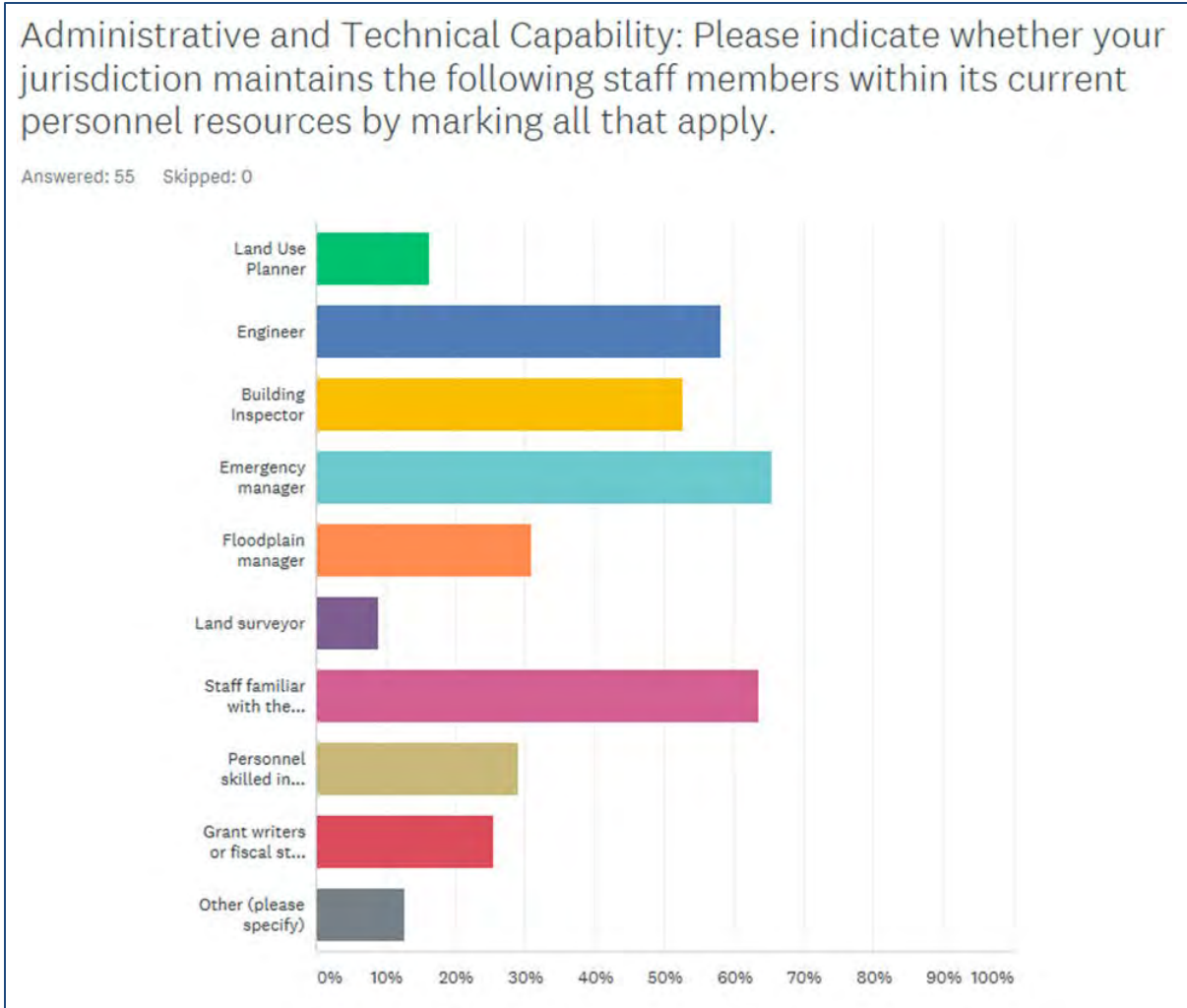


Figure 5.2.2-1: Administrative and Technical Staff Availability

### 5.2.2.1 Administrative Capability

Administrative capability includes a host of human resources. These organizations and personnel are involved at some level in dealing with a wide magnitude of disasters. The following agencies, organizations, and programs are included in this administrative capability assessment as those who provide disaster assistance or implement hazard mitigation-related activities.

**Amateur Radio Emergency Services (ARES)** – ARES consist of federally licensed amateur radio operators who have voluntarily registered their qualifications and equipment for communication duty in the public interest, especially when disaster strikes. For more information, go to <https://yorkcountypa.gov/emergency-services/emergency-management-office/volunteer-respond/amateur-radio.html>.

**American Red Cross** – The American Red Cross, a humanitarian organization led by volunteers, guided by its Congressional Charter and the Fundamental Principles of the International Red Cross Movement, will provide relief to victims of disasters and help people prevent, prepare for, and

respond to emergencies. For more information, go to <http://www.redcross.org/local/pennsylvania/central-pennsylvania>.

**Disaster Action Teams (DAT)** – The York County Chapter of the American Red Cross has a small number of dedicated individuals who volunteer to assist victims of disaster as part of DAT. The DAT responds to the scene of local disasters to determine the immediate emergency needs of the people affected. DAT volunteers work alongside fire fighters, police, and other emergency response personnel to assist disaster victims.

There are a number of volunteer opportunities within the DAT program. DAT volunteers provide vital disaster relief assistance, ranging from cooking a meal for displaced families, reading books to children, and making damage assessments to opening shelters, issuing vouchers for food/clothing/lodging, arranging for mental health counseling, and handling other health-related needs.

**Federal Emergency Management Agency (FEMA)** – FEMA's continuing mission is to lead the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the NFIP. For more information: [www.fema.gov](http://www.fema.gov).

**Hospital Emergency Amateur Radio (HEARS)** – HEARS provides communications within their facilities and between other York County hospitals. Their focus is hospital communications when other means fail or are overloaded. Both HEARS and YARS will work together and, in a disaster, communicate with each other. For more information, contact the York County Office of Emergency Management or [www.yorkcountypa.gov](http://www.yorkcountypa.gov).

**Keystone Emergency Management Association (KEMA)** – KEMA's mission is to foster and promote a high degree of capability and competency of the Emergency Management professionals and volunteers across the Commonwealth. It contributes to the common cause of protecting lives and property from both human-made and natural disasters through education, sharing of information, and encouragement of partnerships with emergency response organizations. For more information visit: [www.kema.pa.com](http://www.kema.pa.com).

**National Weather Service (NWS)** – The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, and adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure that are used by other governmental agencies, the private sector, the public, and the global community. For more information, contact the NWS local representative at 814-231-2408 or visit: <http://www.weather.gov/ctp/>.

**Pennsylvania Emergency Management Agency (PEMA)** – The mission of the PEMA is to coordinate State agency response, including the Office of the State Fire Commissioner and Office of Homeland Security (OHS), to support county and local governments in the areas of civil defense, disaster

mitigation and preparedness, planning, and response to and recovery from human-made or natural disasters. For more information visit: [www.pema.state.pa.us](http://www.pema.state.pa.us).

**Pennsylvania State Animal Response Team (PA SART)** – PA SART is a coordinated effort between several governmental, corporate, and private entities dedicated to the preparation, planning, response, and recovery of animal emergencies in Pennsylvania. The team's mission is to develop and implement procedures and train participants to facilitate a safe, environmentally sound, and efficient response to animal emergencies on the local, County, State, and Federal level. For more information visit: [www.pasart.us](http://www.pasart.us).

**Radio Amateur Civil Emergency Services (RACES)** – RACES provides amateur radio emergency communications during periods of local, regional, or national emergency. Local/county/state emergency management services, with guidance from FEMA, administer RACES. For more information visit: <http://www.usraces.org/>.

**SKYWARN** – SKYWARN is a network of amateur radio operators and others with basic weather training that assist the NWS by reporting important weather information. This information warns the public as quickly as possible about potential severe weather conditions. For more information visit: <https://www.weather.gov/skywarn/>.

**South Central PA Critical Incident Stress Management Team (CISM)** – The CISM team consists of over 50 volunteers trained to debrief or defuse emergency workers after a critical incident. The team is comprised of emergency medical technicians, paramedics, nurses, first responders, firefighters, sheriffs, police officers, 911 dispatchers, and others with emergency services background. These team members serve as peers to their fellow emergency workers who are having difficulty dealing with the stress from a critical incident. The team also includes mental health clinicians to assist with debriefings and other interventions. Although a stand-alone, non-profit organization, the South Central PA CISM Team is administered through the York County Office of Emergency Management. For more information visit: <https://yorkcountypa.gov/emergency-services/emergency-management-office/volunteer-respond/critical-incident-stress-management-cism.html>.

**South Central Task Force (SCTF)** – SCTF has a leadership role in delivering a comprehensive and sustainable regional “all hazard” emergency preparedness program. The Program addresses planning, prevention, response, and recovery events in south-central PA that exceed local capabilities. The SCTF represents Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry and York Counties. For more information visit: <https://www.sctfpa.org>.

**South Central Alert** – This is a system of the SCTF. It functions as a reverse 911 and includes all eight (8) counties. It functions primarily as a public notification system. It can provide telephone or fax contacts to listings in both the white (residential) and yellow (business) pages. Cellular phone numbers can be registered. South Central Alert also utilizes email and text messages <https://www.sctfpa.org/sc-alert.php>.

**Susquehanna River Basin Commission (SRBC)** – The mission of the SRBC is to enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin. To accomplish this mission, the SRBC works to reduce damages caused by floods; provides for the reasonable and sustained development and use of surface and ground water for municipal, agricultural, recreational, commercial, and industrial purposes; protects and restores fisheries, wetlands and aquatic habitat; protects water quality and in stream uses; and ensures future availability of flows to the Chesapeake Bay. For more information visit: [www.srbc.net](http://www.srbc.net).

**United States Army Corps of Engineers (USACE)** – USACE serves the Armed Forces and the Nation by providing vital engineering services and capabilities, as a public service, across the full spectrum of operations from peace to war in support of national interests. USACE missions include five (5) broad areas: Water Resources, Environment, Infrastructure, Homeland Security, and War Fighting. For more information, contact USACE at 800-434-0988 or visit: <http://www.nab.usace.army.mil/>.

**Watershed Alliance of York (WAY)** – The WAY is a coalition of stakeholders committed to being innovative leaders encouraging watershed-based planning, restoration, and protection, through locally led conservation, education, and stewardship initiatives, in York County and beyond. For more information, visit: <https://watershedallianceofyork.org/>.

**York County Drought Advisory Committee** – In response to the Proclamation of Drought and Water Shortage Emergency issued in February 2002, the York County Commissioners established the York County Drought Management Task Force. This was in accordance with PEMA’s water conservation regulations to monitor drought conditions within the County and provide monthly reports to the Commonwealth’s Drought Coordinator. This organization convenes during times of drought, under the name of the York County Drought Advisory Task Force.

**York County Office of Emergency Management (YCOEM)** – The York County Office of Emergency Management (OEM), a division of the York County Department of Emergency Services (DES), administers the Emergency Management Program. YCOEM is responsible for the judicious planning, assignment, and coordination of all available resources in an integrated program of prevention, preparedness, response, and recovery for emergencies of any kind. For information contact YCOEM at 717-840-2990 or visit <https://yorkcountypa.gov/emergency-services/emergency-management-office.html>.

**York County Planning Commission (YCPC)** – It is the mission of YCPC to formulate and to be an advocate for a perspective of York County that reflects public consensus of its physical, social, economic, and institutional environments and to participate in activities that contribute to the implementation of that view. The County Commissioners designated the YCPC to administer various Federal, State, and other housing and community development programs and projects. Current programs include Community Development Block Grant, Emergency Shelter Grant, HOME Investment Partnership, Weatherization Program, State Emergency Shelter Grant, PA Access Grant, and Brownfields Grant. For more information, contact the YCPC at 717-771-9870 or visit: [www.ycpc.org](http://www.ycpc.org).



**York County Special Needs Registry (formerly ECRIN)** – The York County Special Needs Registry is a voluntary community outreach service to assist elected officials and emergency responders in municipalities across the County with obtaining important information on special needs residents living in their communities. It also assists residents by ensuring that all emergency response units have access to the same information. For more information: <https://yorkcountypa.gov/health-human-services/human-services-division/programs/york-county-special-needs-registry-1.html>.

**5.2.2.2 Technical Capability**

As mentioned previously, technical capability includes the knowledge and expertise of local governmental employees and/or their ability to contract out for this expertise. Additionally, common examples of skill sets and technical personnel for hazard mitigation can include, but are not limited to, planners with knowledge of land development practices, scientists, engineers, emergency management professionals, HAZUS and GIS experts, and grant writers. Figure 5.2.2.2-1 depicts the administrative and technical capability as identified through the Capability Survey.

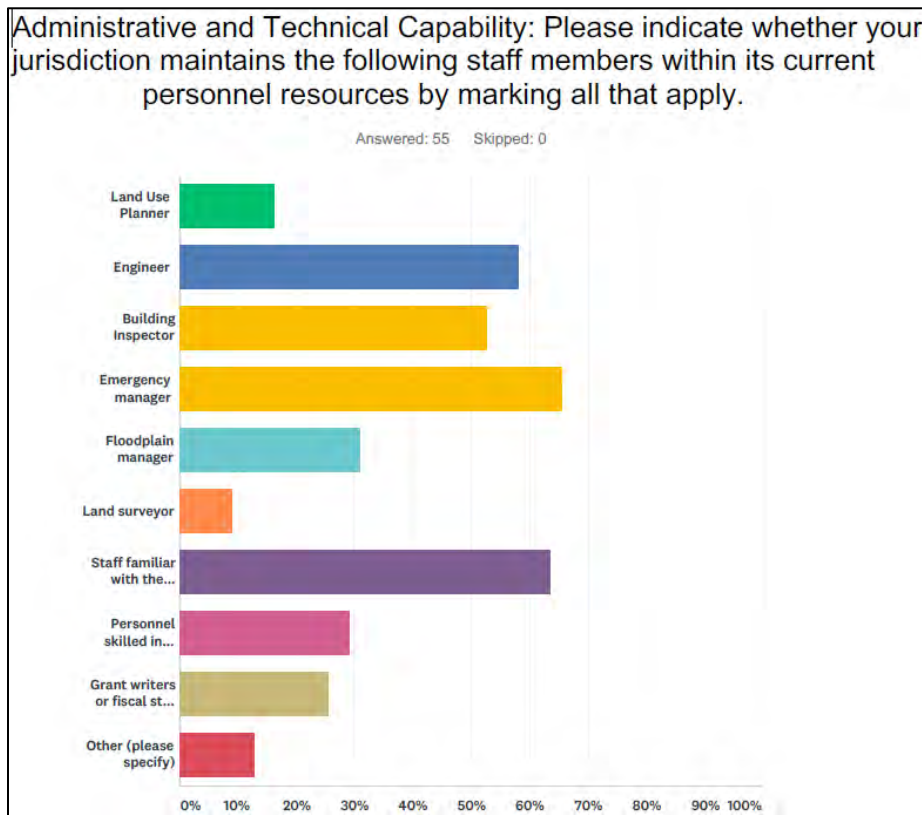


Figure 5.2.2.2-1: Administrative and Technical Capability

The technical resources include early warning systems, weather alerts, stream-level monitoring, 911 communications, reporting systems, and GIS. The following table (Table 5.2.2.2-1) lists the technical resources available by identified hazard and identifies recommended needs. A description of NIMS and PEIRS follows the table.

**Table 5.2.2.2-1: York County Technical Resources**

| <b>Hazard</b>                       | <b>Available Technical Resources</b>   | <b>Recommended Technical Resources</b>  |
|-------------------------------------|--|---|
| <b>Natural Hazards</b>              |  |   |
| Drought                             | GIS, DEP and SRBC tracking system, Drought Task Force, NIMS                      | Early warning based on monitoring   |
| Earthquake                          | GIS, NIMS, PEIRS, South Central Alert, 911                                       | Website improvements, web-based hazard identification tool                                  |
| Extreme Temperature                 | GIS, NIMS, PEIRS, South Central Alert, weather alerts                            | Website improvements, web-based hazard identification tool                                  |
| Flood/Flash Flood/Ice Jam           | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts, SRBC warning system, | Website improvements, web-based hazard identification tool                                  |
| Hailstorm                           | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts                       | Website improvements, web-based hazard identification tool                                  |
| Hurricane/Tropical Storm/Nor'Easter | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts                       | Website improvements, web-based hazard identification tool                                  |
| Invasive Species                    | GIS, NIMS, PEIRS, South Central Alert  | Website improvements, web-based hazard identification tool                                  |
| Landslide                           | GIS, NIMS, PEIRS, South Central Alert, 911                                       | Website improvements, web-based hazard identification tool                                  |
| Lightning Strike                    | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts                       | Website improvements, web-based hazard identification tool                                  |
| Pandemic and Infectious Diseases    | GIS, NIMS, PEIRS, South Central Alert  | Website improvements, web-based hazard identification tool                                  |
| Radon                               | GIS, NIMS, PEIRS, South Central Alert, test tracking by ZIP code,                | Required testing and monitoring, website improvements, web-based hazard identification tool |
| Sinkhole/Subsidence                 | GIS, NIMS, PEIRS, South Central Alert  | Website improvements, web-based hazard identification tool, list of contractors             |
| Tornado/Windstorm                   | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts                       | Website improvements, web-based hazard identification tool                                  |
| Wildfire                            | GIS, NIMS, PEIRS, South Central Alert, 911                                       | Website improvements, web-based hazard identification tool                                  |
| Winter Storm                        | GIS, NIMS, PEIRS, South Central Alert, 911, weather alerts                       | Website improvements, web-based hazard identification tool                                  |
| <b>Human-made Hazards</b>           |  |   |
| Civil Disturbance                   | GIS, NIMS, PEIRS, South Central Alert  | Website improvements, web-based hazard identification tool                                  |
| Dam Failure                         | GIS, NIMS, PEIRS, South Central Alert  | Website improvements, web-based hazard identification tool                                  |

**Table 5.2.2.2-1: York County Technical Resources**

| <b>Hazard</b>                       | <b>Available Technical Resources</b>  | <b>Recommended Technical Resources</b>                     |
|-------------------------------------|---------------------------------------|--|
| Environmental Hazards               | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |
| Levee Failure                       | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |
| Mass Food/Animal Feed Contamination | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |
| Nuclear Incidents                   | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |
| Terrorism                           | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |
| Urban Fires/Explosions              | GIS, NIMS, PEIRS, South Central Alert | Website improvements, web-based hazard identification tool |

**National Incident Management System (NIMS)** – The National Incident Management System (NIMS) is a structure for managing large-scale or multi-jurisdictional incidents. Developed by the Office of Homeland Security and released in March 2004, it establishes a uniform set of processes and procedures that emergency responders at all levels of government will use to conduct response operations. The NIMS will enable responders at all levels to work together more efficiently and effectively <https://www.fema.gov/national-incident-management-system>.

**Pennsylvania Emergency Incident Reporting System (PEIRS)** – PEIRS provides standard criteria for reporting incidents to PEMA and the Office of Homeland Security. Reportable incidents can affect the safety, security, health, and welfare of the citizens of PA. Incidents cover a wide range of categories and include any of the hazards identified in this Plan. For more information, visit the PEIRS directive: [http://www.pema.pa.gov/Documents/1/Directives/PEMA%20Directive%202003-02 Pennsylvania%20Emergency%20Incident%20Reporting%20System.pdf](http://www.pema.pa.gov/Documents/1/Directives/PEMA%20Directive%202003-02%20Pennsylvania%20Emergency%20Incident%20Reporting%20System.pdf).

**York County Office of Emergency Management** – Assists York County residents to prepare for natural and human-made disasters and emergencies. It provides useful knowledge about emergency preparedness for all segments of the population, as well as information regarding how to respond to emergencies and disasters.

For family preparedness information, please visit: <https://yorkcountypa.gov/emergency-services/emergency-management-office/plan-prepare/family-preparedness.html> and [https://yorkcountypa.gov/images/pdf/emergency-management/areyouready\\_full.pdf](https://yorkcountypa.gov/images/pdf/emergency-management/areyouready_full.pdf). For business preparedness information, please visit: <https://yorkcountypa.gov/emergency-services/emergency-management-office/plan-prepare/business-preparedness.html> and <https://www.ready.gov/business>.

**Watershed Restoration** – The York County Conservation District’s (YCCD) Watershed Specialist provides technical assistance, which will improve watershed organization development and the quality and quantity of the Commonwealth’s surface and groundwater resources. The focus of this work relates to watershed assessment, procurement of funding, technical assistance and the creation of work plans and strategies to restore and protect groundwater and surface water resources. For more information, visit the YCCD website at <http://www.yorkccd.org/watersheds/watershed-products-and-services-overview/>.

### 5.2.3 Financial Capability

The decision and capability to implement hazard mitigation-related activities is very often dependent on existing financial resources. The cost of mitigation activities certainly vary. The following programs are available to provide funding for and assistance with hazard mitigation. Figure 5.2.3-1 depicts financial resource availability as identified through the Capability Survey.

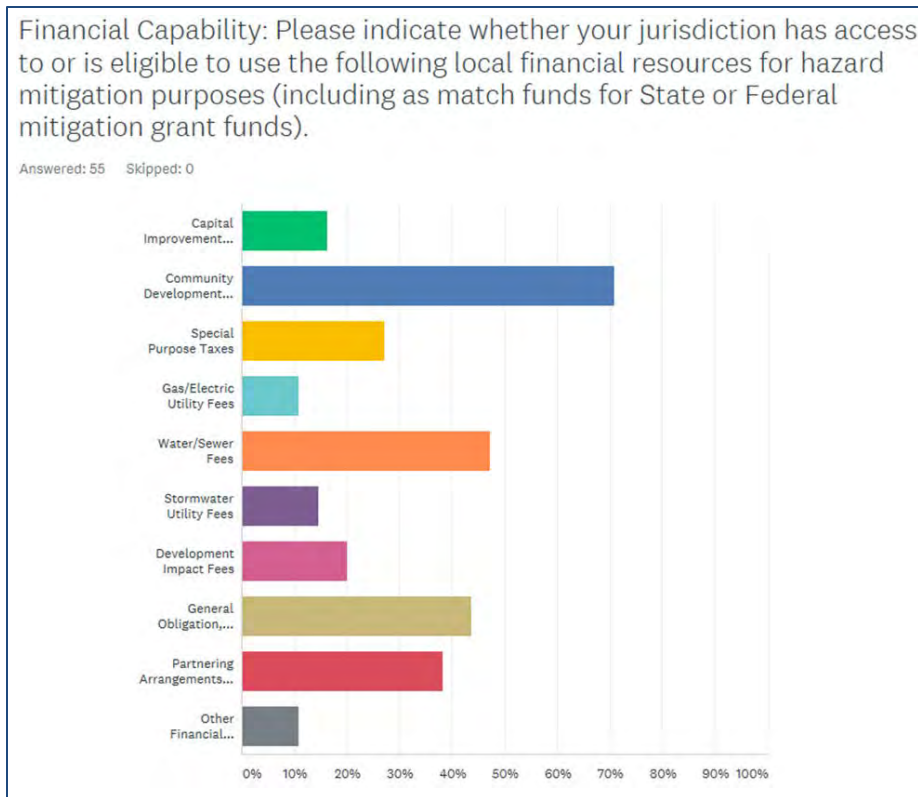


Figure 5.2.3-1: Municipal Financial Capability

**Chesapeake Bay Program** – The Chesapeake Bay Program is a unique regional partnership that directs and conducts the restoration of the Chesapeake Bay. As a partnership, the Chesapeake Bay Program brings together members of various State, Federal, academic, and local watershed organizations to

build and adopt policies that support Bay restoration. Each organization in the partnership has a unique set of strengths, and by combining resources from the individual organizations, the Bay Program is able to follow a unified plan for restoration. For more information visit: [www.chesapeakebay.net](http://www.chesapeakebay.net).

**Community Action for a Renewed Environment (CARE)** – CARE is a competitive grant program through the US Environmental Protection Agency that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical cooperative agreements, the program will support the following types of activities: working with the funded entity to form community-based collaborative partnerships, identifying and developing an understanding of the many local sources of risk from toxic pollutants and environmental concerns, and setting priorities for the reduction of the identified risks and concerns of the community. For more information: <https://www.epa.gov/communityhealth/community-action-renewed-environment-care-resources>.

**Community Development Block Grant (CDBG) Program** – Administered by the US Department of Housing and Urban Development (HUD) to develop viable urban communities by providing decent housing and a suitable living environment, principally for low-moderate income individuals. Activities can include acquisition, rehabilitation, and reconstruction of properties and facilities damaged by disaster and redevelopment of disaster-affected areas. For more information, contact the YCPC at [www.ycpc.org](http://www.ycpc.org).

**Dirt, Gravel, & Low Volume Road Program** – Dirt, gravel, and low volume roads (low-traffic) roads transverse all of our rural landscapes from forests to farmlands. These roads frequently cut across natural drainage patterns to intercept both overland and sub-surface water flows and convey runoff directly to nearby streams, resulting in sediment pollution, an increase in flood flows, and a decrease in groundwater recharge through infiltration. The combined “rural storm-water system” is a large, but frequently overlooked cause of stream and watershed degradation and impairment. York County’s Dirt, Gravel and Low Volume Road Program is available to eligible public road maintenance entities providing both financial and technical assistance. For more information, visit the YCCD website at <http://www.yorkccd.org/watersheds/dirt-gravel-roads-program/>.

**Disaster Legal Assistance** - Disaster Legal Services can be provided to citizens and business owners. For more information, visit the FEMA website at <https://www.disasterassistance.gov/disaster-assistance/forms-of-assistance/4464/1/805>.

**Economic Adjustment Assistance Program (Sudden and Severe Economic Dislocation Title X)** – Administered by the US Department of Commerce (DOC) to help States and localities develop and/or implement strategies that address adjustment problems resulting from dislocation. Grants can be made available under this Program in response to natural disasters for improvements and reconstruction of public facilities. For more information, contact the DOC at 202-482-6225.

**Emergency Conservation Program** – Provides emergency funding for farmers to rehabilitate farmland damaged by natural disasters and for carrying out emergency water conservation measures during periods of severe drought. For more information visit: <https://www.fsa.usda.gov/programs-and-services/conservation-programs/emergency-conservation/index>.

**Emergency Management Institute (EMI)** – Through the EMI, the Federal government offers training in all aspects of emergency management, including hazard mitigation. The courses available at the Institute are free to local government staff. For more information visit: <https://training.fema.gov/emi.aspx>.

**Emergency Management Performance Grant (EMPG)**– This grant encourages the development of comprehensive disaster preparedness and assistance plans, programs, capabilities, and organizations by the states and by county governments. Financial and technical assistance provides support to state and county governments' efforts to improve their emergency response capabilities. For more information visit: <http://www.pema.pa.gov/about/Pages/Grants.aspx>.

**Emergency Watershed Protection (EWP) Program** – EWP is a program of the USDA's Natural Resources Conservation Service (NRCS). It helps communities address watershed impairments that pose imminent threats to lives and property. Watershed impairments addressed can include, but are not limited to, debris-clogged stream channels, undermined and unstable stream banks, jeopardized water control structures and public infrastructures, wind-borne debris removal, and damaged upland sites stripped of protective vegetation by fire or drought. Floodplain easements for restoring, protecting, maintaining, and enhancing the functions and values of floodplains, including associated wetlands and riparian areas, are available through EWP. For more information visit: [www.nrcs.usda.gov](http://www.nrcs.usda.gov).

**Excise Tax Relief** – Businesses may file claims to the Alcohol and Tobacco Trade Tax Bureau for disaster relief for payment of Federal excise taxes paid on alcoholic beverages or tobacco products lost, rendered unmarketable, or condemned by a duly authorized official under various circumstances, including where the President has declared a major disaster. For more information, 877-882-3277 or at [https://www.ttb.gov/nrc/hurricane\\_disaster\\_relief.shtml](https://www.ttb.gov/nrc/hurricane_disaster_relief.shtml).

**Farm Service Agency (FSA)** – The FSA offers low interest loans to eligible individuals, farmers, and businesses to repair or replace damaged property and personal belongings not covered by insurance. For more information visit: [www.fsa.usda.gov](http://www.fsa.usda.gov).

**Flood Mitigation Assistance Program (FMA)** – FMA was created as part of the National Flood Insurance Reform Act (NFIRA) with the goal of reducing or eliminating claims under the NFIP. FEMA provides funds to assist states and communities to implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. Funding is available in planning grants (to prepare Flood Mitigation Plans), project grants (to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures NFIP-participating communities), and management cost grants (for the state to help administer the FMA and activities). For more information: [www.fema.gov](http://www.fema.gov).

**Flood Insurance Technical and Financial Assistance through PA DCED** – The Governor's Center for Local Government Services at DCED has developed risk management publications that provide guidance in loss control practices for local officials. The first publication is the Risk Manager's Insurance Guide and the second is the Insurance Primer for Municipal Secretaries. The publications contain the following information: municipal liability, types of municipal insurance, public risk management, and how to purchase insurance coverage. The Center also provides training and technical assistance on risk management. The Center is designated as the lead State agency for the

NFIP and Pennsylvania's Floodplain Management (FPM) Act 166 of 1978 and is identified as the lead State coordinator for the NFIP. For more information, visit: <https://dced.pa.gov/housing-and-development/insurance/>.

**Hazard Mitigation Grant Program (HMGP)** – HMGP is a post-disaster mitigation program. It is available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75% funding for hazard mitigation measures. The HMGP's objective is to support cost-effective measures implemented during the recovery from a disaster that will reduce the risk of damage and suffering from future disasters.

Applicants who are eligible for the HMGP are state and local governments, certain private non-profit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. The HMGP is used to fund cost-effective projects that will protect public or private property in an area covered by a Federal disaster declaration. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Hazard Mitigation Plan. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood proofing or elevation to reduce future damage, minor structural improvements, and development of State or local standards.

After a Federal disaster is declared, PEMA briefs eligible applicants about the HMGP. Interested applicants file a HMGP Pre-Application Form with PEMA to receive an application packet. Once completed, HMGP Applications are submitted to PEMA. Projects are reviewed by a special team, placed in rank order for available funding, and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available.

HMGP funds may not be used for disaster repairs, since other Federal programs support these. The HMGP differs from mitigation funded by the Public Assistance Program. FEMA's Public Assistance Program helps pay for repairs to public and certain nonprofit facilities damaged by a disaster. Public Assistance repairs may incorporate mitigation upgrades to protect a facility from future disaster damage. Unlike Public Assistance, the HMGP may fund measures that affect properties that not damaged by a recent disaster, but which remain vulnerable to future disasters. The HMGP may be used for projects that protect private property from future disaster damage as long as an eligible public or nonprofit organization applies for and administers the grant and other program guidelines are met. For more information, contact the State Hazard Mitigation Officer or visit: <https://www.fema.gov/hazard-mitigation-grant-program>.

**Hazardous Materials Emergency Preparedness (HMEP)** – This grant program provides financial and technical assistance, as well as national direction and guidance to enhance state, Territorial, Tribal, and local hazardous materials emergency planning and training. The HMEP Grant Program distributes fees collected from shippers and carriers of hazardous materials to emergency responders for hazmat training and to LEPCs for hazmat planning. A main purpose of the program is to increase implementation of the EPCRA and to encourage a comprehensive approach to emergency training and planning by incorporating the unique challenges of responses to transportation situations <https://www.phmsa.dot.gov/grants/hazmat/hazardous-materials-emergency-preparedness-hmep-grant>.

**Hazardous Materials Response Fund (HMRF)** – The HMRF, supported by fees assessed to the chemical industry, provides supplemental emergency preparedness funding for chemical emergency preparedness at county and State levels. These funds are to be used for the preparation of chemical emergency plans by LEPCs and industry, acquisition of hazardous materials response team equipment, public Right-to-Know education, chemical industry awareness and compliance, and the conduct of training and exercises. All 67 counties of the Commonwealth are eligible to apply for grants under the guidance of Act 1990-165. For more information visit: <http://www.pema.pa.gov/about/Pages/Grants.aspx>.

**Hazard Mitigation Technical Assistance Program (HMTAP)** – The HMTAP is an ad hoc technical assistance program created to assist FEMA's Headquarters and Regional Mitigation Staff. This multi-hazards program provides architectural, engineering, and other mitigation related technical assistance in support of post-disaster mitigation initiatives.

The HMTAP is available for use by all FEMA Regional and Headquarters Mitigation staff. Examples of HMTAP projects are environmental assessments, benefit cost analysis, engineering/architectural feasibility studies, remote sensing and GIS assistance, post disaster floodplain analysis to assist in mitigation activities, and training to assist in the implementation of mitigation activities. For more information visit: [www.fema.gov](http://www.fema.gov).

**Individual Assistance through the US Small Business Administration (SBA)** – The SBA serves as the Federal disaster bank for homeowners, renters, businesses and some non-profit entities in the wake of hurricanes, floods, earthquakes, wildfires, tornadoes, and other physical disasters. Available loans include home and personal property loans, business physical disaster loans, and economic injury disaster loans. For more information, the Small Business Administration's website is [www.sba.gov](http://www.sba.gov).

**Individuals and Households Program (IHP)** – Assists individuals and households affected by a disaster to enable them to address necessary expenses and serious needs, which are not met through other forms of disaster assistance or insurance. Forms of housing assistance under IHP include temporary housing, repair, replacement, and semi-permanent/permanent housing construction. For more information visit: [www.fema.gov](http://www.fema.gov).

**Land and Water Conservation Fund (LWCF)** – Administered by the National Park Service (NPS), this grant program provides matching grants to state and local governments to acquire and develop outdoor recreation areas and facilities for the general public to meet current and future need. Projects can include picnic areas, campgrounds, tennis courts, boat launching ramps, bicycle trails, and support facilities. For more information visit: [www.nps.gov/lwcf/](http://www.nps.gov/lwcf/).

**Large Woody Debris (LWD) Program** – Large woody debris can cause flooding of private/public infrastructure, significant streambank erosion, or is a navigational hazard. Through the YCCD, financial and technical assistance is available to private/public landowners and managers for the purpose of LWD removal and to address streambank and channel erosion and similar concerns, through local watershed-based planning, restoration and protection efforts. Assistance is available on a first come, first serve basis, as long as time and resources allow. For more information, visit the YCCD website at [www.yorkccd.org/watersheds/large-wood-debris/](http://www.yorkccd.org/watersheds/large-wood-debris/).



**Local Government Capital Projects Loan Program (LGCPL)** – LGCPL provides low-interest loans for up to 50% of the total cost of purchasing equipment up to a maximum of \$25,000 or 50% of the total cost of municipal facility needs up to \$50,000 for small local governments with populations of 12,000 or less. For more information visit: <https://dced.pa.gov/programs/local-government-capital-project-loan-program-lgcpl/>.

**Municipal Assistance Program (MAP)** –Through this program, PA DCEd Provides funding to assist local governments to plan for and efficiently implement a variety of services and improvements, and soundly manage development with an emphasis on intergovernmental approaches. Funding is available for three groups of activities: shared services; community planning; and floodplain management and a 50% match is required. For more information visit: <https://dced.pa.gov/programs/municipal-assistance-program-map/>.

**National Dam Safety Program (NDSP)** – The primary purpose of the NDSP is to provide financial assistance to states to strengthen their dam safety programs. States use NDSP funds for dam safety training for state personnel. Funds are also used to increase the number of dam inspections, to increase submittal and testing of Emergency Action Plans (EAPs), to review and issuance of permits in a timely manner, to improve coordination with State emergency preparedness officials, to identify dams to be repaired or removed, and to provide dam safety awareness workshops, dam safety videos, and other outreach materials. For more information visit: <https://www.fema.gov/national-dam-safety-program>. For information on the State Dam Safety Program contact PA DEP at 717-787-8568.

**National Earthquake Technical Assistance Program (NETAP)** – This program helps state, local, and tribal governments obtain the knowledge, tools, and support they need to plan and implement effective earthquake mitigation strategies. FEMA provides training (courses and materials related to a variety of seismic risk-reduction activities), technical assistance (to help recipients design, develop and implement earthquake mitigation projects), tools development (to facilitate efficient and effective implementation of earthquake mitigation efforts), and special-project support (demonstration projects or other original, unique or replicable mitigation initiatives. For more information visit: <https://www.fema.gov/national-earthquake-technical-assistance-program>.

**National Hurricane Program (NHP)** – The NHP conducts and supports many projects and activities that help protect communities and their residents from hurricane hazards. The three (3) key components of the NHP are Response and Recovery; Planning, Training and Preparedness; and Mitigation. For more information visit: [https://www.fema.gov/pdf/plan/prevent/nhp/nhp\\_faqs.pdf](https://www.fema.gov/pdf/plan/prevent/nhp/nhp_faqs.pdf).

**Non-Insured Crop Disaster Assistance Program (NAP)** – NAP provides financial assistance to producers of insurable crops when low yields, loss of inventory and/or prevented planting occurs due to natural disasters. For more information visit: [www.FSA.usda.gov](http://www.FSA.usda.gov).

**Pre-Disaster Mitigation Program (PDM)** – Provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are awarded on a competitive basis and without reference to State allocations, quotas, or other formula-based allocation of funds. For more information visit: <https://www.fema.gov/pre-disaster-mitigation-grant-program>.

**Preparedness (Non-Disaster) Grants** – Provides grants to states to assist state, local, tribal and territorial governments in preparing for all hazards, as authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Title VI of the Stafford Act authorizes FEMA to make grants to provide a system of emergency preparedness for the protection of life and property in the US from hazards and to vest responsibility for emergency preparedness jointly in the Federal government and the states and their political subdivisions. The Federal government, through the EMPG Program, provides necessary direction, coordination, and guidance, and provides necessary assistance, as authorized in this Title, so that a comprehensive emergency preparedness system exists for all hazards. For information, visit: <https://www.fema.gov/preparedness-non-disaster-grants>.

**Public Assistance Grant Program** – The objective of the Public Assistance Grant Program is to provide assistance to states, local governments, and certain non-profit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President. Through the Public Assistance Grant Program, FEMA provides supplemental Federal disaster grant assistance for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations.

The basic criteria for this Program is as follows: must be required as a result of the Presidentially-declared Major Disaster, be located within the designated disaster area, be the legal responsibility of an eligible applicant, and no other Federal agency may have statutory authority to provide funding. Eligible uses for funding include debris removal, emergency protective measures, and permanent restoration. For more information visit: [www.fema.gov](http://www.fema.gov).

**Radiation Transportation Emergency Response Fund (RTERF)** – RTERF, which is supported by fees assessed each shipper of spent nuclear fuel to, within, or across the Commonwealth, is designed to provide financial assistance to train and equip local agencies and volunteer organizations to respond to accidents involving the shipment of spent nuclear fuel. The fund provides grants to the 47 counties that have an approved Nuclear Regulatory Commission / Commonwealth of Pennsylvania route for the shipment of spent nuclear fuel within five (5) miles of their jurisdictional borders. Counties may apply one (1) time during a fiscal year for a maximum grant amount of \$5,000. For more information visit: <http://www.pema.pa.gov/about/Pages/Grants.aspx>.

**Radiation Emergency Response Fund (RERF)** – RERF is supported by fees assessed to nuclear power plants and is designed to provide financial assistance to the eligible risk and support counties, municipalities, school districts, volunteer organizations and state agencies in order to carry out the purposes of the Radiation Emergency Response Program.

RERF provides for the development of a detailed fixed nuclear emergency response plan for areas surrounding each nuclear electrical generation facility, nuclear fabrication, and away-from-reactor storage facility located in the Commonwealth. It also provides the training and equipping of State and local emergency response personnel, the periodic exercise of the accident scenarios designated in the Nuclear Regulatory Commission Emergency Response Plan applicable to each fixed nuclear facility, and the procurement of specialized supplies and equipment. For more information visit: <http://www.pema.pa.gov/about/Pages/Grants.aspx>.

**Watershed Protection and Flood Prevention Program (formerly River Basin Program)** – Administered by Natural Resource Conservation Service (NRCS), this program provides planning

assistance to Federal, State, and local agencies for development of coordinated water and related land resource programs. Priority granted to projects designed to solve upstream rural community flooding, water quality improvement that comes from agricultural non-point sources, wetland preservation, and drought management for agricultural and rural communities. For more information visit: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/pa/programs/planning/wpfp/>.

**Section 108 Loan Guarantee Programs** – Provides loan guarantees as security for Federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing. For more information, contact the YCPC Housing and Community Development Division at 717-771-9870 or visit: [www.hud.gov](http://www.hud.gov).

**Tax Refunds** – The Internal Revenue Service (IRS) allows certain casualty losses deducted on Federal income tax returns for the year of the loss or through an immediate amendment to the previous year's return. For more information regarding deducting losses from a disaster, visit <https://www.irs.gov/newsroom/top-10-tips-for-deducting-losses-from-a-disaster>.

**Transportation Emergency Relief Program** – Administered by the Federal Highway Administration (FHWA), this program provides aid for the repair of Federal-aid roads. These funds are for repairs that incorporate new technologies that improve the quality and life span of the road. For more information, visit: [www.fhwa.dot.gov](http://www.fhwa.dot.gov).

**Unemployment Benefits** – Disaster unemployment assistance and unemployment insurance benefits may be available through the State unemployment office and supported by the US Department of Labor. For more information and eligibility, contact the York County Assistance Office at 717-771-1100.

**US Army Corp of Engineers (USACE)** – USACE provides planning and technical assistance for a wide range of activities, including flood-damage reduction, dam safety, and emergency response. For more information, visit: [www.USACE.army.mil](http://www.USACE.army.mil).

**Weatherization Assistance Program** – This program minimizes the adverse effects of higher energy costs on low-income, elderly, and handicapped citizens through client education activities and weatherization services like heating system modifications and insulation. For more information visit: [www.ycpc.org](http://www.ycpc.org).

There may be other programs not listed here that are available through FEMA, PEMA, and/or other organizations. It does, however, appear that there are a wide array of programs available to offer financial assistance. In light of awareness of these programs, it is important to note that the need exists to be creative in packaging grants to carry out projects. Additionally, some municipalities lack personnel to deal with applying for and writing grants, which creates an obstacles.

The Pennsylvania Silver Jackets Team is an interagency team dedicated to working collaboratively with the Commonwealth and appropriate stakeholders in developing and implementing solutions to flood hazards by combining available agency resources, which include funding, programs, and technical expertise. <https://silverjackets.nfrmp.us/State-Teams/Pennsylvania>.

### 5.2.4 Education and Outreach

Education and outreach activities implement mitigation activities and communicate hazard-related information. The YCPC uses an e-Alert to notify all subscribers of upcoming events, educational opportunities, and other activities. Activities and education related to hazard mitigation are provided by and promoted to a number of organizations and agencies including, but not limited to, the following: the York County Office of Emergency Services, municipal emergency managers, local schools, municipalities, local business, York County CERT, watershed groups, LEPC, watershed groups, and the Pennsylvania Department of Transportation (PennDOT) (specifically warnings of traffic and weather on the Variable Message Signage).

The YCPC also publishes a topical newsletter, Planning Perspectives, which has featured hazard mitigation-related information in the past. A series of model ordinances were developed to provide local elected and appointed officials with ideas and strategies to achieve the recommendations of the County and municipal comprehensive plans. The YCPC also maintains a detailed website with important information and links. The geographic information systems data and mapping that is updated and maintained by the YCPC provides essential information to hazard mitigation planning. Education and outreach identified by municipalities through the Capabilities Survey is depicted in Figure 5.2.4-1.

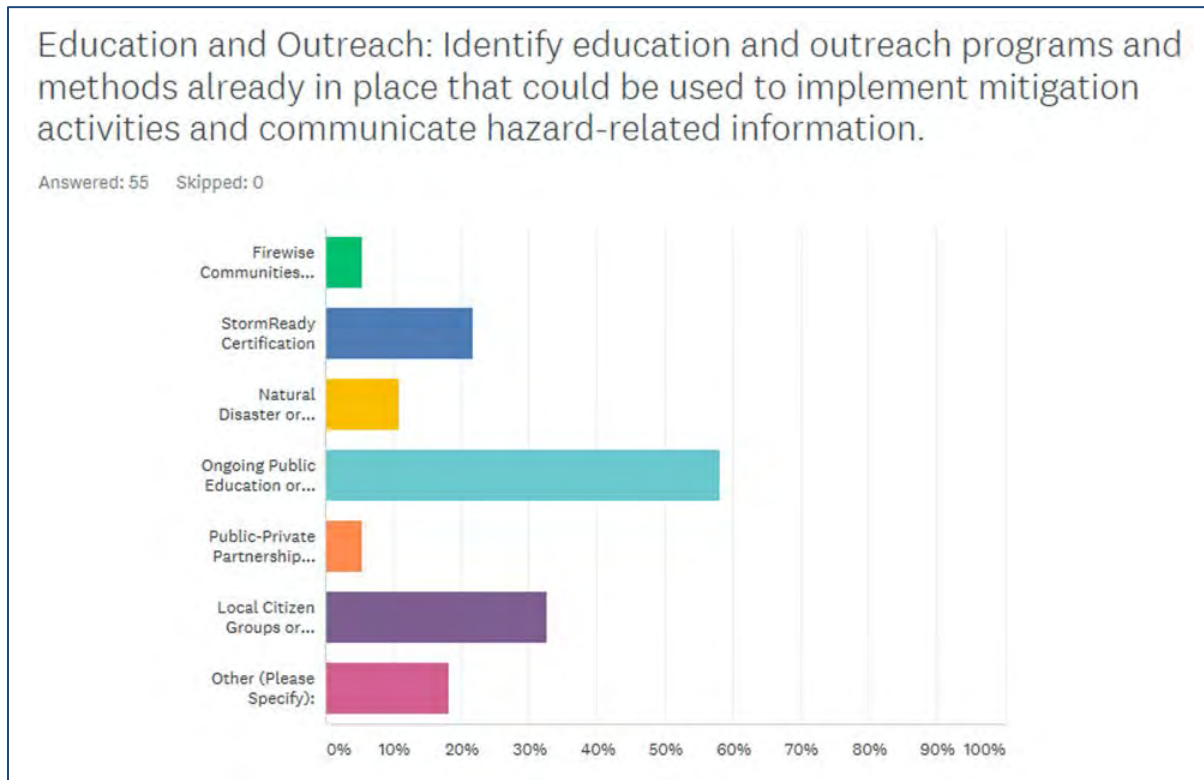


Figure 5.2.4-1: Municipal Education and Outreach

#### 5.2.4.1 Municipal Self-Assessment

In addition to the inventory of specific local capabilities, the Capability Assessment Survey asked each local jurisdiction to conduct its own self-assessment of its capability to effectively implement hazard

mitigation actions. Local municipalities classified each of the capabilities as either “limited,” “moderate,” or “high.” Table 5.2.4.1-1 summarizes the results of the self-assessment question.

| Table 5.2.4.1-1: Summary of Self-Assessment Capability Responses Expressed as a Percentage of Responses Received |         |          |        |
|--|---------|----------|--------|
| Capability Category  | Limited | Moderate | High   |
| Planning and Regulatory  | 52.73%  | 36.36%   | 10.91% |
| Administrative and Technical   | 61.82%  | 27.27%   | 10.91% |
| Financial  | 72.73%  | 25.45%   | 1.82%  |
| Education and Outreach   | 63.64%  | 34.55%   | 1.82%  |

### 5.2.5 Plan Integration

Per FEMA, “plan integration is a process where communities look critically at their existing planning framework and align efforts. Integration of hazard mitigation principles into other local planning mechanisms and vice versa is vital to build a safer, more resilient community” (FEMA, 2015). This includes plans, policies, and programs that guide land use and development and consider the input of the stakeholders.

#### 5.2.5.1 Existing Planning Mechanisms

There are many existing regulatory and planning mechanisms in place, at all levels of government, which support hazard mitigation planning efforts. These tools include the Commonwealth of PA All-Hazard Mitigation Plan, the York County Comprehensive Plan, local floodplain management ordinances, local emergency operations plans, zoning ordinances, subdivision and land development ordinances, and local comprehensive plans. Table 5.2.5.1-1 presents the planning framework in York County.

| Table 5.2.5.1-1: Planning Framework in York County |   |
|--|---|
| State  | 2013 Commonwealth of PA Standard All-Hazard Mitigation Plan |
| Regional   | Envision Lancaster County (County Comprehensive Plan)       |
|  | Imagine Adams County (Comprehensive Plan)                   |
|  | Growing Together: Dauphin County Comprehensive Plan         |
|  | HarfordNEXT: A Master Plan for Harford County               |
|  | Carroll County Master Plan                                  |
|  | Baltimore County Master Plan 2020                           |
| County   | York County Growth Management Plan                          |
|  | York County Integrated Water Resources Plan                 |
|  | York County Heritage Preservation Plan                      |
|  | York County Open Space and Greenways Plan                   |
|  | York County Long Range Transportation Plan                  |
|  | York County Economic Development Plan                       |
|  | York County Emergency Operations Plan                       |
|  | York County Debris Management Plan                          |

**Table 5.2.5.1-1: Planning Framework in York County**

|              |   |
|--------------|---|
| Municipality | Act 167 Stormwater Management Ordinance   |
|              | Local Emergency Operations Plans  |
|              | Local Land Use Plans and Regulations (Comprehensive Plan, Zoning Ordinance, Subdivision and Land Development Ordinance) |

**5.2.5.2 Incorporation into Other Planning Mechanisms**

Hazard mitigation is most effective when it works with other plans, regulations, and programs. Hazard mitigation goals and actions in comprehensive planning efforts promote resilience, effective emergency management, and reduction of risk. Comprehensive plans, emergency operations plans, local hazard mitigation plans, floodplain ordinances, zoning ordinances, and subdivision and land development ordinances are essential to hazard mitigation planning at the County level. Local planning initiatives can implement mitigation strategies to target growth away from the high hazard areas. Safe growth, effective emergency management, and risk reduction result when hazard mitigation goals and actions are applied to comprehensive planning. The York County Emergency Operations Plan presents the policies and the concepts of operations that guide how the County will assist municipalities, public facilities, and agencies affected by disaster, emergency, and/or terrorism, as well as outlines the County’s response and recovery responsibilities. Linking the current planning initiatives in York County to the York County 2018 Hazard Mitigation Plan Update helps to ensure the implementation of the adopted mitigation strategies.

**5.2.5.3 Existing Limitations**

There are no communities in York County that participate in the NFIP Community Rating System, however, many municipalities are prone to flooding. Participation in this program can provide premium reductions for properties located outside of the Special Flood Hazard Areas of up to 10% and for those within the Special Flood Hazard Areas up to 45% reductions.

There are roadways and intersections that repeatedly flood; some of which are State roads. The County and municipalities face challenges mitigating flooding because the roads are maintained and operated by the State and local municipalities do not have the authority to implement a mitigation project independently. In situations like this, PennDOT must decide to carry out the project. Often, PennDOT is concerned with larger, critical transportation routes and smaller State roads and intersections that affect a local community may not get the attention they need to take on a mitigation project.

Lack of financial resources contributes to the lack of implementation of hazard mitigation activities by municipalities. A barrier to acquiring financial assistance is the lack municipal staff with the time or expertise to apply for and manage hazard mitigation grants. This is further exasperated by the strenuous requirements of these programs and the requirement that a municipality must act on behalf of private property owners in order for them to receive hazard mitigation assistance. The County will continue to look to regional, State, and Federal partnerships for financial assistance and explore how it can better assist municipalities with grant applications and management.

# CHAPTER SIX – MITIGATION STRATEGY

## 6.1 UPDATE PROCESS SUMMARY

Mitigation goals are general guidelines that explain what the County and municipalities want to achieve. **Goals** are often expressed as broad policy statements representing a desired long-term result(s). **Objectives** are more specific statements. Objectives often describe steps that are measurable and have a determined completion date.

There were four (4) goals and ten (10) objectives in the *York County 2013 HMP*. A list of these goals and objectives is in Table 6.1-1: List and Review Summary of 2013 Mitigation Strategy Goals and Objectives. The reviews are based on responses received at the 2nd Local Planning Team meeting, and from both public meetings.

| Table 6.1-1: List and Review Summary of 2013 Mitigation Strategy Goals and Objectives   |   |
|---|---|
| <b>Goal 1:</b> Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from the occurrence of drought, earthquake, extreme temperature, flood/flash flood/ice jam, hailstorm, hurricane/tropical storm/nor'easter, invasive species, landslide, lightning strike, pandemic, radon exposure, subsidence/sinkhole, tornado/windstorm, wildfire, winter storm, civil disturbance, dam failure, environmental hazards, nuclear incidents, terrorism, and urban fires/explosions. |   |
| <b>Objective 1A</b> - Provide preventative or corrective measures where possible to deal with identified hazards.   | <b>Review:</b> The LPT agreed that this goal should be continued, with the amendment that all hazards currently profiled in this 2018 HMPU be listed and references to each be consistent with those in the State Hazard Mitigation Plan.<br><br>Objectives 1A, 1B, and 1C will be continued. |
| <b>Objective 1B</b> - Provide proper monitoring and warning of potential for a hazard to occur.   |   |
| <b>Objective 1C</b> - Provide for appropriate response to hazards that is coordinated at all levels.  |   |
| <b>Goal 2:</b> Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.  |   |
| <b>Objective 2A</b> – Ensure that an agency or organization is identified, that can directly plan for and carry out tasks related to a specific hazard.   | <b>Review:</b> The LPT agreed that this goal should be continued.<br><br>Objective 2A will be continued.<br><br>Objective 2B wording has been changed to delete Steering Committee.<br><br>Objective 2C will be continued.  |
| <b>Objective 2B</b> - Utilize the Steering Committee (Local Planning Team) to coordinate and work towards addressing hazard mitigation throughout York County.  |   |
| <b>Objective 2C</b> - Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.   |   |

**Table 6.1-1: List and Review Summary of 2013 Mitigation Strategy Goals and Objectives**

|  |   |
|--|---|
| <b>Goal 3:</b> Promote proper planning and disaster resistant future development.  |   |
| <b>Objective 3A</b> - Maintain the Hazard Mitigation Plan as an element of the York County Comprehensive Plan.                                   | <b>Review:</b> The LPT agreed that this goal should be continued.   |
| <b>Objective 3B</b> - Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels. | Objective 3A will be continued.<br><br>Objective 3B has been changed to include consideration of hazard mitigation as part of the review process. |
| <b>Goal 4:</b> Increase public understanding, support, and demand for hazard mitigation.   |   |
| <b>Objective 4A</b> - Provide educational materials.   | <b>Review:</b> The LPT agreed that this goal should be continued.   |
| <b>Objective 4B</b> - Create awareness among residents regarding their responsibility to be prepared for and able to respond to a hazard.        | Objectives 4A and 4B will be continued  |

**Actions** provide more detailed descriptions of specific work tasks to help the County achieve its goals and objectives. There were 102 actions identified in 2013 York County HMP. A list of these actions is in Table 6.1-2: List and Review Summary of 2013 Mitigation Actions. The reviews are based on the work of the YCPC staff and individual surveys sent to each municipality (see Appendix D for example of survey).

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action   | Review            |
|--|-------------------|
| 1. Regionalization of emergency management services to better utilize resources and to coordinate more efficient hazard response.  | Still applicable. |
| 2. Work to inform municipal officials and the public on the PEIRS Program and the need to report instances of hazards through County 911 so that they may be documented. | Still applicable. |
| 3. Continue to engage Hazard Mitigation Local Planning team in the County’s hazard mitigation planning and implementation.   | Still applicable. |
| 4. Continue to rely on the York County Office of Emergency Management as the overall coordinating entity dealing with hazards in York County                             | Still applicable. |
| 5. Carefully evaluate and promote land uses that will lessen the impact of certain hazards with proper hazard mitigation planning.                                       | Still applicable. |
| 6. Continue to maintain GIS mapping of all known hazards and maintain updated GIS layers related to all hazards for which a map is helpful.                              | Still applicable. |
| 7. Explore the development and implementation of an online hazard identification tool.   | Still applicable. |



**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review   |
|---|--|
| 8. Use Family Disaster Plans, Family Emergency Survival Kits, evacuation plans and safe rooms/shelters for personal preparedness.   | Still applicable.  |
| 9. Plan emergency transportation evacuation routes.   | Action considered vague and will be replaced with alternate action addressing both emergency routes and evacuation routes. |
| 10. Use structural and nonstructural retrofitting for buildings, infrastructure retrofits, structural elevation and mitigation construction (e.g., proper scoping pre-construction and construction activities and demolition/removal).   | Still applicable.  |
| 11. Use the “5% initiative projects” to include but not limited to developmental or research-based actions, equipment systems for early warning, permanently- installed generators or related equipment, hazard identification and mapping, GIS Software/Hardware, data acquisition, public awareness and education, model building codes or other unproven activities that are tied to or have the primary aim of hazard mitigation. | Still applicable.  |
| 12. Conduct post-disaster code enforcement where extraordinary needs exist that are associated with enforcing local building codes during post-disaster reconstruction (may include performance of building department functions like building inspections and performance of substantial damage determinations under the NFIP.   | Still applicable.  |
| 13. Purchase Alternate Emergency Command Center equipment (computer, lighting, generator, communication equipment).   | Still applicable.  |
| 14. Purchase emergency generator for back-up power.   | No information received from municipality. Action will be deleted.   |
| 15. Create bridge maintenance program to ensure emergency vehicle passage.  | No information received from municipality. Action will be deleted.   |
| 16. Purchase a trailer to be used by emergency services to provide generator support, a command center, a cooling station and a canteen.  | Still applicable.  |
| 17. Color-coded directional signage to designate east-west and north-south evacuation and alternate detour/travel routes.   | Still applicable.  |
| 18. Use and acquire early warning systems and devices, including the utilization of a weather radio.  | Still applicable. Action will be reworded to “Promote the use of early warning systems...”                                 |
| 19. Use environmental and facility design that minimizes the effects of civil disturbance.  | Still applicable.  |
| 20. Maintain and inspect dams.  | Still applicable. Action will be reworded to “Promote the maintenance and inspection of dams.”                             |
| 21. Engineering costs for design/drawings of upgrade to Sheppard Myers Dam spillway to comply with probable maximum flood requirements.   | Still applicable.  |

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review   |
|---|--|
| 22. Create and implement water use ordinances.  | Still applicable. Action will be reworded to "Promote the creation and implementation of water use ordinances."  |
| 23. Provide public water within identified growth areas and hydro-geological testing in identified rural areas.   | Still applicable. Action will be reworded to "Promote the provision of..."   |
| 24. Utilize well drilling ordinances for areas dependent upon on-lot wells in identified rural areas.   | Still applicable. Action will be reworded to "Promote the utilization of well drilling ordinances..."  |
| 25. Use low flow technology and other water conservation techniques.  | Still applicable. Action will be reworded to "Promote the use of low flow ...."  |
| 26. In the event of drought declaration, plan for contingencies.  | This action was considered non-specific and will be deleted.   |
| 27. Use zoning and subdivision/land development ordinances to promote groundwater recharge.   | Still applicable.  |
| 28. Training and compliance with safety regulations related to environmental hazards.   | Still applicable. Action will be reworded to "Promote training and compliance...."   |
| 29. Buffer areas around fixed hazardous material structures (SARA facilities).  | Still applicable. Action will be reworded to "Promote the use of buffer areas...."   |
| 30. Prohibit or establish special criteria for SARA facilities in wellhead and source water protection areas.   | Still applicable.  |
| 31. Develop emergency and risk management plans and local emergency planning committee efforts to properly prepare for hazardous materials incidents.   | Still applicable.  |
| 32. Identify comfort stations during extreme temperatures.  | Still applicable.  |
| 33. Adopt and implement the Countywide Debris Management Plan.  | Completed. Plan was completed and approved and will be implemented as needed.  |
| 34. Coordinate the identification and mitigation of flood prone areas through the YCPC and other stakeholder entities.  | Still applicable. YCPC completed York County Flooded Roadway Study.  |
| 35. Identify, acquire, demolish or relocate flood prone structures, with those properties being acquired for open space or other low risk uses. This includes hydrologic, hydraulic, engineering or drainage studies and the use of land easements in the support of these actions. | Still applicable.  |
| 36. Flood proof existing structures existing in the floodplain.   | Still applicable. Action will be reworded to "Promote flood proofing of existing structures within the floodplain."  |
| 37. Use minor localized flood reduction projects including, but not limited to, culverts, retention/detention basins and channelization and the incorporation of stormwater BMPs into local ordinances.   | Still applicable.  |
| 38. Work with FEMA to maintain FIRM maps.   | Still applicable. County worked with FEMA as part of 2015 Update by hosting meetings, incorporating information as part of web page, and making presentations to first time home buyers and other organizations. |

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review   |
|---|--|
| 39. Expand the real time stream monitoring program.   | Still applicable. Add “in flood sensitive areas to assist with early warning notification of potential flooding” |
| 40. Continued NFIP compliance through implementation of adopted floodplain management measures, consideration of new measures for implementation as they become available and public education.   | Still applicable.  |
| 41. Use drainage system maintenance and wetland protection as a way of lessening impacts of floods.   | Still applicable. Change lead agency to YCCD.  |
| 42. Monitor Floodplains.  | Still applicable. Change wording to “Monitor floodplains and provide technical assistance.”                      |
| 43. Update municipal ordinances to DEP requirements with regards to private bridges and crossings.  | Still applicable.  |
| 44. Complete soil stabilization projects to reduce risk to structures or infrastructure from erosion and landslides, including geotextiles, sod stabilization, installing vegetative buffer strips, preserving natural vegetation, decreasing slope angles and stabilizing with rip rap and other means of slope anchoring. | Still applicable.  |
| 45. Replace County Bridge #123  | Still applicable. Add “due to scour critical rating.”  |
| 46. Replace County Bridge #166.   | Still applicable. Add “due to scour critical rating.”  |
| 47. Replace/redirect inadequate storm sewer.  | Action deleted. No response from municipality.   |
| 48. Tire removal and stream bank stabilization.   | Action deleted. No response from municipality.   |
| 49. Dump clean-up and flood damaged road stabilization.   | Action deleted. No response from municipality.   |
| 50. Replace County Bridge #41.  | Still applicable. Add “due to scour critical rating.”  |
| 51. SR0114 and SR1003 – elevate and replace bridge along with stream channel restoration to reduce flooding.  | Still applicable.  |
| 52. Paving and stormwater control, 36 High Street to the Borough line.  | Action completed. Deleted.   |
| 53. Maul Avenue Bridge Replacement.   | Still applicable. Add “due to flooding.”   |
| 54. Stormwater control from 25 Red Lion Avenue to Main Street.  | Still applicable.  |
| 55. Replace/repair retaining wall along Baltimore St. on South Branch Codorus Creek.  | Still applicable.  |
| 56. Purchase a boom cutter for vegetation maintenance along South Branch of Codorus Creek to keep floodway clear of dense vegetation.   | Action completed. Deleted.   |
| 57. Realign Fishing Creek, stabilize channel, and repair Water St.  | Action deleted. No response from municipality.   |
| 58. South Kister Street Drainage Improvements.  | Action deleted. No response from municipality.   |
| 59. Construct labyrinth spillway to provide capacity for a full PMF (probable maximum flood).   | Action deleted. No response from municipality.   |

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review  |
|---|---|
| 60. Remove sediment from under bridge to reducing flooding problem.   | Action deleted. Not a long term solution.             |
| 61. Front Street Drainage Improvements.   | Still applicable.                                     |
| 62. Replace County Bridge #28   | Still applicable. Add “due to scour critical rating.” |
| 63. Replace undersized culvert on Susquehanna Trail to alleviate flooding.  | Action deleted. No response from municipality.        |
| 64. Replace County Bridge #247.   | Still applicable. Add “due to scour critical rating.” |
| 65. Replace County Bridge #143.   | Still applicable. Add “due to scour critical rating.” |
| 66. Elevate and install drainage improvements along Flickinger Road to reduce flooding potential.   | Still applicable.                                     |
| 67. Blettner Avenue Municipal Bridge No. 333 scour critical bridge improvements.  | Still applicable.                                     |
| 68. Replace culvert, redesign stream and make channel improvements at Young’s Road and Kidd Lane.   | Still applicable.                                     |
| 69. Develop a lining program for the storm sewer system. (Drainage System Maintenance) The corrugated metal pipe, more than 25 years old, in the Township is showing signs of deterioration. There is potential for failure. The pipe is also operating at less than design capacity. | Still applicable.                                     |
| 70. Realign South Branch Codorus Creek and reconstruct adequate stream enclosure/overflow channel to mitigate flooding.   | Action deleted. No response from municipality.        |
| 71. West Gay Street stormwater improvements.  | Action deleted. No response from municipality.        |
| 72. First Avenue Storm Water Improvements.  | Action deleted. No response from municipality.        |
| 73. Remove silt/debris from South Branch, Codorus Creek.  | Action deleted. Not a long term solution.             |
| 74. Stormwater drainage facilities installation to prevent flooding municipal property.   | Action deleted. No response from municipality.        |
| 75. Replace County Bridge #213.   | Still applicable. Add “due to scour critical rating.” |
| 76. Flood-proofing sanitary sewage pump station – 2700 block West Market Street.  | Action Completed. Deleted.                            |
| 77. West First Avenue Storm Sewer Improvements.   | Still applicable. Updated costs provided.             |
| 78. East High Street Storm Water Drainage Improvements (Heindel Ave to Park).   | Still applicable. Updated costs provided.             |
| 79. Professional engineered design and construction drawings and permitting to reduce flooding and erosion along the Fishing Creek corridor in Windsor Borough.   | Still applicable. Updated costs provided.             |
| 80. West High Street Storm Water Drainage Improvements (Heindel Ave to North Camp Street).  | Still applicable. Updated costs provided.             |

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review  |
|---|---|
| 81. Replace Locust Street storm sewer pipe and inlets. Existing storm sewer is undersized and degrading which leads to flooding and road damage.  | Action completed. Deleted.  |
| 82. Replace County Bridge #98.  | Still applicable. Add "due to scour critical rating."   |
| 83. Professional design, permitting, construction associated with replacement of inadequate storm sewer along Hill Street to prevent erosion, flooding and property damage.   | Action deleted. No response from municipality.  |
| 84. Stream monitoring to determine flooding causes/remedies.  | Action deleted. No response from municipality.  |
| 85. Bury power lines.   | Still applicable. Reword action to "Promote burying of power lines."  |
| 86. Make available safe back up power in the event of loss of electricity (including back-up generators, both temporary and permanent).   | Still applicable. Reword action to "Promote available safe backup ...."   |
| 87. Use native species.   | Still applicable. Reword action to "Promote the use of native species in municipal plans and ordinances."   |
| 88. Procure decontamination stations (male and female) for PBAPS nuclear response incident.   | Still applicable.   |
| 89. Promote immunization and following the recommendations of medical professionals.  | Still applicable  |
| 90. Test for and abate radon in all structures.   | Still applicable. Reword to "Promote testing and abatement of radon in all structures."   |
| 91. Conduct geologic testing, in identified Karst topography areas, as a requirement within the Subdivision/Land Development Ordinances.  | Still applicable.   |
| 92. Create a directory of companies or individuals properly trained to deal with the correction of land subsidence.   | Action deleted. No longer applicable.   |
| 93. Train emergency responders in relation to terrorism.  | Still applicable.   |
| 94. Complete threat assessment and terrorism awareness measures.  | Still applicable. Add "assessment available through U.S. Department of Homeland Security and State Police Risk Vulnerability Assessment Team (RVAT)." |
| 95. Use personal and community vigilance to prevent future acts of terrorism.   | Still applicable. Change wording from "Use" to "Promote."   |
| 96. Utilize code enforcement to minimize or remove the damage that can be caused by hazards.  | Still applicable.   |
| 97. Identify area with structures such as mobile homes that are more susceptible to tornadoes, winter storms and other weather-related hazards and identify evacuation shelters for those living in those structures. | Still applicable.   |
| 98. Provide and maintain smoke detectors and fire extinguishers.  | Still applicable. Change wording to "Promote the acquisition and maintenance of smoke detectors and fire extinguishers."                              |

**Table 6.1-2: List and Review Summary of 2013 Mitigation Actions**

| Action  | Review  |
|---|---|
| 99. Use defensible space and other wildfire mitigation actions to mitigate wildfires (e.g., ignition-resistant construction and hazardous fuels reduction).               | Still applicable. Change wording from "Use" to "Promote."     |
| 100. Purchase and install road salt de-icing pre-wetting system apparatus on four Township trucks and the installation of a salt brine manufacturing system/storage tank. | Still applicable.   |
| 101. Purchase and install road salt prewetting system for Township vehicles.  | Action Completed. Deleted.                                    |
| 102. Codorus Creek NPS Watershed Implementation Plan.   | Still applicable. Reword to "Implement Codorus Creek NPS...." |

## 6.2 2018 MITIGATION GOALS AND OBJECTIVES

Based on the review of the 2013 goals and objectives, updated goals and objectives was developed in this HMP-U. Table 6.2.1 shows the mitigation goals and objectives for 2018. In all, there remain four (4) goals and ten (10) objectives identified as part of the Plan Update.

**Table 6.2-1: 2018 Mitigation Goals and Objectives**

|               |   |
|---------------|---|
| <b>Goal 1</b> | Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from the occurrence of drought, earthquake, extreme temperature, flood/flash flood/ice jam, hailstorm, hurricane/tropical storm/nor'easter, invasive species, landslide, lightning strike, pandemic and infectious disease, radon exposure, subsidence/sinkhole, tornado/windstorm, wildfire, winter storm, civil disturbance, dam failure, environmental hazards, levee failure, mass food/animal feed contamination, nuclear incidents, terrorism, and urban fires/explosions. |
| Objective 1A  | Provide preventative or corrective measures where possible to deal with identified hazards.   |
| Objective 1B  | Provide proper monitoring and warning of potential for a hazard to occur.   |
| Objective 1C  | Provide for appropriate response to hazards that is coordinated at all levels.  |
| <b>Goal 2</b> | Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.   |
| Objective 2A  | Ensure that an agency or organization is identified that can directly plan for and carry out tasks related to a specific hazard.  |
| Objective 2B  | Utilize the Local Planning Team to coordinate and work towards addressing hazard mitigation throughout York County.   |
| Objective 2C  | Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.   |
| <b>Goal 3</b> | Promote proper planning and disaster-resistant future development.  |
| Objective 3A  | Maintain the Hazard Mitigation Plan as an element of the York County Comprehensive Plan.  |

| Table 6.2-1: 2018 Mitigation Goals and Objectives |  |
|---|--|
| Objective 3B                                      | Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels and as part of the review process for these documents and other proposed projects. |
| <b>Goal 4</b>                                     | Increase public understanding, support and demand for hazard mitigation.   |
| Objective 4A                                      | Provide educational materials.   |
| Objective 4B                                      | Create awareness among residents regarding their responsibility to be prepared for, and able to respond to, a hazard.  |

### 6.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

Appendix 10 of the Standard Operating Guide (SOG) developed by PEMA presents a comprehensive list of hazard mitigation ideas. The YCPC used this list to guide the development of mitigation techniques and ideas. The four (4) categories of mitigation actions, identified in the SOG, include:

- Local Plans and Regulations:** Includes government authorities, policies, or codes that influence the way land and buildings are developed and built. Examples include planning, zoning, building codes, subdivision regulations, hazard-specific regulations (e.g., floodplain regulations), capital improvement programs, and open space protection, evacuation planning, emergency flood protection procedures, and stormwater regulations.
- Structure and Infrastructure:** Includes actions that involve modifying or removing existing structures and infrastructure or constructing new structures to reduce hazard vulnerability. Examples include the acquisition, elevation, and relocation of structures; structural retrofits; flood-proofing; storm shutters; shatter-resistant glass; stormwater controls (culverts); dams; dikes and levees; warning systems; and safe rooms.
- Natural Systems Protection:** Includes actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, forest and vegetation management, wetlands restoration or preservation, slope stabilization, and conservation easements.
- Education and Awareness:** Includes actions to inform and educate citizens, elected officials, and property owners about risks from hazards and potential ways to mitigate them, and may also include participation in national programs. Such actions include hazard mapping, outreach projects, library materials and dissemination, real estate disclosures, the creation of hazard information centers, school age/adult education programs, hazard response training and exercises, and NFIP outreach.

Table 6.3-1 provides a matrix identifying the mitigation techniques used for hazards in York County. The specific actions associated with these techniques are discussed and included in 6.4. Some of the actions identified apply to all or most of the hazards.

**Table 6.3-1: Mitigation Techniques for Hazards in York County**

| Hazard                              | Mitigation Technique        |                              |                            |                         |
|-------------------------------------|-----------------------------|------------------------------|----------------------------|-------------------------|
|                                     | Local Plans and Regulations | Structure and Infrastructure | Natural Systems Protection | Education and Awareness |
| Drought                             | X                           | X                            |                            | X                       |
| Earthquake                          |                             | X                            |                            | X                       |
| Extreme Temperature                 |                             |                              |                            | X                       |
| Flood/Flash Flood/Ice Jam           | X                           | X                            | X                          | X                       |
| Hailstorm                           |                             |                              |                            | X                       |
| Hurricane/Tropical Storm/Nor'Easter | X                           | X                            |                            | X                       |
| Invasive Species                    | X                           |                              | X                          | X                       |
| Landslide                           | X                           | X                            | X                          | X                       |
| Lightning Strike                    | X                           | X                            |                            | X                       |
| Pandemic and Infectious Disease     |                             |                              |                            | X                       |
| Radon Exposure                      | X                           | X                            |                            | X                       |
| Sinkhole/Subsidence                 | X                           |                              |                            | X                       |
| Tornado/Windstorm                   | X                           | X                            |                            | X                       |
| Wildfire                            | X                           | X                            |                            | X                       |
| Winter Storm                        | X                           | X                            |                            | X                       |
| Civil Disturbance                   | X                           | X                            |                            | X                       |
| Dam Failure                         | X                           | X                            |                            | X                       |
| Environmental Hazards               | X                           |                              | X                          | X                       |
| Levee Failure                       | X                           | X                            |                            | X                       |
| Mass Food/Animal Feed Contamination |                             |                              |                            | X                       |
| Nuclear Incidents                   | X                           | X                            |                            | X                       |
| Terrorism                           | X                           | X                            |                            | X                       |
| Urban Fire/Explosion                | X                           | X                            |                            | X                       |

## 6.4 MITIGATION ACTION PLAN

A risk assessment analysis was conducted to develop a framework for the County’s mitigation action plan. Following a review of the goals and objectives, the mitigation actions from the existing 2013 HMP were discussed to determine if the actions were completed, discontinued, or still applicable. Completed actions were not carried forward to this 2018 HMPU, except if part of longer list of projects. No longer applicable, discontinued, or inadequate projects were deleted or adjusted. New



2018 project submissions were collected via electronic submission of Mitigation Action Forms. Additionally, PEMA's Mitigation Ideas document was consulted for consideration of new action items.

Table 6.4-1 presents the newly updated and identified mitigation actions. A mitigation action has been identified for each hazard profiled in this HMP-U. Additionally, each jurisdiction has at least one (1) mitigation action. More than one (1) hazard is identified for several hazards. Each mitigation action item is intended to address one (1) or more of the goals and objectives. Action #29 specifically addresses continued participation in the National Flood Insurance Program (NFIP), while the other actions related to flooding/flash flood/ice jam would support the mitigation efforts of that hazard.

Table 6.4-1 lists 135 mitigation actions, many of which will involve time and commitment from the County, municipalities, and other organizations/agencies. Limitations of time and resources require that mitigation actions be prioritized. These actions were evaluated using the PASTEEL method. The criteria on which they were evaluated are as follows:

- **Political:** Does the action have political support?
- **Administrative:** Is there adequate staffing and funding to implement the action in a timely manner?
- **Social:** Will the action be acceptable by the community or will it cause any one segment of the population to be treated unfairly?
- **Technical:** How effective will the action be in avoiding or reducing future losses?
- **Economic:** What are the costs and benefits of the action and does it contribute to community economic goals?
- **Environmental:** Will the action provide environmental benefits and will it comply with local, State, and Federal environmental regulations?
- **Legal:** Does the community have the authority to implement the proposed measure?

In order to evaluate the 135 actions by PA STEEL, an in-house YCPC workshop examined in detail each proposed action. After scoring each, it was determined that the average score was 17. Applying a standard deviation of approximately 3, ranges were assigned as follows: greater than 20 = "high," 14-20 = "moderate" and less than 14 = "low."

Two (2) actions received the highest score of 23. Those actions were related to the promotion of training and compliance with safety regulations related to environmental hazards and updating the Indian Rock Dam Flood Emergency Plan. Other actions ranked as high addressed dam failure, drought, environmental hazards, flood/flash flood/ice jam, invasive species, and levee failure. Some of the general actions that address all hazards were also ranked "high."

Table 6.4-2 provides the summary of the factors based on the PA STEEL evaluation. The columns furthest to the right present the summary score and the summary score with the applied weighting. The second reflects the feasibility scores with benefits and costs weighted more heavily. Simply stated, a weighting factor of three (3) was applied to each benefit and cost element, i.e., a "+" benefit

factor rating equals three (3) pluses and a “-“ equals three (3) minuses in the total prioritization score. It is this set of scores that was used to determine the high, moderate, and low classifications.

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*         | Mitigation Action   | Mitigation Technique Category  | Hazard Addressed  | Estimated Cost | Potential Funding Sources                       | Lead Agency/ Department**   | Implementation Schedule             |
|----------|-----------------------|---|--|-------------------|----------------|---|---|-------------------------------------|
| 1        | all 72 municipalities | Regionalization of emergency management services to better utilize resources and coordinate more efficient hazard response  | Local Plans and Regulations  | all hazards       | TBD            | Staff time/in-kind, , EMPG                      | York County EMA   | ongoing                             |
| 2        | all 72 municipalities | Work to inform municipal officials and public on PEIRS Program and the need to report instances of hazards through County 911 so they may be documented   | Education and Awareness  | all hazards       | TBD            | Staff time/in-kind, , EMPG                      | York County EMA   | ongoing                             |
| 3        | all 72 municipalities | Continue to engage Haz Mit Local Planning Team in the County's hazard mitigation planning and implementation  | Local Plans and Regulations  | all hazards       | TBD            | Staff time/In-kind                              | YCPC Long Range Planning Division   | annual basis                        |
| 4        | all 72 municipalities | Continue to rely on York Co Office of Emergency Management as the overall coordinating entity dealing with hazards in York County   | Local Plans and Regulations  | all hazards       | TBD            | Staff time/In-kind                              | York County EMA   | ongoing                             |
| 5        | all 72 municipalities | Carefully evaluate and promote land uses that will lessen the impact of certain hazards with proper hazard mitigation planning  | Local Plans and Regulations  | all hazards       | TBD            | Staff time/In-kind                              | YCPC Municipal/ Long Range Planning Divisions, municipal planning commissions                           | ongoing                             |
| 6        | all 72 municipalities | Continue to maintain GIS mapping of all known hazards and maintain updated GIS layers related to all hazards for which a map is helpful   | Education and Awareness  | all hazards       | TBD            | Staff time/in-kind, ,FMA, EMPG                  | YCPC Information Systems Division   | ongoing                             |
| 7        | all 72 municipalities | Explore the development and implementation of an online hazard identification tool  | Education and Awareness  | all hazards       | \$25,000.00    | Staff time/in-kind, HMGP, PDM, ,FMA, EMPG, CDBG | YCPC Long Range Planning/ Information Systems Divisions   | dependent upon funding availability |
| 8        | all 72 municipalities | Use Family Disaster Plans, Family Emergency Survival Kits, evacuation plans, and safe rooms/ shelters for personal preparedness   | Education and Awareness  | all hazards       | TBD            | Staff time/In-kind                              | YCPC Long Range Planning Division, municipalities, York County EMA                                      | ongoing                             |
| 9        | all 72 municipalities | Use structural and nonstructural retrofitting for buildings, infrastructure retrofits, structural elevation, and mitigation construction (e.g. proper scoping preconstruction and construction activities and demolition/removal)   | Structure and Infrastructure   | all hazards       | TBD            | HMGP  | YCPC, municipalities  | dependent upon funding availability |
| 10       | all 72 municipalities | Use the "5% initiative projects" to include but not limited to developmental or research-based actions, equipment systems for early warning, permanently-installed generators, or related equipment, hazard identification, and mapping, GIS software and hardware, data acquisition, public awareness and education, model building codes, or other unproven activities that are tied to or have primary aim of hazard mitigation. | Local Plans and Regulations, Structure and Infrastructure, Education and Awareness | all hazards       | TBD            | HMGP, PDM, PCPGP, EMPG, staff time/in-kind      | York County EMA, YCPC Long Range Planning/Information Systems/ Transportation Divisions, municipalities | dependent upon funding availability |
| 11       | all 72 municipalities | Conduct post-disaster code enforcement where extraordinary needs exist that are associated with enforcing local building codes during post-disaster reconstruction (may include performance of building, department functions like building inspections and performance of substantial damage determinations under the NFIP)  | Local Plans and Regulations  | all hazards       | TBD            | HMGP  | Municipal code enforcement officers/engineers   | dependent upon funding availability |
| 12       | all 72 municipalities | Promote the use and acquisition of early warning systems and devices, including utilization of a weather radio  | Structure and Infrastructure, Education and Awareness                              | all hazards       | TBD            | Staff time/in-kind, , EPMG, PDM, HMGP, EMA      | YCPC Long Range Planning Division, municipalities, York County EMA                                      | ongoing                             |
| 13       | all 72 municipalities | Use environmental and facility design that minimizes the effects of civil disturbance   | Local Plans and Regulations, Education and Awareness                               | Civil Disturbance | TBD            | Staff time/In-kind, HMGP, PDM, , EMPG           | YCPC Long Range Planning Division, municipalities, York County EMA                                      | ongoing                             |
| 14       | all 72 municipalities | Promote the maintenance and inspection of all dams  | Local Plans and Regulations, Structure and Infrastructure, Education and Awareness | Dam Failure       | TBD            | Staff time/in-kind, , EMPG, USACE, FMA          | YCPC Long Range Planning Division, municipalities, York County EMA                                      | ongoing                             |
| 15       | all 72 municipalities | Promote the creation and implementation of water use ordinances   | Local Plans and Regulations, Education and Awareness                               | Drought           | TBD            | Staff time/In-kind, HMGP, PDM, , EMPG           | YCPC Long Range Planning Division, York County EMA  | ongoing                             |

**Table 6.4-1: 2018 Mitigation Actions**

| Action # | Municipality*         | Mitigation Action   | Mitigation Technique Category   | Hazard Addressed          | Estimated Cost | Potential Funding Sources                 | Lead Agency/ Department**   | Implementation Schedule             |
|----------|-----------------------|---|---|---------------------------|----------------|---|---|-------------------------------------|
| 16       | all 72 municipalities | Promote the use of low flow technology and other water conservation techniques  | Education and Awareness   | Drought                   | TBD            | Staff time/in-kind, EMPG                  | YCPC Long Range Planning Division, municipalities                                 | ongoing                             |
| 17       | all 72 municipalities | Incorporate groundwater recharge provisions into zoning and subdivision/land development ordinances   | Local Plans and Regulations   | Drought                   | TBD            | Staff time/in-kind, EMPG                  | YCPC Long Range Planning Division, municipalities                                 | ongoing                             |
| 18       | all 72 municipalities | Promote training and compliance with safety regulations related to environmental hazards  | Education and Awareness   | Environmental Hazards     | TBD            | Staff time/in-kind, EMPG                  | York County EMA   | ongoing                             |
| 19       | all 72 municipalities | Promote buffer areas around fixed hazardous material structures (SARA facilities)   | Local Plans and Regulations   | Environmental Hazards     | TBD            | Staff time/In-kind, HMGP, PDM, EMPG       | YCPC Municipal and Long Range Planning Divisions, municipalities, York County EMA | ongoing                             |
| 20       | all 72 municipalities | Prohibit or establish special criteria for SARA facilities in wellhead and source water protection areas  | Local Plans and Regulations, Natural Systems Protection                           | Environmental Hazards     | TBD            | Staff time/In-kind, HMGP, PDM, EMPG       | YCPC Long Range Planning Division, municipalities, York County EMA                | ongoing                             |
| 21       | all 72 municipalities | Develop emergency and risk management plans and local emergency planning committee efforts to properly prepare for hazardous material incidents   | Local Plans and Regulations, Education and Awareness                              | Environmental Hazards     | TBD            | Staff time/In-kind, HMGP, PDM, EMPG       | LEPC, municipalities, York County EMA   | ongoing                             |
| 22       | all 72 municipalities | Identify comfort stations during extreme temperatures   | Education and Awareness   | Extreme Temperatures      | TBD            | staff time/in-kind, EMPG                  | York County EMA, municipalities, Red Cross  | ongoing                             |
| 23       | all 72 municipalities | Coordinate the identification and mitigation of flood prone areas through the YCPC and other stakeholder entities   | Structure and Infrastructure, Natural Systems Protection, Education and Awareness | Flood/Flash Flood/Ice Jam | TBD            | Staff time/In-kind, HMGP, PDM, EMPG       | YCPC Long Range Planning Division   | dependent upon funding availability |
| 24       | all 72 municipalities | Identify, acquire, demolish, or relocate flood prone structures with those properties being acquired for open space or other low risk uses. This includes hydrologic, hydraulic, engineering, or drainage studies and the use of land easements in support of these actions | Structure and Infrastructure, Natural Systems Protection                          | Flood/Flash Flood/Ice Jam | TBD            | Staff time/in-kind, HMGP, PDM, RFC, FMA   | YCPC Long Range Planning Division, municipalities                                 | ongoing                             |
| 25       | all 72 municipalities | Promote flood proofing of existing structures within the floodplain   | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam | TBD            | Staff time/in-kind, HMGP, PDM, RFC, FMA   | YCPC Long Range Planning Division, municipalities                                 | ongoing                             |
| 26       | all 72 municipalities | Use minor localized flood reduction projects including but not limited to culverts, retention/ detention basins, and channelization and the incorporation of stormwater BMPs into local ordinances  | Structure and Infrastructure, Natural Systems Protection                          | Flood/Flash Flood/Ice Jam | TBD            | Staff time/in-kind, HMGP, PDM, RFC, FMA   | YCPC Long Range Planning Division, municipalities                                 | ongoing                             |
| 27       | all 72 municipalities | Work with FEMA to maintain FIRM maps  | Local Plans and Regulations, Education and Awareness                              | Flood/Flash Flood/Ice Jam | TBD            | Staff time                                | YCPC Long Range Planning/ Information Systems Divisions                           | ongoing                             |
| 28       | all 72 municipalities | Expand the real time stream monitoring program in flood-sensitive areas to assist with early warning notification of potential flooding.  | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam | TBD            | In-kind, HMGP, PDM, EMPG, FMA             | YCCD  | ongoing                             |
| 29       | all 72 municipalities | Continued NFIP compliance through implementation of adopted floodplain management measures, consideration of new measures for implementation as they become available, and public education   | Prevention, Public Education and Awareness  | Flood/Flash Flood/Ice Jam | TBD            | staff time/in-kind, EMPG                  | municipalities  | ongoing                             |
| 30       | all 72 municipalities | Use drainage system maintenance and wetland protection as a way of lessening the impact of floods   | Structure and Infrastructure, Natural Systems Protection                          | Flood/Flash Flood/Ice Jam | TBD            | Staff time/ in-kind, EMPG, FMA, HMGP, PDM | YCCD  | ongoing                             |
| 31       | all 72 municipalities | Monitor floodplains and provide technical assistance  | Local Plans and Regulations, Education and Awareness                              | Flood/Flash Flood/Ice Jam | TBD            | Staff time/ in-kind, EMPG, FMA            | YCCD  | ongoing                             |
| 32       | all 72 municipalities | Update municipal ordinances to DEP requirements with regards to private bridges and crossings   | Local Plans and Regulations   | Flood/Flash Flood/Ice Jam | TBD            | Staff time/ in-kind, EMPG                 | YCPC Municipal Planning Division  | ongoing                             |

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*         | Mitigation Action   | Mitigation Technique Category  | Hazard Addressed   | Estimated Cost | Potential Funding Sources                | Lead Agency/ Department**   | Implementation Schedule             |
|----------|-----------------------|---|--|--|----------------|--|---|-------------------------------------|
| 33       | all 72 municipalities | Complete soil stabilization projects to reduce risk to structures or infrastructure from erosion and landslides, including geotextiles, sod stabilization, installing vegetative buffer strips, preserving natural vegetation, decreasing slope angles, and stabilizing with rip rap and other means of slope anchoring | Natural Systems Protection   | Flood/Flash Flood/Ice Jam  | TBD            | HMGP, PDM                                | YCPC Long Range Planning Division, municipalities   | ongoing                             |
| 34       | all 72 municipalities | Promote burial of power lines   | Local Plans and Regulations  | Hurricane/Tropical Storm/Nor'Easter, Winter Storms, Tornadoes, Lightning                         | TBD            | Staff time/in-kind, EMPG                 | YCPC Long Range Planning Division, municipalities   | ongoing                             |
| 35       | all 72 municipalities | Promote available safe back up power in the event of loss of electricity (including back-up generators, both temporary and permanent)   | Structure and Infrastructure, Education and Awareness                              | Hurricane/Tropical Storm/Nor'Easter, Winter Storms, Tornadoes, Lightning                         | TBD            | Staff time                               | YCPC Long Range Planning Division, York County EMA, municipalities                        | ongoing                             |
| 36       | all 72 municipalities | Promote the use of native species in plans and ordinances   | Local Plans and Regulations, Natural Systems Protection                            | Invasive Species   | TBD            | Staff time/in-kind, EMPG                 | YCPC Long Range Planning Division, Penn State Cooperative Extension, YCCD, municipalities | ongoing                             |
| 37       | all 72 municipalities | Promote immunization and following the recommendations of medical professionals   | Education and Awareness  | Pandemic   | TBD            | Staff time/in-kind, EMPG                 | York City Health Department   | ongoing                             |
| 38       | all 72 municipalities | Promote radon testing and abatement in all structures   | Structure and Infrastructure, Education and Awareness                              | Radon  | TBD            | Staff time/in-kind, ECPGP, EMPG          | YCPC Long Range Planning Division, York County EMA, municipalities, RAYAC                 | ongoing                             |
| 39       | all 72 municipalities | Train emergency responders in relationship to terrorism   | Education and Awareness  | Terrorism  | TBD            | Staff time/in-kind, EMPG                 | York County EMA   | ongoing                             |
| 40       | all 72 municipalities | Work with Department of Homeland Security (DHS) and PA State Police to complete a Risk and Vulnerability Assessment (RVAT) to assess County's security needs and emergency preparedness.  | Education and Awareness  | Terrorism  | TBD            | staff time/in-kind, EMPG                 | SCTF, Dept. of Homeland Security, PA State Police   | ongoing                             |
| 41       | all 72 municipalities | Promote personal and community vigilance to prevent future acts of terrorism  | Education and Awareness  | Terrorism  | TBD            | Staff time/in-kind, EMPG                 | SCTF, municipalities  | ongoing                             |
| 42       | all 72 municipalities | Utilize code enforcement to minimize damage that can be caused by all hazards   | Local Plans and Regulations, Education and Awareness                               | Tornado, Winter Storm, Hurricane/Tropical Storm/Nor'Easter, Flood/flash flood/ice jam, Landslide | TBD            | Staff time/In-kind, HMGP, PDM, EMPG, FMA | Municipal code enforcement officials  | ongoing                             |
| 43       | all 72 municipalities | Identify area with structures such as mobile homes that are more susceptible in tornadoes, winter storms, and other weather-related hazards, and identify evacuation shelters for those living in those structures  | Education and Awareness  | Tornado, Winter Storm, Hurricane/Tropical Storm/Nor'Easter, Flood/flash flood/ice jam, Landslide | TBD            | Staff time/In-kind, HMGP, PDM, EMPG, FMA | YCPC Long Range Planning Division, York County EMA, Red Cross                             | dependent upon funding availability |
| 44       | all 72 municipalities | Promote provision and maintenance of smoke detectors and fire extinguishers   | Education and Awareness  | Urban Fires  | TBD            | Staff time/in-kind, EMPG                 | York County EMA, municipalities   | ongoing                             |
| 45       | all 72 municipalities | Promote defensible space and other wildfire mitigation actions (e.g., ignition resistant construction and hazardous fuels reduction) to mitigate wildfires  | Structure and Infrastructure, Education and Awareness                              | Wildfires  | TBD            | Staff time/in-kind, EMPG                 | York County EMA, municipalities   | ongoing                             |
| 46       | all 72 municipalities | Promote awareness of West Nile Virus and Lyme Disease   | Education and Awareness  | Infectious disease/Pandemic  | TBD            | Staff time/in-kind                       | PA Cooperative Extension, PA Department of Health   | ongoing                             |
| 47       | all 72 municipalities | Identify historic structures that are susceptible to flooding and promote mitigation  | Structure and Infrastructure, Education and Awareness                              | Flood/flash flood/ice jam  | TBD            | Staff time/in-kind, PHMC                 | York County Heritage Advisory Committee   | ongoing                             |
| 48       | all 72 municipalities | Evaluate the need for additional detour and evacuation routes beyond those related to nuclear power plants and winter storms  | Local Plans and Regulations, Education and Awareness                               | all hazards  | TBD            | Staff time/in-kind                       | YCPC Transportation Department, EMA   | ongoing                             |
| 49       | all 72 municipalities | As infrastructure is added or replaced, consider hazard mitigation in the development or redevelopment process  | Local Plans and Regulations, Structure and Infrastructure, Education and Awareness | all hazards  | TBD            | staff time/in-kind                       | Project-dependent, Municipal Planning Commissions   | ongoing                             |

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*   | Mitigation Action   | Mitigation Technique Category                             | Hazard Addressed                    | Estimated Cost | Potential Funding Sources           | Lead Agency/ Department**  | Implementation Schedule           |
|----------|---|---|---|-------------------------------------|----------------|-------------------------------------|--|-----------------------------------|
| 50       | all 72 municipalities   | Support stormwater management as a way of lessening impacts of flooding   | Local Plans and Regulations, Education and Awareness      | Flood/flash flood/ice jam           | TBD            | Staff time/in-kind                  | YCPC Long Range Planning Division, municipalities                | ongoing                           |
| 51       | all 72 municipalities   | Provide information, education, and outreach on animal feed contamination and food borne illness  | Education and Awareness                                   | Mass food/animal feed contamination | TBD            | Staff time/in-kind                  | PA Department of Health  | ongoing                           |
| 52       | Carroll Township, Conewago Township, Dillsburg Borough, Dover Township, Fairview Township, Franklin Township, Franklinton Borough, Hanover Borough, Heidelberg Township, Jackson Township, Monaghan Township, Newberry Township, Paradise Township, Penn Township, Warrington Township, Washington Township, West Manheim Township, and York Haven Borough  | Promote the provision of public water within identified growth areas and hydrogeological testing in rural areas identified as water challenged or potentially groundwater distressed        | Local Plans and Regulations                               | Drought                             | TBD            | Staff time/in-kind, EMPG            | YCPC Long Range Planning Division, municipalities                | ongoing                           |
| 53       | Carroll Township, Conewago Township, Dillsburg Borough, Dover Township, Fairview Township, Franklin Township, Franklinton Borough, Hanover Borough, Heidelberg Township, Jackson Township, Monaghan Township, Newberry Township, Paradise Township, Penn Township, Warrington Township, Washington Township, West Manheim Township, and York Haven Borough  | Promote utilization of well drilling ordinances for areas dependent upon on-lot wells in rural areas identified as water challenged or potentially groundwater distressed                   | Local Plans and Regulations                               | Drought                             | TBD            | Staff time/in-kind, HMGP, PDM, EMPG | YCPC Long Range/ Municipal Planning Divisions, municipalities    | ongoing                           |
| 54       | Manchester Township, North York Borough, Spring Garden Township, Springettsbury Township, West Manchester Township, York City   | Work with US Army Corps of Engineers to maintain levees in working order and conduct timely engineering studies of levees to determine adequacy of existing levees in controlling flooding. | Local Plans and Regulations, Structure and Infrastructure | Levee Failure                       | TBD            | Staff time/in-kind                  | USACE, municipalities  | dependent on funding availability |
| 55       | Carroll Township, Codorus Township, Dillsburg Borough, Dover Township, East Manchester Township, East Prospect Borough, Fairview Township, Franklin Township, Hallam Borough, Hanover Borough, Heidelberg Township, Hellam Township, Jackson Township, Jefferson Borough, Lower Chanceford Township, Lower Windsor Township, Manchester Township, Manheim Township, Mt. Wolf Borough, North Codorus Township, North | Add a provision to conduct geologic testing in identified Karst topography areas as a requirement within the subdivision and land development ordinances                                    | Local Plans and Regulations                               | Sinkholes                           | TBD            | Staff time/in-kind, CDBG, , EMPG    | YCPC Municipal Planning Division, Municipal Planning Commissions | ongoing                           |

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*   | Mitigation Action   | Mitigation Technique Category  | Hazard Addressed          | Estimated Cost  | Potential Funding Sources                     | Lead Agency/ Department**    | Implementation Schedule           |
|----------|---|---|--|---------------------------|-----------------|---|------------------------------|-----------------------------------|
|          | York Borough, Paradise Township, Penn Township, Seven Valleys Borough, Spring Garden Township, Spring Grove Borough, Springettsbury Township, Springfield Township, West Manchester Township, West Manheim Township, West York Borough, Windsor Township, Wrightsville Borough, York City, and York Township  |   |  |                           |                 |   |                              |                                   |
| 56       | Codorus Township, Dallastown Borough, East Manchester Township, Glen Rock Borough, Hanover Borough, Heidelberg Township, Hellam Township, Hopewell Township, Jackson Township, Jacobus Borough, Jefferson Borough, Loganville Borough, Manchester Borough, Manachester Township, Manheim Township, Mount Wolf Borough, New Freedom Borough, New Salem Borough, North Codorus Township, North Hopewell Township, North York Borough, Paradise Township, Penn Township, Railroad Borough, Red Lion Borough, Seven Valleys Borough, Shrewsbury Borough, Shrewsbury Township, Spring Garden Township, Spring Grove Borough, Springettsbury Township, Springfield Township, West Manchester Township, West Manheim Township, West York Borough, Winterstown Borough, Yoe Borough, York City, and York Township | Implement the Codorus Creek NPS Watershed Implementation Plan   | Local Plans and Regulations, Structure and Infrastructure, Education and Awareness | Flood/flash flood/ice jam | \$12,281,166.00 | Growing Greener, EPA Section 319 NPS Grants   | YCCD                         | 2007-2025                         |
| 57       | Carroll Township  | Replace County Bridge #272 due to scour-critical rating   | Natural Systems Protection   | Flood/flash flood/ice jam | \$264,000.00    | HMGP, PDM, EPMG, FMA                          | YCPC Transportation Division | dependent on funding availability |
| 58       | Chanceford Township/<br>Lower Windsor Township  | Replace County Bridge #53 due to scour-critical rating  | Structure and Infrastructure   | Flood/Flash flood/ice jam | \$570,000.00    | HMGP, PDM, FMA,EPMG                           | YCPC Transportation Division | dependent on funding availability |
| 59       | Codorus Township  | Replace County Bridge #123 due to previous scour-critical rating  | Structure and Infrastructure   | Flood/Flash Flood/Ice Jam | \$390,000.00    | HMGP, PDM, EPMG                               | YCPC Transportation Division | dependent on funding availability |
| 60       | Conewago Township   | Purchase and install road salt de-icing pre-wetting system apparatus on four Township trucks and the installation of a salt brine manufacturing system/storage tank | Structure and Infrastructure   | Winter Storm              | \$35,000.00     | HMGP, Township General Fund, in-kind services | Conewago Township            | dependent on funding availability |

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*          | Mitigation Action   | Mitigation Technique Category                            | Hazard Addressed          | Estimated Cost | Potential Funding Sources   | Lead Agency/ Department**    | Implementation Schedule                |
|----------|------------------------|---|--|---------------------------|----------------|---|------------------------------|--|
| 61       | Dover Township         | Replace County Bridge #166 due to scour-critical rating   | Structure and Infrastructure                             | Flood/flash flood/ice jam | \$725,000.00   | HMGP, PDM, FMA, EMPG  | YCPC Transportation Division | dependent on funding availability      |
| 62       | Dover Township         | Phase 1: Acquisition and demolition of properties on Pine Road  | Structure and Infrastructure                             | Flood/flash flood/ice jam | \$365,481.17   | HMGP, PDM, FMA, EPMG  | Dover Township               | closed out 3-2016                      |
| 63       | Dover Township         | Phase 2: Acquisition and demolition of properties on Pine Road  | Structure and Infrastructure                             | Flood/flash flood/ice jam | \$633,878.45   | HMGP, PDM, FMA, EPMG  | Dover Township               | 3 years from receipt of grant contract |
| 64       | Dover Township         | Phase 3: Acquisition and demolition of properties on Pine Road  | Structure and Infrastructure                             | Flood/flash flood/ice jam | TBD            | HMGP, PDM, FMA, EPMG  | Dover Township               | ongoing                                |
| 65       | East Hopewell Township | Replace County Bridge #42 due to previous scour-critical rating   | Structure and Infrastructure                             | Flood/Flash flood/ice jam | \$324,000.00   | HMGP, PDM, FMA,EPMG   | YCPC Transportation Division | dependent on funding availability      |
| 66       | East Hopewell Township | Replace County Bridge #41 due to previous scour-critical rating   | Structure and Infrastructure                             | Flood/flash flood/ice jam | \$324,000.00   | HMGP, PDM, FMA,EPMG   | YCPC Transportation Division | dependent on funding availability      |
| 67       | Fairview Township      | SR0114 and SR1003 -- elevate and replaced bridge along with stream channel restoration to reduce flooding       | Structure and Infrastructure                             | Flood/Flash Flood/Ice Jam | \$1,500,000.00 | HMGP, PDM, PENNVEST, township general fund  | Fairview Township            | dependent on funding availability      |
| 68       | Felton Borough         | Maul Avenue Bridge Replacement  | Structure and Infrastructure                             | Flood/Flash Flood/Ice Jam | \$190,000.00   | HMGP, PDM, FMA, EPMG, USACE   | Felton Borough               | dependent on funding availability      |
| 69       | Felton Borough         | Stormwater control from 25 Red Lion Avenue to Main Street   | Structure and Infrastructure, Natural Systems Protection | Flood/Flash Flood/Ice Jam | \$235,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Felton Borough               | dependent on funding availability      |
| 70       | Glen Rock Borough      | Purchase Alternate Emergency Command Center equipment (computer, lighting, generator, communications equipment) | Structure and Infrastructure                             | All                       | \$35,000.00    | HMGP, general fund  | Glen Rock Borough            | dependent on funding availability      |
| 71       | Glen Rock Borough      | Replace/repair retaining wall along Baltimore Street on South Branch Codorus Creek                              | Structure and Infrastructure                             | Flood/flash flood/ice jam | \$200,000.00   | HPMG, PENNVEST, EWPP, Borough general fund  | Glen Rock Borough            | dependent on funding availability      |
| 72       | Glen Rock Borough      | Procure decontamination stations (male and female) for PBAPS nuclear response incident                          | Structure and Infrastructure                             | Nuclear Incident          | \$50,000.00    | HMGP, Borough general fund  | Glen Rock Borough            | dependent on funding availability      |
| 73       | Goldsboro Borough      | 138 South York Street Fishing Creek Riparian Buffer   | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$3,767.00     | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Goldsboro Borough            | 2018-2023 Regional CBPRP               |
| 74       | Goldsboro Borough      | 138 South York Street Fishing Creek Riparian Buffer   | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$510,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Goldsboro Borough            | 2018-2023 Regional CBPRP               |
| 75       | Hallam Borough         | Beaver Street Swale Retrofit  | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$345,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Hallam Township              | 2018-2023 Regional CBPRP               |
| 76       | Hallam Borough         | Beaver Street Swale-Wetlands Restoration  | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$501,176.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Hallam Township              | 2018-2023 Regional CBPRP               |
| 77       | Hallam Borough         | Kreutz Creek Stream Restoration   | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$1,800,000.00 | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Hallam Township              | 2018-2023 Regional CBPRP               |
| 78       | Hanover Borough        | Poplar Street Swale Retrofit  | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$15,000.00    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Hanover Borough              | 2018-2023 Regional CBPRP               |
| 79       | Jackson Township       | UNT West Branch Codorus- BMP #2 Stream Restoration and Riparian Buffer  | Natural Systems Protection                               | Flood/flash flood/ice Jam | \$397,500.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Jackson Township             | 2018-2023 Regional CBPRP               |



**Table 6.4-1: 2018 Mitigation Actions**

| Action # | Municipality*             | Mitigation Action  | Mitigation Technique Category                        | Hazard Addressed          | Estimated Cost | Potential Funding Sources   | Lead Agency/ Department**     | Implementation Schedule           |
|----------|---------------------------|--|--|---------------------------|----------------|---|-------------------------------|-----------------------------------|
| 80       | Jackson Township          | UNT West Branch Codorus- BMP #3 Stream Restoration and Riparian Buffer   | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$555,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Jackson Township              | 2018-2023 Regional CBPRP          |
| 81       | Lewisberry Borough        | Front Street drainage improvements   | Structure and Infrastructure                         | Flood/Flash flood/ice jam | \$75,000.00    | Borough (\$5000), CDBG, HMGP, PDM   | Lewisberry Borough            | dependent of funding availability |
| 82       | Lower Chanceford Township | Replace County Bridge #28 due to scour-critical rating   | Structure and Infrastructure                         | Flood/Flash flood/ice jam | \$362,340.00   | County, State, Federal  | YPCPC Transportation Division | dependent of funding availability |
| 83       | Lower Windsor Township    | Identify properties within the Special Flood Hazard Area where permanent structures have been constructed, temporary RVs installed without permits; and major improvements to repetitive loss structures | Local Plans and Regulations, Education and Awareness | Flood/flash flood/ice jam | TBD            | Staff time  | Lower Windsor Township        | ongoing                           |
| 84       | Lower Windsor Township    | Look into requirements for an emergency evacuation plan for the various RG camps and boat storage facilities along Long Level  | Local Plans and Regulations                          | Flood/flash flood/ice jam | TBD            | Staff time  | Lower Windsor Township        | ongoing                           |
| 85       | Manchester Borough        | Manhaven Manor Basin Retrofit  | Structure and Infrastructure                         | Flood/flash flood/Ice Jam | \$12,000.00    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Borough            | 2018-2023 Regional CBPRP          |
| 86       | Manchester Borough        | Musser Run Stream Restoration and Riparian Buffer  | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$360,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Borough            | 2018-2023 Regional CBPRP          |
| 87       | Manchester Borough        | Manchester Borough Basin Retrofits (Dauberton HOA)   | Structure and Infrastructure                         | Flood/flash flood/Ice Jam | \$18,000.00    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Borough            | 2018-2023 Regional CBPRP          |
| 88       | Manchester Township       | Stillmeadow Park UNT Codorus Creek Stream Restoration (within park)  | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$630,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 89       | Manchester Township       | York County Solid Waste and Refuse Center Water Re-Use Project   | Structure and Infrastructure                         | Flood/flash flood/Ice Jam | TBD            | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 90       | Manchester Township       | Stillmeadow Park Restoration- wetland pocket (within park)   | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$751,764.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 91       | Manchester Township       | Stillmeadow Park UNT Codorus Creek Stream Restoration (downstream from park)   | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$300,000.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 92       | Manchester Township       | Stillmeadow Park Restoration- Wetland Pocket (downstream from park)  | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$375,882.00   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 93       | Manchester Township       | Stillmeadow Park Restoration - Basin Retrofit (upstream from park)   | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$18,000.00    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 94       | Manchester Township       | Stillmeadow Park Restoration - Basin Retrofit (south of park)  | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$21,000.00    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |
| 95       | Manchester Township       | Stillmeadow Park Restoration - tree planting/buffer (within park)  | Natural Systems Protection                           | Flood/flash flood/Ice Jam | \$195.00       | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Manchester Township           | 2018-2023 Regional CBPRP          |

**Table 6.4-1: 2018 Mitigation Actions**

| Action # | Municipality*                                | Mitigation Action  | Mitigation Technique Category                            | Hazard Addressed                         | Estimated Cost                                 | Potential Funding Sources   | Lead Agency/ Department**    | Implementation Schedule           |
|----------|--|--|--|--|--|---|------------------------------|-----------------------------------|
| 96       | Manchester Township                          | Stillmeadow Park Restoration - Basin Retrofit (within park)  | Natural Systems Protection                               | Flood/flash flood/Ice Jam                | \$12,000.00                                    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM                                     | Manchester Township          | 2018-2023 Regional CBPRP          |
| 97       | Manchester Township                          | Stillmeadow Park Restoration - Basin Retrofit (church property)  | Natural Systems Protection                               | Flood/flash flood/Ice Jam                | \$15,000.00                                    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM                                     | Manchester Township          | 2018-2023 Regional CBPRP          |
| 98       | Manchester Township                          | Stillmeadow Park UNT Codorus Creek Stream Restoration(north of park)   | Natural Systems Protection                               | Flood/flash flood/Ice Jam                | \$225,000.00                                   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM                                     | Manchester Township          | 2018-2023 Regional CBPRP          |
| 99       | Monaghan Township                            | Replace County Bridge #247 due to previous scour-critical rating   | Structure and Infrastructure                             | Flood/Flash flood/ice jam                | \$1,144,800.00                                 | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |
| 100      | North Codorus Township                       | Replace County Bridge #143 due to previous scour-critical rating   | Structure and Infrastructure                             | Flood/Flash flood/ice jam                | \$590,600.00                                   | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |
| 101      | Springfield Township/ North Codorus Township | Replace County Bridge #89 due to previous scour-critical rating  | Structure and Infrastructure                             | Flood/Flash flood/ice jam                | \$510,000.00                                   | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |
| 102      | Paradise Township                            | Replace County Bridge #157 due to scour-critical rating  | Structure and Infrastructure                             | Flood/Flash flood/ice jam                | \$423,000.00                                   | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |
| 103      | Penn Township                                | Purchase a trailer used by emergency services to provide generator support, a command center, a cooling station, and a canteen   | Structure and Infrastructure                             | all hazards                              | \$8,000.00                                     | Township general fund, in-kind services, EMPG, HGSP   | Penn Township                | dependent on funding availability |
| 104      | Penn Township                                | Engineering costs for design/drawings of upgrade to Sheppard Myers Dam Spillway to comply with probable maximum flood requirements.  | Structure and Infrastructure                             | Flood/Flash Flood/Ice Jam                | \$75,000.00                                    | HMGP, LMRDP, PDMP, USACE, in-kind services  | Hanover Borough              | ongoing                           |
| 105      | Penn Township                                | Elevate and install drainage improvements along Flickinger Road to reduce flooding potential   | Structure and Infrastructure                             | Flood/Flash Flood/Ice Jam                | \$583,200.00                                   | HMGP, PDM, , FMA, EMPG  | Penn Township                | completed in 1-2 years            |
| 106      | Penn Township                                | Blettner Avenue Municipal Bridge No. 333 scour critical bridge improvements  | Structure and Infrastructure                             | Severe Storms                            | \$10,100.00                                    | Township general fund, HMGP   | Penn Township                | dependent on funding availability |
| 107      | Penn Township                                | Replace culvert, redesign stream, and make channel improvements at Young's Road and Kidd Lane  | Structure and Infrastructure, Natural Systems Protection | Severe Storms                            | \$200,000.00 (with acquisition and permitting) | Township general fund, HMGP   | Penn Township                | dependent on funding availability |
| 108      | Penn Township                                | Develop a lining program for the storm sewer system (Drainage System Maintenance) The corrugated metal pipe, more than 25 years old, is showing signs of deterioration. There is a potential for failure. The pipe is also operating at less than design capacity. | Structure and Infrastructure                             | Severe Storms, Flood/flash flood/Ice jam | \$100,000.00                                   | Township general fund, HMGP,PDM   | Penn Township                | dependent on funding availability |
| 109      | Penn Township                                | Homewood Streambank Restoration (Plum Run)   | Natural Systems Protection                               | Flood/flash flood/Ice Jam                | \$150,000.00                                   | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM                                     | Penn Township                | 2018-2023 Regional CBPRP          |
| 110      | Red Lion Borough                             | Horace Mann Avenue- BMP #1 Bioretention Basin  | Natural Systems Protection                               | Flood/flash flood/Ice Jam                | \$13,892.00                                    | Growing Greener, EPA S.319, NPS grants, YCCD Habitat Restoration Grants, NFWF, USACE, HMGP, PDM                                     | Red Lion Borough             | 2018-2023 Regional CBPRP          |
| 111      | Springettsbury Township                      | Penn Oaks Park UNT Kreutz Creek Stream Restoration   | Natural Systems Protection                               | Flood/Flash Flood/Ice jam                | \$348,000.00                                   | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 112      | Springettsbury Township                      | Stonewood Park UNT Kreutz Creek Stream Restoration   | Natural Systems Protection                               | Flood/Flash Flood/Ice jam                | \$300,000.00                                   | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC,  | Springettsbury Township      | 2018-2023 Regional CBPRP          |

**Table 6.4-1: 2018 Mitigation Actions**

| Action # | Municipality*                       | Mitigation Action  | Mitigation Technique Category | Hazard Addressed          | Estimated Cost | Potential Funding Sources   | Lead Agency/ Department**    | Implementation Schedule           |
|----------|-------------------------------------|--|-------------------------------|---------------------------|----------------|---|------------------------------|-----------------------------------|
|          |                                     |  |                               |                           |                | Habitat Restoration Grants, NFWF, USACE, HMGP, PDM  |                              |                                   |
| 113      | Springettsbury Township             | Camp Security UNT Kreutz Creek Stream Restoration                      | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$336,000.00   | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 114      | Springettsbury Township             | Springettsbury Municipal Campus Basin Retrofit                         | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$13,500.00    | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 115      | Springettsbury Township             | East York P3- Springetts Oaks Park UNT Kreutz Creek Stream Restoration | Natural Systems Protection    | Flood/flash flood/ice jam | \$570,000.00   | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 116      | Springettsbury Township             | East York P3-Kinsley Property-Basin Retrofit Concord Business Park     | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$6,198.00     | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 117      | Springettsbury Township             | East York P3-Kinsley Property-Basin Retrofit Concord Office Center     | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$4,132.00     | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 118      | Springettsbury Township             | East York P3-Kinsley Property-Basin Retrofit Concord Office Center     | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$5,510.00     | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 119      | Springettsbury Township             | East York P3- York County Home - Detention Basin Retrofit              | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$1,377.00     | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 120      | Springettsbury Township             | East York P3- York County Home - Proposed Bio-retention Basin          | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$3,925.00     | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 121      | Springettsbury Township             | East York P3- York County Home - UNT Kreutz Creek Stream Restoration   | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$210,000.00   | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 122      | Springettsbury Township             | East York P3- York County Home - Forest Buffer (wet pond)              | Natural Systems Protection    | Flood/Flash Flood/Ice jam | \$50,000.00    | Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | Springettsbury Township      | 2018-2023 Regional CBPRP          |
| 123      | Springfield Township/ York Township | Replace County Bridge #95 due to previous scour-critical rating        | Structure and Infrastructure  | Flood/Flash flood/ice jam | \$321,000.00   | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |
| 124      | Warrington Township                 | Replace County Bridge #213 due to previous scour-critical rating       | Structure and Infrastructure  | Flood/Flash flood/ice jam | \$414,000.00   | HMGP, PDM, , FMA, EPMG  | YCPC Transportation Division | dependent of funding availability |

Table 6.4-1: 2018 Mitigation Actions

| Action # | Municipality*   | Mitigation Action   | Mitigation Technique Category | Hazard Addressed   | Estimated Cost | Potential Funding Sources  | Lead Agency/ Department**  | Implementation Schedule           |
|----------|---|---|-------------------------------|--|----------------|--|--|-----------------------------------|
| 125      | West Manheim Township   | Color coded directional signage to designate east-west and north-south evacuation and alternate detour/travel routes (112 signs@ \$42 each)   | Local Plans and Regulations   | Flood/Flash Flood/Ice Jam, Storm Damage, Environmental Hazards | \$4,704.00     | Township general fund, in-kind services, EMPG, HGSP  | Penn Township  | dependent on funding availability |
| 126      | Windsor Borough   | West First Avenue Storm Sewer Improvements  | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$120,000.00   | Borough- \$3500; CDBG, HMGP, PDM   | Windsor Borough  | dependent on funding availability |
| 127      | Windsor Borough   | East High Street Stormwater Drainage Improvements (Heindel Ave to Park)   | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$150,000.00   | Borough- \$5000; CDBG, HMGP, PDM   | Windsor Borough  | dependent on funding availability |
| 128      | Windsor Borough   | Professional engineered design and construction drawings and permitting to reduce flooding and erosion along the Fishing Creek corridor in Windsor Borough  | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$500,000.00   | Borough General Fund, in-kind services, Growing Greener II, EWPP, HMGP, PDMP, LMRDP, RBP, WAWTAP, DCED, CDBG, ACOE                               | Windsor Borough  | dependent on funding availability |
| 129      | Windsor Borough   | West High Street Stormwater Drainage Improvements (Heindel Ave to North Camp St)  | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$250,000.00   | Borough - \$5000, CDBG, HMGP, PDM  | Windsor Borough  | dependent on funding availability |
| 130      | York Township   | Replace County Bridge #98 due to previous scour-critical rating   | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$ 416,000.00  | HMGP, PDM, , FMA, EPMG   | YCPC Transportation Division   | dependent on funding availability |
| 131      | Hellam Township, Jackson Township, Manchester Township, North Codorus Township, North York Borough, Spring Garden Township, Spring Grove Borough, Springettsbury Township, Springfield Township, York City, West Manchester Township, West York Borough, Wrightsville Borough | Update flood emergency plans for Indian Rock Dam facility and Codorus Watershed Area  | Local Plans and Regulations   | Flood/Flash Flood/Ice Jam                                      | TBD            | USACE  | USACE, YAMPO, YCPC Long Range Planning /Transportation Divisions, municipalities | dependent on funding availability |
| 132      | All 72 municipalities   | Work with seniors to inform them about hazards and encourage them to have an emergency plan that includes creating a support network, having a back-up plan for medical supplies and treatment, and creating an emergency kit for themselves and any pets | Education and Awareness       | all hazards  | TBD            | Staff time/ in-kind  | York County Area Agency on Aging   | ongoing                           |
| 133      | All 72 municipalities   | Promote stream/floodplain restoration and buffering to lessen impacts of stormwater runoff and flooding   | Natural Systems Protection    | Flood/Flash Flood/Ice jam                                      | TBD            | HMGP, USACE, Growing Greener, EPA S. 319 NPS grants, YCCD Habitat Restoration Grants, PA FBC, Habitat Restoration Grants, NFWF, USACE, HMGP, PDM | YCPC Long Range Planning Division, YCCD  | ongoing                           |
| 134      | Yorkana Borough   | Valley View Road Drainage Improvements  | Structure and Infrastructure  | Flood/Flash Flood/Ice jam                                      | \$77,495       | HMGP, PDM, , FMA, EMPG   | Yorkana Borough  | dependent on funding availability |
| 135      | Newberry Township   | Replace County Bridge #202 due to scour-critical rating   | Structure and Infrastructure  | Flood/Flash Flood/Ice Jam                                      | \$750,000      | HMGP, PDM, , FMA, EPMG   | YCPC Transportation Division   | dependent on funding availability |

\* In lieu of having specific mitigation actions for each municipality, generalized actions were assigned to cover each of York County's 72 municipalities. Actions will be revisited if future actions are identified for a municipality.

\*\*Unless otherwise specified, municipal manager/secretary is primary contact when a specific municipality or municipalities is referenced.

Table 6.4-2: PA STEEL Evaluation

| Municipality          | Hazard      | No. | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             | Results         |                          |                           |  |                          |                           |
|-----------------------|-------------|-----|---|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|--------------------------|---------------------------|
|                       |             |     |   | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                           |
|                       |             |     |   | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                          | Potential Legal Challenge |
|                       |             | 1   | Example: Action 2.1.1: Bridge Replacement   | +                                | +              | -              | N                   | +                  | +                        | +                    | +                               | -                    | -                  | N                 | +                      | +                   | N                             | +                        | -                      | +                            | +                             | -   | -                           | N               | +                        | +                         | 13 (+)<br>6 (-)<br>4 (N)               | 17 (+)<br>6 (-)<br>4 (N) |                           |
| All 72 Municipalities | All Hazards | 1   | Regionalization of emergency management services to better utilize resources and coordinate more efficient hazard response  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>2 (-)<br>3 (N)               | 22 (+)<br>2 (-)<br>3 (N) | H                         |
| All 72 Municipalities | All Hazards | 2   | Work to inform municipal officials and public on PEIRS Program and the need to report instances of hazards through County 911 so they may be documented   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | All Hazards | 3   | Continue to engage Haz Mit Local Planning Team in the County's hazard mitigation planning and implementation  | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | N                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>0 (-)<br>5 (N)               | 22 (+)<br>0 (-)<br>5 (N) | H                         |
| All 72 Municipalities | All Hazards | 4   | Continue to rely on York Co Office of Emergency Management as the overall coordinating entity dealing with hazards in York County   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>1 (-)<br>5 (N)               | 21 (+)<br>1 (-)<br>5 (N) | H                         |
| All 72 Municipalities | All Hazards | 5   | Carefully evaluate and promote land uses that will lessen the impact of certain hazards with proper hazard mitigation planning  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>2 (-)<br>3 (N)               | 22 (+)<br>2 (-)<br>3 (N) | H                         |
| All 72 Municipalities | All Hazards | 6   | Continue to maintain GIS mapping of all known hazards and maintain updated GIS layers related to all hazards for which a map is helpful   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 13 (+)<br>1 (-)<br>9 (N)               | 17 (+)<br>1 (-)<br>9 (N) | M                         |
| All 72 Municipalities | All Hazards | 7   | Explore the development and implementation of an online hazard identification tool  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N) | M                         |
| All 72 Municipalities | All Hazards | 8   | Use Family Disaster Plans, Family Emergency Survival Kits, evacuation plans, and safe rooms/ shelters for personal preparedness   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N) | M                         |
| All 72 Municipalities | All Hazards | 9   | Use structural and nonstructural retrofitting for buildings, infrastructure retrofits, structural elevation, and mitigation construction (e.g. proper scoping preconstruction and construction activities and demolition/removal) | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | +               | +                        | N                         | 14 (+)<br>2 (-)<br>7 (N)               | 18 (+)<br>2 (-)<br>7 (N) | M                         |

Table 6.4-2: PA STEEL Evaluation

| Municipality          | Hazard                | No.            | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 |                          |                           |   | Results                   |  |                           |                           |   |
|-----------------------|-----------------------|----------------|---|----------------------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|---|---------------------------|--|---------------------------|---------------------------|---|
|                       |                       |                |   | (+)<br>Favorable                 |                          |                      |                                 |                      |                    |                   |                        |                     |                               | (-)<br>Less favorable    |                        |                              |                               |   | (N)<br>Not Applicable       |                 |                          |                           |   | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                   |                           |   |
|                       |                       |                |   | P<br>Political                   |                          |                      | A<br>Administrative             |                      |                    | S<br>Social       |                        | T<br>Technical      |                               | E<br>Economic            |                        |                              | E<br>Environmental            |   |                             |                 |                          | L<br>Legal                |   |                           |  |                           |                           |   |
| Political Support     | Local Champion        | Public Support | Staffing  | Funding Allocation               | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority | Potential Legal Challenge |   |                           |  |                           |                           |   |
| All 72 Municipalities | All Hazards           | 10             | Use the "5% initiative projects" to include but not limited to developmental or research-based actions, equipment systems for early warning, permanently-installed generators, or related equipment, hazard identification, and mapping, GIS software and hardware, data acquisition, public awareness and education, model building codes, or other unproven activities that are tied to or have primary aim of hazard mitigation. | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | -                             | N   | N                           | N               | N                        | N                         | + | +                         | N                                      | 14 (+)<br>2 (-)<br>7 (N)  | 18 (+)<br>2 (-)<br>7 (N)  | M |
| All 72 Municipalities | All Hazards           | 11             | Conduct post-disaster code enforcement where extraordinary needs exist that are associated with enforcing local building codes during post-disaster reconstruction (may include performance of building, department functions like building inspections and performance of substantial damage determinations under the NFIP)  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | -                             | +                        | +                      | +                            | N                             | -   | N                           | N               | N                        | N                         | N | +                         | N                                      | 12 (+)<br>3 (-)<br>8 (N)  | 16 (+)<br>3 (-)<br>8 (N)  | L |
| All 72 Municipalities | All Hazards           | 12             | Promote the use and acquisition of early warning systems and devices, including utilization of a weather radio  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | +                             | +                        | +                      | N                            | N                             | N   | N                           | N               | N                        | N                         | N | N                         | N                                      | 12 (+)<br>0 (-)<br>11 (N) | 16 (+)<br>0 (-)<br>11 (N) | M |
| All 72 Municipalities | Civil Disturbance     | 13             | Use environmental and facility design that minimizes the effects of civil disturbance   | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | -                      | N                            | -                             | N   | N                           | N               | N                        | N                         | N | N                         | N                                      | 11 (+)<br>3 (-)<br>9 (N)  | 13 (+)<br>5 (-)<br>9 (N)  | L |
| All 72 Municipalities | Dam Failure           | 14             | Promote the maintenance and inspection of all dams  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | N                             | N   | N                           | N               | +                        | +                         | + | +                         | N                                      | 17 (+)<br>0 (-)<br>6 (N)  | 21 (+)<br>0 (-)<br>6 (N)  | H |
| All 72 Municipalities | Drought               | 15             | Promote the implementation of water use restrictions during times of drought  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | N                             | +   | N                           | N               | +                        | +                         | + | +                         | N                                      | 18 (+)<br>0 (-)<br>5 (N)  | 22 (+)<br>0 (-)<br>5 (N)  | H |
| All 72 Municipalities | Drought               | 16             | Promote the use of low flow technology and other water conservation techniques  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | N                             | +   | N                           | N               | +                        | +                         | + | +                         | N                                      | 18 (+)<br>0 (-)<br>5 (N)  | 22 (+)<br>0 (-)<br>5 (N)  | H |
| All 72 Municipalities | Drought               | 17             | Incorporate groundwater recharge provisions into zoning and subdivision/land development ordinances   | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | -                             | +   | N                           | N               | +                        | N                         | N | N                         | N                                      | 14 (+)<br>2 (-)<br>7 (N)  | 18 (+)<br>2 (-)<br>7 (N)  | M |
| All 72 Municipalities | Environmental Hazards | 18             | Promote training and compliance with safety regulations related to environmental hazards  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | N                            | N                             | +   | N                           | +               | +                        | +                         | + | +                         | N                                      | 19 (+)<br>0 (-)<br>4 (N)  | 23 (+)<br>0 (-)<br>4 (N)  | H |

Table 6.4-2: PA STEEL Evaluation

| Municipality          | Hazard                    | No. | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             | Results         |                          |                           |  |                          |                           |
|-----------------------|---------------------------|-----|---|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|--------------------------|---------------------------|
|                       |                           |     |   | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                           |
|                       |                           |     |   | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                          | Potential Legal Challenge |
| All 72 Municipalities | Environmental Hazards     | 19  | Promote buffer areas around fixed hazardous material structures (SARA facilities)   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | Environmental Hazards     | 20  | Prohibit or establish special criteria for SARA facilities in wellhead and source water protection areas  | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>1 (-)<br>4 (N)               | 22 (+)<br>1 (-)<br>4 (N) | H                         |
| All 72 Municipalities | Environmental Hazards     | 21  | Develop emergency and risk management plans and local emergency planning committee efforts to properly prepare for hazardous material incidents   | +                                | +              | +              | +                   | +                  | +                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | N               | N                        | N                         | 15 (+)<br>1 (-)<br>7 (N)               | 19 (+)<br>1 (-)<br>7 (N) | M                         |
| All 72 Municipalities | Extreme Temperatures      | 22  | Identify comfort stations during extreme temperatures   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | -                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 11 (+)<br>3 (-)<br>9 (N)               | 15 (+)<br>3 (-)<br>9 (N) | L                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 23  | Coordinate the identification and mitigation of flood prone areas through the YCPC and other stakeholder entities   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 24  | Identify, acquire, demolish, or relocate flood prone structures with those properties being acquired for open space or other low risk uses. This includes hydrologic, hydraulic, engineering, or drainage studies and the use of land easements in support of these actions | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 25  | Promote flood proofing of existing structures within the floodplain   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | N                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>0 (-)<br>5 (N)               | 22 (+)<br>0 (-)<br>5 (N) | H                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 26  | Use minor localized flood reduction projects including but not limited to culverts, retention/ detention basins, and channelization and the incorporation of stormwater BMPs into local ordinances  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 27  | Work with FEMA to maintain FIRM maps  | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 18 (+)<br>1 (-)<br>4 (N)               | 22 (+)<br>1 (-)<br>4 (N) | H                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 28  | Expand the real time stream monitoring program in flood sensitive areas to assist with early warning notification of potential flooding   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam | 29  | Continued NFIP compliance through implementation of adopted floodplain management measures, consideration of new measures for implementation as they become available, and public education   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |

Table 6.4-2: PA STEEL Evaluation

| Municipality          | Hazard   | No. | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             | Results         |                          |                           |  |                           |                           |
|-----------------------|--|-----|---|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|---------------------------|---------------------------|
|                       |  |     |   | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                   |                           |
|                       |  |     |   | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                           | Potential Legal Challenge |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 30  | Use drainage system maintenance and wetland protection as a way of lessening the impact of floods   | +                                | +              | +              | +                   | -                  | +                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>2 (-)<br>5 (N)               | 20 (+)<br>2 (-)<br>5 (N)  | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 31  | Monitor floodplains and provide technical assistance  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | -                      | -                   | +                             | -                        | +                      | N                            | N                             | N   | N                           | N               | +                        | N                         | 13 (+)<br>4 (-)<br>6 (N)               | 13 (+)<br>8 (-)<br>6 (N)  | L                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 32  | Update municipal ordinances to DEP requirements with regards to private bridges and crossings   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | N                           | +               | +                        | N                         | 16 (+)<br>2 (-)<br>5 (N)               | 20 (+)<br>2 (-)<br>5 (N)  | M                         |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 33  | Complete soil stabilization projects to reduce risk to structures or infrastructure from erosion and landslides, including geotextiles, sod stabilization, installing vegetative buffer strips, preserving natural vegetation, decreasing slope angles, and stabilizing with rip rap and other means of slope anchoring | +                                | +              | +              | +                   | -                  | +                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>2 (-)<br>5 (N)               | 20 (+)<br>2 (-)<br>5 (N)  | M                         |
| All 72 Municipalities | Hurricane/Tropical Storm/Nor'easter, Winter Storms, Tornadoes, Lightning | 34  | Promote the burial of power lines   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | N                        | N                      | N                            | N                             | +   | N                           | +               | +                        | N                         | 16 (+)<br>0 (-)<br>7 (N)               | 20 (+)<br>0 (-)<br>7 (N)  | M                         |
| All 72 Municipalities | Hurricane/Tropical Storm/Nor'easter, Winter Storms, Tornadoes, Lightning | 35  | Promote available safe back up power in the event of loss of electricity (including back-up generators, both temporary and permanent)   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | -                  | +                 | +                      | +                   | N                             | N                        | N                      | N                            | N                             | N   | N                           | +               | +                        | N                         | 14 (+)<br>1 (-)<br>8 (N)               | 18 (+)<br>1 (-)<br>8 (N)  | M                         |
| All 72 Municipalities | Invasive Species   | 36  | Promote the use of native species in plans and ordinances   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | N                        | +                      | +                            | N                             | +   | +                           | N               | N                        | N                         | 17 (+)<br>0 (-)<br>6 (N)               | 21 (+)<br>0 (-)<br>6 (N)  | H                         |
| All 72 Municipalities | Pandemic   | 37  | Promote immunization and follow the recommendations of medical professionals  | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | N                  | +                 | +                      | +                   | N                             | N                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>0 (-)<br>11 (N)              | 16 (+)<br>0 (-)<br>11 (N) | M                         |
| All 72 Municipalities | Radon  | 38  | Promote radon testing and abatement in all structures   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | N                        | N                      | N                            | N                             | +   | +                           | N               | N                        | N                         | 15 (+)<br>0 (-)<br>8 (N)               | 19 (+)<br>0 (-)<br>8 (N)  | M                         |
| All 72 Municipalities | Terrorism  | 39  | Train emergency responders in relationship to terrorism   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N)  | M                         |
| All 72 Municipalities | Terrorism  | 40  | Work with the Department of Homeland Security (DHS) and PA State Police to complete a Risk Assessment and Vulnerability Analysis (RVAT) to assess the County's security needs and emergency preparedness  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N)  | M                         |



Table 6.4-2: PA STEEL Evaluation

| Municipality          | Hazard   | No.            | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 |                          |                           |   | Results                   |  |         |                           |                           |   |
|-----------------------|--|----------------|---|----------------------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|---|---------------------------|--|---------|---------------------------|---------------------------|---|
|                       |  |                |   | (+)<br>Favorable                 |                          |                      |                                 |                      |                    |                   |                        |                     |                               | (-)<br>Less favorable    |                        |                              |                               |   | (N)<br>Not Applicable       |                 |                          |                           |   | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING |                           |                           |   |
|                       |  |                |   | P<br>Political                   |                          |                      | A<br>Administrative             |                      |                    | S<br>Social       |                        | T<br>Technical      |                               | E<br>Economic            |                        |                              | E<br>Environmental            |   |                             |                 |                          | L<br>Legal                |   |                           |  |         |                           |                           |   |
| Political Support     | Local Champion   | Public Support | Staffing  | Funding Allocation               | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority | Potential Legal Challenge |   |                           |  |         |                           |                           |   |
| All 72 Municipalities | Terrorism  | 41             | Promote personal and community vigilance to prevent future acts of terrorism  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | N                           | N               | N                        | N                         | N | N                         | N                                      | N       | 12 (+)<br>1 (-)<br>10 (N) | 16 (+)<br>1 (-)<br>10 (N) | M |
| All 72 Municipalities | Tornado, Winter Storm, Hurricane/Tropical Storm/Nor'Easter, Flood/Flash Flood/Ice Jam, Landslide | 42             | Utilize code enforcement to minimize damage that can be caused by all hazards   | +                                | +                        | -                    | -                               | -                    | +                  | +                 | +                      | +                   | +                             | N                        | +                      | +                            | N                             | -   | +                           | N               | N                        | +                         | + | N                         | +                                      | -       | 13 (+)<br>5 (-)<br>5 (N)  | 17 (+)<br>5 (-)<br>5 (N)  | M |
| All 72 Municipalities | Tornado, Winter Storm, Hurricane/Tropical Storm/Nor'Easter, Flood/Flash Flood/Ice Jam, Landslide | 43             | Identify areas with structures such as mobile homes that are more susceptible in tornadoes, winter storms, and other weather-related hazards, and identify evacuation shelters for those living in those structures | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | -   | N                           | N               | N                        | N                         | N | +                         | N                                      | N       | 13 (+)<br>2 (-)<br>8 (N)  | 17 (+)<br>2 (-)<br>8 (N)  | M |
| All 72 Municipalities | Urban Fires  | 44             | Promote provision and maintenance of smoke detectors and fire extinguishers   | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | N                           | N               | N                        | N                         | N | N                         | +                                      | N       | 14 (+)<br>0 (-)<br>9 (N)  | 18 (+)<br>0 (-)<br>9 (N)  | M |
| All 72 Municipalities | Wildfires  | 45             | Promote defensible space and other wildfire mitigation actions (e.g., ignition resistant construction and hazardous fuels reduction) to mitigate wildfires  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | +                           | N               | N                        | +                         | + | N                         | N                                      | N       | 16 (+)<br>0 (-)<br>7 (N)  | 20 (+)<br>0 (-)<br>7 (N)  | M |
| All 72 Municipalities | Infectious Disease/Pandemic  | 46             | Promote awareness of West Nile Virus and Lyme Disease   | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | N                           | N               | N                        | +                         | N | N                         | N                                      | N       | 14 (+)<br>0 (-)<br>9 (N)  | 18 (+)<br>0 (-)<br>9 (N)  | M |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 47             | Identify historic structures that are susceptible to flooding and promote mitigation  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | -                           | N               | N                        | N                         | N | N                         | N                                      | N       | 12 (+)<br>2 (-)<br>9 (N)  | 16 (+)<br>2 (-)<br>9 (N)  | M |
| All 72 Municipalities | All Hazards  | 48             | Evaluate the need for additional detour and evacuation routes beyond those related to nuclear power plants and winter storms  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | -   | N                           | N               | N                        | N                         | N | N                         | N                                      | N       | 12 (+)<br>2 (-)<br>9 (N)  | 16 (+)<br>2 (-)<br>9 (N)  | M |
| All 72 Municipalities | All Hazards  | 49             | As infrastructure is added or replaced, consider hazard mitigation in the development or redevelopment process  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | -   | N                           | N               | N                        | N                         | N | N                         | N                                      | N       | 12 (+)<br>2 (-)<br>9 (N)  | 16 (+)<br>2 (-)<br>9 (N)  | M |
| All 72 Municipalities | Flood/Flash Flood/Ice Jam  | 50             | Support stormwater management as a way of lessening impacts of flooding   | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | -   | +                           | N               | N                        | +                         | + | +                         | +                                      | N       | 18 (+)<br>1 (-)<br>4 (N)  | 22 (+)<br>1 (-)<br>4 (N)  | H |
| All 72 Municipalities | Mass Food/Animal Feed Contamination  | 51             | Provide information, education, and outreach on animal feed contamination and food borne illness  | +                                | +                        | +                    | +                               | -                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | +                             | -   | N                           | N               | N                        | N                         | + | +                         | N                                      | N       | 15 (+)<br>2 (-)<br>6 (N)  | 19 (+)<br>2 (-)<br>6 (N)  | M |
| Drought Hazard Area   | Drought  | 52             | Promote the provision of public water within identified growth areas and hydrogeological testing in identified rural areas  | +                                | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | +                             | +                        | +                      | +                            | N                             | N   | +                           | N               | N                        | +                         | + | +                         | +                                      | N       | 18 (+)<br>0 (-)<br>5 (N)  | 22 (+)<br>0 (-)<br>5 (N)  | H |

Table 6.4-2: PA STEEL Evaluation

| Municipality                                   | Hazard                    | No. | Mitigation Action<br>Name  | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             | Results         |                          |                           |  |                          |                           |
|--|---------------------------|-----|--|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|--------------------------|---------------------------|
|  |                           |     |  | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                           |
|  |                           |     |  | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                          | Potential Legal Challenge |
| Drought Hazard Area                            | Drought                   | 53  | Promote utilization of well drilling ordinances for areas dependent upon on-lot wells in identified rural areas  | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | N                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 18 (+)<br>0 (-)<br>5 (N)  | 22 (+)<br>0 (-)<br>5 (N)               | H                        |                           |
| Levee Failure Hazard Area                      | Levee Failure             | 54  | Work with US Army Corps of Engineers to maintain levees in working order and conduct timely engineering studies of levees to determine adequacy of existing levees in controlling flooding | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | -                             | +                        | N                      | +                            | +                             | +   | N                           | N               | N                        | 18 (+)<br>1 (-)<br>4 (N)  | 22 (+)<br>1 (-)<br>4 (N)               | H                        |                           |
| Sinkhole Hazard Area                           | Sinkholes                 | 55  | Add a provision to conduct geologic testing in identified Karst topography areas as a requirement within the subdivision and land development ordinances                                   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Codorus Creek Watershed Municipalities         | Flood/Flash Flood/Ice Jam | 56  | Implement the Codorus Creek NPS Watershed Implementation Plan  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Carroll Township                               | Flood/Flash Flood/Ice Jam | 57  | Replace County Bridge #272 due to scour-critical rating  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Chanceford Township/<br>Lower Windsor Township | Flood/Flash Flood/Ice Jam | 58  | Replace County Bridge #53 due to scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Codorus Township                               | Flood/Flash Flood/Ice Jam | 59  | Replace County Bridge #123 due to previous scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        |                           |  | M                        |                           |
| Conewago Township                              | Winter Storm              | 60  | Purchase and install road salt de-icing pre-wetting system apparatus on four Township trucks and the installation of a salt brine manufacturing system/storage tank                        | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | N                 | +                      | +                   | N                             | -                        | -                      | -                            | N                             | -   | -                           | N               | N                        | N                         | 11 (+)<br>6 (-)<br>6 (N)               | 15 (+)<br>6 (-)<br>6 (N) | L                         |
| Dover Township                                 | Flood/Flash Flood/Ice Jam | 61  | Replace County Bridge #166 due to scour-critical rating  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Dover Township                                 | Flood/Flash Flood/Ice Jam | 62  | Phase 1: Acquisition and demolition of properties on Pine Road   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 18 (+)<br>1 (-)<br>4 (N)  | 22 (+)<br>1 (-)<br>4 (N)               | H                        |                           |
| Dover Township                                 | Flood/Flash Flood/Ice Jam | 63  | Phase 2: Acquisition and demolition of properties on Pine Road   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 18 (+)<br>1 (-)<br>4 (N)  | 22 (+)<br>1 (-)<br>4 (N)               | H                        |                           |
| Dover Township                                 | Flood/Flash Flood/Ice Jam | 64  | Phase 3: Acquisition and demolition of properties on Pine Road   | +                                | +              | +              | +                   | +                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 18 (+)<br>1 (-)<br>4 (N)  | 22 (+)<br>1 (-)<br>4 (N)               | H                        |                           |

Table 6.4-2: PA STEEL Evaluation

| Municipality           | Hazard                    | No. | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 | Results                   |  |                          |                          |                           |
|------------------------|---------------------------|-----|---|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|---------------------------|--|--------------------------|--------------------------|---------------------------|
|                        |                           |     |   | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                          |                           |
|                        |                           |     |   | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority |                           |  |                          | Existing Local Authority | Potential Legal Challenge |
| East Hopewell Township | Flood/Flash Flood/Ice Jam | 65  | Replace County Bridge #41 due to previous scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| East Hopewell Township | Flood/Flash Flood/Ice Jam | 66  | Replace County Bridge #42 due to previous scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Fairview Township      | Flood/Flash Flood/Ice Jam | 67  | Elevate and replace bridge SR0114 and SR1005  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                         |  |                          | M                        |                           |
| Felton Borough         | Flood/Flash Flood/Ice Jam | 68  | Maul Avenue Bridge Replacement  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                        |                           |
| Felton Borough         | Flood/Flash Flood/Ice Jam | 69  | Stormwater control from 25 Red Lion Avenue to Main Street   | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | N                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>3 (-)<br>4 (N) | 20 (+)<br>3 (-)<br>4 (N) | M                         |
| Glen Rock Borough      | All                       | 70  | Purchase Alternate Emergency Command Center equipment (computer, lighting, generator, communications equipment) | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | -                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | +                         | N                                      | 12 (+)<br>3 (-)<br>8 (N) | 16 (+)<br>3 (-)<br>8 (N) | L                         |
| Glen Rock Borough      | Flood/Flash Flood/Ice Jam | 71  | Replace/repair retaining wall along Baltimore Street on South Branch Codorus Creek                              | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | N                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                         | N                                      | 15 (+)<br>3 (-)<br>5 (N) | 19 (+)<br>3 (-)<br>5 (N) | M                         |
| Glen Rock Borough      | Nuclear Incident          | 72  | Procure decontamination stations (male and female) for PBAPS nuclear response incident                          | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | N                 | +                      | +                   | N                             | -                        | N                      | N                            | +                             | N   | +                           | +               | +                         | N                                      | 14 (+)<br>2 (-)<br>6 (N) | 18 (+)<br>2 (-)<br>6 (N) | M                         |
| Goldsboro Borough      | Flood/Flash Flood/Ice Jam | 73  | 138 South York Street Fishing Creek Riparian Buffer   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Goldsboro Borough      | Flood/Flash Flood/Ice Jam | 74  | 138 South York Street Fishing Creek stream restoration  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Hallam Borough         | Flood/Flash Flood/Ice Jam | 75  | Beaver Street Swale Retrofit  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Hallam Borough         | Flood/Flash Flood/Ice Jam | 76  | Beaver Street Swale-Wetlands Restoration  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>3 (-)<br>4 (N) | 18 (+)<br>5 (-)<br>4 (N) | L                         |
| Hallam Borough         | Flood/Flash Flood/Ice Jam | 77  | Kreutz Creek Stream Restoration   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>3 (-)<br>4 (N) | 18 (+)<br>5 (-)<br>4 (N) | L                         |

Table 6.4-2: PA STEEL Evaluation

| Municipality              | Hazard                    | No. | Mitigation Action<br>Name  | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 | Results                  |                           |  |                          |                           |   |
|---------------------------|---------------------------|-----|--|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|--------------------------|---------------------------|---|
|                           |                           |     |  | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                           |   |
|                           |                           |     |  | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                          | Potential Legal Challenge |   |
| Hanover Borough           | Flood/Flash Flood/Ice Jam | 78  | Poplar Street Swale retrofit   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |   |
| Jackson Township          | Flood/Flash Flood/Ice Jam | 79  | UNT West Branch Codorus- BMP #2 Stream Restoration and Riparian Buffer   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |   |
| Jackson Township          | Flood/Flash Flood/Ice Jam | 80  | UNT West Branch Codorus- BMP #3 Stream Restoration and Riparian Buffer   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>3 (-)<br>4 (N)               | 18 (+)<br>5 (-)<br>4 (N) | L                         |   |
| Lewisberry Borough        | Flood/Flash Flood/Ice Jam | 81  | Front Street drainage improvements   | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>3 (-)<br>3 (N)               | 21 (+)<br>3 (-)<br>3 (N) | M                         |   |
| Lower Chanceford Township | Flood/Flash Flood/Ice Jam | 82  | Replace County Bridge #28 due to scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |   |
| Lower Windsor Township    | Flood/Flash Flood/Ice Jam | 83  | Identify properties within the Special Flood Hazard Area where permanent structures have been constructed, temporary RVs installed without permits; and major improvements to repetitive loss structures | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |   |
| Lower Windsor Township    | Flood/Flash Flood/Ice Jam | 84  | Look into requirements for an emergency evacuation plan for the various RV camps and boat storage facilities along Long Level.   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N) | M                         |   |
| Manchester Borough        | Flood/Flash Flood/Ice Jam | 85  | Manhaven Manor Basin Retrofit  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | N                        | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N) | M                         |   |
| Manchester Borough        | Flood/Flash Flood/Ice Jam | 86  | Musser Run Stream Restoration and Riparian Buffer  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | +                             | N                        | -                      | +                            | +                             | N   | +                           | +               | +                        | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N)  | M |
| Manchester Borough        | Flood/Flash Flood/Ice Jam | 87  | Manchester Borough Basin Retrofits (Dauberton HOA)   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | +                             | N                        | -                      | +                            | +                             | N   | +                           | +               | +                        | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N)  | M |
| Manchester Township       | Flood/Flash Flood/Ice Jam | 88  | Stillmeadow Park UNT Codorus Creek Stream Restoration (within park)  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>3 (-)<br>4 (N)               | 18 (+)<br>5 (-)<br>4 (N) | L                         |   |
| Manchester Township       | Flood/Flash Flood/Ice Jam | 89  | York County Solid Waste and Refuse Center Water Re-Use Project   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>3 (-)<br>4 (N)               | 18 (+)<br>5 (-)<br>4 (N) | L                         |   |

Table 6.4-2: PA STEEL Evaluation

| Municipality                                    | Hazard                    | No. | Mitigation Action<br>Name  | PA STEEL CRITERIA CONSIDERATIONS |   |     |                     |   |     |             |   |                |   |   |               |   |   |     |                    |   |     |   |            |     |   |                           | Results                                |                          |                          |                          |   |
|---|---------------------------|-----|--|----------------------------------|---|-----|---------------------|---|-----|-------------|---|----------------|---|---|---------------|---|---|-----|--------------------|---|-----|---|------------|-----|---|---------------------------|--|--------------------------|--------------------------|--------------------------|---|
|   |                           |     |  | P<br>Political                   |   |     | A<br>Administrative |   |     | S<br>Social |   | T<br>Technical |   |   | E<br>Economic |   |   |     | E<br>Environmental |   |     |   | L<br>Legal |     |   | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                          |                          |   |
|   |                           |     |  | +                                | - | (N) | +                   | - | (N) | +           | - | (N)            | + | - | (N)           | + | - | (N) | +                  | - | (N) | + | -          | (N) | + |                           |  |                          | -                        | (N)                      |   |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 90  | Stillmeadow Park Restoration- wetland pocket (within park)                   | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | - | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 16 (+)<br>3 (-)<br>4 (N) | 18 (+)<br>5 (-)<br>4 (N) | L |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 91  | Stillmeadow Park UNT Codorus Creek Stream Restoration (downstream from park) | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 92  | Stillmeadow Park Restoration- Wetland Pocket (downstream from park)          | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 93  | Stillmeadow Park Restoration - Basin Retrofit (upstream from park)           | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 94  | Stillmeadow Park Restoration - Basin Retrofit (south of park)                | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 95  | Stillmeadow Park Restoration - tree planting/buffer (within park)            | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 96  | Stillmeadow Park Restoration - Basin Retrofit (within park)                  | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 97  | Stillmeadow Park Restoration - Basin Retrofit (church property)              | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Manchester Township                             | Flood/Flash Flood/Ice Jam | 98  | Stillmeadow Park UNT Codorus Creek Stream Restoration(north of park)         | +                                | + | +   | +                   | + | -   | +           | N | +              | + | + | +             | + | N | -   | +                  | + | N   | + | +          | +   | + | +                         | +                                      | N                        | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M |
| Monaghan Township                               | Flood/Flash Flood/Ice Jam | 99  | Replace County Bridge #247 due to previous scour-critical rating             | +                                | + | +   | +                   | - | +   | +           | + | +              | + | + | +             | N | - | +   | N                  | N | +   | + | +          | +   | + | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                        |   |
| North Codorus Township                          | Flood/Flash Flood/Ice Jam | 100 | Replace County Bridge #143 due to previous scour-critical rating             | +                                | + | +   | +                   | - | +   | +           | + | +              | + | + | +             | N | - | +   | N                  | N | +   | + | +          | +   | + | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                        |   |
| Springfield Township/<br>North Codorus Township | Flood/Flash Flood/Ice Jam | 101 | Replace County Bridge #89 due to previous scour-critical rating              | +                                | + | +   | +                   | - | +   | +           | + | +              | + | + | +             | N | - | +   | N                  | N | +   | + | +          | +   | + | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                        |   |
| Paradise Township                               | Flood/Flash Flood/Ice Jam | 102 | Replace County Bridge #157 due to scour-critical rating                      | +                                | + | +   | +                   | - | +   | +           | + | +              | + | + | +             | N | - | +   | N                  | N | +   | + | +          | +   | + | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                        |   |

Table 6.4-2: PA STEEL Evaluation

| Municipality            | Hazard                                    | No. | Mitigation Action<br>Name  | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 | Results                   |  |                          |                          |                           |
|-------------------------|---|-----|--|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|---------------------------|--|--------------------------|--------------------------|---------------------------|
|                         |   |     |  | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                          |                           |
|                         |   |     |  | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority |                           |  |                          | Existing Local Authority | Potential Legal Challenge |
| Penn Township           | All Hazards                               | 103 | Purchase a trailer used by emergency services to provide generator support, a command center, a cooling station, and a canteen   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | -                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | N   | N                           | N               | +                         | N                                      | 12 (+)<br>3 (-)<br>8 (N) | 16 (+)<br>3 (-)<br>8 (N) | L                         |
| Penn Township           | Flood/Flash Flood/Ice Jam                 | 104 | Engineering costs for design/drawings of upgrade to Sheppard Myers Dam Spillway to comply with probable maximum flood requirements.  | +                                | +              | +              | +                   | -                  | N                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | N                      | N                            | N                             | +   | +                           | +               | +                         | N                                      | 14 (+)<br>2 (-)<br>7 (N) | 18 (+)<br>2 (-)<br>7 (N) | M                         |
| Penn Township           | Flood/Flash Flood/Ice Jam                 | 105 | Elevate and install drainage improvements along Flickinger Road to reduce flooding potential   | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | -                      | N                   | -                             | +                        | +                      | N                            | +                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>4 (-)<br>3 (N) | 18 (+)<br>6 (-)<br>3 (N) | L                         |
| Penn Township           | Severe Storms                             | 106 | Blettner Avenue Municipal Bridge No. 333 scour-critical bridge improvements  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | N                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Penn Township           | Severe Storms                             | 107 | Replace culvert, redesign stream, and make channel improvements at Young's Road and Kidd Lane  | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | -                      | N                   | -                             | +                        | +                      | N                            | +                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>4 (-)<br>3 (N) | 18 (+)<br>6 (-)<br>3 (N) | L                         |
| Penn Township           | Severe Storms; Flood/Flash Flood/Ice Jams | 108 | Develop a lining program for the storm sewer system (Drainage system maintenance) The corrugated metal pipe, more than 25 years old, is showing signs of deterioration. There is potential for failure. The pipe is also operating at less than design capacity. | +                                | +              | +              | -                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | -                      | N                   | -                             | +                        | +                      | N                            | +                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>4 (-)<br>3 (N) | 18 (+)<br>6 (-)<br>3 (N) | L                         |
| Penn Township           | Flood/Flash Flood/Ice Jam                 | 109 | Homewood Streambank Restoration (Plum Run)   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Red Lion Borough        | Flood/Flash Flood/Ice Jam                 | 110 | Horace Mann Avenue- BMP #1 Bio retention Basin   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 16 (+)<br>3 (-)<br>4 (N) | 18 (+)<br>5 (-)<br>4 (N) | L                         |
| Springettsbury Township | Flood/Flash Flood/Ice Jam                 | 111 | Penn Oaks Park UNT Kreutz Creek Stream Restoration   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township | Flood/Flash Flood/Ice Jam                 | 112 | Stonewood Park UNT Kreutz Creek Stream Restoration   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township | Flood/Flash Flood/Ice Jam                 | 113 | Camp Security UNT Kreutz Creek Stream Restoration  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township | Flood/Flash Flood/Ice Jam                 | 114 | Springettsbury Municipal Campus Basin Retrofit   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                         | N                                      | 17 (+)<br>2 (-)<br>4 (N) | 21 (+)<br>2 (-)<br>4 (N) | M                         |

Table 6.4-2: PA STEEL Evaluation

| Municipality                        | Hazard   | No. | Mitigation Action<br>Name   | PA STEEL CRITERIA CONSIDERATIONS |                |                |                     |                    |                          |                      |                                 |                      |                    |                   |                        |                     |                               |                          |                        |                              |                               |   |                             |                 |                          |                           | Results                                |                          |                           |
|-------------------------------------|--|-----|---|----------------------------------|----------------|----------------|---------------------|--------------------|--------------------------|----------------------|---------------------------------|----------------------|--------------------|-------------------|------------------------|---------------------|-------------------------------|--------------------------|------------------------|------------------------------|-------------------------------|---|-----------------------------|-----------------|--------------------------|---------------------------|--|--------------------------|---------------------------|
|                                     |  |     |   | P<br>Political                   |                |                | A<br>Administrative |                    |                          | S<br>Social          |                                 | T<br>Technical       |                    |                   | E<br>Economic          |                     |                               |                          | E<br>Environmental     |                              |                               |   | L<br>Legal                  |                 |                          | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |                           |
|                                     |  |     |   | Political Support                | Local Champion | Public Support | Staffing            | Funding Allocation | Maintenance / Operations | Community Acceptance | Effect on Segment of Population | Technically Feasible | Long-Term Solution | Secondary Impacts | Benefit of Action (x3) | Cost of Action (x3) | Contributes to Economic Goals | Outside Funding Required | Effect on Land / Water | Effect on Endangered Species | Effect on HAZMAT / Waste Site | Consistent w/ Community Environmental Goals | Consistent w/ Federal Goals | State Authority | Existing Local Authority |                           |  |                          | Potential Legal Challenge |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 115 | East York P3- Springetts Oaks Park UNT Kreutz Creek Stream Restoration  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | -                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 16 (+)<br>3 (-)<br>4 (N)               | 18 (+)<br>5 (-)<br>4 (N) | L                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 116 | East York P3-Kinsley Property-Basin Retrofit Concord Business Park  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 117 | East York P3-Kinsley Property-Basin Retrofit Concord Office Center  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 118 | East York P3-Kinsley Property-Basin Retrofit Concord Office Center  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 119 | East York P3- York County Home - Detention Basin Retrofit   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 120 | East York P3- York County Home - Proposed Bio retention Basin   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 121 | East York P3- York County Home - UNT Kreutz Creek Stream Restoration  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springettsbury Township             | Flood/Flash Flood/Ice Jam                                      | 122 | East York P3- York County Home - Forest Buffer (wet pond)   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Springfield Township/ York Township | Flood/Flash Flood/Ice Jam                                      | 123 | Replace County Bridge #95 due to previous scour-critical rating   | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| Warrington Township                 | Flood/Flash Flood/Ice Jam                                      | 124 | Replace County Bridge #213 due to previous scour-critical rating  | +                                | +              | +              | +                   | -                  | +                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | +                        | N                      | N                            | +                             | +   | +                           | +               | N                        | 17 (+)<br>2 (-)<br>4 (N)  | 21 (+)<br>2 (-)<br>4 (N)               | M                        |                           |
| West Manheim Township               | Flood/Flash Flood/Ice Jam, Storm Damage, Environmental Hazards | 125 | Color coded directional signage to designate east-west and north-south evacuation and alternate detour/travel routes (112 signs@ \$42 each) | +                                | +              | +              | +                   | +                  | -                        | +                    | +                               | +                    | +                  | +                 | +                      | N                   | -                             | N                        | N                      | N                            | N                             | +   | +                           | +               | +                        | N                         | 15 (+)<br>2 (-)<br>6 (N)               | 19 (+)<br>2 (-)<br>6 (N) | M                         |
| Windsor Borough                     | Flood/Flash Flood/Ice Jam                                      | 126 | West First Avenue Storm Sewer Improvements  | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |
| Windsor Borough                     | Flood/Flash Flood/Ice Jam                                      | 127 | East High Street Stormwater Drainage Improvements (Heindel Ave to Park)   | +                                | +              | +              | +                   | +                  | -                        | +                    | N                               | +                    | +                  | +                 | +                      | +                   | N                             | -                        | +                      | +                            | N                             | +   | +                           | +               | +                        | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M                         |

Table 6.4-2: PA STEEL Evaluation

| Municipality  | Hazard                    | No. | Mitigation Action<br>Name  | PA STEEL CRITERIA CONSIDERATIONS |   |   |                     |   |   |             |   |                |   |   |               |   |   |   |                    |   |   |   |            | Results |   |                           |  |                          |   |
|---|---------------------------|-----|--|----------------------------------|---|---|---------------------|---|---|-------------|---|----------------|---|---|---------------|---|---|---|--------------------|---|---|---|------------|---------|---|---------------------------|--|--------------------------|---|
|   |                           |     |  | P<br>Political                   |   |   | A<br>Administrative |   |   | S<br>Social |   | T<br>Technical |   |   | E<br>Economic |   |   |   | E<br>Environmental |   |   |   | L<br>Legal |         |   | SUMMARY (EQUAL WEIGHTING) | SUMMARY (BENEFITS & COSTS PRIORITIZED) | RANKING                  |   |
|   |                           |     |  | +                                | - | N | +                   | - | N | +           | - | N              | + | - | N             | + | - | N | +                  | - | N | + | -          | N       |   |                           |  |                          |   |
| Windsor Borough   | Flood/Flash Flood/Ice Jam | 128 | Professional engineered design and construction drawings and permitting to reduce flooding and erosion along the Fishing Creek corridor in Windsor Borough   | +                                | + | + | +                   | - | N | +           | N | +              | + | + | +             | + | N | - | N                  | N | N | + | +          | +       | + | N                         | 14 (+)<br>2 (-)<br>7 (N)               | 18 (+)<br>2 (-)<br>7 (N) | M |
| Windsor Borough   | Flood/Flash Flood/Ice Jam | 129 | West High Street Stormwater Drainage Improvements (Heindel Ave to North Camp St)   | +                                | + | + | +                   | + | - | +           | N | +              | + | + | +             | + | N | - | +                  | + | N | + | +          | +       | + | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M |
| York Township   | Flood/Flash Flood/Ice Jam | 130 | Replace County Bridge #98 due to previous scour-critical rating  | +                                | + | + | +                   | - | + | +           | + | +              | + | + | +             | + | N | - | +                  | N | N | + | +          | +       | + | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M |
| East Manchester Township, Hellam Township, Jackson Township, Manchester Township, North Codorus Township, North York Borough, Spring Garden Township, Spring Grove Borough, Springettsbury Township, Springfield Township, York City, West Manchester Township, West York Borough, Wrightsville Borough | Flood/Flash Flood/Ice Jam | 131 | Update flood emergency plans for Indian Rock Dam facility and Codorus Watershed Area   | +                                | + | + | +                   | - | + | +           | + | +              | + | + | +             | + | N | - | +                  | N | N | + | +          | +       | + | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M |
| All 72 Municipalities   | All Hazards               | 132 | Work with seniors to inform them about hazards and encourage to them to have an emergency plan that includes creating a support network, having a back-up plan for medical supplies and treatment, and creating an emergency kit for themselves and any pets | +                                | + | + | +                   | - | + | +           | + | +              | + | + | +             | + | N | - | N                  | N | N | N | N          | N       | N | N                         | 12 (+)<br>2 (-)<br>9 (N)               | 16 (+)<br>2 (-)<br>9 (N) | M |
| All 72 Municipalities   | Flood/Flash Flood/Ice Jam | 133 | Promote stream/floodplain restoration and buffering to lessen impacts of stormwater runoff and flooding  | +                                | + | + | +                   | + | + | +           | + | +              | + | + | +             | + | N | - | +                  | N | N | + | +          | +       | + | N                         | 18 (+)<br>1 (-)<br>4 (N)               | 22 (+)<br>1 (-)<br>4 (N) | H |
| Yorkana Borough   | Flood/Flash Flood/Ice jam | 134 | Valley View Road Drainage Improvements   | +                                | + | + | -                   | - | + | +           | + | +              | + | + | -             | N | - | + | +                  | N | N | + | +          | +       | + | N                         | 16 (+)<br>4 (-)<br>3 (N)               | 18 (+)<br>6 (-)<br>3 (N) | L |
| Newberry Township   | Flood/Flash Flood/Ice Jam | 135 | Replace County Bridge #202 due to scour-critical rating  | +                                | + | + | +                   | - | + | +           | + | +              | + | + | +             | + | N | - | +                  | N | N | + | +          | +       | + | N                         | 17 (+)<br>2 (-)<br>4 (N)               | 21 (+)<br>2 (-)<br>4 (N) | M |



## **CHAPTER SEVEN – PLAN MAINTENANCE**

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This section provides the basis for subsequent updates to the hazard mitigation plan and will define the processes by which continued public participation will be usefully collected and incorporated. It includes a schedule for monitoring, evaluation, and update over the next five (5) years.

### **7.1 UPDATE PROCESS SUMMARY**

Maintaining the York County HMP is essential to the hazard mitigation efforts of York County. It is important to ensure the effective implementation of mitigation activities by monitoring, evaluating, and updating this Plan. This section explains who will be responsible for maintenance activities, provides a methodology and schedule, and describes how the public will be involved. The County's original HMP (2008) stated that the Plan will be updated every five (5) years. Beginning in year four (4), the Plan would be updated based on accomplishments, new data, and new requirements. The intention would be to have the Plan updated by the end of year five (5). This process will continue to be followed.

The 2018 HMPU recognizes the importance of monitoring, evaluating, and updating the Plan based on new Plan maintenance procedures. The County will conduct an annual review of the Plan and work to define the role of the municipalities in the Plan's implementation. Continuing to engage the Local Planning Team and the public will also be key in maintaining this Plan.

### **7.2 MONITORING, EVALUATING AND UPDATING THE PLAN**

The YCPC is designated to administer the Plan maintenance processes of monitoring, evaluating, and updating with support of many entities. As part of the ongoing planning process, the YCPC will work with the County's 72 municipalities to incorporate information and recommendations from the HMP-U into municipal comprehensive plans, zoning and subdivision and land development ordinances, official maps, and other applicable plans and studies. The York County Office of Emergency Management will also work with local Emergency Management Coordinators to gain support for the Plan's recommendations at the municipal level. This will also enable the YCPC to be updated on applicable mitigation actions and provided feedback on the changing hazard vulnerabilities within communities. The Local Planning Team will continue to be engaged, primarily with an annual meeting and Plan review. The YCPC will oversee the progress made on the implementation of the Plan's action items and will modify the actions as necessary. Additionally, municipalities and other agencies and organizations will be solicited annually for hazard mitigation project ideas.

The annual review of the HMP will also include consideration of project applications, specifically, if any application should be submitted for existing mitigation grant programs. Support in applying for post-disaster mitigation funds, when applicable, will also be provided to municipalities. Additionally, any new plans and/or programs developed in the County will be evaluated and will be encouraged to incorporate the HMP-U as appropriate. Tables to certify the annual review and record proposed changes to the HMP are provided at the beginning of the Plan. Documentation of the annual review and meeting will be sent to both PEMA and FEMA.

As required by the Disaster Mitigation Act of 2000, the York County HMP will be updated every five (5) years. Future plan updates will account for any new hazard vulnerabilities or any new data and information. During the five (5)-year review process, the following questions will be used to assess the effectiveness of the York County HMP.

- Are the goals still applicable?
- Do existing actions need to be reprioritized for implementation?
- Do the plan's priorities correspond with State priorities?
- Can actions be implemented with available resources?
- Has the implementation of identified mitigation actions resulted in the expected outcome?

Issues that arise or new findings that are made that would require a change to the risk assessment, mitigation strategy, or other section of this Plan will be addressed by incorporation into future updates.

### **7.3 INCORPORATION INTO OTHER PLANNING MECHANISMS**

As a component of the York County Comprehensive Plan, the County has worked to implement the York County HMP. Moving forward, this document will be useful when updating and developing other plans.

Since 2008, the County has adopted the Integrated Water Resources Plan (IWRP). Adopted in 2011, it serves as both the County Plan for a Reliable Supply of Water, as required by the PA Municipalities Planning Code (Act 247), and the County Stormwater Management Plan, as required by the PA Stormwater Management Act (Act 167). Included in this IWRP is an action plan to enhance and protect the County's water resources. Information in this Plan plays significant role in guiding the protection of those resources.

In the intervening years, the Growth Management component of the York County Comprehensive Plan was updated. The HMP contains countywide information regarding specific risk and vulnerability and specific information by location which informed the discussion of future growth. This data will also help to inform the development of municipal and joint municipal comprehensive plans, particularly in the area of future land use, zoning, and open space.

In 2018, the YCPC completed the Flooded Roadway Study. It identifies roadways in York County that close due to flooding events, and of these roadways, which should be taken into consideration when rehabilitation or resurfacing projects become available in the surrounding area. Data regarding flooded roadways will continue to be collected and incorporated into transportation planning and other land use decisions.

The HMP can also provide information to the Emergency Operations Plans completed by the municipalities. Probability and vulnerability bring much to bear on emergency management efforts and response. Also at the municipal level, the HMP provides an opportunity to contribute to local land use regulations/planning and to discourage development in or near hazard-prone areas.

The YCPC will continue to explore the feasibility of developing a web-based hazard identification tool. Preliminarily conceptualized as an application that could provide mapping to the parcel level, users could select a parcel or an area and easily determine what hazards may occur. This project is largely dependent on the availability of funding.

#### **7.4 CONTINUED PUBLIC INVOLVEMENT**

The public was involved in the HMP-U in various ways and the public involvement will continue during the evaluation and implementation of the HMP. The public will have access to the current HMP on the web at [www.ycpc.org](http://www.ycpc.org) or can be directed by a link from the York County Office of Emergency Management website at [www.yorkcountypa.gov/emergency-services.html](http://www.yorkcountypa.gov/emergency-services.html). The YCPC also maintains paper copies of the Plan in the event someone would wish to access it in that manner. Paper copies will also be made available to the York County Office of Emergency Management and to any municipality, upon request.

Information on events related to the HMP will be announced utilizing the YCPC website at [www.ycpc.org](http://www.ycpc.org), YCPC Planning Perspectives (topical newsletter), YCPC e-newsletter, YCPC Facebook page, and by targeted electronic mailings. York County intends to cross promote the public education opportunities offered by other groups and organizations. All pertinent comments and information will be incorporated into the next HMP update.

In order to facilitate the dispersal of information regarding the 2018 HMPU, a planning perspective was created which summarizes the intent of hazard mitigation planning and the content of the 2018 HMPU (see Appendix H). The planning perspective will be available online, at the YCPC office, and dispersed at meetings related to hazard mitigation and the 2018 HMPU.

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## CHAPTER EIGHT – PLAN ADOPTION

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The Draft 2018 Hazard Mitigation Plan Update was submitted to the Pennsylvania State Hazard Mitigation Officer in September 2018, who then forwarded it to FEMA for final review and approval pending adoption.

The York County Commissioners, in cooperation with the YCPC, will then adopt the FEMA approved Plan as a component of the York County Comprehensive Plan. Additionally, the YCPC will work with the County's 72 municipalities to adopt, by resolution, the approved York County 2018 Hazard Mitigation Plan and integrate actions into municipal plans as appropriate.

The completed Local Mitigation Plan Review Crosswalk is included in Appendix G.

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## **APPENDIX A – MEETING DOCUMENTATION**

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**Hazard Mitigation Local Planning Team  
Kick-Off Meeting Agenda  
April 28, 2017  
1:00 p.m., York County 911 Center**

- 1) Introductions**
- 2) Hazard Mitigation Plan Background**
- 3) Planning Team Role**
- 4) Time Frames**
- 5) Hazard and Gap Identification**
- 6) Capability Survey and Municipal Assessment**
- 7) Other Business for Discussion**
- 8) Next Steps**
- 9) Meeting Adjourned**

# YORK COUNTY HAZARD MITIGATION PLAN UPDATE – LOCAL PLANNING TEAM MEETING



April 28, 2017



## Hazard Mitigation Plan Background

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) constitutes the statutory authority for most Federal disaster response activities especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs.



## Hazard Mitigation Plan Background

- Designed to bring an orderly and systemic means of federal natural disaster assistance for state and local governments in carrying out their responsibilities to aid citizens.
- Intention was to encourage states and localities to develop comprehensive disaster preparedness plans, prepare for better intergovernmental coordination in the face of a disaster, encourage the use of insurance coverage, and provide federal assistance programs for losses due to a disaster.



## Hazard Mitigation Plan Background

- Disaster Mitigation Act 2000 amended the Stafford Act to include a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.
- Established a new requirement for local government hazard mitigation plans as a condition of receiving hazard mitigation assistance (Includes Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program).
- Does not mean that municipalities and residents will not receive emergency assistance.




## Hazard Mitigation Plan Background

- First York County Plan completed in 2008
- Multi-municipal Plan that serves County and all 72 municipalities
- Required to be adopted by resolution
- Adopted by 68 municipalities




## Hazard Mitigation Plan Background

- Updates required every 5 years
- Last update was completed in 2013
- Complete update and reformat
- 70 municipalities adopted



## Hazard Mitigation Plan Background

- Plan Development Guided by
  - FEMA Local Mitigation Plan Review Guide - Crosswalk
  - PEMA Standard Operating Guide (SOG)



## Hazard Mitigation

- Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose is to systematically identify policies, actions, and tools.
- Pre-disaster mitigation involves actions taken in advance of hazard event to interrupt cycle of damage, reconstruction, and repeated damage.
- After 9/11/01 included human made disasters.



## Hazard Mitigation Plan Background

- Plan consists of 8 sections
- Introduction- Background, Purpose, Scope
- Community Profile- Geography, Demographics, Land Use
- Planning Process- Documentation of Involvement
- Risk Assessment- Hazard I.D., Profile (location, magnitude, occurrence, and vulnerability), Hazard Ranking



## Hazard Mitigation Plan Background

- Capability Assessment- Inventory of planning/regulatory tools, resources and ability to use them
- Mitigation Strategy- Goals, objectives, mitigation techniques, and action plan
- Plan Maintenance- Further update, Plan monitoring, incorporation into other efforts, and continued public involvement
- Plan Adoption- Process and Plan Review Crosswalk



## Planning Team Role

- Feedback on draft work
- Local expertise to increase plan effectiveness
- Participation in surveys
- Hazard identification and prioritization
- Tools and resources available and gaps
- Hazard mitigation actions



## Time Frames

- Grant Performance Period 1/11/17 – 8/30/19
- Plan expires April of 2018
- Attachment A timeline



## Hazard Identification

- 15 natural hazards and 6 Human-made hazards
- State Plan identifies 26 hazards
- Not Addressed- Transportation Accidents, Utility Interruption, Levee Failure, Coastal Erosion (NA), Mass Food and Animal Contamination



## Hazard Identification

- Not applicable- Avalanche/Glacier, Dust/Sand Storm, Volcano, Expansive Soils, Tsunami, Coastal Erosion






## Hazard Identification

- For Consideration-Transportation Accidents, Utility Interruption, Levee Failure, Mass Food and Animal Contamination
- Recommended- Add Levee Failure, Greater emphasis on Wind Storm
- Group Discussion for recommendation to municipalities



## Gap Identification

- Climate Change Impact- Expand
- Aging Population
- Historic Resources
- Viable Specific Municipal Actions
- Other?



Surveys

- Hazard Identification and Ranking/Gap Analysis
- Capability Survey and Assessment

**Appendix 5. Hazard Identification and Risk Evaluation Worksheet**

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Jurisdiction: \_\_\_\_\_

**PART 1**

| Identified Hazards<br>2XXX HMP | How has the frequency of occurrence, magnitude of impact, and/or geographic extent changed in your community?<br><b>NC=No Change, I=Increase, D=Decrease</b><br><i>(Please provide an explanation for any hazards marked I or D in the "Additional Comments" column)</i> | Additional Comments |
|--------------------------------|--|---------------------|
| <b>Natural Hazards</b>         |  |                     |
|                                |  |                     |
|                                |  |                     |
|                                |  |                     |
|                                |  |                     |
|                                |  |                     |
| <b>Human-made Hazards</b>      |  |                     |

**PART II**

**Other Hazards:**  
Do any of these hazards, not previously profiled in the County's hazard mitigation plan, have the potential to affect your municipality significantly? (If so, check box)

*Natural*

- |  |   |
|--|---|
| <input type="checkbox"/> Avalanche/Glacier                     | <input type="checkbox"/> Coastal Erosion  |
| <input type="checkbox"/> Dust, Sand Storm                      | <input type="checkbox"/> Expansive Soils  |
| <input type="checkbox"/> Extreme Temperature                   | <input type="checkbox"/> Hailstorm        |
| <input type="checkbox"/> Hurricane, Tropical Storm, Nor'easter | <input type="checkbox"/> Invasive Species |
| <input type="checkbox"/> Landslide                             | <input type="checkbox"/> Lightning Strike |
| <input type="checkbox"/> Pandemic                              | <input type="checkbox"/> Radon Exposure   |
| <input type="checkbox"/> Subsidence, Sinkhole                  | <input type="checkbox"/> Tsunami          |
| <input type="checkbox"/> Volcano                               |   |
- Human-made*
- |   |  |
|---|--|
| <input type="checkbox"/> Building or Structure Collapse | <input type="checkbox"/> Civil Disturbance         |
| <input type="checkbox"/> Disorientation                 | <input type="checkbox"/> Drowning                  |
| <input type="checkbox"/> Levee Failure                  | <input type="checkbox"/> War and Criminal Activity |

**Appendix 3. Capability Assessment Survey**

Jurisdiction: \_\_\_\_\_ Point of Contact/Title: \_\_\_\_\_  
Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

1. **Planning and Regulatory Capability:** Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by placing an "X" in the appropriate box, followed by the date of adoption/update. Then, for each particular item in place, identify the department or agency responsible for its implementation and indicate its estimated or anticipated effect on hazard loss reduction (Supports, Neutral or Hinders) with the appropriate symbol and also indicate if there has been a change in the ability of the tool/program to result in loss reduction. Finally, please provide additional comments or explanations in the space provided.

| Tool/Program                    | Status   |                         |                   | Dept. / Agency Responsible | Comments:   |
|---------------------------------|----------|-------------------------|-------------------|----------------------------|---|
|                                 | In Place | Date Adopted or Updated | Under Development |                            |   |
| EXAMPLE: Hazard Mitigation Plan | X        | 1/1/2006                |                   | Hazard County EMA          | Interim update in 2008 revised mitigation strategy; completed one action. |
| Hazard Mitigation Plan          |          |                         |                   |                            |   |
| Emergency Operations Plan       |          |                         |                   |                            |   |
| Disaster Recovery Plan          |          |                         |                   |                            |   |
| Evacuation Plan                 |          |                         |                   |                            |   |
| Continuity of Operations Plan   |          |                         |                   |                            |   |
| NFIP                            |          |                         |                   |                            |   |
| NFIP-CRS                        |          |                         |                   |                            |   |
| Floodplain Regulations          |          |                         |                   |                            |   |
| Floodplain Management Plan      |          |                         |                   |                            |   |
| Zoning Regulations              |          |                         |                   |                            |   |

2. *Administrative and Technical Capability:* Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by placing an "X" in the appropriate box. Then, if YES, please identify the department or agency they work under and provide any other comments you may have in the space provided or with attachments.

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**Pennsylvania's All-Hazard Mitigation Planning Standard Operating Guide**

| Staff/Personnel Resources  | Yes | No | Department / Agency | Comments |
|--|-----|----|---------------------|----------|
| Planners (with land use / land development knowledge)  |     |    |                     |          |
| Planners or engineers (with natural and/or human caused hazards knowledge)   |     |    |                     |          |
| Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors) |     |    |                     |          |
| Emergency manager  |     |    |                     |          |
| Floodplain manager   |     |    |                     |          |
| Land surveyors   |     |    |                     |          |

3. *Financial Capability:* Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for hazard mitigation purposes (including as match funds for State of Federal mitigation grant funds). Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

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**Pennsylvania's All-Hazard Mitigation Planning Standard Operating Guide**

| Financial Resources                       | Yes | No | Department / Agency | Comments |
|---|-----|----|---------------------|----------|
| Capital improvement programming           |     |    |                     |          |
| Community Development Block Grants (CDBG) |     |    |                     |          |
| Special purpose taxes                     |     |    |                     |          |
| Gas / electric utility fees               |     |    |                     |          |
| Water / sewer fees                        |     |    |                     |          |
| Stormwater utility fees                   |     |    |                     |          |
| Development impact fees                   |     |    |                     |          |

4. *Education and Outreach:* Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Then, identify the primary department or agency responsible for its administration or allocation and provide any other comments you may have in the space provided or with attachments.

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**Pennsylvania's All-Hazard Mitigation Planning Standard Operating Guide**

| Program/Organization   | Yes | No | Department / Agency | Comments |
|--|-----|----|---------------------|----------|
| Firewise Communities Certification   |     |    |                     |          |
| StormReady certification   |     |    |                     |          |
| Natural disaster or safety related school programs   |     |    |                     |          |
| Ongoing public education or information program (e.g. responsible water use, fire safety, household preparedness, environmental education) |     |    |                     |          |
| Public-private partnership initiatives addressing disaster-related issues  |     |    |                     |          |

5. *Self-Assessment of Capability:* Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided

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**Pennsylvania's All-Hazard Mitigation Planning Standard Operating Guide**

in Sections 1-5 of this survey. For multi-jurisdictional plans, record the results of this section into the Self Assessment Capability Matrix in Appendix 4.

| Area                         | Degree of Capability |          |      |
|------------------------------|----------------------|----------|------|
|                              | Limited              | Moderate | High |
| Planning and Regulatory      |                      |          |      |
| Administrative and Technical |                      |          |      |
| Financial                    |                      |          |      |
| Education and Outreach       |                      |          |      |

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- Other Business/Questions
- Next Steps
- Adjourn Meeting

# York County Hazard Mitigation Plan

Local Planning Team Meeting, 4/2/2017

In attendance: Mike Fetrow (York County Office of Emergency Management), Bill James (York County EMA), Shen Kreiser (York County Office of Emergency Management), Ken Martin (York College), Dan O'Connell (York County LEPC), Laurel Oswald (Dover Township), Russ Stanko (York County Area Agency on Aging)

YCPC staff in attendance: Amy Evans, Wade Gobrecht, Roy Livergood, Jeph Rebert, Joe Simora, Anne Walko

## Welcome and Introductions

Roy Livergood welcomed the group. Everyone made self-introductions.

## Plan Background and Requirements

Roy Livergood provided background of hazard mitigation planning, going back to the Robert T Stafford Disaster Relief and Emergency Assistance Act of 1988 (federal disaster response activities as they pertain to FEMA). The Act was amended in 2000 to include a new set of requirements that focus on the need for State, local, and tribal entities to coordinate mitigation planning and implementation activities.

In York County completed its first Hazard Mitigation Plan in 2008. The required update was completed in 2013. This was a complete update and reformat to conform to the PA State Hazard Mitigation Plan requirements. It is now time to update the 2013 plan. The Plan consists of 8 sections: Introduction, Community Profile, Planning Process, Risk Assessment, Capability Assessment, Mitigation Strategy, Plan Maintenance, and Plan Adoption.

## The Role of the Planning Team

The Local Planning Team assembled has a wide range of knowledge on many aspects of hazard mitigation. The Local Planning team will be called upon to provide feedback on draft work, to provide local expertise to increase plan effectiveness, to identify and prioritize hazards, to provide tools and resources and to formulate hazard mitigation actions.

## Timeframe

A timeline was provided. Highlights are that the grant performance period is 1/11/17-8/30/19. The current York County Hazard mitigation Plan expires 4/2018.

## Hazard Identification

The discussion then shifted to hazard identification. There are 15 natural hazards and 6 human made hazards identified in the current York County plan. York County currently DOES NOT address Transportation Accidents, Utility Interruption, Levee Failure, Coastal Erosion, and Mass Food and Animal Contamination. Hazards that are not applicable to York County include Avalanche/Glacier, Dust/Sand Storm, Volcano, Expansive Soils, Tsunami, and Coastal Erosion. Open discussion with the consideration of those hazards not currently addressed in the Plan continued.

There was a recommendation to add Levee Failure to the updated plan in light of the City of York/Army Corps of Engineers levee. Additionally, it was agreed that greater focus be placed on Wind Storms (in addition to Tornadoes, too address straight-line windstorms. Mass Food and Animal Contamination will be considered, along with Pandemic to determine if there is appropriate coverage of animal to human illness in Pandemic.

### Gap Identification

There is a need to expand the section that discusses the impacts of climate change, particularly regarding the intensity and changing impacts of hazards. More attention and information will be directed to the aging population. Considerable work has been done regarding historic resources and the updated plan will incorporate pertinent information. Additionally, there is a need to identify viable specific municipal actions.

### Surveys

Two surveys will be conducted for this planning initiative. The first is the Hazard Identification and Ranking/Gap Analysis and the other is the Capability Survey and Assessment. Both surveys will be distributed electronically, using the Survey Monkey technology to gather results. Hard copies will be available to those unable to complete online.

### Questions and Comments

- *The current plan expires 4/2018 and anticipated adoption is 8/2018. Is there a grace period?*  
Further clarification on this question is required. Roy will contact PEMA for additional information.
- *What about the Amish and other non-motorized population who do not drive? Does anything address their evacuation needs?*  
Households located within the APZ of Peach Bottom are informed of pick-up locations for evacuations and are provided with information regarding sheltering in place. They are notified through their municipalities.
- *Is the levee constructed to the specifications of the 100-year floodplain?*  
As explained, the levee is in need of recertification. The plan will definitely indicate in its definition/description if the levee is 100-year floodplain certified.
- *Regarding food and animal contamination, does this include avian flu and the like?*  
Avian flu may be included with the discussion and evaluation of pandemic. It was shared that avian flu can have significant impacts on agricultural operations and it may be necessary to add mass food and animal contamination as a hazard that could affect York County.
- *Will adding transportation accidents to our list of hazards open up York County to any additional funding?*  
That needs more clarification. Roy will check with the Transportation Chief of the York County Planning Commission to see if transportation projects can be tied to this. If not, we will likely not add Transportation Accidents as a hazard of concern for York County.



- *Does utility interruption include the water supply?*

Water service interruption is not covered. Contamination is covered by environmental hazards. We will continue to address utility interruption as we have in the past.

This continued to a discussion of warming and cooling stations. Notification for warming and cooling stations is spread through a variety of avenues, most recently social media.

Additionally, the issue of funding for special needs shelters was raised. During a recent ice storm, a special needs shelter was established, however it did not have the skilled care on site that was needed. This could be a recommendation that could come out of this plan.

- *Is the opioid crisis address anywhere in hazard mitigation planning?*  
No. Public health crises (communicable) are handled under pandemic.
- There was a recommendation regarding historic resources. The mapping contained in the Heritage Preservation Plan will be useful in the discussion of protecting and mitigating hazards that can affect heritage locations. Historic resources within the floodplain remain a primary concern.

### Conclusion and Next Steps

Roy concluded the meeting by thanking the Local Planning Team for their interest. He shared that attempts were made to include someone from the American Red Cross, public health (York City Health Department), and someone with a geology background. If anyone has contacts in any of those areas, please share so an invitation can be extended. The Local Planning Team is also pleased to welcome someone from the York County Area Agency on Aging, local law enforcement and York College.

Information regarding the Hazard Mitigation planning process will be put on the York County Planning Commission's website, [www.ycpc.org](http://www.ycpc.org).

**York County Hazard Mitigation Plan Update  
Local Planning Team**

**Kick-off Meeting, 4/28/17, 1:00 PM at the York County 911 Center, 120 Davies Drive, York, PA 17402**

| Local Planning Team (Please Sign In) |                      |                            |
|--------------------------------------|----------------------|----------------------------|
| Name                                 | Organization         | Email                      |
| Roy Livergood Jr.                    | YCPC                 | rlivergood@ycpc.org        |
| Joseph Simoren                       | YCPC                 | jsimoren@ycpc.org          |
| BILL JAMES                           | YORK OEM             | wjames@ycdes.org           |
| Wade Gabrecht                        | YLPL                 | wgabrecht@ycpc.org         |
| Koss Stanko                          | Area Agency on Aging | kstanko@yorkcountypa.gov   |
| JEFF REBERT                          | YCPC                 | jrebert@ycpc.org           |
| Lautel Oswalt                        | Dover Township       | laoswalt@dovertownship.org |
| Amy Evans                            | YCPC                 | aevans@ycpc.org            |
| Anne Walico                          | YCPC                 | "                          |
| MIKE FETROW                          | OEM                  | mifetrow@ycdes.org         |
| Shen Kreiser                         | York OEM             | shkreiser@ycdes.org        |
| DAN O'BONNELL                        | YORK COUNTY LEPC     | A&Z_Compliance@msn.com     |
| Ken Martin                           | York College         | kmartin@ycp.edu            |
|                                      |                      |                            |
|                                      |                      |                            |

# YORK COUNTY HAZARD MITIGATION PLAN UPDATE – LOCAL PLANNING TEAM MEETING 2



December 11, 2017



## Agenda

- Hazard Mitigation Surveys
- Hazard Profiles Discussion/Review
- Review Goals and Objectives
- Project/Action Identification
- Next Steps



## Hazard Mitigation Plan Surveys

- Hazard Mitigation Capability Survey
- Hazard Identification and Prioritization Survey
- Public Hazard ID and Prioritization Survey
- Hazard Risk Factor Survey



## Hazard Capability Survey

- **55 Responses/50 Municipalities**
  - Regulatory Tools (Zoning/Subdivision, EOP, Stormwater, Building Code, and Comp. Plan)
  - Admin and Tech (EMA Manager, Staff, Engineer, Building Codes)
  - Funding- Community Development Block Grant
  - Public Education Programs
  - Limited in Planning/Regulatory, Admin/Tech, Financial, Ed/Outreach
  - No projects Last 10 years
  - Most not sure or depends for assistance in applying for grants



## Hazard ID and Prioritization Survey

- 70 Responses/ 56 municipalities
- Severity- Nuclear Incident, Hurricane, Winter Storm
- Frequency- Winter Storm, Flooding, Hurricanes
- Increasing- Flooding, Winter Storm, Tornado, Hurricane
- Agree with adding Levee Failure and Mass Food & Animal Feed Contamination



## Hazard ID and Prioritization Survey

- Agree with not adding 6 additional hazards
- Top Hazards 1) Winter Storm, 2) Flooding, 3) Hurricane
- 52% familiar with Plan
- Greatest Strength = Regional Information
- Needs- funding projects, include coyotes, feral dogs/cats under invasive species, sinkholes cover greater area
- Issue to consider Aging Population and Infrastructure
- Use Social Media and News Releases to advertise

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## Public Survey

- 13 Responses/11 Municipalities
- Frequency- Winter Storm, Extreme Temps, Flooding
- Severity-Hurricane, (Flooding, Pandemic, Winter Storm)
- Increase in Extreme Temp., Hurricanes, Winter Storm
- Agree with Additions and Exclusions

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## Public Survey

- Top 3 Hazards- Winter Storm, Flooding, Extreme Temp.
- Familiar with Plan
- Strength- Consolidated Information
- Needs- Mass Food/Animal Food Contamination, Expand Invasive Species, Add Transportation Incidents and Utility Interruption
- Issues to consider- infrastructure and aging population
- Social Media most recommended for public involvement

# Risk Factor Survey

**Table 4.4.2.1: Hazard Prioritization Matrix**

| Hazard Risk | Hazard                                  | Risk Assessment Category |        |                |              |          | Risk Factor |
|-------------|---|--------------------------|--------|----------------|--------------|----------|-------------|
|             |   | Probability              | Impact | Spatial Extent | Warning Time | Duration |             |
| High        | Nuclear Incidents                       | 1.4                      | 3.1    | 3.7            | 3.2          | 3.7      | 3.1         |
|             | Flood/Flash Flood/Ice Jam               | 3.7                      | 2.4    | 2.8            | 1.7          | 2.4      | 3.0         |
|             | Winter Storms                           | 3.4                      | 2.2    | 3.6            | 1.2          | 2.7      | 2.9         |
|             | Environmental Hazards                   | 3.1                      | 1.8    | 2.5            | 3.5          | 2.1      | 2.9         |
|             | Radon Exposure                          | 3.6                      | 1.9    | 3.1            | 1.0          | 3.9      | 2.9         |
|             | Urban Fires/Explosions                  | 2.9                      | 2.1    | 1.8            | 4.0          | 1.8      | 2.8         |
|             | Pandemic And Infectious Disease         | 2.3                      | 2.3    | 3.5            | 1.6          | 3.6      | 2.8         |
|             | Extreme Temperatures                    | 3.2                      | 1.8    | 3.6            | 1.1          | 3.1      | 2.8         |
|             | Terrorism                               | 2.4                      | 2.1    | 2.2            | 3.9          | 1.8      | 2.8         |
| Moderate    | Mass Food and Animal Feed Contamination | 1.5                      | 1.9    | 3.0            | 3.4          | 3.5      | 2.7         |
|             | Hurricane/Tropical Storm/Nor' Easter    | 2.5                      | 2.3    | 3.6            | 1.1          | 2.3      | 2.6         |
|             | Tornado                                 | 2.7                      | 2.1    | 2.2            | 2.8          | 1.4      | 2.6         |
|             | Dam Failure                             | 1.2                      | 2.7    | 2.6            | 3.3          | 2.1      | 2.6         |
|             | Hailstorm                               | 3.1                      | 1.4    | 2.2            | 3.2          | 1.0      | 2.5         |
|             | Wildfire                                | 2.7                      | 1.4    | 1.7            | 3.6          | 1.8      | 2.5         |
| Low         | Lightning Strike                        | 3.3                      | 1.6    | 1.4            | 2.9          | 1.0      | 2.4         |
|             | Drought                                 | 2.2                      | 1.3    | 3.3            | 1.4          | 4.0      | 2.4         |
|             | Levee Failure                           | 1.2                      | 2.4    | 2.4            | 3.0          | 2.3      | 2.4         |
|             | Subsidence/Sinkhole                     | 2.1                      | 1.6    | 1.8            | 3.6          | 2.0      | 2.4         |
|             | Invasive Species                        | 2.4                      | 1.5    | 2.5            | 1.3          | 3.9      | 2.3         |
|             | Earthquake                              | 1.8                      | 1.1    | 2.2            | 3.7          | 1.0      | 2.2         |
|             | Civil Disturbance                       | 1.4                      | 1.7    | 1.7            | 3.2          | 1.9      | 2.1         |
| Landslide   | 1.1                                     | 1.0                      | 1.3    | 3.6            | 1.1          | 1.7      |             |



## Hazard Profiles Chapter 4

- Expanded descriptions and events data
- Used York County Data instead of State for Exposure Data
- Review in upcoming month



## Goals and Objectives Review

- Do Goals and Objectives adequately address conditions in York County?



## Goal 1

***Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from the occurrence of drought, earthquake, extreme temperature, flood/flash flood/ice jam, hailstorm, hurricane/tropical storm/nor'easter, invasive species, landslide, lightning strike, pandemic, radon exposure, subsidence/sinkhole, tornado/windstorm, wildfire, winter storm, civil disturbance, dam failure, environmental hazards, nuclear incidents, terrorism, and urban fires/explosions.***





## Goal 1 Objectives

- Objective 1A - Provide preventative or corrective measures where possible to deal with identified hazards.
- Objective 1B - Provide proper monitoring and warning of potential for a hazard to occur.
- Objective 1C - Provide for appropriate response to hazards that is coordinated at all levels.



## Goal 2

***Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.***



## Goal 2 Objectives

- Objective 2A - Ensure that an agency or organization is identified that can directly plan for and carry out tasks related to a specific hazard.
- Objective 2B - Utilize the Steering Committee (Local Planning Team) to coordinate and work towards addressing hazard mitigation throughout York County.
- Objective 2C - Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.



## Goal 3

***Promote proper planning and disaster-resistant future development.***



## Goal 3 Objectives

- Objective 3A - Maintain the Hazard Mitigation Plan as an element of the *York County Comprehensive Plan*.
- Objective 3B - Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels



## Goal 4

***Increase public understanding, support and demand for hazard mitigation.***




## Goal 4 Objectives

- Objective 4A - Provide educational materials.
- Objective 4B - Create awareness among residents regarding their responsibility to be prepared for, and able to respond to, a hazard.



## Mitigation Actions

- Currently 102 actions identified.
- Staff will analyze and contact municipalities to see if still valid.
- Each municipality required to identify one hazard mitigation action.
- Actions identified for all eligible activities under FEMA programs.
- Need to solicit new projects.



## Next Steps

- Review Chapter 4 via link
- Project Identification
- Public Meeting – January
- Solicit Municipal Projects
- Update Capability Assessment Chapter 5
- Questions?

# York County Hazard Mitigation Plan – Update

## Local Planning Team Meeting #2

Attending: Ernie Szabo, PEMA

Staff: Amy Evans, Wade Gobrecht, Roy Livergood, Jeph Rebert, Joe Simora, and Anne Walko

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### Welcome and Introductions

Roy Livergood welcomed everyone to the meeting. Self-introductions were made. Roy shared the agenda for the meeting.

### Hazard Mitigation Surveys

Roy Livergood shared that four surveys have been conducted to date: Hazard Mitigation Capability Survey; Hazard Identification and Prioritization Survey; Public Hazard ID and Prioritization Survey; and Hazard Risk Factor Survey. Each are outlined below.

#### Hazard Capability Survey

Roy received 55 responses/50 municipalities. It included questions on regulatory tools, administration and technical (specifically staff knowledge of hazard mitigation), funding, public education, and the limitations of each. General observations include that most had not done any projects in the past 10 years and many are unsure if they will be applying for funding in the future. Roy shared that there is an interest in the Plan update to take a greater part in working with residents and that this is dependent of the project type. Roy did clarify that some municipalities have completed projects, including Fairview, Paradise, Hellam, and Dover Townships.

#### Hazard Identification and Prioritization Survey

Roy received 70 responses/56 municipalities. The purpose of the survey was to review and prioritize the hazards by severity and frequency. The top three ranked highest in severity are nuclear accident, hurricane, and winter storm. Related to frequency, the top three are winter storm, flooding, and hurricanes. Hazards with rankings that are increasing are flooding, winter storm, tornado, and hurricane. The respondents agreed to profile levee failure and mass food and animal feed contamination. The respondents were in agreement not to add six additional hazards. Some general information: 52% considered themselves familiar with the Plan and felt its strength was regional information. Additional needs brought to attention include funding projects related to coyotes, including feral dogs/cats in invasive species, increasing coverage area of sinkholes. Respondents said to consider the aging population and infrastructure. Survey results show that the use of social media and news releases are the preferred methods to advertise and share about the plan update.

#### Public Survey

Roy received 13 responses/11 municipalities. The survey was posted on Facebook, [www.ycpc.org](http://www.ycpc.org), and notification was sent through YCPC E-Alert. This, too, ranked hazards based on severity and frequency. The hazard ranked most severe is hurricane. Flooding, pandemic, and winter storm followed, all tied for second. Ranked highest in frequency are winter storms, extreme temperatures, and flooding. Extreme

temperatures, hurricanes, and winter storms increased in the rankings. Most reported familiarity with the plan and see its strength as a consolidation of information. Needs identified were the addition of mass food and animal feed contamination, expansion of invasive species, addition of transportation incidents and utility interruption. The plan has to consider infrastructure and the aging population. Social media recommended for public involvement.

### Risk Factor Survey

Roy Livergood shared a chart that presented the outcome of the risk factor survey. He shared that nine hazards ranked “high” and previously five had. The top four, nuclear incidents, flash flood/flooding/ice jam, winter storms, and environmental hazards remained the same. He also clarified that mass food and animal feed contamination is a new category and it ranked “moderate.” Ernie Szabo stated that it is important to realize that these rankings are important and are in the context of York County.

### Hazard Profiles (Chapter 4)

Roy Livergood shared that the draft of this chapter includes expanded descriptions and events data for all hazards. For exposure data, York County data was used. 23 hazards are now profiled. HAZUS has been fine tuned, along with assessment data, to provide reliable local estimates. Roy will send out a link to this chapter, with changes highlighted. Comments are due back by 1/26/18. Wade Gobrecht suggested putting the hazard profiles chapter on Civi-comment. Roy agreed and asked Wade to look into it. A meeting to inform the public will be held in mid-January.

### Goals and Objectives

The next portion of the meeting focused on a review and discussion of the goals and objectives.

#### Goal 1-

It was suggested it be updated to reflect the current list of hazards. Discussion around the objectives for Goal 1 included questions about the status of South Central Alert. Joe Simora shared that the Next Gen 911 is a migration to GIS data for call routing. This is more on the response side of things. Also, providing preventative measures includes helping to identify projects.

#### Goal 2-

Roy clarified that the hazard mitigation planning initiatives have expanded to include police and colleges. Representative Hill suggested involvement by school districts. Outreach to school district personnel did not yield any participation/representation.

Ernie Szabo did share that school districts are notified of the larger scale drills that are conducted by nuclear facilities. Jeph Rebert suggested an analysis conducted by Homeland Security and Pennsylvania State Police, that identifies lucrative, vital targets in a community or area. Ernie Szabo confirmed the benefit of such an analysis. Regarding the objectives for Goal 2, Ernie explained that the State also has a State Recovery Plan... *how to recover after a hazard or disaster occurs.*

The floodplain viewer was mentioned as a valuable tool in this. Roy elaborated that he’s considered the development of an all county/all hazard viewer. He further stated that the County will be taking a greater role to help residents pursue funding. He summarized that the YCPC role is planning and that EMA is response.

Joe Simora offered to see what he can find out related GIS users and hazard mitigation. Evacuation routes were mentioned.

### Goal 3-

This goal promotes proper planning and disaster-resistant future development. Discussion regarding the objectives included floodplain ordinances along with other model ordinances prepared by FEMA. Ernie also shared that there are many best practices for reference. These objectives can be expanded to include municipal planners' reviews of projects and plans. Conversation about radon detection ensued.

### Goal 4-

Regarding increasing public understanding, Jeph Rebert inquired about auto-less households like the Amish. Roy and Ernie confirmed that the Plan includes community contacts for such purposes. School districts were mentioned again and it was confirmed that they are made aware of drills at nuclear plants.

## Mitigation Actions

The current plan identifies 102 actions. Staff will review list and contact municipalities to see if the mitigation actions are still valid. As for previous plans, each municipality is required to identify one hazard mitigation item. For those without specific hazard-related project needs, they will fall under the general recommendations. There is a need to solicit new projects, too.

Ernie Szabo elaborated that the most popular projects are culverts. It is good to identify vulnerable water/road transitions. Additionally, it is useful to determine how many miles of powerline is in the County and identify where there might be issues with overhead lines and trees. Additionally, a recommendation could be to bury the power lines.

Discussion then moved to York City. It was suggested that the City will be completing their own hazard mitigation plan. Discussion ensued and Ernie Szabo shared his thought that setting priorities is more effectively done at the County level. It is allowable for a municipality to complete its own plan however it is advisable to work with the County.

Roy Livergood confirmed for Ernie Szabo that the Plan is available online and it is searchable. As a word of advice, Ernie recommended that no portion of the Plan should exceed 10 MG, for ease of downloading.

## Next Steps

Roy Livergood outlined the steps moving forward. First, the link Chapter 4 will be distributed. Time will be spent to identify projects. There will be a public meeting in January to review profiles. Municipal projects will be solicited. Roy will work to update Chapter 5, Capability Assessment. Roy also shared that outreach includes presentations to the Transportation Coalition, the Local Emergency Planning Committee (LEPC), and the Heritage Preservation Advisory Committee.



York County Hazard Mitigation Plan Update  
 Local Planning Team Meeting 2  
 December 11, 2017

| Name                 | Email                |
|----------------------|----------------------|
| Ray O. Livergood Jr. | r.livergood@ycpc.org |
| Ernest Szabo         | erszabo@pa.gov       |
| Anne Walko           | awalko@ycpc.org      |
| Amy Evans            | aevans@ycpc.org      |
| JEPH ROBERTS         | jrobert@ycpc.org     |
| Joseph Simonek       | jsimonek@ycpc.org    |
| Wade Gabrecht        | wgabrecht@ycpc.org   |
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# Memo

**To:** York County Municipalities, Emergency Management Coordinators, School Districts, Adjacent Counties, and Related Organizations

**From:** Roy O. Livergood, Jr., Senior Planner

**CC:** York County Commissioners and Planning Commission Staff

**Date:** January 29, 2018

**Re:** York County 2018 Hazard Mitigation Plan Update Public Meeting

Walter A. Kuhl  
Chairman

Mary E. Coble  
Vice Chairman

Sean P. Kenny  
Secretary

Brian Brenneman  
Treasurer

Eric Bortner

Matthew  
Chronister

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Thomas W. Earp

Cheryl Wormley

Felicia S. Dell  
Director

Jeffrey L.  
Rehmer II  
Solicitor

---

The York County Planning Commission is currently in the process of updating the York County Hazard Mitigation Plan and we need your input. The purpose of the meeting is to provide background information on hazard mitigation planning, gather input on the work completed to date and any hazard mitigation actions that should be included in the Plan. All county residents, municipal officials, and emergency management personnel with interest in hazard mitigation are encouraged to attend. Meeting details are as follows:

**Date:** Wednesday, February 7, 2018

**Time:** 6:30 PM

**Location:** York County Emergency Services Building  
120 Davies Drive, York, PA 17402

**For more information contact:**

Roy Livergood, (717) 771-9870 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

It is the policy of the County of York to ensure services are meaningfully accessible to qualified individuals with disabilities in accordance with the Americans with Disabilities Act. Upon request, auxiliary aids and accommodations are available to individuals with disabilities. Persons seeking accommodations shall call the County of York at (717) 840-7682. Individuals with a hearing impairment shall contact the Deaf Center at (717) 848-2585 or (717) 848-6765 (TTY).

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PLANNING COMMISSION

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**The York Dispatch/York Sunday News and York Daily Record** are the names of the newspaper(s) of general circulation published continuously for more than six months at its principal place of business, 1891 Loucks Road, York, PA 17408.

The printed copy of the advertisement hereto attached is a true copy, exactly as printed and published, of an advertisement printed in the regular issues of the said **The York Dispatch/York Sunday News and York Daily Record** published on the following dates, viz:

1/29/2018

### YORK COUNTY 2018 HAZARD MITIGATION PLAN PUBLIC MEETING

The York County Planning Commission will host a public meeting related to the update of the York County Hazard Mitigation Plan. The purpose of the meeting is to provide background information on hazard mitigation planning and gather input on the work completed to date. All county residents, municipal officials, and emergency management personnel with interest in hazard mitigation are encouraged to attend.

York County 2018 Hazard Mitigation Plan -  
PUBLIC MEETING  
Wednesday, February 7, 2018  
6:30 PM  
York County Emergency Services Building  
120 Davies Drive, York, PA 17402

For more information contact:  
Roy Livergood, (717) 771-9870 or  
rlivergood@ycpc.org

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## COMMONWEALTH OF PENNSYLVANIA COUNTY OF YORK

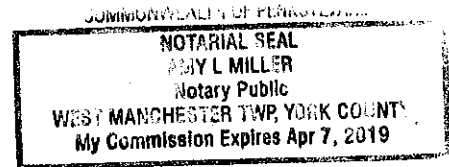
Before me, a Notary Public, personally came Karen Ahrens who being duly sworn deposes and says that she is the Legal Advertising Clerk of The York Dispatch/York Sunday News and York Daily Record and her personal knowledge of the publication of the advertisement mentioned in the foregoing statement as to the time, place and character of publications are true, and that the affiant is not interested in the subject matter of the above mentioned advertisement.

Sworn and subscribed to before me, on  
this 29 day of January 2018

Roy L. Miller

Notary Public

} Karen Ahrens



The charge for the following publication of above mentioned advertisement and the expense of the affidavit.

|                    |                 |
|--------------------|-----------------|
| Advertisement Cost | \$253.20        |
| Affidavit Fee      | \$5.00          |
| Total Cost         | <u>\$258.20</u> |

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YORK, PENNSYLVANIA

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Bicyclists enjoying the newest section of the Heritage Rail Trail County Park. Please click on the image to learn more about our Transportation Alternatives Program (TAP)

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29 Jan 2018

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York County 2018 Hazard Mitigation Plan Public Meeting- The York County Planning Commission is curre...

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### Upcoming Meetings

#### YCPC Meeting

The next Planning Commission meeting is being held on February 20, 2018, at 7:00 p.m. If you are interested in a specific topic, please visit the [Boards and Committees page](#) for more information.

#### YAMPO Meeting

The next YAMPO meeting is being held on February 1, 2018, at 9:00 am. Please visit the [Boards and Committees](#) page for more information.

Dear Roy,

To keep you updated on activities and current events, the York County Planning Commission has created E-Alerts. These E-Alerts are just another way to keep you connected with what is taking place in and around your community. Please explore the articles below or visit the links to the left for other helpful information.

## YORK COUNTY HAZARD MITIGATION PLAN

The York County Planning Commission will host a public meeting related to the update of the York County Hazard Mitigation Plan. The purpose of the meeting is to provide background information on hazard mitigation planning and gather input on the work completed to date. All county residents, municipal officials, and emergency management personnel with interest in hazard mitigation are encouraged to attend.

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Wednesday, February 7, 2018  
6:30 PM

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120 Davies Drive, York, PA 17402

For more information contact:  
Roy Livergood, (717) 771-9870 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

## GO YORK 2045 LAUNCHES York County Prepares for the Future of Transportation

The York County Planning Commission and York Area Metropolitan Planning Organization announce the launch of Go York 2045, a comprehensive planning effort for all forms of transportation in York County, and its accompanying website, [GoYork2045.com](http://GoYork2045.com). Go York 2045 will bring together the public and organizations from around York County to develop strategies and investments to better move people and goods during the next 27 years.

Over the next few decades, communities across the country will confront major changes in population and technology, and York County is no different. Here are three brief examples of the big questions York County faces.

In 2016, for the first time since York County's Center for Traffic Safety began collecting data, crashes involving senior drivers (65+) became the number one traffic safety concern in York County. The Center for Rural Pennsylvania expects the number of people over 65 years of age in the state to nearly double in the next 30 years. Together, these factors create an important challenge for York County. How can senior citizens continue to enjoy our communities while traveling safely?

As anyone who has driven on Interstate 83 knows, York County is a hub of logistics. Investors have built multiple million-square-foot warehouses along the I-83 corridor in recent years. That development brings both jobs and trucks - more than 5,000 trucks per day on the busiest sections of I-83. Economists predict online shopping to continue to grow, which will spur more demand for these types of large facilities. How will York County manage the expected increase in

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### Upcoming Meetings

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#### YAMPO Meeting

The next YAMPO meeting is being held on April 5, 2018, at 9:00 am. Please visit the [Boards and Committees](#) page for more information.

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### YCPC Website Feedback Survey?

Have you visited [www.ycpc.org](http://www.ycpc.org) lately? Were you able to find what you were looking for in an easy manner? We'd like to know. Please take a brief survey on how our website measures up.

YCPC Website Feedback Survey Link:

<https://www.surveymonkey.com/r/DWCPDBO>

### York County Agricultural Lands Viewer

[The York County Agricultural Lands Viewer](#) is a tool designed to assist the user to locate lands enrolled in Municipal Agricultural Security Areas (ASA's) as well as lands protected by a public or private perpetual conservation easement. Data associated with each parcel is limited to information found in recorded ASA Resolutions, however additional ASA data can be obtained from the Municipality, or, the York County Agricultural Land Preservation (YCALP) Office. ASA data is derived from ASA Resolutions as recorded in the York County Court House and is subject to change following Municipal Review procedures according to Act 43- Ag Area Security Law, as amended.

If you have any questions about ASA or Conservation Easements, please contact the [YCALP Office](#).

If you have questions about the web mapping applications, please contact the [York County Planning Commission](#).

### Hazard Mitigation Plan Update Public Meeting

The York County Planning Commission held its first public meeting regarding the update to the York County Hazard Mitigation Plan on February 7, 2018. Due to inclement weather, the meeting was not well attended. In order to make sure that York County municipalities and residents are informed about this process, information related to public outreach is available on-line at [www.ycpc.org/environment/hazard-mitigation-planning-and-implementation.html](http://www.ycpc.org/environment/hazard-mitigation-planning-and-implementation.html). This includes meeting minutes, presentations, and handouts. Please check this information out and if you have comments or suggestions regarding the Hazard Mitigation Plan Update, contact Roy Livergood at [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org) or (717) 771-9870 ext. 1756.



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York County Planning Commission Published by Amy Evans

Help us update the York County Hazard Mitigation Plan! Join us on Feb 7th to let us know what you think about what we've done so far and any hazard mitigation actions that should be included in the Plan.

If you live in the County, are a municipal official, or work in emergency management, you are encouraged to attend!

Full meeting notice here: http://bit.ly/HazMitMtg

2018 Hazard Mitigation Plan Public Meeting. Mark your calendar! Wednesday February 7, 2018 6:30 PM. York County Emergency Services Bldg 120 Davies Drive York, PA 17402. Includes images of a construction site and a fire truck.

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### Details

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Hazard Mitigation Plan Public Meeting

Event



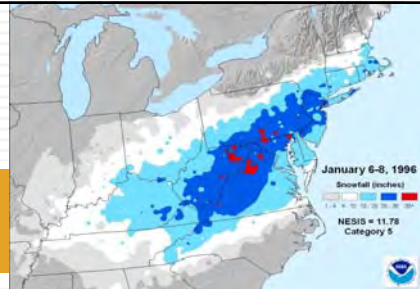
# YORK COUNTY 2018 HAZARD MITIGATION PLAN UPDATE – PUBLIC MEETING



February 7, 2018



## Agenda



- Hazard Mitigation Planning Background
- Hazard Mitigation Plan
- Hazard Identification
- Survey (4) Summary
- Worked Completed to Date
- Plan Goals, Objectives, and Actions



FEMA



## Hazard Mitigation Plan Background

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) constitutes the statutory authority for most Federal disaster response activities especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs.



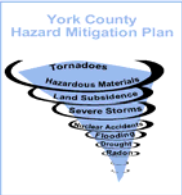
## Hazard Mitigation Plan Background

- Disaster Mitigation Act 2000 amended the Stafford Act to include a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.
- Requirement for local government hazard mitigation plans as a condition of receiving hazard mitigation assistance (Includes Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program).
- Does not mean that municipalities and residents will not receive emergency assistance.

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## Hazard Mitigation Plan Background

- First York County Plan completed in 2008
- Multi-municipal Plan that serves County and all 72 municipalities
- Required to be adopted by resolution
- Adopted by 68 municipalities




York County  
Hazard Mitigation Plan

Tornadoes  
Hazardous Materials  
Land Subsidence  
Severe Storms  
Coastal Storms  
Flooding  
Seismicity

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## Hazard Mitigation Plan Background

- Updates required every 5 years
- Last update was completed in 2013
- Complete update and reformat
- 70 municipalities adopted



York  
County  
2013  
Hazard  
Mitigation  
Plan


JAN 2013



## Hazard Mitigation Plan Background


- **Plan Development**
  - Requirements
    - FEMA Local Mitigation Plan Review Guide - Crosswalk
    - PEMA Standard Operating Guide (SOG)
  - Guided by
    - Local Planning Committee
  - Informed by Input from
    - Municipalities
    - Public






## Hazard Mitigation


The Four Phases of Emergency Management



- Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose is to systematically identify policies, actions, and tools.
- Pre-disaster mitigation involves actions taken in advance of hazard event to interrupt cycle of damage, reconstruction, and repeated damage.
- After 9/11/01 included human made disasters.



## Hazard Mitigation Plan




- Plan consists of 8 sections
- Introduction- Background, Purpose, Scope
- Community Profile- Geography, Demographics, Land Use
- Planning Process- Documentation of Involvement
- Risk Assessment- Hazard I.D., Profile (location, magnitude, occurrence, and vulnerability), Hazard Ranking



## Hazard Mitigation Plan



- Capability Assessment- Inventory of planning/regulatory tools, resources and ability to use them
- Mitigation Strategy- Goals, objectives, mitigation techniques, and action plan
- Plan Maintenance- Further update, Plan monitoring, incorporation into other efforts, and continued public involvement
- Plan Adoption- Process and Plan Review Crosswalk



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## Hazard Identification

- Current Plan- 15 natural hazards and 6 Human-made hazards
- State Plan identifies 26 hazards
- Not Addressed- Transportation Accidents, Utility Interruption, Levee Failure, Coastal Erosion (NA), Mass Food and Animal Contamination

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## Hazard Identification

- Local Planning Team Recommendation- Add Levee Failure, Mass Food and Animal Contamination, and Greater emphasis on Wind Storms





## Hazard Identification



### Natural Hazards (15)-

Drought, Earthquake, Extreme Temperature, Flood/Flash Flood/Ice Jam, Hailstorm, Hurricane/Tropical Storm/Nor'easter, Invasive Species, Landslide, Lightning Strike, Pandemic and Infectious Disease, Radon Exposure, Subsidence Sinkhole, Tornado/Windstorm, Wildfire, and Winter Storm





## Hazard Identification

### Human-Made Hazards (8)-


Civil Disturbance, Dam Failure, Environmental Hazards, Levee Failure, Mass Food/Animal Feed Contamination, Nuclear Incidents, Terrorism, Urban Fire and Explosion



## Gap Identification

- Climate Change Impact- Expand
- Aging Population
- Historic Resources
- Viable Specific Municipal Actions



## Hazard I.D., Ranking, and Gap Analysis Survey

- 70 Responses/ 56 municipalities
- Severity- Nuclear Incident, Hurricane, Winter Storm
- Frequency- Winter Storm, Flooding, Hurricanes
- Increasing- Flooding, Winter Storm, Tornado, Hurricane
- Agree with adding Levee Failure and Mass Food & Animal Feed Contamination






## Hazard I.D., Ranking, and Gap Analysis Survey

- Top Hazards 1) Winter Storm, 2) Flooding, 3) Hurricane
- 52% familiar with Plan
- Greatest Strength = Regional Information
- Needs- funding projects, include coyotes, feral dogs/cats under invasive species, sinkholes cover greater area
- Issue to consider Aging Population and Infrastructure
- Use Social Media and News Releases to advertise



## Hazard Capability Survey


- **55 Responses/50 Municipalities**
  - Regulatory Tools (Zoning/Subdivision, EOP, Stormwater, Building Code, and Comp. Plan)
  - Admin and Tech (EMA Manager, Staff, Engineer, Building Codes)
  - Funding- Community Development Block Grant
  - Public Education Programs
  - Limited in Planning/Regulatory, Admin/Tech, Financial, Ed/Outreach
  - No projects Last 10 years
  - Most not sure or depends for assistance in applying for grants



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## Public Survey

- 13 Responses/11 Municipalities
- Frequency- Winter Storm, Extreme Temps, Flooding
- Severity-Hurricane, (Flooding, Pandemic, Winter Storm)
- Increase in Extreme Temp., Hurricanes, Winter Storm
- Agree with Additions and Exclusions



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## Public Survey

- Top 3 Hazards- Winter Storm, Flooding, Extreme Temperature
- Familiar with Plan
- Strength- Consolidated Information
- Needs- Mass Food/Animal Food Contamination, Expand Invasive Species, Add Transportation Incidents and Utility Interruption
- Issues to consider- infrastructure and aging population
- Social Media most recommended for public involvement

# Risk Factor Survey

**Table 4.4.2.1: Hazard Prioritization Matrix**

| Hazard Risk | Hazard                                  | Risk Assessment Category |        |                |              |          | Risk Factor |
|-------------|---|--------------------------|--------|----------------|--------------|----------|-------------|
|             |   | Probability              | Impact | Spatial Extent | Warning Time | Duration |             |
| High        | Nuclear Incidents                       | 1.4                      | 3.1    | 3.7            | 3.2          | 3.7      | 3.1         |
|             | Flood/Flash Flood/Ice Jam               | 3.7                      | 2.4    | 2.8            | 1.7          | 2.4      | 3.0         |
|             | Winter Storms                           | 3.4                      | 2.2    | 3.6            | 1.2          | 2.7      | 2.9         |
|             | Environmental Hazards                   | 3.1                      | 1.8    | 2.5            | 3.5          | 2.1      | 2.9         |
|             | Radon Exposure                          | 3.6                      | 1.9    | 3.1            | 1.0          | 3.9      | 2.9         |
|             | Urban Fires/Explosions                  | 2.9                      | 2.1    | 1.8            | 4.0          | 1.8      | 2.8         |
|             | Pandemic And Infectious Disease         | 2.3                      | 2.3    | 3.5            | 1.6          | 3.6      | 2.8         |
|             | Extreme Temperatures                    | 3.2                      | 1.8    | 3.6            | 1.1          | 3.1      | 2.8         |
| Terrorism   | 2.4                                     | 2.1                      | 2.2    | 3.9            | 1.8          | 2.8      |             |
| Moderate    | Mass Food and Animal Feed Contamination | 1.5                      | 1.9    | 3.0            | 3.4          | 3.5      | 2.7         |
|             | Hurricane/Tropical Storm/Nor' Easter    | 2.5                      | 2.3    | 3.6            | 1.1          | 2.3      | 2.6         |
|             | Tornado                                 | 2.7                      | 2.1    | 2.2            | 2.8          | 1.4      | 2.6         |
|             | Dam Failure                             | 1.2                      | 2.7    | 2.6            | 3.3          | 2.1      | 2.6         |
|             | Hailstorm                               | 3.1                      | 1.4    | 2.2            | 3.2          | 1.0      | 2.5         |
|             | Wildfire                                | 2.7                      | 1.4    | 1.7            | 3.6          | 1.8      | 2.5         |
| Low         | Lightning Strike                        | 3.3                      | 1.6    | 1.4            | 2.9          | 1.0      | 2.4         |
|             | Drought                                 | 2.2                      | 1.3    | 3.3            | 1.4          | 4.0      | 2.4         |
|             | Levee Failure                           | 1.2                      | 2.4    | 2.4            | 3.0          | 2.3      | 2.4         |
|             | Subsidence/Sinkhole                     | 2.1                      | 1.6    | 1.8            | 3.6          | 2.0      | 2.4         |
|             | Invasive Species                        | 2.4                      | 1.5    | 2.5            | 1.3          | 3.9      | 2.3         |
|             | Earthquake                              | 1.8                      | 1.1    | 2.2            | 3.7          | 1.0      | 2.2         |
|             | Civil Disturbance                       | 1.4                      | 1.7    | 1.7            | 3.2          | 1.9      | 2.1         |
| Landslide   | 1.1                                     | 1.0                      | 1.3    | 3.6            | 1.1          | 1.7      |             |



Questions or comments on surveys, identified hazards, or rankings?



## Worked Completed To Date

- Updated Introduction (Chp. 1)
- Updated Community Profile (Chp. 2)
- Continue to Update Planning Process (Chp. 3)
- Updated Hazard Assessment and Profiles (Chp. 4)
- Currently Updating Capability Assessment (Chp. 5)



## Goal 1



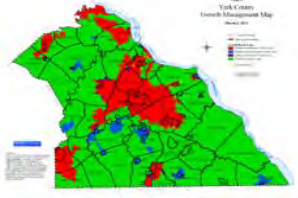
***Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from the occurrence of drought, earthquake, extreme temperature, flood/flash flood/ice jam, hailstorm, hurricane/tropical storm/nor'easter, invasive species, landslide, lightning strike, pandemic, radon exposure, subsidence/sinkhole, tornado/windstorm, wildfire, winter storm, civil disturbance, dam failure, environmental hazards, nuclear incidents, terrorism, and urban fires/explosions.***



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## Goal 1 Objectives



- Objective 1A - Provide preventative or corrective measures where possible to deal with identified hazards.
- Objective 1B - Provide proper monitoring and warning of potential for a hazard to occur.
- Objective 1C - Provide for appropriate response to hazards that is coordinated at all levels.



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## Goal 2

***Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.***



## Goal 2 Objectives

- Objective 2A - Ensure that an agency or organization is identified that can directly plan for and carry out tasks related to a specific hazard.
- Objective 2B - Utilize the Steering Committee (Local Planning Team) to coordinate and work towards addressing hazard mitigation throughout York County.
- Objective 2C - Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.



## Goal 3

***Promote proper planning and disaster-resistant future development.***



## Goal 3 Objectives

- Objective 3A - Maintain the Hazard Mitigation Plan as an element of the *York County Comprehensive Plan*.
- Objective 3B - Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels



## Goal 4

***Increase public understanding, support and demand for hazard mitigation.***




### Planning Perspectives

*A Newsletter from the York County Planning Commission*

March 2010


#### Flood Safety Awareness

In light of the recent rains affecting York County and as part of the implementation of the York County Hazard Mitigation Plan, the York County Planning Commission thought this would be a good time to pass along some facts and information on flooding in York County. The following is a summary of flood-related information from the York County Hazard Mitigation Plan (2008) and NOAA safety recommendations from their website. It should be noted that March 15 - 19 will be designated as Flood Safety Awareness Week by the National Oceanic and Atmospheric Administration (NOAA).



## Goal 4 Objectives

- Objective 4A - Provide educational materials.
- Objective 4B - Create awareness among residents regarding their responsibility to be prepared for, and able to respond to a hazard.



## Goals and Objectives Review

- Do Goals and Objectives adequately address conditions in York County?



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## Mitigation Actions





Indian Rock Dam - York's Life Saver

- Currently 102 actions identified.
- Staff will analyze and contact municipalities to see if still valid.
- Each municipality required to identify one hazard mitigation action.
- Actions identified for all eligible activities under FEMA programs.
- Need to solicit new projects.

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## Mitigation Actions

Are there specific actions or projects that should be addressed by the Hazard Mitigation Plan?





## Thanks for Your Attendance

Please submit any goals, objectives, actions,  
comments or questions to:

Roy Livergood, Senior Planner

28 East Market Street

York, PA 17401-1580

Ph. (717) 771-9870 ext. 1756

[rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

# 2018 York County Hazard Mitigation Plan PUBLIC MEETING

*Wednesday, February 7, 2018 - 6:30 PM at York County Emergency Services Center*

---

Attendance: Mike Wascovich (Hallam Borough Council)

Staff: Roy Livergood, Wade Gobrecht, Anne Walko

## Welcome and Introductions

Roy Livergood gave the welcome and made introductions.

## Agenda

- Hazard Mitigation Planning Background
- Hazard Mitigation Plan
- Hazard Identification
- Summary of 4 Surveys
- Work Completed to Date
- Plan Goals, Objectives, and Actions

## Hazard Mitigation Plan Background

Roy Livergood provided background including Robert T Stafford Disaster Relief and Emergency Assistance Act of 1988, Disaster Mitigation Act of 2000, requirements for local governments to have hazard mitigation plans as a condition to receive hazard mitigation plan assistance.

York County Hazard Mitigation Plan background starts with the first county plan completed in 2008. Plan is updated every five years with last update in 2013. At that time, 70 municipalities adopted by resolution. FEMA and PEMA requirements guide plan development with guidance from the Local Planning Team and YCPC staff. The municipalities and the public inform the process. Hazard Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Pre-disaster mitigation involves actions taken in advance of a hazard event to interrupt cycle of damage, reconstruction, and repeated damage.

York County Hazard Mitigation Plan currently consists of 8 sections. 15 natural hazards and 6 human-made hazards are profiled. With the 2018 update Levee Failure and Mass Food and Animal Contamination were added.

The gap identification identified and addressed the issues of climate change, aging population, historic resources and viable specific municipal actions. A question arose regarding the focus on the aging population. Wade Gobrecht shared that, organizationally, the YCPC is focusing on issues facing our older population. Additionally, older individuals may have diminishing mobility, may live alone, and may not have immediate access to technology to follow the track of storms or other hazard incidents.

The 4 surveys that were conducted were also summarized. Highlights include the findings of the Risk Factor Surveys which ranked the following as High Hazard Risk (in order): Nuclear Incidents, flood/flash flood/ice jam, winter storms, environmental hazards, radon exposure, urban fire/explosion, pandemic and infectious diseases, extreme temperatures, and terrorism.

**How do we prevent terrorism and nuclear incidents?** It was discussed that prevention isn't the focus... it is more preparedness in the event something does occur. Proper planning can lessen the impacts, too. For example, if there is a large event planned, event planners and emergency responders should notify adjacent law enforcement and first responders. Mr Wascovich inquired about Share the Bleed, which he is aware of through the Susquehanna Ambulance Company. To clarify these notes, this following information is added: *Launched in October of 2015 by the White House, Stop the Bleed is a national awareness campaign and a call to action. Stop the Bleed is intended to cultivate grassroots efforts that encourage bystanders to become trained, equipped, and empowered to help in a bleeding emergency before professional help arrives.* <https://www.dhs.gov/stopthebleed>

**How to notify disabled persons?** The previous ECRIN program was mentioned. It was a collaboration between York County Human Services and York County Emergency Service. *To clarify these notes, the following information is added: The York County Special Needs Registry (formerly ECRIN) is a voluntary community outreach service to assist elected officials and emergency responders in municipalities to obtain important information on special needs individuals living in the community. It also assists residents by ensuring that this information is accessible to all emergency response units.* <https://yorkcountypa.gov/health-human-services/human-services-division/programs/york-county-special-needs-registry-1.html>

The progress to date is as follows: Chapters 1-4 are completed and Chapter 5 is almost finalized.

The goals and objectives of the Hazard Mitigation plan were reviewed. Moving on to Action Items, there were two specific hazard areas mentioned in the Hallam Borough/Hellam Township area, both of which regard flooding. Mr Wascovich was urged to review current hazard mitigation plan action items and submit any new action items. Roy reiterated that each hazard profiled must have at least one mitigation action and each municipality must identify one mitigation action. Roy did clarify that projects can be added at any time and the plan will be amended. PEMA is notified.

### Next Steps

Staff will continue to update the 2018 York County Hazard Mitigation Plan. Municipalities will be submitting action items for inclusion. Municipalities, emergency services professionals, the public, and other stakeholders are encouraged to submit any goals, objectives, action items, comments, and or questions to Roy Livergood at the YCPC ([rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)). Updates to this planning process and requests for information are found at <http://www.ycpc.org/environment/hazard-mitigation-planning-and-implementation.html>.

# Memo

**To:** York County Municipalities; Emergency Management Coordinators; and School Districts, Adjacent Counties; Municipalities; and School Districts, and Related Organizations

**From:** Roy O. Livergood, Jr., Senior Planner

**CC:** York County Commissioners and Planning Commission Board/Staff

**Date:** July 16, 2018

**Re:** York County Hazard Mitigation Plan Update 45 Day Review Period and Public Meetings

Walter A. Kuhl  
Chairman

Mary E. Coble  
Vice Chairman

Sean P. Kenny  
Secretary

Brian Brenneman  
Treasurer

Eric Bortner

Matthew  
Chronister

Kevin F. Clark

Thomas W. Earp

Cheryl Wormley

Felicia S. Dell  
Director

Jeffrey L.  
Rehmyer II  
Solicitor

The York County Planning Commission (YCPC) has completed a draft of the York County Hazard Mitigation Plan Update. **The YCPC will be accepting comments on the Draft Plan for 45 days from July 23, 2018, through September 5, 2018.** Beginning July 23, 2018, the Draft Plan will be available for review online at [www.ycpc.org](http://www.ycpc.org) and paper copies will be available for review at the YCPC and the following libraries during regular hours:

Collinsville Library- 2632 Delta Rd, Brogue, PA 17309

Guthrie Library- 2 Library Pl, Hanover, PA 17331

Paul Smith Library- 80 Constitution Ave, Shrewsbury, PA 17361

Red Land Library- 70 Newberry Commons, Etters PA, 17319

Dillsburg Library- 204 Mumper Ln, Dillsburg, PA 17019

**During the review period, we will also be hosting two (2) public meetings on July 31, 2018.** The purpose of these meetings is to provide an overview of the plan development process, the Draft Plan, Plan adoption, and implementation. The Pennsylvania Emergency Management Agency has been invited to participate in the meeting presentation, as well. All residents, municipal officials, and emergency management personnel with interest in hazard mitigation are encouraged to attend. Meeting details are as follows:

**Date:** Tuesday, July 31, 2018

**Beginning Times:** 1<sup>st</sup> Meeting-1:00 PM; 2<sup>nd</sup> Meeting – 5:00 PM

**Location:** York County Emergency Services Building  
120 Davies Drive, York, PA 17402

**For more information, contact:**

Roy Livergood, (717) 771-9870 ext.1756 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

It is the policy of the County of York to ensure services are meaningfully accessible to qualified individuals with disabilities in accordance with the Americans with Disabilities Act. Upon request, auxiliary aids and accommodations are available to individuals with disabilities. Persons seeking accommodations shall call the County of York at (717) 840-7682. Individuals with a hearing impairment shall contact the Deaf Center at (717) 848-2585 or (717) 848-6765 (TTY).

YORK COUNTY PLANNING CO  
 28 EAST MARKET STREET  
 3RD FLOOR  
 YORK, PA 17401  
 ATTN:

Acct: 101004

**PROOF OF PUBLICATION  
 State of Pennsylvania**

0001734959

**York Daily Record, York Dispatch and York Sunday News**, is the name of the newspaper(s) of general circulation published continuously for more than six months as its principal place of business, 1891 Loucks Rd York, PA 17408

The printed copy if the advertisement hereto attached is a true copy, exactly as printed and published, of an advertisement printed in the regular issues of the Said York Daily Record, York Dispatch and York Sunday News

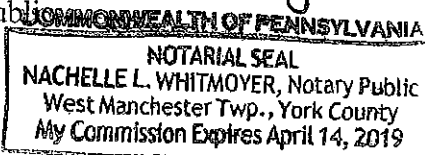
07/23/18

**COMMONWEALTH OF PENNSYLVANIA COUNTY OF YORK**

Before me, a Notary Public, personally came Linda Gracey who being duly sworn deposes and says that she is the Legal Advertising Clerk of York Daily Record, York Dispatch and York Sunday News and her personal knowledge of the publication of the advertisement mentioned in the foregoing statement as to the time, place and character of publications are true, and that the affiant is not interested in the subject matter of the above-mentioned advertisement.

Sworn and subscribed to before me, on this 23 day of July, 2018

*Nachelle L. Whitmoyer ; Linda Gracey*  
 Notary Public



|                    |                 |
|--------------------|-----------------|
| Advertisement Cost | \$365.40        |
| Affidavit Fee      | \$5.00          |
| <b>Total Fee</b>   | <b>\$370.40</b> |

**PUBLIC REVIEW AND MEETING NOTICE  
 YORK COUNTY 2018 HAZARD MITIGATION PLAN**

The York County Planning Commission (YCPC) will be accepting comments on the York County 2018 Hazard Mitigation Plan for 45 days beginning July 23, 2018. Written comments must be submitted no later than September 5, 2018, to the York County Planning Commission, attention Roy Livergood, 28 East Market Street, York, PA 17401 or by email (rlivergood@ycpc.org).

Beginning July 23, 2018, the Plan will be available for review online at www.ycpc.org and paper copies will be available for review at the YCPC office and the following libraries during regular business hours:

Collinsville Library- 2632 Delta Rd. Brogue, PA 17309  
 Guthrie Library- 2 Library Pl, Hanover, PA 17331  
 Paul Smith Library- 80 Constitution Ave, Shrewsbury, PA 17361  
 Red Land Library- 70 Newberry Commons, Etters PA, 17319  
 Dillsburg Library- 204 Mumper Ln, Dillsburg, PA 17019

During the comment period, the YCPC will also be hosting two (2) public meetings on July 31, 2018, to provide an overview of, and obtain comment on, the proposed York County 2018 Hazard Mitigation Plan. All residents, municipal officials, and private/public entities with interest in hazard mitigation are encouraged to attend. Details of the public meetings are as follows:

**Tuesday, July 31, 2018**  
 1st Meeting Start Time-1:00 PM; 2nd Meeting Start Time-5:00 PM  
 York County Emergency Services Center  
 120 Davies Drive  
 York, PA 17402

It is the policy of the County of York to ensure services are meaningful accessible to qualified individuals with disabilities in accordance with the Americans with Disabilities Act. Upon request, auxiliary aids and accommodations are available to individuals with disabilities. Persons seeking accommodations shall call the County of York at (717) 840-7882. Individuals with a hearing impairment shall contact the Deaf Center at (717) 848-2585 or (717) 848-6765 (TTY).



**FOR IMMEDIATE RELEASE**

**Contact:** Roy Livergood  
**Phone:** (717) 771-9870  
**Email:** [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

## **YORK COUNTY ACCEPTING COMMENT AND HOSTING PUBLIC MEETINGS**

### *York County 2018 Hazard Mitigation Plan*

**YORK, PA** – Extreme temperatures, flooding, radon, severe winter storms, and sinkholes are just a few of the hazards identified in the York County 2018 Hazard Mitigation Plan as affecting York County. The Plan profiles these hazards and 18 other hazards, as well as 132 actions to address those hazards. This work has been completed by the York County Planning Commission (YCPC) as part of a required five (5) year update to the Plan, which was last updated in 2013.

#### **What is Hazard Mitigation and why do we need a Plan?**

The Federal Emergency Management Agency (FEMA) defines Hazard Mitigation as “any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose of mitigation planning is to systematically identify policies, actions, and tools that can be used to implement those actions.” Pre-disaster mitigation actions are those taken in advance of a hazard event to interrupt the cycle of damage, reconstruction, and repeated damage. Successful mitigation actions can be a cost effective means of reducing future losses.

The Disaster Mitigation Act of 2000, (DMA 2000), requires the development and submission of a hazard mitigation plan by not only the State, but also local governments (counties/municipalities) as a condition of receiving various types of pre- and post- disaster assistance for mitigation efforts, as identified under the Stafford Act. The Plan is adopted by the County and any municipalities participating in the planning process and wanting to have the County Plan serve as their official Plan. Those residents impacted by hazards can then work with their local municipality to apply for grant funding for hazard mitigation under three (3) Federal grant programs. The programs providing hazard mitigation assistance include:

#### **Hazard Mitigation Grant Program (HMGP)**

The HMGP provides funding for long-term hazard mitigation measures following major disaster declarations. Funding is available to implement projects in accordance with State, territorial, federally-recognized tribal, and local priorities.

### **Pre-Disaster Mitigation (PDM)**

The PDM program provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects. FEMA provides funding for measures to reduce or eliminate overall risk from natural hazards.

### **Flood Mitigation Assistance (FMA)**

The FMA program provides funds on an annual basis so that measures can be taken to reduce or eliminate the risk of flood damage to buildings insured under the National Flood Insurance Program. The FMA program for Fiscal Year 2013 and beyond includes provisions to mitigate Severe Repetitive Loss and Repetitive Loss properties.

Beyond grant eligibility, the Hazard Mitigation Plan identifies hazard areas and mitigation actions that can be used by municipalities in land use planning, emergency management planning, and public awareness. Other organizations, including the YCPC, use the Plan information for outreach and education, consideration of grant requests, and project funding.

### **How can you participate?**

**The YCPC will be accepting comments on the Draft Plan for 45 days from July 23, 2018, through September 5, 2018.** A draft of the York County 2018 Hazard Mitigation Plan is available for review online at [www.ycpc.org](http://www.ycpc.org) and at the locations below during normal business hours.

- York County Planning Commission – 28 East Market Street, York, PA 17401
- Collinsville Library- 2632 Delta Rd, Brogue, PA 17309
- Guthrie Library- 2 Library Pl, Hanover, PA 17331
- Paul Smith Library- 80 Constitution Ave, Shrewsbury, PA 17361
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**During the review period, the YCPC will be hosting two (2) public meetings on July 31, 2018.** The purpose of these meetings is to provide an overview of the plan development process, the Draft Plan, Plan adoption, and implementation. The Pennsylvania Emergency Management Agency has been invited to participate in the meeting presentation, as well. All residents, municipal officials, and emergency management personnel with interest in hazard mitigation are encouraged to attend. Meeting details are as follows:

|                  |   |
|------------------|---|
| Date:            | Tuesday, July 31, 2018  |
| Beginning Times: | 1st Meeting-1:00 PM; 2nd Meeting – 5:00 PM                                  |
| Location:        | York County Emergency Services Building<br>120 Davies Drive, York, PA 17402 |

Anyone with comments, questions, or concerns about the draft York County 2018 Hazard Mitigation Plan should contact Roy Livergood via email at [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org) or call (717) 771-9870 ext. 1756.



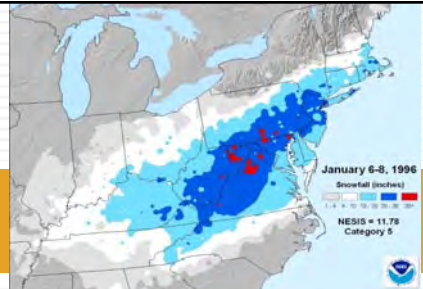
# YORK COUNTY 2018 HAZARD MITIGATION PLAN UPDATE – PUBLIC MEETING



July 31, 2018




## Agenda



- Welcome
- Define Hazard Mitigation
- Hazard Mitigation Planning Authority & Requirements
- Previous Hazard Mitigation Planning Efforts
- 2018 Hazard Mitigation Plan Process
- York County 2018 Hazard Mitigation Plan
- Plan Adoption and Implementation
- Hazard Mitigation Funding


The Four Phases of Emergency Management



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## Hazard Mitigation

- Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose is to systematically identify policies, actions, and tools.
- Pre-disaster mitigation involves actions taken in advance of hazard event to interrupt cycle of damage, reconstruction, and repeated damage.
- After 9/11/01 included human made disasters.




**FEMA**

**YORK COUNTY**  
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## Hazard Mitigation Plan Authority

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) constitutes the statutory authority for most Federal disaster response activities especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs.




## Hazard Mitigation Plan Requirements

- Disaster Mitigation Act 2000 amended the Stafford Act to include a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.
- Requirement for local government hazard mitigation plans as a condition of receiving hazard mitigation assistance (Includes Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program).
- Does not mean that municipalities and residents will not receive emergency assistance.



## Hazard Mitigation Plan Background

- First York County Plan completed in 2008
- Multi-municipal Plan that serves County and all 72 municipalities
- Adopted by 68 municipalities




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## Hazard Mitigation Plan Background

- Updates required every 5 years
- Last update was completed in 2013
- Complete update and reformat
- 70 municipalities adopted

York  
County  
2013  
Hazard  
Mitigation  
Plan  
April 2011



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## Hazard Mitigation Plan Process

- Plan Development
  - Requirements
    - FEMA Local Mitigation Plan Review Guide - Crosswalk
    - PEMA Standard Operating Guide (SOG)
  - Guided by
    - Local Planning Team
  - Informed by Input from
    - Municipalities
    - Public



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## Hazard Mitigation Plan Process

- 3 Public Meetings
- 3 Local Planning Team Meetings
- 5 Surveys- Hazard ID and Prioritization (municipal and public), Mitigation Capability, Mitigation Action Identification, and NFIP Compliance
- Outreach to Transportation Coalition, LEPC, and Heritage Preservation Advisory Committee
- Information Posted To YCPC Website, Facebook, e-newsletter, E-mail, York Newspapers, Direct Contact

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## Hazard Mitigation Plan


- Plan consists of 8 sections
- Introduction- Background, Purpose, Scope
- Community Profile- Geography, Demographics, Land Use
- Planning Process- Documentation of Involvement
- Risk Assessment- Hazard I.D., Profile (location, magnitude, occurrence, and vulnerability), Hazard Ranking



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## Hazard Mitigation Plan

- Capability Assessment- Inventory of planning/ regulatory tools, resources and ability to use them
- Mitigation Strategy- Goals, objectives, mitigation techniques, and action plan
- Plan Maintenance- Further update, Plan monitoring, incorporation into other efforts, and continued public involvement
- Plan Adoption- Process and Plan Review Crosswalk



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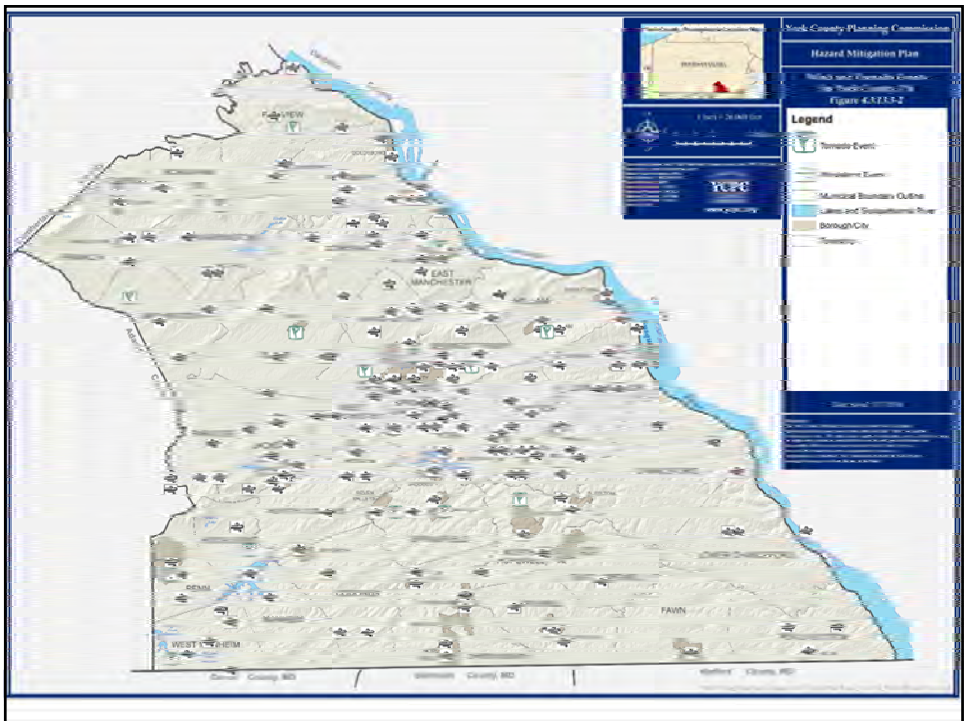
## Hazard Identification

Natural Hazards (15)-  
Drought, Earthquake, Extreme Temperature, Flood/Flash Flood/Ice Jam, Hailstorm, Hurricane/Tropical Storm/Nor'easter, Invasive Species, Landslide, Lightning Strike, Pandemic and Infectious Disease, Radon Exposure, Subsidence Sinkhole, Tornado/Windstorm, Wildfire, and Winter Storm

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# Hazard Identification

Human-Made Hazards (8)–  
Civil Disturbance, Dam Failure, Environmental Hazards, **Levee Failure**, **Mass Food/Animal Feed Contamination**, Nuclear Incidents, Terrorism, Urban Fire and Explosion



**Table 4.3.11.2-1: Radon Risk for Smokers and Non-Smokers (EPA, 2010)**

| Radon Level (pCi/L) | If 1,000 people were exposed to this level over a lifetime...* | Risk of Cancer from radon exposure compares to ... ** | Action Threshold                                 |
|---------------------|--|---|--|
| <b>Smokers</b>      |  |   |  |
| 20                  | ~260 could get lung cancer                                     | 250 times the risk of drowning                        | Fix structure                                    |
| 10                  | ~ 150 could get lung cancer                                    | 200 times the risk of dying in a home fire            | Fix structure                                    |
| 8                   | ~ 120 could get lung cancer                                    | 30 times the risk of dying in a fall                  | Fix structure                                    |
| 4                   | ~62 could get lung cancer                                      | 5 times the risk of dying in a car crash              | Fix structure                                    |
| 2                   | ~ 32 could get lung cancer                                     | 6 times the risk of dying from poison                 | Consider fixing between 2-4 pCi/L                |
| 1.3                 | ~20 could get lung cancer                                      | (average indoor radon level)                          | Reducing radon levels below 2 pCi/L is difficult |
| <b>Non-Smokers</b>  |  |   |  |
| 20                  | ~36 could get lung cancer                                      | 35 times the risk of drowning                         | Fix structure                                    |
| 10                  | ~ 18 could get lung cancer                                     | 20 times the risk of dying in a home fire             | Fix structure                                    |
| 8                   | ~ 15 could get lung cancer                                     | 4 times the risk of dying in a fall                   | Fix structure                                    |
| 4                   | ~ 7 could get lung cancer                                      | The risk of dying in a car crash                      | Fix structure                                    |
| 2                   | ~ 4 could get lung cancer                                      | The risk of dying from poison                         | Consider fixing between 2-4 pCi/L                |
| 1.3                 | ~2 could get lung cancer                                       | (average indoor radon level)                          | Reducing radon levels below 2 pCi/L is difficult |


**NOTE:** Risk may be lower for former smokers  
 \* Lifetime risk of lung cancer deaths from EPA Assessment of risk from Radon in Homes (EPA 402-R-03-003)  
 \*\* Comparison data calculated using Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports

**Table 4.3.14.3-1: Fire Alarms for Wildfires, York County, 2013-2017**

| Month        | 2013      | 2014       | 2015       | 2016       | 2017       | Total        |
|--------------|-----------|------------|------------|------------|------------|--------------|
| January      | -         | 5          | 11         | 9          | 10         | 35           |
| February     | -         | 17         | 12         | 5          | 59         | 93           |
| March        | -         | 49         | 24         | 57         | 24         | 154          |
| April        | -         | 77         | 110        | 47         | 35         | 269          |
| May          | -         | 16         | 48         | 10         | 20         | 94           |
| June         | -         | 13         | 10         | 24         | 17         | 64           |
| July         | -         | 24         | 7          | 34         | 27         | 92           |
| August       | -         | 11         | 16         | 19         | 12         | 58           |
| September    | -         | 16         | 17         | 25         | 1          | 59           |
| October      | 2         | 25         | 11         | 19         | -          | 57           |
| November     | 42        | 43         | 40         | 44         | -          | 169          |
| December     | 3         | 9          | 7          | 16         | -          | 35           |
| <b>Total</b> | <b>47</b> | <b>305</b> | <b>313</b> | <b>309</b> | <b>205</b> | <b>1,179</b> |


Source: York County Department of Emergency Services





**Table 4.3.4.4-1: Recurrence Intervals and Associated Probabilities of Occurrence (USACE, 2012)**

| Flood Recurrence Interval | Chance of Occurrence in any Given Year (%) |
|---------------------------|--|
| 5 year                    | 20   |
| 10 year                   | 10   |
| 25 year                   | 4  |
| 50 year                   | 2  |
| 100 year                  | 1  |
| 500 year                  | 0.2  |



**Table 4.3.17.5-1: Dam Failure Vulnerability**

| Municipality             | Dwelling Units in Affected Area | Estimated Pop In Affected Area | Other Structures in Affected Area | Critical Facilities in Affected Area | Total Exposure (\$) |
|--------------------------|---------------------------------|--------------------------------|-----------------------------------|--------------------------------------|---------------------|
| Codus Township           | 5                               | 13                             | 8                                 | 0                                    | \$879,726           |
| Conewago Township        | 34                              | 92                             | 18                                | 3                                    | \$3,641,293         |
| Dover Township           | 27                              | 68                             | 49                                | 0                                    | \$4,498,759         |
| East Manchester Township | 137                             | 390                            | 53                                | 1                                    | \$26,271,471        |
| Heidelberg Township      | 76                              | 214                            | 129                               | 1                                    | \$12,950,579        |
| Jackson Township         | 84                              | 223                            | 140                               | 1                                    | \$34,329,384        |
| Lower Windsor Township   | 20                              | 52                             | 23                                | 1                                    | \$1,859,286         |

# Risk Factor Survey

**Table 4.4.2-1: Hazard Prioritization Matrix**

| Hazard Risk | Hazard                                  | Risk Assessment Category |        |                |              |          | Risk Factor |
|-------------|---|--------------------------|--------|----------------|--------------|----------|-------------|
|             |   | Probability              | Impact | Spatial Extent | Warning Time | Duration |             |
| High        | Nuclear Incidents                       | 1.4                      | 3.1    | 3.7            | 3.2          | 3.7      | 3.1         |
|             | Flood/Flash Flood/Ice Jam               | 3.7                      | 2.4    | 2.8            | 1.7          | 2.4      | 3.0         |
|             | Winter Storms                           | 3.4                      | 2.2    | 3.6            | 1.2          | 2.7      | 2.9         |
|             | Environmental Hazards                   | 3.1                      | 1.8    | 2.5            | 3.5          | 2.1      | 2.9         |
|             | Radon Exposure                          | 3.6                      | 1.9    | 3.1            | 1.0          | 3.9      | 2.9         |
|             | Urban Fires/Explosions                  | 2.9                      | 2.1    | 1.8            | 4.0          | 1.8      | 2.8         |
|             | Pandemic And Infectious Disease         | 2.3                      | 2.3    | 3.5            | 1.6          | 3.6      | 2.8         |
|             | Extreme Temperatures                    | 3.2                      | 1.8    | 3.6            | 1.1          | 3.1      | 2.8         |
|             | Terrorism                               | 2.4                      | 2.1    | 2.2            | 3.9          | 1.8      | 2.8         |
| Moderate    | Mass Food and Animal Feed Contamination | 1.5                      | 1.9    | 3.0            | 3.4          | 3.5      | 2.7         |
|             | Hurricane/Tropical Storm/Nor'Easter     | 2.5                      | 2.3    | 3.6            | 1.1          | 2.3      | 2.6         |
|             | Tornado                                 | 2.7                      | 2.1    | 2.2            | 2.8          | 1.4      | 2.6         |
|             | Dam Failure                             | 1.2                      | 2.7    | 2.6            | 3.3          | 2.1      | 2.6         |
|             | Hailstorm                               | 3.1                      | 1.4    | 2.2            | 3.2          | 1.0      | 2.5         |
|             | Wildfire                                | 2.7                      | 1.4    | 1.7            | 3.6          | 1.8      | 2.5         |
|             | Lightning Strike                        | 3.3                      | 1.6    | 1.4            | 2.9          | 1.0      | 2.4         |
| Low         | Drought                                 | 2.2                      | 1.3    | 3.3            | 1.4          | 4.0      | 2.4         |
|             | Levee Failure                           | 1.2                      | 2.4    | 2.4            | 3.0          | 2.3      | 2.4         |
|             | Subsidence/Sinkhole                     | 2.1                      | 1.6    | 1.8            | 3.6          | 2.0      | 2.4         |
|             | Invasive Species                        | 2.4                      | 1.5    | 2.5            | 1.3          | 3.9      | 2.3         |
|             | Earthquake                              | 1.8                      | 1.1    | 2.2            | 3.7          | 1.0      | 2.2         |
|             | Civil Disturbance                       | 1.4                      | 1.7    | 1.7            | 3.2          | 1.9      | 2.1         |
|             | Landslide                               | 1.1                      | 1.0    | 1.3            | 3.6          | 1.1      | 1.7         |




# Municipal Risk

**Table 4.4.2-2: Calculated Countywide Risk Factor by Hazard and Comparative Jurisdictional Risk**


| Municipality        | Identified Hazard and Corresponding Countywide Risk Factor |                           |               |                       |                |                        |                                 |                      |           |   |                                     |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
|---------------------|--|---------------------------|---------------|-----------------------|----------------|------------------------|---------------------------------|----------------------|-----------|---|-------------------------------------|--------------------|-------------|-----------|----------|------------------|---------|---------------|---------------------|------------------|------------|-------------------|-----------|
|                     | Nuclear Incidents  | Flood/Flash Flood/Ice Jam | Winter Storms | Environmental Hazards | Radon Exposure | Urban Fires/Explosions | Pandemic And Infectious Disease | Extreme Temperatures | Terrorism | Mass Food and Animal Feed Contamination | Hurricane/Tropical Storm/Nor'Easter | Tornado/ Windstorm | Dam Failure | Hailstorm | Wildfire | Lightning Strike | Drought | Levee Failure | Subsidence/Sinkhole | Invasive Species | Earthquake | Civil Disturbance | Landslide |
| Carroll Township    | 3.1  | 3.0                       | 2.9           | 2.9                   | 2.8            | 2.8                    | 2.8                             | 2.8                  | 2.7       | 2.6                                     | 2.6                                 | 2.6                | 2.5         | 2.5       | 2.4      | 2.4              | 2.4     | 2.4           | 2.4                 | 2.3              | 2.2        | 2.1               | 1.7       |
| Chanceford Township | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Codorus Township    |  |                           |               |                       |                |                        |                                 |                      |           |   |                                     |                    |             |           |          |                  |         |               |                     |                  |            |                   |           |
| Conewago Township   | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Crossroads Borough  | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Dallastown Borough  | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Delta Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Dillsburg Borough   | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |
| Dover Borough       | ↓  | ↓                         | ↓             | ↓                     | ↓              | ↓                      | ↓                               | ↓                    | ↓         | ↓                                       | ↓                                   | ↓                  | ↓           | ↓         | ↓        | ↓                | ↓       | ↓             | ↓                   | ↓                | ↓          | ↓                 | ↓         |





## Capability Assessment


- Planning and Regulatory
- NFIP Participation
- Administrative and Technical
- Financial
- Education and Outreach




## Municipal Self-Assessment

**Table 5.2.4.1-1: Summary of Self-Assessment Capability Responses Expressed as a Percentage of Responses Received**


| Capability Category          | Limited | Moderate | High   |
|------------------------------|---------|----------|--------|
| Planning and Regulatory      | 52.73%  | 36.36%   | 10.91% |
| Administrative and Technical | 61.82%  | 27.27%   | 10.91% |
| Financial                    | 72.73%  | 25.45%   | 1.82%  |
| Education and Outreach       | 63.64%  | 34.55%   | 1.82%  |






## Goal 1

***Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from the occurrence of drought, earthquake, extreme temperature, flood/flash flood/ice jam, hailstorm, hurricane/tropical storm/nor'easter, invasive species, landslide, lightning strike, pandemic, radon exposure, subsidence/sinkhole, tornado/windstorm, wildfire, winter storm, civil disturbance, dam failure, environmental hazards, nuclear incidents, terrorism, and urban fires/explosions.***



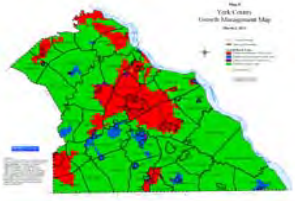


## Goal 1 Objectives


- Objective 1A - Provide preventative or corrective measures where possible to deal with identified hazards.
- Objective 1B - Provide proper monitoring and warning of potential for a hazard to occur.
- Objective 1C - Provide for appropriate response to hazards that is coordinated at all levels.




## Goal 2



***Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.***



## Goal 2 Objectives




- Objective 2A - Ensure that an agency or organization is identified that can directly plan for and carry out tasks related to a specific hazard.
- Objective 2B - Utilize the Local Planning Team to coordinate and work towards addressing hazard mitigation throughout York County.
- Objective 2C - Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.



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YCPC  
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## Goal 3


***Promote proper planning and disaster-resistant future development.***




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YCPC  
PLANNING  
COMMISSION**

## Goal 3 Objectives


- Objective 3A - Maintain the Hazard Mitigation Plan as an element of the *York County Comprehensive Plan*.
- Objective 3B - Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels



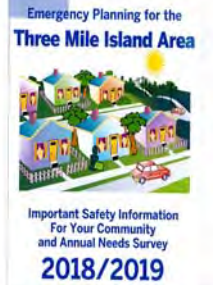
## Goal 4



***Increase public understanding, support and demand for hazard mitigation.***



## Goal 4 Objectives



- Objective 4A - Provide educational materials.
- Objective 4B - Create awareness among residents regarding their responsibility to be prepared for, and able to respond to a hazard.

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COMMISSION**

## 132 Mitigation Actions

- Required to address all 72 municipalities and all 23 hazards
- Actions address all eligible activities under HMGP, PDM, and FMA
- Remainder are municipal specific actions or those that address gaps identified through surveys including infrastructure, aging population, and historic resources
- Many are stormwater projects

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## Final Chapters

- Update Process (Every 5 years and annual evaluation)
- Incorporation in other planning mechanisms
  - IWRP, comprehensive plans, emergency operation plans, zoning ordinances, etc.
- Continued Public Involvement
  - Annual evaluation and meeting
  - Web page, paper copies, e-newsletter, Facebook page, e-mail





## Thanks for Your Attendance

Please submit any comments or questions to:

Roy Livergood, Senior Planner

28 East Market Street

York, PA 17401-1580

Ph. (717) 771-9870 ext. 1756

[rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

York County 2018 Hazard Mitigation Plan Update- Public Meeting  
 York County 911 Center  
 July 31, 2018 1:00 pm

| Name               | Organization          | Contact # or E-mail          |
|--------------------|-----------------------|------------------------------|
| Roy Livergood      | YCPA                  | rlivergood@ycpc.org          |
| Anne Walko         | YCPA                  | awalko@ycpc.org              |
| Ernie Szabo        | PEMA                  | erszabo@per.su               |
| BILL JAMES         | YORK CO. OEM          | lwjames@ycdes.org            |
| NELSON BRENNEMAN   | N. CUDORUS TWP        |                              |
| Wade Gubrecht      | YCPA                  | wgubrecht@yloc.org           |
| Kathleen Dellinger | York Township EMA     | k.dellinger@yorktownship.com |
| Neal Doyle         | Paradise Township EMA | neal.doyle@yahoo.com         |
| MIKE FERROW        | York Co.              | Miferrow@ycdes.org           |
| John Gardosik      | PA SHPO               | jgardosik@pa.gov             |
| Kevin Eck          | Rep. Saybr            | KECK@PAHOUSEGOP.COM          |
| Wendy Leahy        | Rep Grove             | wleahy@pahousegov.com        |
|                    |                       |                              |
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|                    |                       |                              |



# 2018 York County Hazard Mitigation Plan PUBLIC MEETING

*Tuesday, July 31, 2018 1:00 PM at York County Emergency Services Center*

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Attendance: Ernie Szabo (PEMA), Bill James (York County OEM), Mike Fetrow (York County EMA), Nelson Brenneman (North Codorus Township), Kathleen Dellinger (York Township EMA), Neal Doyle (Paradise Township EMA), John Gardozik (PA State Historic Preservation Office), Wendy Leahy (Representative Seth Grove), Kevin Eck (Representative Stan Saylor)

Staff: Roy Livergood, Wade Gobrecht, Anne Walko

## Welcome and Introductions

Roy Livergood gave the welcome and made introductions.

## Agenda

- Hazard Mitigation definition
- Hazard Mitigation Planning Authority and Requirements
- Previous Hazard Mitigation Planning Efforts
- 2018 Hazard Mitigation Planning Process
- Plan Adoption and Implementation
- Hazard Mitigation Funding

## Hazard Mitigation Definition, Authority Requirements.

Roy Livergood provided background including the Stafford Act as well as requirements for local governments to have hazard mitigation plans as a condition to receive hazard mitigation plan assistance. The first York County Hazard Mitigation Plan was completed in 2008. Plan is updated every five years with last update in 2013. Hazard Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Pre-disaster mitigation involves actions taken in advance of a hazard event to interrupt cycle of damage, reconstruction, and repeated damage.

## 2018 Hazard Mitigation Planning Process

York County Hazard Mitigation Plan currently consists of 8 sections. 15 natural hazards and 6 human-made hazards are profiled. With the 2018 update, Levee Failure and Mass Food and Animal Contamination were added. There have been 3 public meetings, 3 Local Planning Team meetings, 5 surveys, outreach to various local groups, and information shared via social media, website, newspapers, and direct contact. The Plan has 8 sections including risk and capability assessments, strategies, actions, and plan maintenance.

## Plan Adoption and Implementation

Ernie Szabo from the Hazard Mitigation Division at PEMA reviewed plan adoption and implementation. He also reviewed funding opportunities. In short, the final draft plan is sent to PEMA and to FEMA. FEMA has 45-day period to review. FEMA will then issue it Approved Pending Adoption and the County will send it out for municipal adoption. The first municipal adoption starts the 5-year clock.

The Hazard Mitigation Assistance Unified Guidance publication outlines funding, what is allowed and what is not allowed. [www.fema.gov/media-library/assets/documents/33634?id=7851](http://www.fema.gov/media-library/assets/documents/33634?id=7851). In short, the four mitigation categories are local plan and regulations; structure and infrastructure; natural systems protection; and education and awareness programs. The State mitigation project priorities are acquisition/demolition, small structural projects, eligible state initiative flood mitigation opportunities, development of county hazard mitigation plans, home elevation projects. There are a few eligible business mitigation activities. The details of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Flood Mitigation Assistance Severe Repetitive Loss Component were shared.

Ernie Szabo then discussed eligible projects and the importance of benefit cost analysis (BCA) and benefit cost ration (BCR). Tools that can be utilized include the Frequency BCA Model, Substantial Damage Estimator, Digital FIRMS, flood insurance studies, GIS, and the NFIP Data Exchange Website.

There are several training opportunities through PEMA and FEMA. The Silver Jacket Initiative was also presented. It is an interagency team that works to develop and implement solutions to flooding hazards by combining and leveraging resources. <http://silverjackets.nfrmp.us/State-Teams/Pennsylvania>.

Contact information is as follows:

Ernie Szabo, PEMA Planning Project Officer, 717-651-2159, [eszabo@pa.gov](mailto:eszabo@pa.gov)

Tom Hughes, State Hazard Mitigation Officer, 717-651-2726, [thughes@pa.gov](mailto:thughes@pa.gov)

## 2018 York County Hazard Mitigation Plan **PUBLIC MEETING**

*Tuesday, July 31, 2018 5:00 PM at York County Emergency Services Center*

---

**Attendance:** Ernie Szabo (PEMA), Teresa Boeckel (York Daily Record)

**Staff:** Roy Livergood, Wade Gobrecht, Anne Walko, Pam Shellenberger

Due to the lack of attendance, the public meeting took the format of question and answer session on Facebook Live, facilitated by Teresa Boeckel of the York Daily Record. Roy Livergood highlighted the plan development process, previous hazard mitigation planning efforts, and hazard mitigation funding. Special emphasis was placed on flooding, in light of the recent rain.

The public was reminded how they could review the draft plan and submit comments. The deadline for public comment in September 5, 2018.





JUL  
31

## Hazard Mitigation Plan Public Meeting

Public · Hosted by York County Planning Commission

★ Interested   ✓ Going



🕒 Tuesday, July 31 at 5 PM – 7 PM  
about 1 month ago

📍 York County 911 Center, 120 Davies Dr, York, PA 17402-8805, United States [Show Map](#)

👤 Hosted by York County Planning Commission [Message / Host](#)

About

Discussion

[Write Post](#)   [Add Photo/Video](#)   [Create Poll](#)



Write something...

0 Went · 3 Interested

Share this event with your followers

### Details

All residents, municipal officials, and emergency management personnel are encouraged to attend. We will present an overview of the planning process, the draft Plan, and the steps involved in adoption and implementation. The PA Emergency Management Agency (PEMA) will present information, as well.

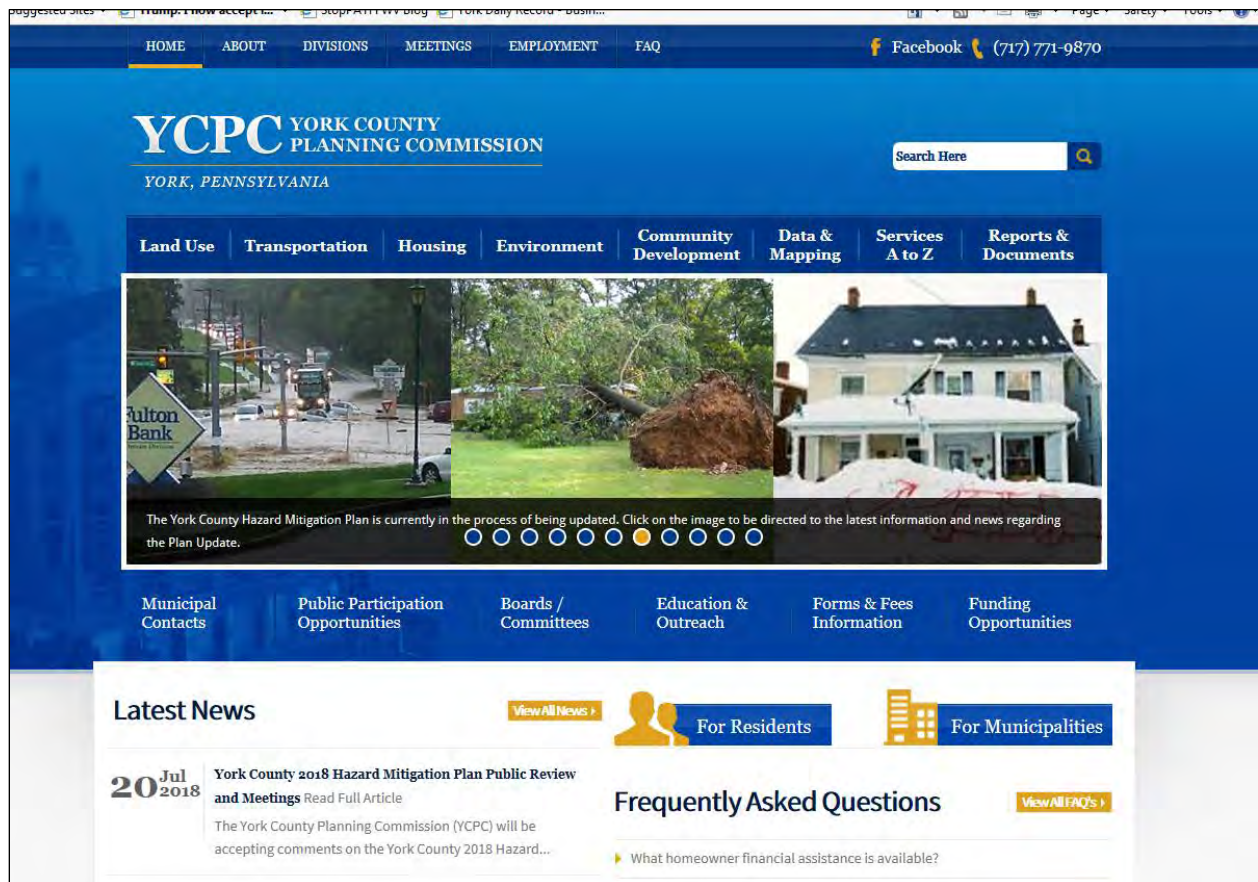
A second meeting will be held at 1:00 PM on the same date to help accommodate varying work schedules.

Beginning on July 23rd, the draft Plan will be available for review at [www.ycpc.org](http://www.ycpc.org) and paper copies will be available at YCPC and the following public libraries: Collinsville (2832 Delta Rd, Brogue), Guthrie (2 Library Pl, Hanover), Paul Smith (80 Constitution Ave, Shrewsbury), Red Land (70 Newberry Commons, Etters), and Dillsburg (204 Mumper Ln, Dillsburg).

For more information, contact Roy Livergood at 717-771-9870 x1758 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org).

See Less







## About

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## York County 2018 Hazard Mitigation Plan Public Review and Meetings

The York County Planning Commission (YCPC) will be accepting comments on the York County 2018 Hazard Mitigation Plan for 45 days beginning July 23, 2018. During the comment period, the YCPC will also be hosting two (2) public meetings on July 31, 2018, to provide an overview of, and obtain comment on, the proposed York County 2018 Hazard Mitigation Plan. For more information please click [here](#).

[Read More](#)

### Documents currently available for Public Comment

#### 20 Jul 2018 **Draft York County 2018 Hazard Mitigation Plan**

The York County Planning Commission (YCPC) will be accepting comments on the York County 2018 Hazard Mitigation Plan for 45 days beginning July 23, 2018. Comments must be submitted no later than September 5, 2018.

The Plan can be viewed online using [CiviComment](#) where you can make your comments directly on the Plan. You also have the option to view the Plan by clicking [here](#). Please submit written comments to the York County Planning Commission, attention Roy Livergood, 28 East Market Street, York, PA 17401 or by email to [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org). Additionally, paper copies are available for review at the YCPC office and the following libraries during regular business hours:

Collinsville Library- 2632 Delta Rd, Brogue, PA 17309  
Guthrie Library- 2 Library Pl, Hanover, PA 17331  
Paul Smith Library- 80 Constitution Ave, Shrewsbury, PA 17361  
Red Land Library- 70 Newberry Commons, Etters PA, 17319  
Dillsburg Library- 204 Mumper Ln, Dillsburg, PA 17019

[Read More](#)

### General Comments

## **APPENDIX B – PUBLIC AND STAKEHOLDER OUTREACH**

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March 27, 2017

## York County Hazard Mitigation Plan Update Notice

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Solicitor

The York County Planning Commission (YCPC) is preparing to update the York County Hazard Mitigation Plan (HMP). The Disaster Mitigation Act of 2000 (DMA 2000) requires State, local (county/municipal), and Indian Tribal governments to plan for hazard mitigation as a requirement for certain types of mitigation assistance. The Plan is required to be updated every five (5) years. The first York County Hazard Mitigation Plan was adopted in 2008 and it was last updated in 2013, making this update the third iteration of the Plan.

The YCPC has secured Pre-Disaster Mitigation Grant funding through the Pennsylvania Emergency Management Agency (PEMA) to update the Plan. Staff of the YCPC will update the Plan with guidance from a Local Planning Team and input from all 72 municipalities. There will also be opportunities for public review and comment. Input from a variety of stakeholders is important not only for updating the County HMP, but also because most municipalities adopt the County Plan as their local HMP to meet the requirements of DMA 2000.

Some topics identified to be addressed by the update include evaluating any new hazards; updating base information; incorporating information regarding climate change, historic resources, and the County's aging population; soliciting new hazard mitigation projects; and addressing any new mitigation planning requirements.

If you have any questions or input regarding the York County Hazard Mitigation Plan update, please contact Roy Livergood at (717) 771-9870 ext. 1756 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org).



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## Divisions

### Municipal Planning

[Act 167 Stormwater Management Plan and Model Ordinance](#)
[Model Ordinances](#)
[Subdivisions and Land Development Review](#)

### Long Range Planning

[Census Information](#)
[2020 Census](#)
[Hazard Mitigation Planning and Implementation](#)
[Plan Reviews](#)
[Technical Assistance](#)
[Stormwater](#)
[Stormwater Authority Implementation Plan](#)
[Water Planning & Implementation](#)
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[York County Heritage Program](#)

### Transportation Planning

[Long Range Transportation Plan](#)
[Air Quality](#)
[Identifying Transportation Problems](#)
[Multi- and Inter-Modal Planning](#)
[Transportation Alternatives Set-Aside Program \(TASP\)](#)
[LTAP](#)
[Reviews](#)
[Title VI - Complaint Procedure](#)
[Traffic Counts](#)
[Transportation Coalition](#)

### Housing

[Homeless Services](#)
[Continuum of Care](#)
[Emergency Solutions Grant](#)

## Hazard Mitigation Planning and Implementation

Please click for information on the [York County Hazard Mitigation Plan Update](#)

Hazard mitigation planning is required under the [Disaster Mitigation Act of 2000](#) (DMA 2000), as a condition of receiving various types of pre- and post-disaster assistance for mitigation efforts. York County's first Hazard Mitigation Plan was adopted in 2008 and the current 2013 [Hazard Mitigation Plan](#) is a required five year update to the 2008 Plan.

The YCPC is dedicated to hazard mitigation and provides the following services coordinated through the York County Hazard Mitigation Officer:

[County Hazard Mitigation Plan](#)
[County Representative at Hazard Mitigation Training and Meeting](#)
[Education](#)
[Information Contact](#)
[Municipal Assistance and Outreach](#)
[Project Review](#)

### County Hazard Mitigation Plan

Staff members develop, implement and update the Hazard Mitigation Plan component of the [York County Comprehensive Plan](#) in a collaborative effort with all 72 municipalities, a Local Hazard Mitigation Planning Team, [York County EMA](#), [PEMA](#), and [FEMA](#).

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### County Representative at Hazard Mitigation Meetings

Staff members regularly participate in meetings, as a representative of the County, to provide input specific to local hazard mitigation concerns.

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### Education

Staff members attend, participate in, and conduct educational training to achieve two outcomes: to stay current on hazard mitigation related issues and to keep County stakeholders informed of hazard mitigation related issues.

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### Information Contact

The YCPC maintains an abundance of information on hazard mitigation planning. Municipalities and other stakeholders are welcome to contact staff to seek answers to hazard mitigation related questions and/or obtain a referral as to where the requested information can be found.

Homeless Management  
Information System

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Housing and Home Assistance

## Municipal Assistance and Outreach

Affordable Housing Development

Home Improvement Program

Weatherization Assistance  
Program

York Homebuyer Assistance  
Program

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Housing for Our Aging Population

## Project Review

Community Development

Community Development Block  
Grant

Staff members review, and if applicable, offer comments on proposed plans, projects, regulations and policies to ensure consistency and implementation of the 2013 Hazard Mitigation Plan and other components of the County Comprehensive Plan.

Programs Management and

[Top of Page](#)

Compliance Division

## York County Hazard Mitigation Plan Update Information

Information Systems

Available Data

GIS Mapping Information

Map Gallery

Mapping and Data

Online Mapping

Staff

The York County Planning Commission (YCPC) is preparing to update the York County Hazard Mitigation Plan (HMP). The Disaster Mitigation Act of 2000 (DMA 2000) requires State, local (county/municipal), and Indian Tribal governments to plan for hazard mitigation as a requirement for certain types of mitigation assistance. The Plan is required to be updated every five (5) years. The first York County Hazard Mitigation Plan was adopted in 2008 and it was last updated in 2013, making this update the third iteration of the Plan. The YCPC has secured Pre-Disaster Mitigation Grant funding through the Pennsylvania Emergency Management Agency (PEMA) to update the Plan. Staff of the YCPC will update the Plan with guidance from a Local Planning Team and input from all 72 municipalities. There will also be opportunities for public review and comment. Input from a variety of stakeholders is important not only for updating the County HMP, but also because most municipalities adopt the County Plan as their local HMP to meet the requirements of DMA 2000. Some topics identified to be addressed by the update include evaluating any new hazards; updating base information; incorporating information regarding climate change, historic resources, and the County's aging population; soliciting new hazard mitigation projects; and addressing any new mitigation planning requirements. If you have any questions or input regarding the York County Hazard Mitigation Plan update, please contact Roy Livergood at (717) 771-9870 ext. 1756 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org).

## Meetings

02/20/2018 - Local Emergency Planning Committee Meeting - [Information Packet](#)

02/07/2018 - York County Hazard Mitigation Plan Public Meeting #1 - [Information Packet](#)

04/28/2017 - Hazard Mitigation Local Planning Team Kickoff Meeting - [Information Packet](#)

10/19/2017 - York County Transportation Coalition Meeting - [Information Packet](#)

12/11/2017 - Hazard Mitigation Local Planning Team Meeting 2 - [Information Packet](#)

01/16/2018 - Heritage Preservation Advisory Committee Meeting - [Information Packet](#)

## Surveys

[York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey - Public](#)

[York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey](#)

[York County Hazard Mitigation Plan Capability Survey](#)

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For more information beyond the scope of this page please contact the [Hazard Mitigation Officer](#).

**YCPC** YORK COUNTY  
 PLANNING COMMISSION  
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- 05 Jul 2018** **York County GIS Open Data Portal now available!** Read Full Article  
 The York County Planning Commission, with coordination from York County Departments, is happy to ann...
- 09 Mar 2018** **2018-2019-2020 Three Year Project Plan** Read Full Article  
 County Commissioners approve Three Year Project Plan for CDBG and ESG programs. On February 7, 2018,...

Frequently Asked Questions

[View All FAQs](#)

- What homeowner financial assistance is available?
- The municipal codes enforcement officer refuses to issue a permit for me to...
- I want to give ten (10) feet of my lot to my neighbor. Must I submit a subd...

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To keep you updated on activities and current events, the York County Planning Commission has created E-Alerts. These E-Alerts are just another way to keep you connected with what is taking place in and around your community. Please explore the articles below or visit the links to the left for other helpful information.

### Upcoming Meetings

#### YCPC Meeting

The next Planning Commission meeting is being held on April 18, at 7:00 p.m. If you are interested in a specific topic, please visit the [Boards and Committees page](#) for more information.

#### YAMPO Meeting

The next YAMPO meeting is being held on April 7, at 9:00 am. Please visit the [Boards and Committees](#) page for more information.

## York County Home Improvement Program

### Loan and Grant Program

The County's Home Improvement Program (HIP) is looking for qualified applicants to participate. The program is a zero interest, deferred loan program designed to help income eligible resident homeowners in York County by providing financial and technical assistance for home repairs including, but not limited to, roofing, windows, plumbing, heating, electrical, senior safe/ADA modifications, septic and water/sewer hookups. Grant funds may also be available to eligible homeowners age 55 and older, or disabled individuals. [Click Here](#) to view additional information on the program that can be found on our website [www.ycpc.org](http://www.ycpc.org). Please direct any questions you may have to Kim Walston at (717) 771-9870, ext. 1750 or e-mail [kwalston@ycpc.org](mailto:kwalston@ycpc.org).

## PUBLIC NOTICE

### Applications for York County Community Development Block Grant (CDBG) and Emergency Solutions Grant (ESG) 2018, 2019 and 2020 Program Years

York County Planning Commission (YCPC), on behalf of the County of York, announces the availability of applications to the 2018, 2019 and 2020 County CDBG and ESG Programs to municipalities and non-profit organizations serving York County residents.

CDBG program primarily funds public services and improvements to public facilities / infrastructure benefiting low- and moderate-income persons and / or eliminating or preventing slums and blight.

ESG program primarily funds emergency shelters for the homeless.

Application forms and information are available at [www.ycpc.org](http://www.ycpc.org) Forms & Fees. Questions may be directed to Joiann Galiano, Chief, Community Development Dept., YCPC, 717-771-9870 or [jgaliano@ycpc.org](mailto:jgaliano@ycpc.org). Completed applications due at the YCPC 4:00 P. M., June 9, 2017.

## Nominate a Great Place in Pennsylvania



### APA PA is looking for Great Public Spaces and Great Streets

The Pennsylvania Chapter of the American Planning Association (APA PA) will be recognizing "Great Public Spaces" and "Great Streets" in 2017. Do you know of a public space or street that truly stands out in what it offers residents and visitors? Do you think it merits designation as a Great Place in Pennsylvania? If so, NOMINATE IT!

Nominations will be accepted through April 18, 2017. For more information, including guidelines, category criteria, and the nomination form, please visit the APA PA website: <http://planningpa.org/about/great-places-in-pennsylvania-2/>. All Great Street and Great Greenway/Trail nominations must be submitted online at <http://planningpa.org/events-training/great-places-in-pennsylvania/great-places-submission-form/>.

### **What Makes a Great Place?**

Great Places offer better choices for where and how people live, work, and play. They are enjoyable, safe, sustainable, and desirable. They build a sense of community by being places where people want to be, to not only visit, but to live, work and/or play every day. Great Places also give their communities an economic boost by helping to attract and retain residents and businesses.

Many criteria, including functionality, accessibility, connectivity, community involvement, economic opportunities, forward thinking planning, and others, define Pennsylvania's Great Public Spaces and Great Streets. APA PA will recognize successfully designated Great Public Spaces and Great Streets through an array of activities, such as:

- News and social media releases statewide and locally about the designations

- Recognition on the APA PA website

- Coordinated attendance of APA PA representatives at local designation ceremonies in communities choosing to hold such events.

- Presentation of a Great Places Certificate and Window Clings

- Recognition at the APA PA Annual Conference.

## **2016 York County Population Estimate**

York County's population is now 443,744! The US Census Bureau has just released the 2016 County Population Estimates. [For more information](#), please read the Research Brief prepared by the PA State Data Center.

## **Training Opportunity**

The Emergency Management Institute, National Emergency Training Center located in Emmitsburg, MD is offering a training opportunity for Managing Floodplain Development through the National Flood Insurance Program. For more information, please [click here](#).

## **York County Hazard Mitigation Plan Update**

The York County Planning Commission (YCPC) is preparing to update the York County Hazard Mitigation Plan (HMP). The Disaster Mitigation Act of 2000 (DMA 2000) requires State, local (county/municipal), and Indian Tribal governments to plan for hazard mitigation as a requirement for certain types of mitigation assistance. The Plan is required to be updated every five (5) years. The first York County Hazard Mitigation Plan was adopted in 2008 and it was last updated in 2013, making this update the third iteration of the Plan. The YCPC has secured Pre-Disaster Mitigation Grant funding through the Pennsylvania Emergency Management Agency (PEMA) to update the Plan. Staff of the YCPC will update the Plan with guidance from a Local Planning Team and input from all 72 municipalities. There will also be opportunities for public review and comment. Input from a variety of stakeholders is important not only for updating the County HMP, but also because most municipalities adopt the County Plan as their local HMP to meet the requirements of DMA 2000. Some topics identified to be addressed by the update include evaluating any new hazards; updating base information; incorporating information regarding climate change, historic resources, and the County's aging population; soliciting new hazard mitigation projects; and addressing any new mitigation planning requirements. If you have any questions or input regarding the York County Hazard Mitigation Plan update, please contact Roy Livergood at (717) 771-9870 ext. 1756 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org).

## **Long Range Transportation Plan**

York County's Long Range Transportation Plan is now available for public comment. While this



### York County Planning Commission

@YorkCountyPlanning

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#### York County Planning Commission

Published by Amy Evans [?] · Just now

#### NOTICE of York County Hazard Mitigation Plan Update

The York County Planning Commission (YCPC) is in preparing to update the York County Hazard Mitigation Plan (HMP). The Disaster Mitigation Act of 2000 (DMA 2000) requires State, local (county/municipal), and Indian Tribal governments to plan for hazard mitigation as a requirement for certain types of mitigation assistance.

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11 were here this week Mike Pritchard

The York County Planning Commission is the planning agency for York County, PA. If you are looking for more information about YCPC, please visit [ycpc.org](http://ycpc.org).

568 Likes Willard Hill and 23 other friends like this

11 people have been here. Mike Pritchard has been here

About See All



28 E Market St  
York, PA 17401  
(717) 771-9870

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|--------------------------|---|-------|----------------|--------------------------------|
| <input type="checkbox"/> | NOTICE of York County Hazard Mitigation Plan Update The York Count...               | 0     | 0              | Mar 23, 2017 at Amy Evans      |
| <input type="checkbox"/> | Owners of historic homes, this is for you!  | 41    | 4              | Mar 21, 2017 at Amy Evans      |
| <input type="checkbox"/> | Please join PennDOT Secretary Leslie Richards for tomorrow night's live onlin...    | 488   | 14             | Mar 20, 2017 at Mike Pritchard |
| <input type="checkbox"/> | It's that time again! Every two years, the Pennsylvania Department of...            | 1.5K  | 55             | Mar 17, 2017 at                |
| <input type="checkbox"/> | Our offices will be closed tomorrow, Tuesday, March 14. Please stay warm...         | 142   | 11             | Mar 13, 2017 at Mike Pritchard |
| <input type="checkbox"/> | We are currently seeking a qualified individual for a planner position in our...    | 3.2K  | 157            | Mar 10, 2017 at Amy Evans      |
| <input type="checkbox"/> | We know that York County has plenty of Great Places, so why not nominate you...     | 103   | 4              | Mar 10, 2017 at Amy Evans      |
| <input type="checkbox"/> | ICYMI: Here's a preview of some transportation improvements you'll be...            | 233   | 12             | Mar 9, 2017 at 3 Amy Evans     |
| <input type="checkbox"/> | Two community events on expungement are coming up quickly - March 8th &...          | 129   | 6              | Mar 6, 2017 at 3 Amy Evans     |
| <input type="checkbox"/> | Curious about shared ride options? This video from our partners at rabbittransit... | 144   | 8              | Feb 27, 2017 at Mike Pritchard |
| <input type="checkbox"/> | YCPC has a responsibility, under the Municipalities Planning Code, to review...     | 2K    | 158            | Feb 22, 2017 at Amy Evans      |
| <input type="checkbox"/> | Transportation Chief, Will Clark, is discussing roundabouts and upcoming...         | 173   | 19             | Feb 21, 2017 at Mike Pritchard |

**YORK COUNTY  
TRANSPORTATION COALITION MEETING  
THURSDAY, OCTOBER 19, 2017  
NORTH CODORUS TOWNSHIP  
196<sup>TH</sup> HOUSE DISTRICT**

**AGENDA**

- 1) Opening Remarks –
  - a) Co-Chairs Commissioner Reilly and Representative Keefer
  - b) Host District- Representative Seth Grove
  
- 2) Introductions-
  
- 3) Presentations –
  - a) Barb Zortman, Director of the Center for Traffic Safety and Rich Farr, Director of rabbitransit will provide a presentation concerning the recently created “Live Fully. Travel Safely” initiative.
  - b) Roy Livergood, YCPC, will also introduce the York County Hazard Mitigation Plan and identify opportunities to become involved in the update process.
  
- 4) Other Business-
  - a) 2019 Transportation Alternatives Program (TAP) Will Clark, YCPC
  - b) Congestion Management Process (CMP) signal timing project update, Will Clark, YCPC
  - c) Long Range Transportation Plan Update, Mike Pritchard, YCPC
  
- 5) Next Meeting
  - a) November 2, 2017 – York Area Metropolitan Planning Organization Technical Committee Meeting
  - b) December 7, 2017 – York Area Metropolitan Planning Organization Coordinating Committee Meeting
  - c) January 18, 2018 – York County Transportation Coalition Meeting- York City Council Chambers, 101 South George Street
  
- 6) Adjournment

# YORK COUNTY HAZARD MITIGATION PLAN UPDATE 2018



October 19, 2017



## Hazard Mitigation Plan Background

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) constitutes the statutory authority for most Federal disaster response activities especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs.



## Hazard Mitigation Plan Background

- **Encourage states and localities to:**
  - Develop comprehensive disaster preparedness plans,
  - Prepare for better intergovernmental coordination in the face of a disaster,
  - Encourage the use of insurance coverage (Flooding), and
  - Provide federal assistance programs for losses due to a disaster.




## Hazard Mitigation Plan Background

- **Disaster Mitigation Act 2000 amended the Stafford Act to include:**
  - A new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.
  - Established a new requirement for local government hazard mitigation plans as a condition of receiving hazard mitigation assistance (Includes Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program).
  - Does not mean that municipalities and residents will not receive emergency assistance.

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## Hazard Mitigation Plan Background

- First York County Plan completed in 2008
- Multi-municipal Plan that serves County and all 72 municipalities
- Required to be adopted by resolution
- Updates required every 5 years
- Last Update was completed in 2013
- 70 municipalities adopted




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## Current Plan Update



- Plan development guided by:
  - FEMA Local Mitigation Plan Review Guide – Crosswalk
  - PEMA Standard Operating Guide (SOG)
- Hazard Mitigation- Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.
- Hazard Identification/Assessment, Existing Capabilities, Future Actions
- Update guided by Planning Team
- Funded by Pre-Disaster Mitigation Grant





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## 23 Hazards Addressed

- Civil Disturbance, Dam Failure, Drought, Earthquake, Environmental Hazards, Extreme Temperatures, Flooding, Hailstorms, Hurricane/Tropical Storms, Invasive Species, Landslide, Lightning Strike, Nuclear Incidents, Pandemic, Radon, Sinkholes, Terrorism, Tornadoes, Urban Fire, Wildfire, Winter Storm
- Added Levee Failure, Mass Food/Animal Feed Contamination

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## Don't Address

- Transportation Accidents- Result
- Utility Interruption- Result
- Coastal Erosion- N/A

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## Transportation Related


- Civil Disturbance
- Environmental Hazards
- Flooding
- Landslide
- Nuclear Incidents
- Subsidence/Sinkholes
- Terrorism
- Winter Storm



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## Existing Actions Identified


- Planning and awareness of emergency transportation routes
- Municipal bridge maintenance programs
- Evacuation route signage
- Training and education regarding environmental hazards
- Emergency and risk management plans for hazardous material incidents



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## Existing Actions Identified


- Identification of flood prone areas
- Updating municipal ordinances to PA DEP requirements for private bridges and crossings
- County bridge replacement projects
- Flood damaged road repair
- Municipal bridge elevations and replacements
- Stormwater control/drainage improvements
- Municipal stream enclosure and drainage projects
- De-icing and salt prewetting equipment



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## County Initiatives

- Conducted Flooded Roadway Survey
- Review proposed Transportation Improvement Projects against those identified in Plan
- Worked with Municipalities to secure funding (Growing Greener)
- Continue outreach and education
- County Debris Management Plan
- CDBG Projects



## Next Steps

- Public Meetings- Hazard assessments, actions, and draft Plan
- Action survey
- PEMA/FEMA approval process



- Questions?
- Comments?

Comments and Questions Received  
York County Transportation Coalition Meeting  
October 19, 2017

1. Are public meetings scheduled?
2. Evacuation Plans- Who initiates and how are they coordinated?
3. Are medical facilities included in Plan?
4. Who is on the Planning Committee?
5. Are School Districts included in the Plan?
6. Should rabbittransit include as part of their Plan?
7. Is this on the YCPC website?
8. Are sinkholes public knowledge? Can you predict when sinkholes will open up?
9. Please provide examples of municipalities that have received funding?
10. If a municipality doesn't adopt the Plan are they not eligible for funding?
11. Any obligation behind adopting the Plan?

# Please Sign In

| Name                  | Address                           |
|-----------------------|-----------------------------------|
| Heather Bitner        | YCP                               |
| Jesse King            | YCP                               |
| Will Clark            | YCP                               |
| Mike Pritchard        | YCP                               |
| Seth Grove            | 196 <sup>th</sup> District        |
| Kristin Philleps-Hell | 93rd District                     |
| Rich Larr             | RabbitHorn                        |
| Gary Milbrand         | York Township                     |
| Mindy Leahy           | Rep Seth Grove                    |
| Kathryn Gault         | Rep Dawn Keefer                   |
| Jennifer Green        | York County Aging office          |
| Ross Stanko           | York County Human Services Center |
| Gwen Loose            | YCRTA                             |
| Kim Hugeman           | YCEA                              |
| Tim Miller            | Downtown Inc                      |
| Mark Rooney           | Downtown Inc                      |
| Bill Jackson          | North York Borough                |
| Carrie Nace           | Rep. Kate Klunk                   |
| Barbara Metzler       | Sen. Rich Alloway                 |
| Judine Huber          | Sen. Scott Wagner                 |
| Kevin Eck             | Rep. Stan Saylor                  |

Tristan Benson  
Kristi Reichard  
Wade Gobrecht  
Roy Livensood  
Mike Politti  
Joe STAFFORD  
Sherry Welsh  
Barb Zortman

Commuter Services of PA  
A. Morton Thomas & Assoc.  
VCPCL  
YCPCL  
KCI  
Bicycle Access Council  
rabbittransit  
Center for Traffic Safety

# AGENDA

## York County Heritage Preservation Plan Advisory Committee

*Call Toll-Free: 1 866-951-1151 and enter Conference Room # 906-238-911*

1/16/2018  
9:30 – 11:00 AM  
Conference Call

---

|          |   |
|----------|---|
|          | <b>Welcome &amp; Introductions</b>  |
| 9:30 AM  |   |
| 9:35 AM  | <b>Membership</b><br>Additional Invitations   |
| 9:40 AM  | <b>Implementation Tasks</b><br>2017 Recap<br>YCPC Work Items<br>Advisory Committee Work Items for 2018                      |
| 10:10 AM | <b>Work Session - Hazard Mitigation and Heritage Preservation</b>   |
| 10:30 AM | <b>Preservation Updates</b><br>Countywide Web Mapping<br>CVB Grant Program<br>Rotary Club Presentation                      |
| 10:45 AM | <b>Next Steps</b><br>Meeting schedule (bimonthly or quarterly)<br>Work on assigned tasks<br>Stay tuned to email for updates |



# Heritage Preservation Advisory Committee Meeting

January 16, 2018 via phone

## *Attendees:*

June Lloyd, David Maher, Bryan VanSweden

## *Staff:*

Amy Evans, Wade Gobrecht, Anne Walko

## Introductions

Amy Evans welcomed the callers and introductions were made.

## Membership

Amy Evans shared that there are 16 active members on the Heritage Preservation Advisory Committee. With the sad loss of June Evans, the group is now missing a strong archaeological perspective. June Lloyd added that June Evans also brought a sound and experienced municipal perspective. Amy shared that any new additions to the group should perhaps represent either or both of those issues.

## 2017 Implementation Tasks

The implementation tasks were reviewed as follows:

- School Outreach – this will continue to be explored. Meetings were scheduled in the past but canceled due to conflicts. We will engage York College and possibly Millersville University. Amy Evans and Walter Kuhl will continue to be the leads.
- Senior Outreach – Terry Downs was the contact for this task, so we have no report today. Wade Gobrecht asked if this could become part of the conversation of the Senior Initiatives Task Force of the YCPC.
- Comprehensive Survey – Jonathan Pinkerton was not present to update group.
- Targeted National Register Outreach – Bryan VanSweden provided some information in advance of the call. It provided information on historic districts, mills/factories, farms, and schools/churches/libraries. It focuses on some key themes that may be a good starting place for the local nominations. Amy Evans will share the information.
- County Register of Historic Resources - Dave Maher said that Cumberland Valley Historical Society used an adapted PA At Risk nomination process to engage the public. Helped to determine if there was local interest in sites. Amy asked if there were other such examples that we could look to in this discussion. A question was if there would be recognition to the owner/managers of the sites. Dave recollected that Cumberland County provided a marker and press event to recognize its local designees. <https://www.historicalsociety.com/outreach/cumberland-county-register-of-historic-places/>

Wade Gobrecht shared that this could work well with the County mapping project. Carly Marshall of Adams County Planning may be working on something like this. It was advised we contact Adams County for a status report.

- Municipal Preservation Support – this will focus on model ordinances, plan language. Amy Evans added that the County Historical Bridge Study is scheduled to be completed by the middle of 2018.

## Hazard Mitigation Plan and Heritage Preservation

Anne Walko shared that the County is in the process of updating its Hazard Mitigation Plan. It is a plan that is reviewed by PEMA and FEMA. It profiles all of the hazards (natural and manmade) that can impact property and lives in the County. The plan also identifies projects and actions to mitigate the hazards and reduce risk to property and lives. While most of the natural hazards could affect heritage resources, flooding is the most likely to cause damage to heritage resources.

Appendix 10: Mitigation Strategy Ideas of the Hazard Mitigation Plan will be sent to this group for review and feedback related to the consideration of heritage resources in hazard mitigation planning. The Action Plan of the York County Heritage Preservation Plan touches on hazard mitigation in the “Strengthening York County’s Role” section, specifically items 13, 14, and 15, as follows:

- 13. Continuing to recognize preservation’s ties to hazard mitigation planning, including the identification of heritage resources in hazard areas and specific actions to address heritage resources as part of the York County Hazard Mitigation Plan.*
- 14. Encouraging and supporting groups or government bodies that own and/or care for heritage resources in conducting hazard mitigation and emergency response planning in relation to those resources. This includes raising awareness among municipal emergency management coordinators about actions that can protect heritage resources during emergency response.*
- 15. Encouraging municipalities to establish a variance process for heritage resources as part of their floodplain management ordinances. While some heritage resources are exempt from floodplain regulations, encouraging the variance process instead allows for the placement of conditions that can minimize flood damage.*

Anne closed by asking the group if there was anything additional from their background in history and heritage that could inform the Hazard Mitigation Plan, to please share it. Bryan VanSweden explained a project with PHMC and the National Parks Service (grant, spurred by Hurricane Sandy, to survey 4 counties, identify areas in floodzones, and identify historic resources. The second phase of this project is to make recommendations to the county hazard mitigation planners.

<http://www.phmc.pa.gov/Preservation/Disaster-Planning/Pages/Project-Overview.aspx>

## Updates

### County Mapping Project

Chris Koerner was unable to join us today. He did share via email that he continues to work but the work has slowed somewhat. He may have another person available to help with programming to not

lose too much momentum on this project. There were suggestions that funding be applied for from the Susquehanna Riverlands mini-grant and the Keystone Historic Planning Grant (Due 3/1/18) to procure funding to keep this project moving along.

#### *York County Convention and Visitors Bureau Tourism Grant*

The Tourism Program's second grant round is open through 2/14/18. Applications are encouraged. For more information, go to <http://www.yorkpa.org/about-us/grant-program/>

#### *York Rotary*

Amy Evans was contacted to make a presentation regarding the York County Heritage Preservation Plan to the York Rotary on 1/30/18. There will be 40-50 in attendance.

#### *Transource*

Wade Gobrecht provided an update on the proposed high voltage transmission line project in southeastern York County. Transource has decided on an alignment and is submitting it to the PUC for review. It is understood that this process can take 12 months. The siting application mentions Muddy Creeks Forks heritage village but what other historic resources or viewsheds could be impacted by this? A map is attached to the email.

Dave Maher shared that a similar thing is occurring in southeastern Franklin County and the Franklin County Visitors Bureau has taken the lead in the opposition. June Lloyd shared that a local attorney indicated there were alternate routes. Also, the Ma & Pa Preservation Society is growing heritage tourism in the area with the railroad. The FNLT has also been involved as they have preserved property concerns in the region.

#### *Blessing/Mifflin House/Hybla*

June Lloyd shared that she understands there to be a legal help fund set up by Preservation PA to benefit the Kreutz Creek Valley Preservation Society. No other update as decision is now in the courts. Theresa Boeckel wrote an online article and there has been social media following as well.

#### *Monocacy Trail Corridor*

Terry Downs heading up this project, but was unable to join today's meeting. Amy Evans shared that Terry, she, and several others met with DCNR last month with regard to this project. Terry Downs was encouraged to get the word out about this idea via a blog or story map.

#### *Meeting Schedule*

Amy Evans suggested a change to the meeting schedule. This group meets every other month. Amy inquired of those on the call their thoughts on perhaps a quarterly meeting. With so few represented, she decided to poll the entire group via email.

# YORK COUNTY LOCAL EMERGENCY PLANNING COMMITTEE

## LEPC MEETING AGENDA 20 February 2018

- 
- ✚ Call to Order
  - ✚ Introductions
  - ✚ Approval of 19 December 2017 meeting minutes
  - ✚ Roy Livergood - Hazard Mitigation Plan Presentation
  - ✚ Plans Review Committee Report
  - ✚ Public Information Committee Report
  - ✚ Administrative Committee Report
  - ✚ HazMat Report
  - ✚ SARA Planner's Report
  - ✚ Old Business
  - ✚ New Business
  - ✚ Adjourn - **NEXT MEETING IS SCHEDULED FOR:**
    - ✓ 17 April 2018 @ 10:00AM @ 120 Davies Drive

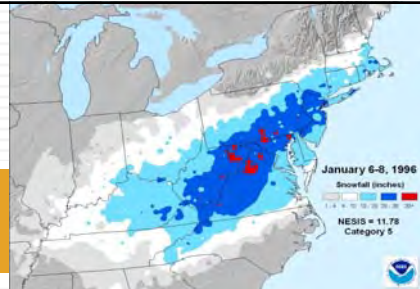
# YORK COUNTY 2018 HAZARD MITIGATION PLAN UPDATE – LOCAL EMERGENCY PLANNING COMMITTEE



February 20, 2018



## Agenda



- Hazard Mitigation Planning Background
- Hazard Mitigation Plan
- Hazard Identification
- Survey (4) Summary
- Plan Goals, Objectives, and Actions



FEMA



## Hazard Mitigation Plan Background

- The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act) constitutes the statutory authority for most Federal disaster response activities especially as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs.




## Hazard Mitigation Plan Background

- Disaster Mitigation Act 2000 amended the Stafford Act to include a new set of requirements that emphasize the need for State, local, and Indian Tribal entities to closely coordinate mitigation planning and implementation efforts.
- Requirement for local government hazard mitigation plans as a condition of receiving hazard mitigation assistance (Includes Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program).
- Does not mean that municipalities and residents will not receive emergency assistance.

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## Hazard Mitigation Plan Background

- First York County Plan completed in 2008
- Multi-municipal Plan that serves County and all 72 municipalities
- Required to be adopted by resolution
- Adopted by 68 municipalities



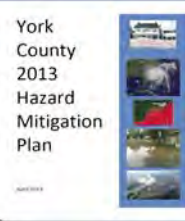
York County  
Hazard Mitigation Plan

Tornadoes  
Hazardous Materials  
Land Subsidence  
Severe Storms  
Coastal Storms  
Flooding  
Seismicity

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## Hazard Mitigation Plan Background

- Updates required every 5 years
- Last update was completed in 2013
- Complete update and reformat
- 70 municipalities adopted



York  
County  
2013  
Hazard  
Mitigation  
Plan


JAN 2013



## Hazard Mitigation Plan Background


- **Plan Development**
  - Requirements
    - FEMA Local Mitigation Plan Review Guide - Crosswalk
    - PEMA Standard Operating Guide (SOG)
  - Guided by
    - Local Planning Committee
  - Informed by Input from
    - Municipalities
    - Public





## Hazard Mitigation

**The Four Phases of Emergency Management**



- Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose is to systematically identify policies, actions, and tools.
- Pre-disaster mitigation involves actions taken in advance of hazard event to interrupt cycle of damage, reconstruction, and repeated damage.
- After 9/11/01 included human made disasters.





## Hazard Mitigation Plan



- Plan consists of 8 sections
- Introduction- Background, Purpose, Scope
- Community Profile- Geography, Demographics, Land Use
- Planning Process- Documentation of Involvement
- Risk Assessment- Hazard I.D., Profile (location, magnitude, occurrence, and vulnerability), Hazard Ranking




## Hazard Mitigation Plan




- Capability Assessment- Inventory of planning/regulatory tools, resources and ability to use them
- Mitigation Strategy- Goals, objectives, mitigation techniques, and action plan
- Plan Maintenance- Further update, Plan monitoring, incorporation into other efforts, and continued public involvement
- Plan Adoption- Process and Plan Review Crosswalk



## Hazard Identification




- Current Plan- 15 natural hazards and 6 Human-made hazards
- State Plan identifies 26 hazards
- Not Addressed- Transportation Accidents, Utility Interruption, Levee Failure, Coastal Erosion (NA), Mass Food and Animal Contamination



## Hazard Identification

- Local Planning Team Recommendation- Add Levee Failure, Mass Food and Animal Contamination, and greater emphasis on Wind Storms





## Hazard Identification



### Natural Hazards (15)-

Drought, Earthquake, Extreme Temperature, Flood/Flash Flood/Ice Jam, Hailstorm, Hurricane/Tropical Storm/Nor'easter, Invasive Species, Landslide, Lightning Strike, Pandemic and Infectious Disease, Radon Exposure, Subsidence Sinkhole, Tornado/Windstorm, Wildfire, and Winter Storm





## Hazard Identification

### Human-Made Hazards (8)-


Civil Disturbance, Dam Failure, Environmental Hazards, Levee Failure, Mass Food/Animal Feed Contamination, Nuclear Incidents, Terrorism, Urban Fire and Explosion



## Gap Identification

- Climate Change Impact- Expand
- Aging Population
- Historic Resources
- Viable Specific Municipal Actions



## Hazard I.D., Ranking, and Gap Analysis Survey

- 70 Responses/ 56 municipalities
- Severity- Nuclear Incident, Hurricane, Winter Storm
- Frequency- Winter Storm, Flooding, Hurricanes
- Increasing- Flooding, Winter Storm, Tornado, Hurricane
- Agree with adding Levee Failure and Mass Food & Animal Feed Contamination




## Hazard I.D., Ranking, and Gap Analysis Survey

- Top Hazards 1) Winter Storm, 2) Flooding, 3) Hurricane
- 52% familiar with Plan
- Greatest Strength = Regional Information
- Needs- funding projects, include coyotes, feral dogs/cats under invasive species, sinkholes cover greater area
- Issue to consider Aging Population and Infrastructure
- Use Social Media and News Releases to advertise



## Hazard Capability Survey


- **55 Responses/50 Municipalities**
  - Regulatory Tools (Zoning/Subdivision, EOP, Stormwater, Building Code, and Comp. Plan)
  - Admin and Tech (EMA Manager, Staff, Engineer, Building Codes)
  - Funding- Community Development Block Grant
  - Public Education Programs
  - Limited in Planning/Regulatory, Admin/Tech, Financial, Ed/Outreach
  - No projects Last 10 years
  - Most not sure or depends for assistance in applying for grants



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## Public Survey

- 13 Responses/11 Municipalities
- Frequency- Winter Storm, Extreme Temps, Flooding
- Severity-Hurricane, (Flooding, Pandemic, Winter Storm)
- Increase in Extreme Temp., Hurricanes, Winter Storm
- Agree with Additions and Exclusions



YORK COUNTY  
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PLANNING  
COMMISSION

## Public Survey

- Top 3 Hazards- Winter Storm, Flooding, Extreme Temperature
- Familiar with Plan
- Strength- Consolidated Information
- Needs- Mass Food/Animal Food Contamination, Expand Invasive Species, Add Transportation Incidents and Utility Interruption
- Issues to consider- infrastructure and aging population
- Social Media most recommended for public involvement

# Risk Factor Survey

**Table 4.4.2.1: Hazard Prioritization Matrix**

| Hazard Risk | Hazard                                  | Risk Assessment Category |        |                |              |          | Risk Factor |
|-------------|---|--------------------------|--------|----------------|--------------|----------|-------------|
|             |   | Probability              | Impact | Spatial Extent | Warning Time | Duration |             |
| High        | Nuclear Incidents                       | 1.4                      | 3.1    | 3.7            | 3.2          | 3.7      | 3.1         |
|             | Flood/Flash Flood/Ice Jam               | 3.7                      | 2.4    | 2.8            | 1.7          | 2.4      | 3.0         |
|             | Winter Storms                           | 3.4                      | 2.2    | 3.6            | 1.2          | 2.7      | 2.9         |
|             | Environmental Hazards                   | 3.1                      | 1.8    | 2.5            | 3.5          | 2.1      | 2.9         |
|             | Radon Exposure                          | 3.6                      | 1.9    | 3.1            | 1.0          | 3.9      | 2.9         |
|             | Urban Fires/Explosions                  | 2.9                      | 2.1    | 1.8            | 4.0          | 1.8      | 2.8         |
|             | Pandemic And Infectious Disease         | 2.3                      | 2.3    | 3.5            | 1.6          | 3.6      | 2.8         |
|             | Extreme Temperatures                    | 3.2                      | 1.8    | 3.6            | 1.1          | 3.1      | 2.8         |
| Moderate    | Terrorism                               | 2.4                      | 2.1    | 2.2            | 3.9          | 1.8      | 2.8         |
|             | Mass Food and Animal Feed Contamination | 1.5                      | 1.9    | 3.0            | 3.4          | 3.5      | 2.7         |
|             | Hurricane/Tropical Storm/Nor' Easter    | 2.5                      | 2.3    | 3.6            | 1.1          | 2.3      | 2.6         |
|             | Tornado                                 | 2.7                      | 2.1    | 2.2            | 2.8          | 1.4      | 2.6         |
|             | Dam Failure                             | 1.2                      | 2.7    | 2.6            | 3.3          | 2.1      | 2.6         |
|             | Hailstorm                               | 3.1                      | 1.4    | 2.2            | 3.2          | 1.0      | 2.5         |
|             | Wildfire                                | 2.7                      | 1.4    | 1.7            | 3.6          | 1.8      | 2.5         |
| Low         | Lightning Strike                        | 3.3                      | 1.6    | 1.4            | 2.9          | 1.0      | 2.4         |
|             | Drought                                 | 2.2                      | 1.3    | 3.3            | 1.4          | 4.0      | 2.4         |
|             | Levee Failure                           | 1.2                      | 2.4    | 2.4            | 3.0          | 2.3      | 2.4         |
|             | Subsidence/Sinkhole                     | 2.1                      | 1.6    | 1.8            | 3.6          | 2.0      | 2.4         |
|             | Invasive Species                        | 2.4                      | 1.5    | 2.5            | 1.3          | 3.9      | 2.3         |
|             | Earthquake                              | 1.8                      | 1.1    | 2.2            | 3.7          | 1.0      | 2.2         |
|             | Civil Disturbance                       | 1.4                      | 1.7    | 1.7            | 3.2          | 1.9      | 2.1         |
| Landslide   | 1.1                                     | 1.0                      | 1.3    | 3.6            | 1.1          | 1.7      |             |



## Goals

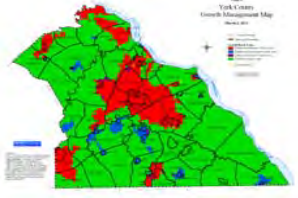
**1. Reduce the possibility of injury or death to County residents and potential losses or damages to critical facilities, infrastructure, and property that could result from.....**



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## Goal 1 Objectives

- Objective 1A - Provide preventative or corrective measures where possible to deal with identified hazards.
- Objective 1B - Provide proper monitoring and warning of potential for a hazard to occur.
- Objective 1C - Provide for appropriate response to hazards that is coordinated at all levels.





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## Goal 2

***Encourage a coordinated effort among the County, its 72 municipalities, and those entities, both public and private, in dealing with hazard mitigation.***





## Goal 2 Objectives

- Objective 2A - Ensure that an agency or organization is identified that can directly plan for and carry out tasks related to a specific hazard.
- Objective 2B - Utilize the Steering Committee (Local Planning Team) to coordinate and work towards addressing hazard mitigation throughout York County.
- Objective 2C - Encourage participation by municipalities in adopting and implementing the Plan, as well as in pursuing funding for implementation.



## Goal 3

***Promote proper planning and disaster-resistant future development.***



## Goal 3 Objectives

- Objective 3A - Maintain the Hazard Mitigation Plan as an element of the *York County Comprehensive Plan*.
- Objective 3B - Where not already done, address hazard mitigation in codes, plans, and ordinances at both the municipal and County levels



## Goal 4

***Increase public understanding, support and demand for hazard mitigation.***



### Planning Perspectives

*A Newsletter from the York County Planning Commission*

March 2018

#### Flood Safety Awareness

In light of the recent rains affecting York County and as part of the implementation of the York County Hazard Mitigation Plan, the York County Planning Commission thought this would be a good time to pass along some facts and information on flooding in York County. The following is a summary of flood-related information from the York County Hazard Mitigation Plan (2008) and NOAA safety recommendations from their website. It should be noted that March 15 - 19 will be designated as Flood Safety Awareness Week by the National Oceanic and Atmospheric Administration (NOAA).


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## Goal 4 Objectives

- Objective 4A - Provide educational materials.
- Objective 4B - Create awareness among residents regarding their responsibility to be prepared for, and able to respond to a hazard.

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## Mitigation Actions




Indian Rock Dam - York's Life Saver

- Currently 102 actions identified.
- Each municipality required to identify one hazard mitigation action.
- Actions identified for all eligible activities under FEMA programs.
- Need to solicit new projects.

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## Mitigation Actions

Are there specific actions or projects that should be addressed by the Hazard Mitigation Plan?



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Please submit any goals, objectives, actions, comments or questions to:

Roy Livergood, Senior Planner  
28 East Market Street  
York, PA 17401-1580  
Ph. (717) 771-9870 ext. 1756  
[rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

On Tuesday, 2/20/2018, Roy Livergood made a presentation to the LEPC Planning Committee during their regularly scheduled meeting at the York County Emergency Services Center.

A copy of the sign-in sheet is attached, as is the PowerPoint of the presentation.

Questions and comments include the following:

- Important to consider industrial site buffering
- *Is the Commodity Flow Study incorporated into the Hazard Mitigation Plan?*  
Roy confirmed that it is considered. It was shared that the Commodity Flow Study will be updated this year, with tentative completion date of July 2018. The timeline for Hazard Mitigation Plan Update will need to include the 2015 Commodity Flow Study information.
- *What are the main means of communication in this process?* Roy shared that we use our YCPC website, eNewsletters, direct email, newspapers, and social media. There was a follow up question about the Civil Defense System. It was further clarified that the IPAWS system share information/emergency alert through County Emergency Services.
- There was also discussion on the timing of the surveys. Responses could be dependent on the current weather or conditions. This is noted.

Roy provided contact information and encouraged meeting attendees to share any questions or comments that may develop.

## SIGN IN - PLEASE PRINT

DATE 2/20/2018MEETING LEPC Meeting

| NAME            | ORGANIZATION                   | ADDRESS                            | PHONE                     | E-MAIL                    |
|-----------------|--------------------------------|------------------------------------|---------------------------|---------------------------|
| Roy Livergood   | YCLPC                          | 28 E. Market St.<br>York, PA 17402 | 717-771-9870<br>x1756     | rlivergood@yclpc.org      |
| Kevin Lain      | Glatfelter                     | 228 S. Main St<br>Spring Grove Pa  | 717-225-<br>4711 ext 2280 | Kevin.Lain@glatfelter.com |
| Dan O'Connell   | York LEPC                      |                                    | 717.817.6596              | DOConnell@covanta.com     |
| Gene Sajski     | PEMA                           |                                    |                           | esajski@pa.gov            |
| Mike Fetrow     | York Co OEL                    |                                    |                           |                           |
| Jim Wolff       | York Co OEL                    |                                    |                           |                           |
| Bill James      | York OEL                       |                                    |                           |                           |
| Richard Hapin   | At Largo                       |                                    | 717-825-725               | rha/pa 48@gmail.com       |
| Anne Walko      | YCLPC                          | 282 Market St, York                | 717-771-9870              | awalko@yclpc.org          |
| John Bramble    | York Township<br>EMA<br>GD-OFS |                                    | (717) 246-8207            |                           |
| John Livingston | York Co Fire<br>School         |                                    |                           | John@YCLFS.US             |
| Roy Kinsey      | York Hazmat                    |                                    | 443 790<br>4040           | RoyKinsey14<br>@gmail.com |





**York County Planning Commission** shared a live video.



Published by Amy Evans [?] · August 1 · 🌐

If you couldn't make our public meetings yesterday, this Q & A with York Daily Record Sunday News's Teresa Boekel and our very own Roy Livergood gives you the hazard mitigation basics.

"Hazard mitigation" might not sound all that exciting, but this process helps all of our municipalities plan for your safety during many types of natural and man-made disasters, AND makes us eligible for add'l funding to prevent future problems.

For more info on how to access the draft and tell us what you think, go to: <http://bit.ly/HazMitDraft>.



1,921 Views

**York Daily Record/Sunday News** was live.  
July 31 · 🌐

Earthquakes, flooding, winter storms and more: Roy Livergood talks about how York County Planning plans to address hazardous situations.

**56**  
People Reached

**1**  
Engagement

**2**  
Clicks



**Table 3.5-2 Adjacent Communities and Agency Notification**

| Adjacent Community or Agency  | 3/2017 Project notification memo, website posting, e-newsletter listing, and Facebook posting | 5/2/17 Notice of Hazard identification survey placed on YCPC website and Facebook | 7/16/18 Memo announcing 45-day review/comment period and public meeting | 7/18 45- day review/comment period and public meeting notice placed in newspaper legal section and YCPC website, Facebook, and e-newsletter | 7/24/18 News release announcing 45-day review period and public meeting |
|---|---|---|---|---|---|
| Adams County Planning Commission  | X   | X   | X   | X   | X   |
| Cumberland County Planning Commission                                     | X   | X   | X   | X   | X   |
| Lancaster County Planning Commission                                      | X   | X   | X   | X   | X   |
| Tri-County Regional Planning Commission                                   | X   | X   | X   | X   | X   |
| Baltimore County, MD  | X   | X   | X   | X   | X   |
| Carroll County, MD  | X   | X   | X   | X   | x   |
| Harford County, MD  | X   | X   | X   | X   | X   |
| Adjacent Related Entities (EMA's, Police, Fire, health departments, etc.) | X   | X   |   | X   | X   |
| Abbottstown Borough, Adams County   | X   | X   |   | X   | X   |
| Bermudian Springs School District, Adams County                           | X   | X   |   | X   | X   |
| Berwick Township, Adams County  | X   | X   |   | X   | X   |
| Columbia Borough, Lancaster County  | X   | X   |   | X   | X   |
| Columbia Borough School District, Lancaster County                        | X   | X   |   | X   | X   |
| Conestoga Township, Lancaster County                                      | X   | X   |   | X   | X   |
| Conewago Valley School District, Adams County                             | X   | X   |   | X   | X   |
| Conoy Township, Lancaster County  | X   | X   |   | X   | X   |

**Table 3.5-2 Adjacent Communities and Agency Notification**

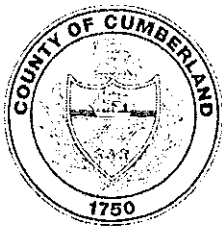
| Adjacent Community or Agency                         | 3/2017 Project notification memo, website posting, e-newsletter listing, and Facebook posting | 5/2/17 Notice of Hazard identification survey placed on YCPC website and Facebook | 7/16/18 Memo announcing 45-day review/comment period and public meeting | 7/18 45- day review/comment period and public meeting notice placed in newspaper legal section and YCPC website, Facebook, and e-newsletter | 7/24/18 News release announcing 45-day review period and public meeting |
|--|---|---|---|---|---|
| Cumberland Valley School District, Cumberland County | X   | X   |   | X   | X   |
| Donegal School District, Lancaster County            | X   | X   |   | X   | X   |
| Drumore Township, Lancaster County                   | X   | X   |   | X   | X   |
| East Berlin Borough, Adams County                    | X   | X   |   | X   | X   |
| East Donegal Township, Lancaster County              | X   | X   |   | X   | X   |
| Elizabethtown Area School District, Lancaster County | X   | X   |   | X   | X   |
| Fulton Township, Lancaster County                    | X   | X   |   | X   | X   |
| Hamilton Township, Adams County                      | X   | X   |   | X   | X   |
| Latimore Township, Adams County                      | X   | X   |   | X   | X   |
| Littlestown Area School District, Adams County       | X   | X   |   | X   | X   |
| Londonderry Township, Dauphin County                 | X   | X   |   | X   | X   |
| Lower Allen Township, Cumberland County              | X   | X   |   | X   | X   |
| Lower Dauphin School District, Dauphin County        | X   | X   |   | X   | X   |
| Lower Swatara Township, Dauphin County               | X   | X   |   | X   | X   |

**Table 3.5-2 Adjacent Communities and Agency Notification**

| Adjacent Community or Agency                            | 3/2017 Project notification memo, website posting, e-newsletter listing, and Facebook posting | 5/2/17 Notice of Hazard identification survey placed on YCPC website and Facebook | 7/16/18 Memo announcing 45-day review/comment period and public meeting | 7/18 45- day review/comment period and public meeting notice placed in newspaper legal section and YCPC website, Facebook, and e-newsletter | 7/24/18 News release announcing 45-day review period and public meeting |
|---|---|---|---|---|---|
| Manor Township, Lancaster County                        | X   | X   |   | X   | X   |
| Marietta Borough, Lancaster County                      | X   | X   |   | X   | X   |
| Martic Township, Lancaster Township                     | X   | X   |   | X   | X   |
| McSherrystown Borough, Adams County                     | X   | X   |   | X   | X   |
| Mechanicsburg School District, Cumberland County        | X   | X   |   | X   | X   |
| Middletown Area School District, Dauphin County         | X   | X   |   | X   | X   |
| Monroe Township, Cumberland County                      | X   | X   |   | X   | X   |
| New Cumberland Borough, Cumberland County               | X   | X   |   | X   | X   |
| Penn Manor School District, Lancaster County            | X   | X   |   | X   | X   |
| Reading Township, Adams County                          | X   | X   |   | X   | X   |
| Solanco School District, Lancaster County               | X   | X   |   | X   | X   |
| South Middletown School District, Cumberland County     | X   | X   |   | X   | X   |
| Steelton-Highspire Area School District, Dauphin County | X   | X   |   | X   | X   |
| Swatara Township, Dauphin Township                      | X   | X   |   | X   | X   |
| Union Township, Adams County                            | X   | X   |   | X   | X   |

**Table 3.5-2 Adjacent Communities and Agency Notification**

| Adjacent Community or Agency              | 3/2017 Project notification memo, website posting, e-newsletter listing, and Facebook posting | 5/2/17 Notice of Hazard identification survey placed on YCPC website and Facebook | 7/16/18 Memo announcing 45-day review/comment period and public meeting | 7/18 45- day review/comment period and public meeting notice placed in newspaper legal section and YCPC website, Facebook, and e-newsletter | 7/24/18 News release announcing 45-day review period and public meeting |
|---|---|---|---|---|---|
| Upper Allen Township, Cumberland County   | X   | X   |   | X   | X   |
| West Hempfield Township, Lancaster County | X   | X   |   | X   | X   |



## Cumberland County Planning Commission

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310 Allen Road, Suite 101  
Carlisle, PA 17013  
Phone 717.240.5362  
Fax 717.240.6517  
[www.ccpa.net/planning](http://www.ccpa.net/planning)

July 30, 2018

York County Planning Commission  
Attn: Mr. Roy Livergood  
28 East Market Street  
York, PA 17401-1580

Re: York County Hazard Mitigation Plan Update  
Cumberland County Comments and Recommendations

Dear Mr. Livergood:

The Cumberland County Planning Department has reviewed the proposed York County Hazard Mitigation Plan Update. We offer the following comments and recommendations:

1. Page 25 indicates that the 2013 Standard All-State Hazard Mitigation Plan was reviewed to create an updated list of hazards for the HMP Update. It is recommended that the DRAFT version of the 2018 Standard All-State Hazard Mitigation be reviewed for potential hazards. The 2018 plan is still in draft, but it is available for review and may contain additional hazards for consideration.
2. Table 4.4.1-1 (page 185) appears to have some information regarding warning time in the row for spatial extent and a row for spatial extent in the row for impact. The staff of the York County Planning Commission may want to review this table prior to adoption.

Please feel free to contact us with any questions. Thank you!

Sincerely,

Steven B. Hoffman  
Planning Specialist

# DAUPHIN COUNTY PLANNING COMMISSION

112 Market Street, 2nd Floor  
Harrisburg, Pennsylvania 17101-2031  
Telephone 717-234-2639  
Fax 717-234-4058  
e-mail: [planning@tcrpc-pa.org](mailto:planning@tcrpc-pa.org)

August 6, 2018

Roy Livergood  
York County Planning Commission  
28 East Market Street  
York, PA 17401

RECEIVED  
AUG 09 2018  
YORK COUNTY  
PLANNING COMMISSION

Re: York County 2018 Hazard Mitigation Plan Update

Dear Mr. Livergood,

The Dauphin County Planning Commission (DCPC) has reviewed the York County 2018 Hazard Mitigation Plan Update. The Commission finds it to be well researched, organized and comprehensive. Of particular note, the Commission is encouraged that the plan recognizes the importance of being a part of the South Central Task Force, a key cooperative emergency management effort, and is pleased to see this organization's work referenced within the plan.

The Commission supports the plan's adoption and commends York County for their diligent work to protect their municipalities and residents.

Thank you for your opportunity to review the above mentioned plan. Should there be any questions as to this review, please contact Gerard Duke, AICP, at the County Planning Commission office

Sincerely,



Chris Abruzzo  
Vice Chairman

## **APPENDIX C – MUNICIPAL PRIMARY CONTACTS**

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**York County Municipal Primary Points of Contact**

| Municipality              | Primary Contact Name | Job Title   | Business Address Street       | City           | State | Zipcode    | Phone          | E-mail                             |
|---------------------------|----------------------|---|-------------------------------|----------------|-------|------------|----------------|------------------------------------|
| Carroll Township          | Faye Romberger       | Secretary/Treasurer   | 555 Chestnut Grove Rd         | Dillsburg      | PA    | 17019      | (717) 432-4951 | fromberger@carrolltownship.com     |
| Chanceford Township       | Tonya Jackson        | Secretary/Treasurer/Zoning Permit Officer                             | 51 Muddy Creek Forks Rd       | Brogue         | PA    | 17309      | (717) 927-6401 | chancefordtwp@zoominternet.net     |
| Codorus Township          | April Rehbein        | Secretary/Treasurer   | 4631 Shaffers Church Rd       | Glenville      | PA    | 17329-8923 | (717) 235-4634 | secretary@codorustownship.org      |
| Conewago Township         | Lou Anne Bostic      | Secretary/Treasurer   | 490 Copenhaffer Rd            | York           | PA    | 17404      | (717) 266-2122 | conetwp@comcast.net                |
| Cross Roads Borough       | Martha J Miller      | Secretary/Treasurer   | 13231 Cross Roads Ave         | Cross Roads    | PA    | 17322      |                | millerspuds@verizon.net            |
| Dallastown Borough        | Connie Stokes        | Manager/Secretary/Treasurer   | 175 E Broad St                | Dallastown     | PA    | 17313      | (717) 244-6626 | conniestokes@aol.com               |
| Delta Borough             | Sherrie Wood         | Secretary   | PO Box 278                    | Delta          | PA    | 17314      | (717) 456-6248 | delta.borough@verizon.net          |
| Dillsburg Borough         | Karen Deibler        | Manager   | 151 S Baltimore St            | Dillsburg      | PA    | 17019      | (717) 432-9969 | dillsburg@dillsburg.com            |
| Dover Borough             | Linford Bledsoe      | Manager / Zoning Officer  | 46 Butter Rd                  | Dover          | PA    | 17315      | (717) 292-6530 | lbledsoedoverboro@comcast.net      |
| Dover Township            | Laurel A Oswalt      | Manager   | 2480 W Canal Rd               | Dover          | PA    | 17315      | (717) 292-3634 | laoswalt@dovertownship.org         |
| East Hopewell Township    | Martha J Miller      | Secretary   | 8916 Hickory Rd               | Felton         | PA    | 17322      | (717) 993-6529 | ehopetwp@verizon.net               |
| East Manchester Township  | David Gentzler       | Manager/Public Works Director/Secretary/Treasurer                     | 5080 N Sherman St Ext         | Mt Wolf        | PA    | 17347      | (717) 266-6735 | emantwp@comcast.net                |
| East Prospect Borough     | Mindy K Barshinger   | Secretary   | PO Box 334                    | East Prospect  | PA    | 17317      | (717) 252-0177 | epboro@netzero.net                 |
| Fairview Township         | Donald Martin III    | Manager/Secretary   | 599 Lewisberry Rd             | New Cumberland | PA    | 17070-2399 | (717) 901-5210 | donmartin@twp.fairview.pa.us       |
| Fawn Grove Borough        | Cathy E Kirkwood     | Secretary / Treasurer   | PO Box 131                    | Fawn Grove     | PA    | 17321      | (717) 382-4153 | fawngroveborough@zoominternet.net  |
| Fawn Township             | Amy L Mottram        | Secretary/Treasurer   | PO Box 229                    | New Park       | PA    | 17352-0229 | (717) 382-4834 | fawntwp@yahoo.com                  |
| Felton Borough            | Joy Flinchbaugh      | Secretary-Treasurer, Zoning Officer                                   | 88 Main St                    | Felton         | PA    | 17322      | (717) 246-6493 | feltonboroughoffice@gmail.com      |
| Franklin Township         | Teresa Adams         | Secretary / Building Permit Officer                                   | 150 Century Ln                | Dillsburg      | PA    | 17019      | (717) 432-3773 | franklintwp@pa.net                 |
| Franklintown Borough      | Kelly Kunkle         | Secretary/Treasurer   | PO Box 88                     | Franklintown   | PA    | 17323-0088 | (717) 432-4047 | FTOWNBORO@COMCAST.NET              |
| Glen Rock Borough         | Ann E Merrick        | Secretary/Treasurer   | PO Box 116                    | Glen Rock      | PA    | 17327      | (717) 235-3206 | glenrockborough@comcast.net        |
| Goldsboro Borough         | Lee V Fishel         | Manager/Secretary/Treasurer/Building Permit/Zoning Officer            | PO Box 14                     | Etters         | PA    | 17319      | (717) 938-3456 | Goldsboroborough@comcast.net       |
| Hallam Borough            | Sharon Dupler        | Secretary   | 250 W Beaver St               | Hallam         | PA    | 17406      | (717) 755-0810 | secretary@hallamborough.com        |
| Hanover Borough           | Michael R Bowersox   | Manager   | 44 Frederick St               | Hanover        | PA    | 17331      | (717) 637-3877 | mbowersox@hanoverboroughpa.gov     |
| Heidelberg Township       | Norma Markle         | Secretary/Treasurer/Supervisor/Building Permit Officer/Zoning Officer | 6424 York Rd                  | Spring Grove   | PA    | 17362      | (717) 225-6606 | heidelbergtwp@earthlink.net        |
| Hellam Township           | Corina Mann          | Manager/Secretary-Treasurer   | 44 Walnut Springs Rd          | York           | PA    | 17406      | (717) 434-1300 | cmann@hellamtownship.com           |
| Hopewell Township         | Kristy Smallwood     | Manager/Secretary   | PO Box 429                    | Stewartstown   | PA    | 17363      | (717) 993-2027 | kspevak@hopewelltownship.com       |
| Jackson Township          | William J Conn       | Manager   | 439 Roth's Church Rd          | Spring Grove   | PA    | 17362      | (717) 225-5661 | manager@jacksontwpyork.org         |
| Jacobus Borough           | Cynthia M Ferree     | Office Manager / Treasurer  | 126 N Cherry Ln               | Jacobus        | PA    | 17407-1000 | (717) 428-1752 | jacobusborough@verizon.net         |
| Jefferson Borough         | Janny Graham         | Secretary/Treasurer   | PO Box 146                    | Codorus        | PA    | 17311      | (717) 229-0545 | jeffersonboro@comcast.net          |
| Lewisberry Borough        | Mackensie Greene     | Secretary/Manager   | PO Box 186                    | Lewisberry     | PA    | 17339      | (717) 938-3596 | boro.manager@lewisberryborough.org |
| Loganville Borough        | Norma J Duttera      | Secretary   | PO Box 88                     | Loganville     | PA    | 17342      | (717) 428-3938 | loganvilleborough@yahoo.com        |
| Lower Chanceford Township | Susan M Wiley        | Secretary/Treasurer/Zoning Officer                                    | 4120 Delta Rd                 | Airville       | PA    | 17302      | (717) 862-3589 | lctwp@zoominternet.net             |
| Lower Windsor Township    | Sande Cunningham     | Manager   | 2425 Cralely Rd               | Wrightsville   | PA    | 17368      | (717) 244-6813 | Townshipmgr@lowerwindsor.com       |
| Manchester Borough        | Judith Hilliard      | Secretary/Zoning Officer  | 225 S Main St                 | Manchester     | PA    | 17345      | (717) 266-1022 | jrj@manchesterborough.com          |
| Manchester Township       | Timothy R James      | Manager / Secretary-Treasurer   | 3200 Farmland Rd              | York           | PA    | 17406      | (717) 764-4646 | t.james@mantwp.com                 |
| Manheim Township          | Loren Riebling       | Manager/Zoning Officer  | 5191 Wool Mill Road           | Glenville      | PA    | 17329-9464 | (717) 229-2862 | ldrmanheim@comcast.net             |
| Monaghan Township         | Linda L Altland      | Secretary/Treasurer   | 202 S York Rd                 | Dillsburg      | PA    | 17019      | (717) 697-2132 | monaghtownship@comcast.net         |
| Mt Wolf Borough           | Steven Kehler        | Secretary   | PO Box 458                    | Mt Wolf        | PA    | 17347      | (717) 266-3211 | office@MtWolfBorough.com           |
| New Freedom Borough       | T. L. Crawford       | Secretary/Borough Administrator                                       | 49 E High St                  | New Freedom    | PA    | 17349      | (717) 235-2337 | nfboro@nfdc.net                    |
| New Salem Borough         | Andrew Shaffer       | Secretary   | PO Box 243                    | York New Salem | PA    | 17371      | (717) 739-6053 | newsalemboro@gmail.com             |
| Newberry Township         | Donald Keener        | Manager/Secretary/Treasurer   | 1915 Old Trail Rd             | Etters         | PA    | 17319      | (717) 938-6992 | dkeener@newberrytwp.com            |
| North Codorus Township    | Sharon M Kerchner    | Manager/Secretary/Treasurer   | 1986 Stoverstown Rd           | Spring Grove   | PA    | 17362      | (717) 225-4812 | nctmanager@comcast.net             |
| North Hopewell Township   | Kerrie Ebaugh        | Codes Enforcement/Zoning Officer/Secretary/Treasurer                  | 13081 High Point Rd           | Felton         | PA    | 17322      | (717) 246-2398 | northhopewelltwp@hotmail.com       |
| North York Borough        | Brittany Reed        | Administrative Assistant  | 350 E 6th Ave                 | York           | PA    | 17404      | (717) 845-3976 | boroughofnorthyork_905@comcast.net |
| Paradise Township         | Christine M Mentzer  | Secretary/Treasurer   | 82 Beaver Creek Rd            | Abbottstown    | PA    | 17301      | (717) 259-0385 | paratwp@comcast.net                |
| Peach Bottom Township     | Catherine Bilger     | Manager/Secretary/Treasurer   | 6880 Delta Rd Ste 3           | Delta          | PA    | 17314      | (717) 456-5083 | pbtwp@zoominternet.net             |
| Penn Township             | Kristina J Rodgers   | Manager / Treasurer   | 20 Wayne Ave                  | Hanover        | PA    | 17331      | (717) 632-7366 | pennadmin@comcast.net              |
| Railroad Borough          | Jean M Greene        | Secretary/Treasurer   | PO Box 56                     | Railroad       | PA    | 17355      | (717) 235-5042 | railroadborough@comcast.net        |
| Red Lion Borough          | Dianne Price         | Borough Manager   | PO Box 190                    | Red Lion       | PA    | 17356      | (717) 244-3475 | dprice@redlionpa.org               |
| Seven Valleys Borough     | Cheryl D Bahn        | Secretary/Treasurer   | PO Box 277                    | Seven Valleys  | PA    | 17360      | (717) 792-1261 | thebahns1@verizon.net              |
| Shrewsbury Borough        | Cindy L Bosley       | Secretary/Treasurer   | 35 W Railroad Ave             | Shrewsbury     | PA    | 17361      | (717) 235-4371 | cbosley@shrewsburyborough.org      |
| Shrewsbury Township       | Todd A Zeigler       | Manager/Secretary/Treasurer   | 11505 Susquehanna Trail South | Glen Rock      | PA    | 17327-9067 | (717) 235-3011 | manager@shrewsburytownship.org     |
| Spring Garden Township    | Gregory J Maust      | Manager/Secretary   | 558 S Ogontz St               | York           | PA    | 17403      | (717) 848-2858 | gmaust@sgtwp.org                   |
| Spring Grove Borough      | Andrew Shaffer       | Manager / Secretary - Treasurer                                       | 1 Campus Ave                  | Spring Grove   | PA    | 17362      | (717) 225-5791 | manager@springgroveboro.com        |

**York County Municipal Primary Points of Contact**

| Municipality             | Primary Contact Name   | Job Title                          | Business Address Street      | City          | State | Zipcode | Phone            | E-mail                            |
|--------------------------|------------------------|------------------------------------|------------------------------|---------------|-------|---------|------------------|-----------------------------------|
| Springettsbury Township  | Benjamin Marchant      | Manager                            | 1501 Mt Zion Rd              | York          | PA    | 17402   | (717) 757-3521   | Ben.Marchant@springettsbury.com   |
| Springfield Township     | Barbara E Sweitzer     | Secretary-Treasurer                | 9211 Susquehanna Trail South | Seven Valleys | PA    | 17360   | (717) 428-1413   | barbspringfield9211@comcast.net   |
| Stewartstown Borough     | Melissa Matthews       | Secretary                          | 6 N Main St Ste A            | Stewartstown  | PA    | 17363   | (717) 993-2963   | melissa@stewartstown.org          |
| Warrington Township      | Rebecca Knaub-Bradshaw | Manager/Secretary                  | 3345 Rosstown Rd             | Wellsville    | PA    | 17365   | (717) 432-9082   | office@warringtontwp.org          |
| Washington Township      | Diane Deardorff        | Secretary/Treasurer                | 14 Creek Rd                  | East Berlin   | PA    | 17316   | (717) 432-9814   | washtwp@comcast.net               |
| Wellsville Borough       | Stephanie L Bruce      | Secretary                          | PO Box 115                   | Wellsville    | PA    | 17365   | (717) 432-3395   | wellsvil@ptd.net                  |
| West Manchester Township | Kelly Kelch            | Manager/Secretary/Treasurer        | 380 East Berlin Rd           | York          | PA    | 17408   | (717) 792-3505   | kkelch@wmtwp.com                  |
| West Manheim Township    | Marc Woerner           | Manager                            | 2412 Baltimore Pike          | Hanover       | PA    | 17331   | (717) 632-0320   | mwoerner@westmanheimtwp.com       |
| West York Borough        | Linda Diaz             | Manager/Secretary/Zoning Officer   | 1381 W Poplar St             | York          | PA    | 17404   | (717) 846-8889   | linda.diaz@wyborough.org          |
| Windsor Borough          | Donna Martin           | Secretary/Treasurer                | PO Box 190                   | Windsor       | PA    | 17366   | (717) 244-6615   | djmwindsor@comcast.net            |
| Windsor Township         | Jennifer Gunnet        | Manager/Secretary                  | 1480 Windsor Rd              | Red Lion      | PA    | 17356   | (717) 244-3512   | jgunnet@windsortwp.com            |
| Winterstown Borough      | Kerrie Ebaugh          | Secretary/Treasurer                | 12244 Winterstown Rd         | Felton        | PA    | 17322   | (717) 825-6463   | info@winterstownborough.com       |
| Wrightsville Borough     | Tammie Hoff            | Borough Secretary                  | PO Box 187                   | Wrightsville  | PA    | 17368   | (717) 252-2768 x | secretary@wrightsvilleborough.com |
| Yoe Borough              | Diana Dvorak           | Secretary/Treasurer                | 150 N Maple St               | Yoe           | PA    | 17313   | (717) 244-5904   | Secretary@YoeBorough.org          |
| York City                | Cheryl Wormley         | Zoning Officer                     | PO Box 509                   | York          | PA    | 17405   | (717) 849-2280   | cwormley@yorkcity.org             |
| York Haven Borough       | Pamela Billett         | Secretary/Treasurer                | PO Box 169                   | York Haven    | PA    | 17370   | (717) 266-7261   | yorkhavenborough@comcast.net      |
| York Township            | Gary Milbrand          | Manager/GIS Engineer/CIO/Secretary | 190 Oak Rd                   | Dallastown    | PA    | 17313   | (717) 741-3861   | g.milbrand@yorktownship.com       |
| Yorkana Borough          | Juanita Smith          | Secretary/Treasurer                | 71 Main St                   | Yorkana       | PA    | 17406   | (717) 755-6780   | Yorkana71@yahoo.com               |

## APPENDIX D – SURVEYS

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**From:** Roy Livengood  
**To:** monaghtownship@comcast.net; FTOWNBORO@COMCAST.NET; thebahns1@verizon.net; thebahns1@verizon.net; epboro@netzero.net; pbtwp@zoominternet.net; Pamela Billett (yorkhavenborough@comcast.net); cbosley@shrewsburyborough.org; conetwp@comcast.net; Michael R Bowersox (mbowersox@hanoverboroughpa.gov); boroughofnorthyork\_905@comcast.net; manager@jacksontwp.org; nfboro@nfdc.net; Sande Cunningham (scunningham@lowerwindsor.com); washtwp@comcast.net; dillsburg@dillsburg.com; Linda Diaz (linda.diaz@wyorkborough.com); secretary@hallamborough.com; loganvilleborough@yahoo.com; yoeborough@comcast.net; northhopewelltwp@hotmail.com; fawntwp@yahoo.com; jacobusborough@verizon.net; Goldsboroborough@comcast.net; feltonboroughoffice@gmail.com; David Gentzler (emantwp@comcast.net); jeffersonboro@comcast.net; railroadborough@comcast.net; boro\_manager@lewisberryborough.org; Jennifer Gunnet (jgunnet@windsortwp.com); info@winterstownborough.com; jrh@manchesterborough.com; Tammie Hoff (secretary@wrightsvilleborough.com); chancefordtwp@zoominternet.net; Timothy R James (t.james@mantwp.com); dkeener@newberrytwp.com; office@MtWolfBorough.com; Kelly Kelch (kkelch@wmtwp.com); nctmanager@comcast.net; Cathy E Kirkwood (fawngroveborough1@verizon.net); office@warringtontwp.org; Dover Borough (doverboro@comcast.net); cmann@hellamtownship.com; Benjamin Marchant (Ben.Marchant@springettsbury.com); heidelbergtwp@earthlink.net; Donald Martin III (donmartin@twp.fairview.pa.us); Donna Martin (djmwindsor@comcast.net); melissa@stewartstown.org; Gregory J Maust (gmaust@sgtwp.org); paratwp@comcast.net; glenrockborough@comcast.net; g.milbrand@yorktownship.com; millerspuds@verizon.net; ehopetwp@verizon.net; laoswalt@dovertownship.org; dprice@redlionpa.org; Cheryl Rascoe (crascoe@yorkcity.org); secretary@codorustownship.org; ldrmanheim@comcast.net; pennadmin@comcast.net; Faye Romberger (fromberger@carrolltownship.com); Andrew Shaffer (info@springgroveboro.com); Yorkana71@yahoo.com; Kristy Spevak (kspevak@hopewelltownship.com); conniestokes@aol.com; barbspringfield9211@comcast.net; lctwp@zoominternet.net; Marc Woerner (mwoerner@westmanhelmtwp.com); delta.borough@verizon.net; wellsвил@ptd.net; manager@shrewsburytownship.org; franklintwp@pa.net

**Subject:** York County Hazard Mitigation Plan Update Municipal Surveys  
**Date:** Thursday, May 11, 2017 11:06:00 AM  
**Attachments:** image001.png  
image002.png  
image004.jpg  
image005.png

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The York County Planning Commission (YCPC) is in the process of Updating the York County Hazard Mitigation Plan. This is a multi-municipal Plan and for it to be effective, we need input from all 72 municipalities. Participation from municipalities, covered by the Plan, is also a requirement of PEMA/FEMA. In order to make participation efficient and less cumbersome, we have chosen to use an electronic survey tool. Below are links to two (2) surveys that we conducting to gather input. The first survey focuses on hazard identification and prioritization. The second survey identifies the resources your municipality currently has in place to address hazard mitigation and provides a municipal self-evaluation of your capabilities when it comes to hazard mitigation. Please respond to both surveys. This survey has been sent to YCPC primary contacts (Managers/Secretaries) and Municipal Emergency Management Coordinators. Please forward this survey to any elected or appointed municipal officials and staff you feel appropriate. If there is someone who doesn't have electronic access, let us know and we will forward a paper copy. We are requesting that responses to the surveys be made by May 31, 2017.

Survey #1 Hazard Identification and Prioritization-

<https://www.surveymonkey.com/r/J2FVPO2>

Survey #2 Municipal Capability Survey and Self-Evaluation-

<https://www.surveymonkey.com/r/JQHZTC3>

Thank you in advance for your participation and if you should have any questions, please contact me.

***Roy O. Livergood, Jr.***

***Senior Planner***

28 East Market Street | York, PA 17401-1580

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**From:** [Roy Livergood](#)  
**To:** [monaghtownship@comcast.net](#); [FTOWNBORO@COMCAST.NET](#); [thebahns1@verizon.net](#); [thebahns1@verizon.net](#); [pbtwp@zoominternet.net](#); [Pamela Billett \(yorkhavenborough@comcast.net\)](#); [Michael R Bowersox \(mbowersox@hanoverboroughpa.gov\)](#); [manager@jacksontwp.org](#); [Sande Cunningham \(scunningham@lowerwindsor.com\)](#); [Linda Diaz \(linda.diaz@wyorkborough.com\)](#); [loganvilleborough@yahoo.com](#); [yoeborough@comcast.net](#); [northhopewelltwp@hotmail.com](#); [fawntwp@yahoo.com](#); [jacobusborough@verizon.net](#); [Goldsboroborough@comcast.net](#); [feltonboroughoffice@gmail.com](#); [boro.manager@lewisberryborough.org](#); [Jennifer Gunnet \(jgunnet@windsortwp.com\)](#); [info@winterstownborough.com](#); [jrh@manchesterborough.com](#); [Tammie Hoff \(secretary@wrightsvilleborough.com\)](#); [chancefordtwp@zoominternet.net](#); [office@MtWolfBorough.com](#); [Kelly Kelch \(kkelch@wmtwp.com\)](#); [nctmanager@comcast.net](#); [Cathy E Kirkwood \(fawngroveborough1@verizon.net\)](#); [office@warringtontwp.org](#); [Dover Borough \(doverboro@comcast.net\)](#); [heidelbergtwp@earthlink.net](#); [Donna Martin \(djimwindsor@comcast.net\)](#); [melissa@stewartstown.org](#); [Gregory J Maust \(gmaust@sgtwp.org\)](#); [paratwp@comcast.net](#); [millerspuds@verizon.net](#); [ehopetwp@verizon.net](#); [laoswalt@dovertownship.org](#); [dprice@redlionpa.org](#); [secretary@codorustownship.org](#); [Faye Romberger \(fromberger@carrolltownship.com\)](#); [Andrew Shaffer \(info@springgroveboro.com\)](#); [Yorkana71@yahoo.com](#); [Kristy Spevak \(kspevak@hopewelltownship.com\)](#); [conniestokes@aol.com](#); [barbspringfield9211@comcast.net](#); [lctwp@zoominternet.net](#); [delta.borough@verizon.net](#); [wellsvil@ptd.net](#); [franklintwp@pa.net](#)  
**Cc:** [Wade Gobrecht](#); [Felicia Dell](#); [Anne Walko](#); [Pam Shellenberger](#)  
**Subject:** York County Hazard Mitigation Plan Update Municipal Survey Request  
**Date:** Thursday, June 8, 2017 10:15:00 AM  
**Attachments:** [image001.png](#)  
[image003.png](#)  
[image007.jpg](#)  
[image004.png](#)

York County Municipalities and EMA Coordinators,  
 The York County Planning Commission previously sent a request for your assistance in updating the York County Hazard Mitigation Plan by completing two surveys. The first survey helps to identify and prioritize hazards to be included in the Plan and the second survey is an self-evaluation of or your capabilities regarding hazard mitigation. We received a 50% percent response rate for the prioritization survey and about a 33% response rate for the capability survey. **As mentioned in the previous request, we need to demonstrate municipal participation from all municipalities intending to adopt the Plan for it to be approved by FEMA.** Please take a look a chart below and, if your municipality is highlighted in yellow for one or both of the surveys, please click on the appropriate links, below. and complete the survey(s). **The survey(s) can be filled out by municipal staff, officials, and EMA Coordinators.** These are relatively short surveys and are based on your municipality's experiences, perceptions and opinions regarding hazards and hazard mitigation capability. More than one person from your municipality can reply. **We are asking that the surveys be completed by June 23, 2017.**

Survey #1 Hazard Identification and Prioritization-

<https://www.surveymonkey.com/r/J2FVPQ2>

Survey #2 Municipal Capability Survey and Self-Evaluation-

<https://www.surveymonkey.com/r/JQHZTC3>

**York County Hazard Mitigation Plan Update Hazard Survey Responses**

| Municipality        | Priority Survey | Capability Survey |
|---------------------|-----------------|-------------------|
| Carroll Township    | 0               | 0                 |
| Chanceford Township | 0               | 0                 |
| Codorus Township    | 0               | 0                 |
| Conewago Township   | 1               | 1                 |
| Cross Roads Borough | 0               | 0                 |
|                     |                 |                   |

|                           |   |   |
|---------------------------|---|---|
| Dallastown Borough        | 1 | 0 |
| Delta Borough             | 0 | 0 |
| Dillsburg Borough         | 1 | 1 |
| Dover Borough             | 0 | 0 |
| Dover Township            | 1 | 0 |
| East Hopewell Township    | 0 | 0 |
| East Manchester Township  | 1 | 1 |
| East Prospect Borough     | 1 | 1 |
| Fairview Township         | 1 | 2 |
| Fawn Township             | 0 | 0 |
| Fawn Grove Borough        | 0 | 0 |
| Felton Borough            | 0 | 0 |
| Franklin Township         | 1 | 0 |
| Franklintown Borough      | 0 | 0 |
| Glen Rock Borough         | 1 | 1 |
| Goldsboro Borough         | 1 | 0 |
| Hallam Borough            | 1 | 1 |
| Hanover Borough           | 0 | 0 |
| Heidelberg Township       | 0 | 0 |
| Hellam Township           | 1 | 1 |
| Hopewell Township         | 0 | 0 |
| Jackson Township          | 1 | 0 |
| Jacobus Borough           | 1 | 0 |
| Jefferson Borough         | 1 | 1 |
| Lewisberry Borough        | 0 | 0 |
| Loganville Borough        | 0 | 0 |
| Lower Chanceford Township | 0 | 0 |
| Lower Windsor Township    | 1 | 0 |
| Manchester Borough        | 0 | 0 |
| Manchester Township       | 1 | 1 |
| Manheim Township          | 1 | 1 |
| Monaghan Township         | 0 | 0 |
| Mount Wolf Borough        | 0 | 0 |
| New Freedom Borough       | 1 | 1 |
| New Salem Borough         | 0 | 0 |
| Newberry Township         | 1 | 1 |
| North Codorus Township    | 1 | 0 |
| North Hopewell Township   | 0 | 0 |
| North York Borough        | 1 | 1 |
| Paradise Township         | 0 | 0 |
| Peach Bottom Township     | 0 | 0 |
| Penn Township             | 4 | 2 |
| Railroad Borough          | 1 | 1 |
| Red Lion Borough          | 0 | 0 |
| Seven Valleys Borough     | 0 | 0 |
| Shrewsbury Borough        | 1 | 1 |
| Shrewsbury Township       | 2 | 2 |
| Spring Grove Borough      | 0 | 0 |
| Spring Garden Township    | 1 | 0 |
| Springettsbury Township   | 1 | 1 |
| Springfield Township      | 1 | 0 |
| Stewartstown Borough      | 0 | 0 |
| Warrington Township       | 0 | 0 |



|                          |   |   |
|--------------------------|---|---|
| Washington Township      | 1 | 1 |
| Wellsville Borough       | 1 | 1 |
| West Manchester Township | 0 | 0 |
| West Manheim Township    | 1 | 2 |
| West York Borough        | 0 | 0 |
| Windsor Borough          | 0 | 0 |
| Windsor Township         | 1 | 0 |
| Winterstown Borough      | 0 | 0 |
| Wrightsville Borough     | 0 | 0 |
| Yoe Borough              | 1 | 0 |
| York City                | 2 | 1 |
| York Township            | 1 | 1 |
| Yorkana Borough          | 0 | 0 |
| York Haven Borough       | 0 | 0 |

Thanks again for your participation and if you should have any questions, please contact me.

***Roy O. Livergood, Jr.***  
*Senior Planner*

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 Phone 717.771.9870 x1756 | Fax 717.771.9511  
[www.ycpc.org](http://www.ycpc.org) | [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)



## Q1 Please select the one that best describes your role

Answered: 55 Skipped: 0

| ANSWER CHOICES                                | RESPONSES |           |
|---|-----------|-----------|
| Municipal Official (Non Emergency Management) | 63.64%    | 35        |
| Local Emergency Management Official           | 29.09%    | 16        |
| Other (please specify)                        | 7.27%     | 4         |
| <b>TOTAL</b>                                  |           | <b>55</b> |

## Q2 Please select which municipality you represent

Answered: 55 Skipped: 0

| ANSWER CHOICES           | RESPONSES |   |
|--------------------------|-----------|---|
| Carroll Township         | 1.82%     | 1 |
| Chanceford Township      | 0.00%     | 0 |
| Codorus Township         | 0.00%     | 0 |
| Conewago Township        | 1.82%     | 1 |
| Cross Roads Borough      | 0.00%     | 0 |
| Dallastown Borough       | 0.00%     | 0 |
| Delta Borough            | 1.82%     | 1 |
| Dillsburg Borough        | 1.82%     | 1 |
| Dover Borough            | 1.82%     | 1 |
| Dover Township           | 1.82%     | 1 |
| East Hopewell Township   | 1.82%     | 1 |
| East Manchester Township | 1.82%     | 1 |
| East Prospect Borough    | 1.82%     | 1 |
| Fairview Township        | 3.64%     | 2 |
| Fawn Township            | 1.82%     | 1 |
| Fawn Grove Borough       | 0.00%     | 0 |
| Felton Borough           | 1.82%     | 1 |
| Franklin Township        | 0.00%     | 0 |
| Franklintown Borough     | 1.82%     | 1 |
| Glen Rock Borough        | 1.82%     | 1 |
| Goldsboro Borough        | 1.82%     | 1 |
| Hallam Borough           | 1.82%     | 1 |

## York County Hazard Mitigation Plan Capability Survey

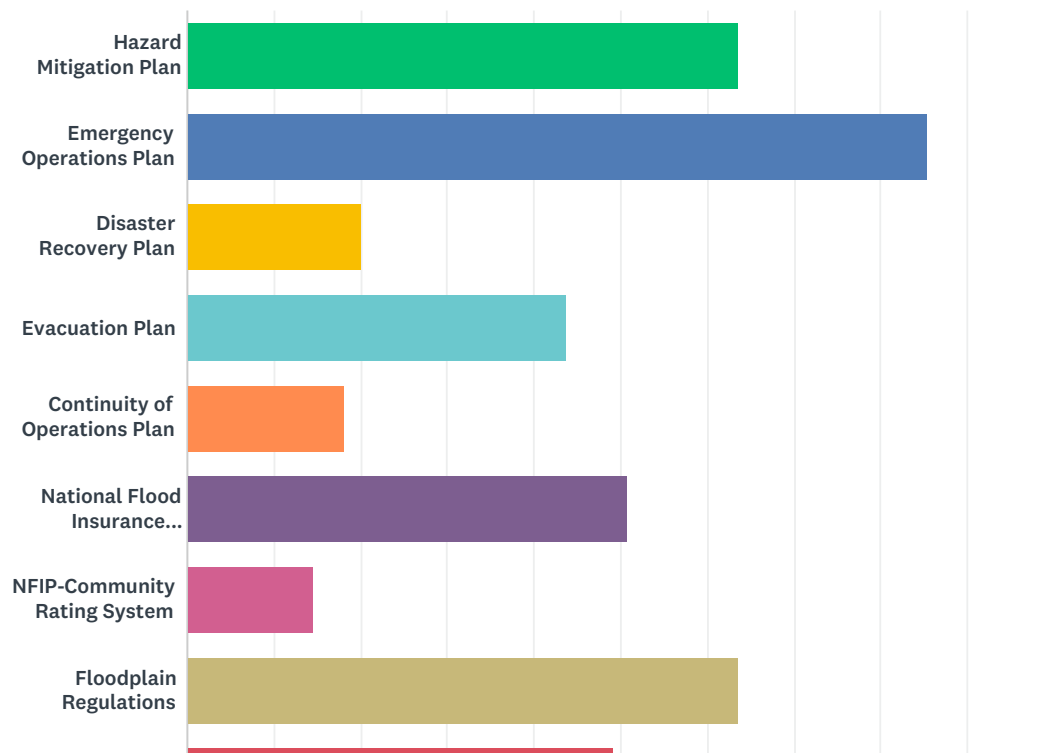
|                           |       |   |
|---------------------------|-------|---|
| Hanover Borough           | 1.82% | 1 |
| Heidelberg Township       | 1.82% | 1 |
| Hellam Township           | 1.82% | 1 |
| Hopewell Township         | 1.82% | 1 |
| Jackson Township          | 1.82% | 1 |
| Jacobus Borough           | 0.00% | 0 |
| Jefferson Borough         | 1.82% | 1 |
| Lewisberry Borough        | 1.82% | 1 |
| Loganville Borough        | 1.82% | 1 |
| Lower Chanceford Township | 0.00% | 0 |
| Lower Windsor Township    | 1.82% | 1 |
| Manchester Borough        | 0.00% | 0 |
| Manchester Township       | 1.82% | 1 |
| Manheim Township          | 1.82% | 1 |
| Monaghan Township         | 0.00% | 0 |
| Mount Wolf Borough        | 0.00% | 0 |
| New Freedom Borough       | 1.82% | 1 |
| New Salem Borough         | 0.00% | 0 |
| Newberry Township         | 1.82% | 1 |
| North Codorus Township    | 1.82% | 1 |
| North Hopewell Township   | 1.82% | 1 |
| North York Borough        | 1.82% | 1 |
| Paradise Township         | 1.82% | 1 |
| Peach Bottom Township     | 0.00% | 0 |
| Penn Township             | 3.64% | 2 |
| Railroad Borough          | 1.82% | 1 |
| Red Lion Borough          | 1.82% | 1 |
| Seven Valleys Borough     | 0.00% | 0 |
| Shrewsbury Borough        | 1.82% | 1 |
| Shrewsbury Township       | 3.64% | 2 |
| Spring Grove Borough      | 0.00% | 0 |
| Spring Garden Township    | 1.82% | 1 |
| Springettsbury Township   | 1.82% | 1 |
| Springfield Township      | 1.82% | 1 |
| Stewartstown Borough      | 0.00% | 0 |

## York County Hazard Mitigation Plan Capability Survey

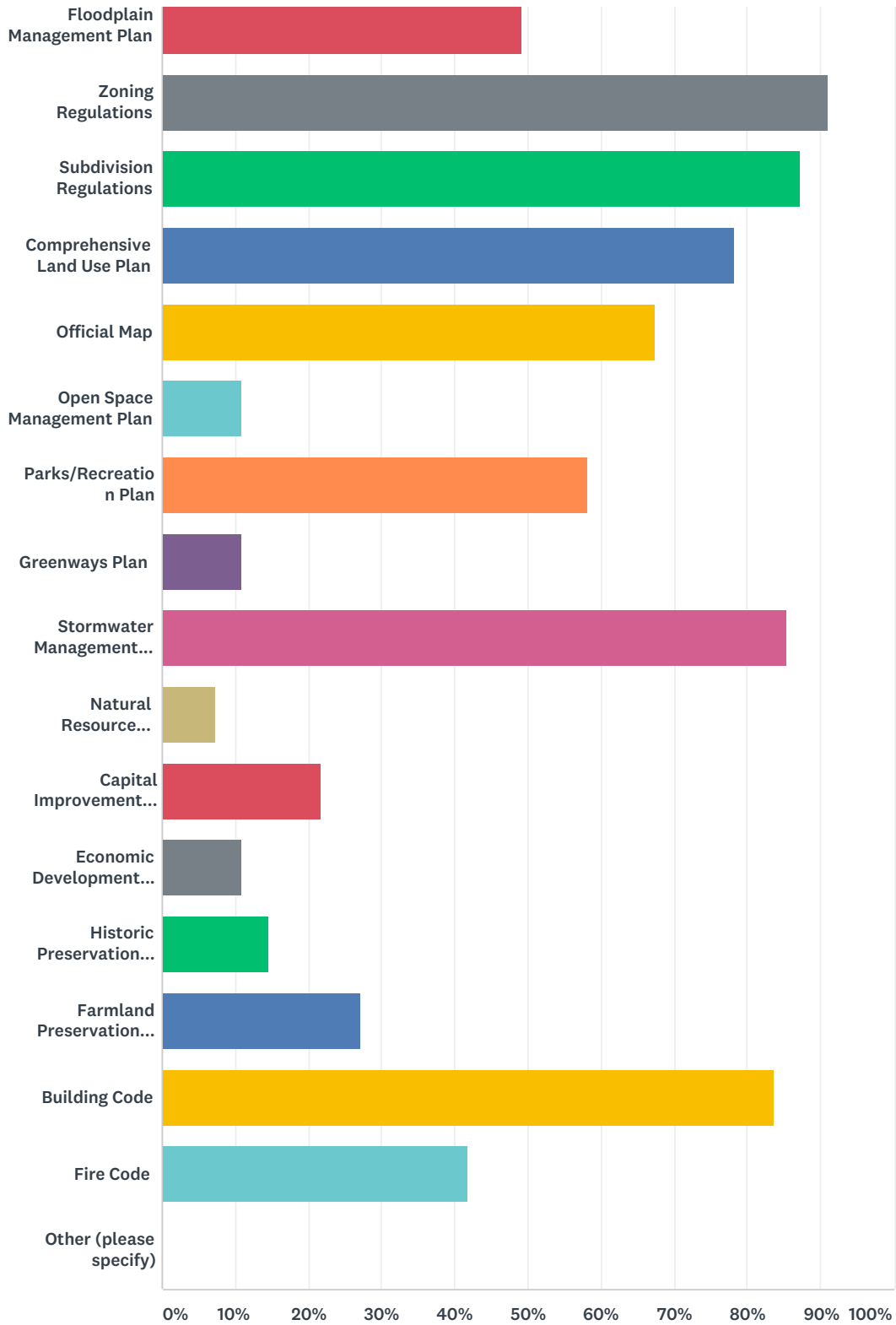
|                          |       |           |
|--------------------------|-------|-----------|
| Warrington Township      | 1.82% | 1         |
| Washington Township      | 1.82% | 1         |
| Wellsville Borough       | 1.82% | 1         |
| West Manchester Township | 0.00% | 0         |
| West Manheim Township    | 3.64% | 2         |
| West York Borough        | 0.00% | 0         |
| Windsor Borough          | 0.00% | 0         |
| Windsor Township         | 1.82% | 1         |
| Winterstown Borough      | 0.00% | 0         |
| Wrightsville Borough     | 1.82% | 1         |
| Yoe Borough              | 1.82% | 1         |
| York City                | 3.64% | 2         |
| York Township            | 1.82% | 1         |
| Yorkana Borough          | 0.00% | 0         |
| York Haven Borough       | 0.00% | 0         |
| <b>TOTAL</b>             |       | <b>55</b> |

**Q3 Planning and Regulatory Capability: Please indicate whether the following planning or regulatory tools and programs are currently in place or under development for your jurisdiction by marking all that apply.**

Answered: 55 Skipped: 0



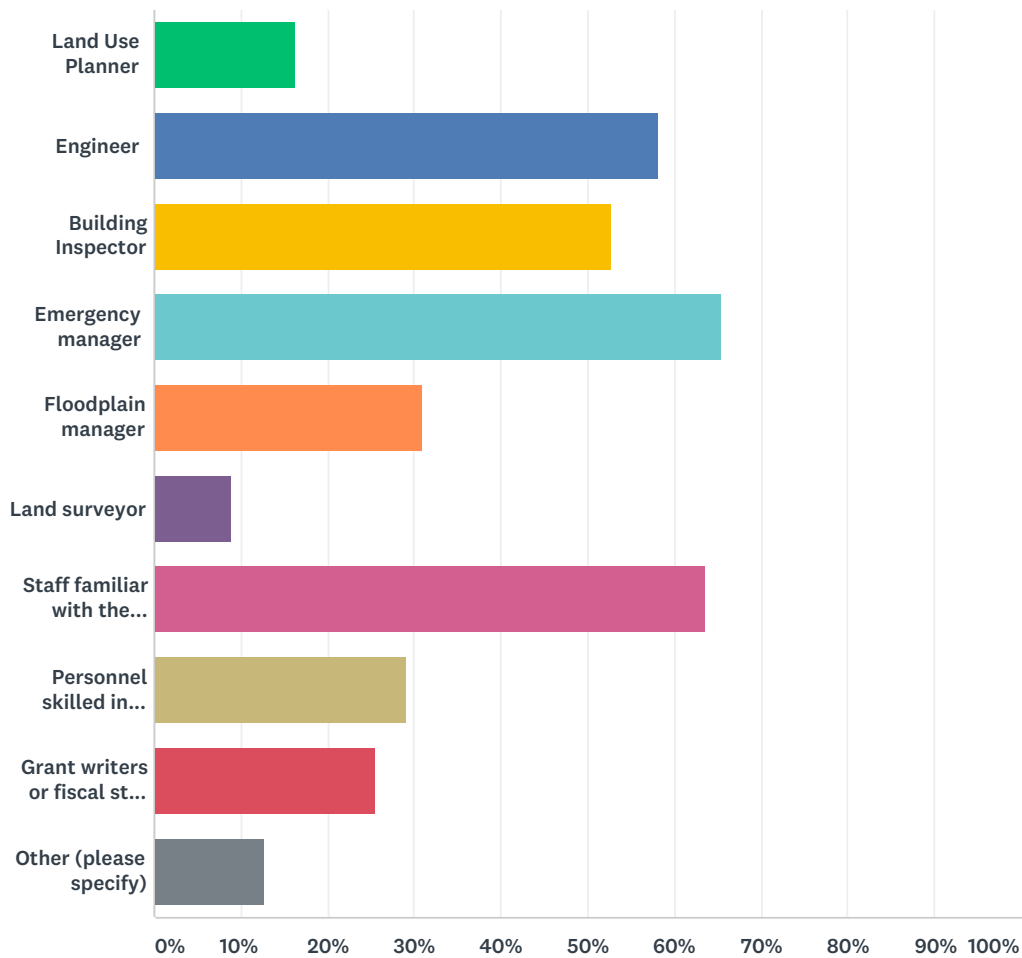
### York County Hazard Mitigation Plan Capability Survey



Q4 Administrative and Technical Capability: Please indicate whether your jurisdiction maintains the following staff members within its current personnel resources by marking all that apply.

Answered: 55 Skipped: 0

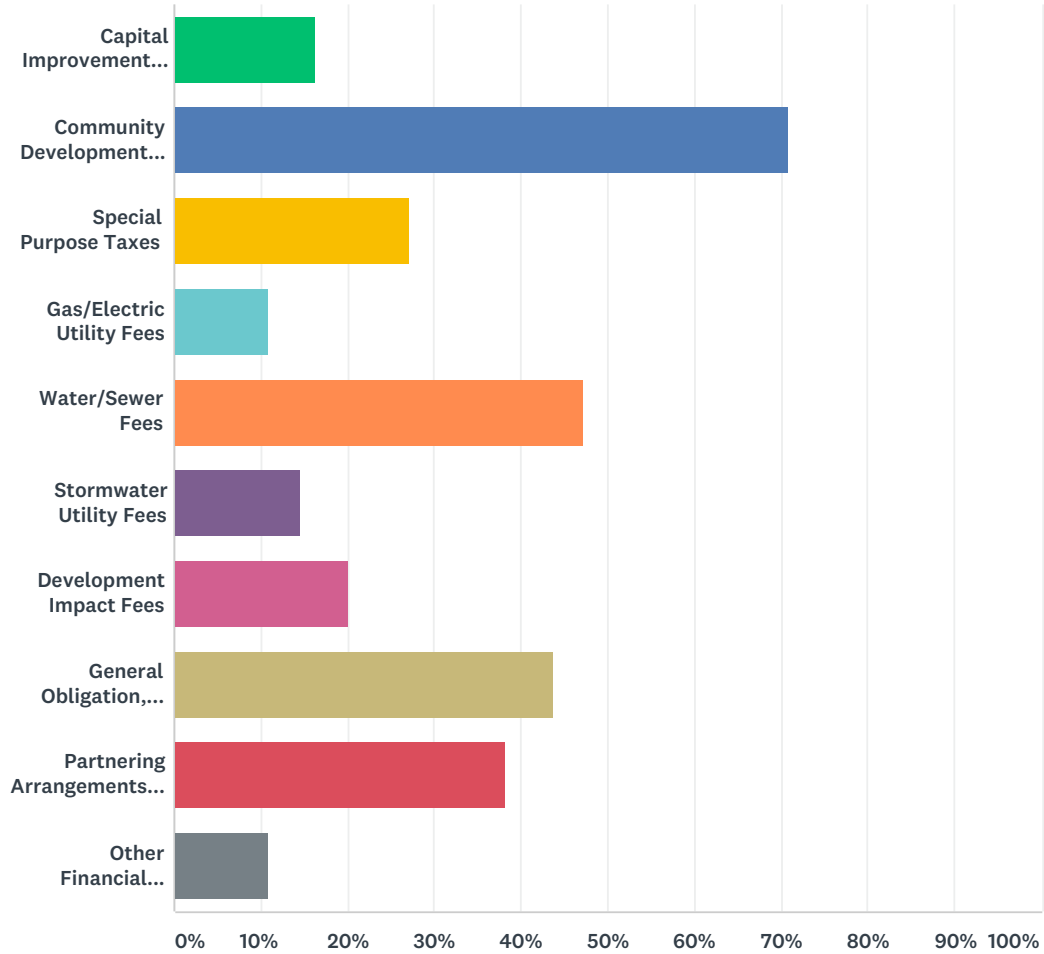
## York County Hazard Mitigation Plan Capability Survey



**Q5 Financial Capability: Please indicate whether your jurisdiction has access to or is eligible to use the following local financial resources for hazard mitigation purposes (including as match funds for State or Federal mitigation grant funds).**

Answered: 55 Skipped: 0

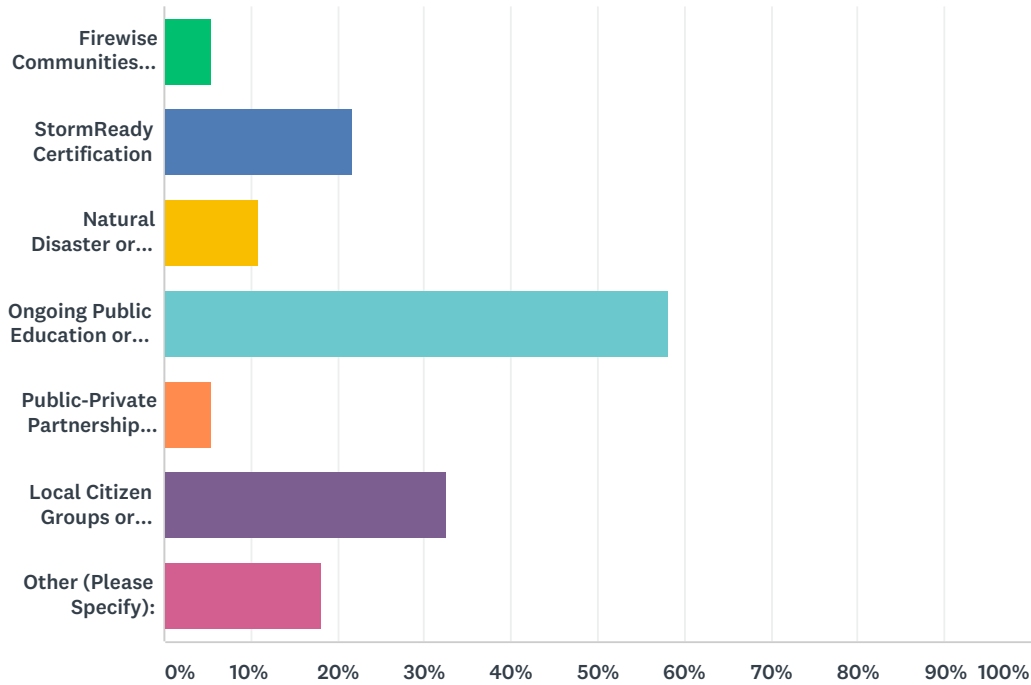
## York County Hazard Mitigation Plan Capability Survey



**Q6 Education and Outreach: Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.**

Answered: 55 Skipped: 0

## York County Hazard Mitigation Plan Capability Survey



**Q7 Self-Assessment of Capability:** Please provide an approximate measure of your jurisdiction's capability to effectively implement hazard mitigation strategies to reduce hazard vulnerabilities. Using the following table, please place an "X" in the box marking the most appropriate degree of capability (Limited, Moderate or High) based upon best available information and the responses provided in questions 3-6 of this survey.

Answered: 55    Skipped: 0

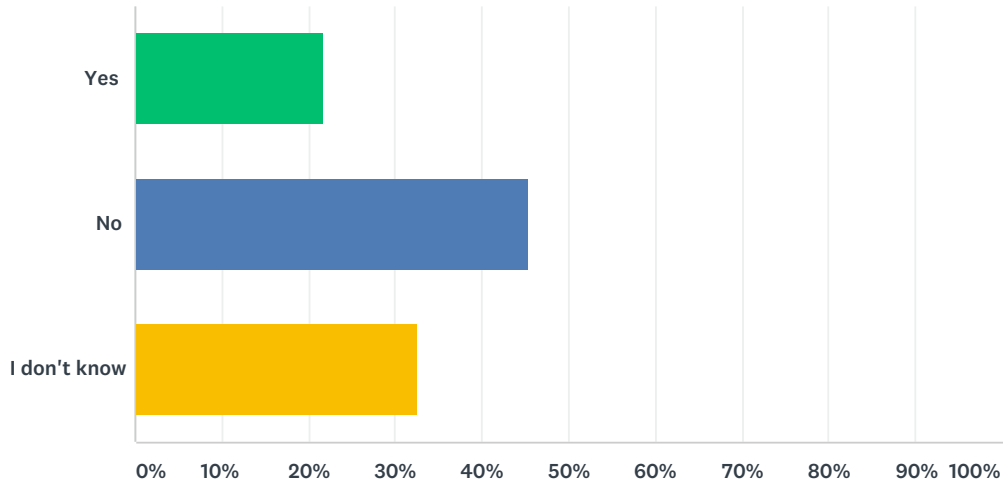
|                              | LIMITED      | MODERATE     | HIGH        | TOTAL |
|------------------------------|--------------|--------------|-------------|-------|
| Planning and Regulatory      | 52.73%<br>29 | 36.36%<br>20 | 10.91%<br>6 | 55    |
| Administrative and Technical | 61.82%<br>34 | 27.27%<br>15 | 10.91%<br>6 | 55    |
| Financial                    | 72.73%<br>40 | 25.45%<br>14 | 1.82%<br>1  | 55    |
| Education and Outreach       | 63.64%<br>35 | 34.55%<br>19 | 1.82%<br>1  | 55    |

**Q8 In the past 10 years has your municipality undertaken any hazard mitigation projects?**

Answered: 55    Skipped: 0

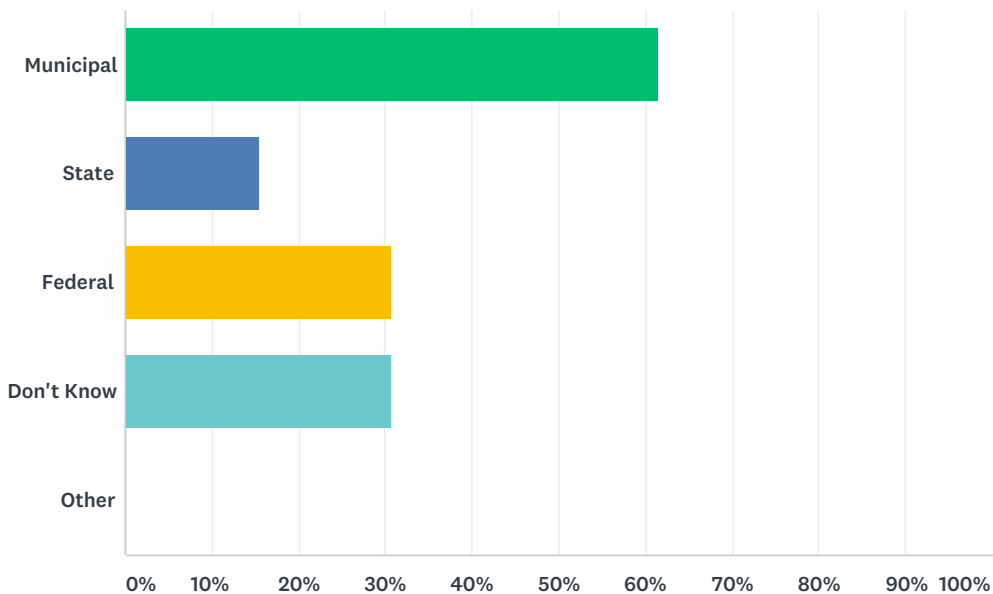


### York County Hazard Mitigation Plan Capability Survey



**Q9 If you answered yes to question 8, what was the funding sources for those projects?**

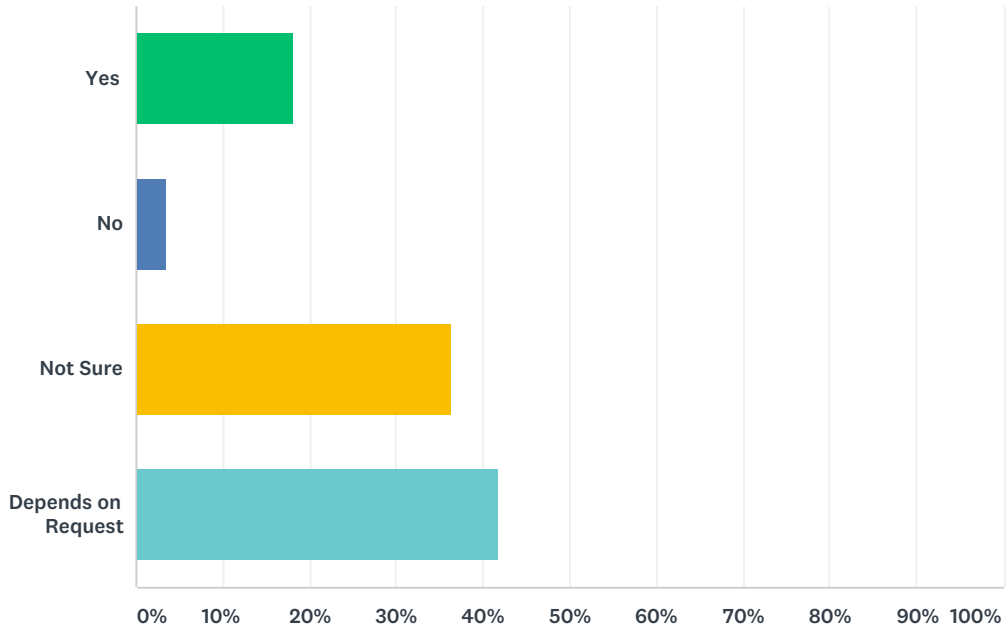
Answered: 13 Skipped: 42



**Q10 Federal Hazard Mitigation Assistance Programs require residents and business owners interested in applying for mitigation assistance to do so through their local government. Is your municipality willing to assist residents and businesses with grant applications by applying on their behalf?**

Answered: 55 Skipped: 0

# York County Hazard Mitigation Plan Capability Survey





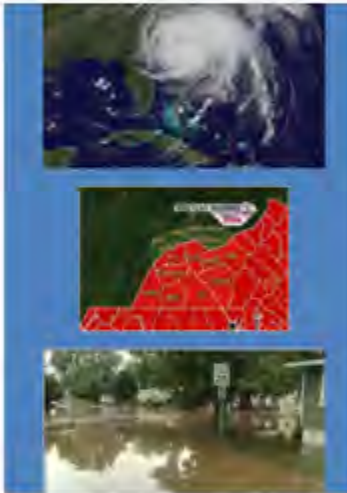
**York County Planning Commission**

May 17, 2017 at 8:30am · 🌐

We are currently in the process of updating our Hazard Mitigation Plan and need your help to identify and prioritize hazards in the County. Please take our survey at the link below.

The survey is available through May 31st. Thank you for your help!

# 2013 Hazard Mitigation Plan



## Hazard Identification and Prioritization Survey

This survey helps identify and prioritize natural and human-made hazards and their risks, so that we can choose the most effective ways to mitigate losses.

[SURVEYMONKEY.COM](http://SURVEYMONKEY.COM)



Like



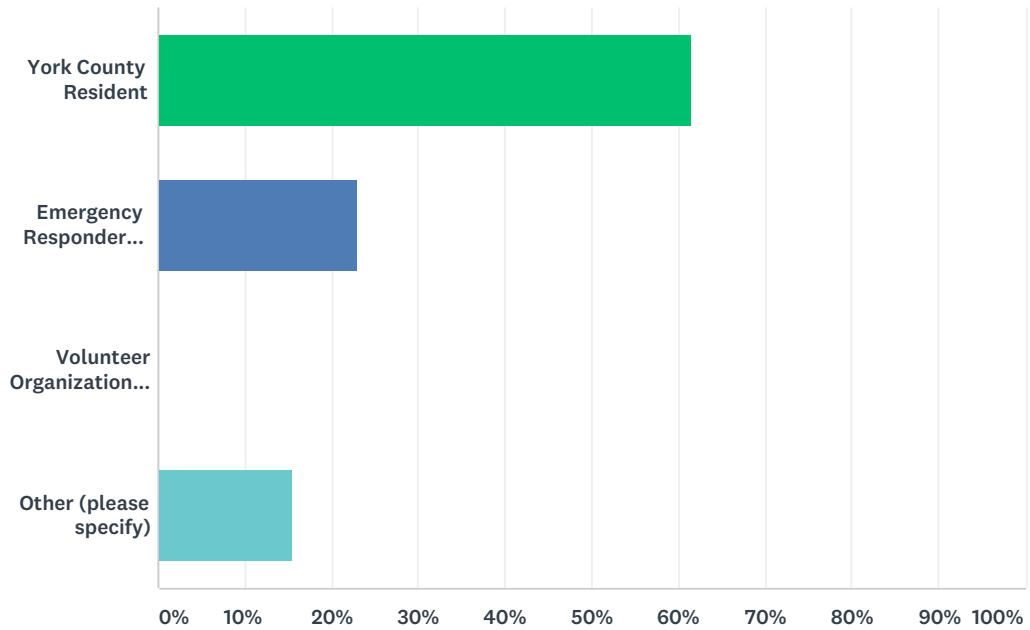
Comment



Share

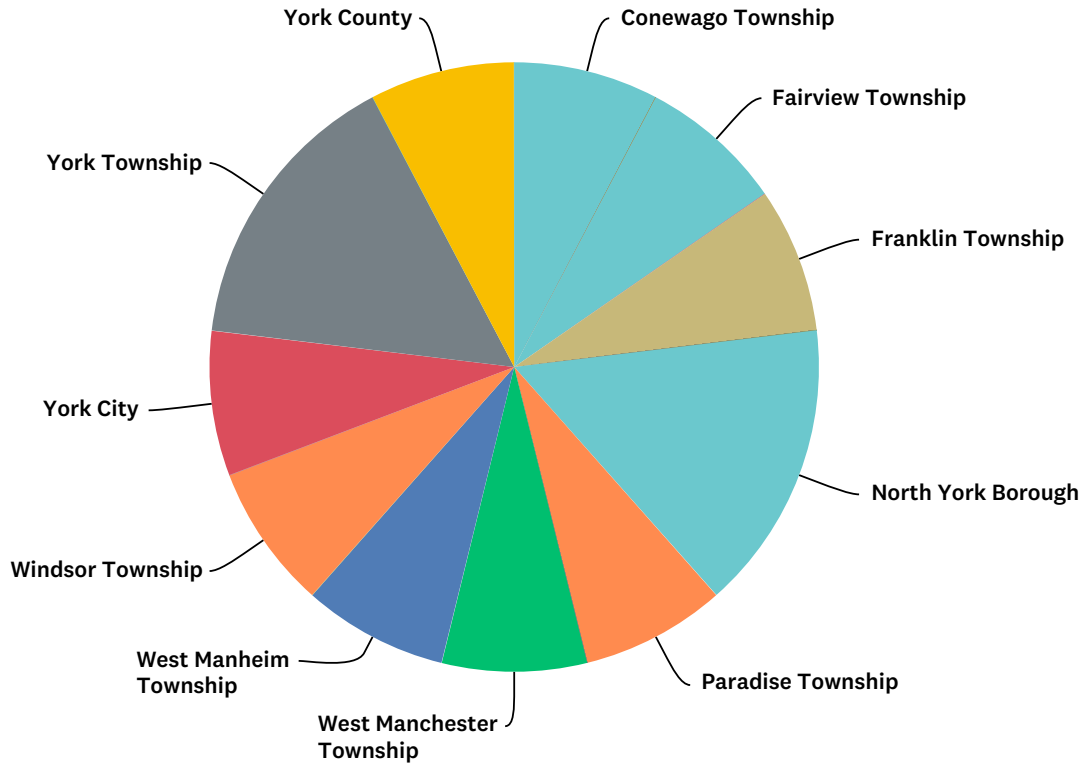
### Q1 Please select the one that best describes your role

Answered: 13 Skipped: 0



### Q2 Please select which municipality you represent

Answered: 13 Skipped: 0



Q3 Please indicate your assessment of each hazard based on frequency.  
 Use the following table to determine your answer: Low - One (1) or no event every ten (10) or more years  
 Moderate - Multiple events within ten (10) years  
 High - One (1) or more events per year

# York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey- Public

Answered: 13    Skipped: 0

|   | LOW           | MODERATE     | HIGH        | TOTAL |
|---|---------------|--------------|-------------|-------|
| Civil Disturbance   | 69.23%<br>9   | 30.77%<br>4  | 0.00%<br>0  | 13    |
| Dam Failure   | 100.00%<br>13 | 0.00%<br>0   | 0.00%<br>0  | 13    |
| Drought   | 46.15%<br>6   | 53.85%<br>7  | 0.00%<br>0  | 13    |
| Earthquake  | 92.31%<br>12  | 7.69%<br>1   | 0.00%<br>0  | 13    |
| Environmental Hazards(hazardous material releases)                            | 41.67%<br>5   | 41.67%<br>5  | 16.67%<br>2 | 12    |
| Extreme Temperature   | 7.69%<br>1    | 38.46%<br>5  | 53.85%<br>7 | 13    |
| Flood, Flash Flood, Ice Jam   | 15.38%<br>2   | 46.15%<br>6  | 38.46%<br>5 | 13    |
| Hailstorm   | 15.38%<br>2   | 84.62%<br>11 | 0.00%<br>0  | 13    |
| Hurricane, Tropical Storm, Nor'easter   | 7.69%<br>1    | 69.23%<br>9  | 23.08%<br>3 | 13    |
| Invasive Species  | 53.85%<br>7   | 23.08%<br>3  | 23.08%<br>3 | 13    |
| Landslide   | 100.00%<br>13 | 0.00%<br>0   | 0.00%<br>0  | 13    |
| Land Subsidence, Sinkholes  | 53.85%<br>7   | 46.15%<br>6  | 0.00%<br>0  | 13    |
| Levee Failure   | 100.00%<br>13 | 0.00%<br>0   | 0.00%<br>0  | 13    |
| Lightning Strike  | 38.46%<br>5   | 30.77%<br>4  | 30.77%<br>4 | 13    |
| Mass Food and Animal Feed Contamination(bacteria, viruses, parasites, toxins) | 66.67%<br>8   | 33.33%<br>4  | 0.00%<br>0  | 12    |
| Nuclear Incident  | 100.00%<br>13 | 0.00%<br>0   | 0.00%<br>0  | 13    |
| Pandemic and Infectious Diseases  | 41.67%<br>5   | 58.33%<br>7  | 0.00%<br>0  | 12    |
| Radon Exposure  | 53.85%<br>7   | 23.08%<br>3  | 23.08%<br>3 | 13    |
| Terrorism   | 100.00%<br>12 | 0.00%<br>0   | 0.00%<br>0  | 12    |
| Tornado, Windstorm  | 15.38%<br>2   | 69.23%<br>9  | 15.38%<br>2 | 13    |
| Urban Fire and Explosion  | 38.46%<br>5   | 38.46%<br>5  | 23.08%<br>3 | 13    |
| Wildfire  | 58.33%<br>7   | 41.67%<br>5  | 0.00%<br>0  | 12    |
| Winter Storm  | 0.00%<br>0    | 30.77%<br>4  | 69.23%<br>9 | 13    |

**Q4 Please indicate your assessment of each hazard based on severity. Please use the following table to determine your answers. Low - Mitigation and contingency planning is advisory in nature. Examples of losses can include one or several of the following: treatable first aid injuries, complete shutdown of facilities and critical services for one week or less and/or less than 10% of property in affected area(s) is severely damaged. Moderate - Mitigation and contingency planning requires prompt action. Examples of losses can include one or several of the following: severe injury/illness, complete shutdown of facilities and critical services for > 14 days, and/or more that 25% of property in affected area(s) is severely damaged. High - High risk condition with highest priority for mitigation and contingency planning. Examples of losses can include one or several of the following: fatalities, complete shutdown of facilities and critical services for > 30 days, and/or more than 50% of property in affected area(s) is severely damaged.**

Answered: 13 Skipped: 0

|  | LOW         | MODERATE    | HIGH        | TOTAL |
|--|-------------|-------------|-------------|-------|
| Civil Disturbance                                  | 46.15%<br>6 | 53.85%<br>7 | 0.00%<br>0  | 13    |
| Dam Failure  | 66.67%<br>8 | 25.00%<br>3 | 8.33%<br>1  | 12    |
| Drought  | 41.67%<br>5 | 50.00%<br>6 | 8.33%<br>1  | 12    |
| Earthquake   | 50.00%<br>6 | 50.00%<br>6 | 0.00%<br>0  | 12    |
| Environmental Hazards(hazardous material releases) | 50.00%<br>6 | 25.00%<br>3 | 25.00%<br>3 | 12    |
| Extreme Temperature                                | 50.00%<br>6 | 33.33%<br>4 | 16.67%<br>2 | 12    |
| Flood, Flash Flood, Ice Jam                        | 33.33%<br>4 | 33.33%<br>4 | 33.33%<br>4 | 12    |
| Hailstorm  | 75.00%<br>9 | 25.00%<br>3 | 0.00%<br>0  | 12    |
| Hurricane, Tropical Storm, Nor'easter              | 16.67%<br>2 | 58.33%<br>7 | 25.00%<br>3 | 12    |
| Invasive Species                                   | 75.00%<br>9 | 25.00%<br>3 | 0.00%<br>0  | 12    |
| Landslide  | 75.00%<br>9 | 25.00%<br>3 | 0.00%<br>0  | 12    |
| Land Subsidence, Sinkholes                         | 58.33%<br>7 | 41.67%<br>5 | 0.00%<br>0  | 12    |
| Levee Failure                                      | 75.00%<br>9 | 25.00%<br>3 | 0.00%<br>0  | 12    |

York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey- Public

|   |             |             |             |    |
|---|-------------|-------------|-------------|----|
| Lightning Strike  | 81.82%<br>9 | 18.18%<br>2 | 0.00%<br>0  | 11 |
| Mass Food and Animal Feed Contamination(bacteria, viruses, parasites, toxins) | 41.67%<br>5 | 33.33%<br>4 | 25.00%<br>3 | 12 |
| Nuclear Incident  | 50.00%<br>6 | 16.67%<br>2 | 33.33%<br>4 | 12 |
| Pandemic and Infectious Diseases  | 25.00%<br>3 | 50.00%<br>6 | 25.00%<br>3 | 12 |
| Radon Exposure  | 75.00%<br>9 | 16.67%<br>2 | 8.33%<br>1  | 12 |
| Terrorism   | 41.67%<br>5 | 41.67%<br>5 | 16.67%<br>2 | 12 |
| Tornado, Windstorm  | 33.33%<br>4 | 50.00%<br>6 | 16.67%<br>2 | 12 |
| Urban Fire and Explosion  | 36.36%<br>4 | 54.55%<br>6 | 9.09%<br>1  | 11 |
| Wildfire  | 50.00%<br>6 | 41.67%<br>5 | 8.33%<br>1  | 12 |
| Winter Storm  | 25.00%<br>3 | 50.00%<br>6 | 25.00%<br>3 | 12 |

**Q5 How has the frequency of occurrence, magnitude of impact, and/or geographic extent of the hazards identified below changed in your municipality?**

Answered: 13 Skipped: 0

|  | NO CHANGE     | INCREASED   | DECREASED  | TOTAL |
|--|---------------|-------------|------------|-------|
| Civil Disturbance                                  | 84.62%<br>11  | 15.38%<br>2 | 0.00%<br>0 | 13    |
| Dam Failure  | 84.62%<br>11  | 15.38%<br>2 | 0.00%<br>0 | 13    |
| Drought  | 61.54%<br>8   | 38.46%<br>5 | 0.00%<br>0 | 13    |
| Earthquake   | 100.00%<br>13 | 0.00%<br>0  | 0.00%<br>0 | 13    |
| Environmental Hazards(hazardous material releases) | 69.23%<br>9   | 30.77%<br>4 | 0.00%<br>0 | 13    |
| Extreme Temperature                                | 38.46%<br>5   | 61.54%<br>8 | 0.00%<br>0 | 13    |
| Flood, Flash Flood, Ice Jam                        | 61.54%<br>8   | 38.46%<br>5 | 0.00%<br>0 | 13    |
| Hailstorm  | 92.31%<br>12  | 7.69%<br>1  | 0.00%<br>0 | 13    |
| Hurricane, Tropical Storm, Nor'easter              | 46.15%<br>6   | 53.85%<br>7 | 0.00%<br>0 | 13    |
| Invasive Species                                   | 76.92%<br>10  | 15.38%<br>2 | 7.69%<br>1 | 13    |



York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey- Public

|   |              |             |            |    |
|---|--------------|-------------|------------|----|
| Landslide   | 92.31%<br>12 | 0.00%<br>0  | 7.69%<br>1 | 13 |
| Land Subsidence, Sinkholes  | 92.31%<br>12 | 0.00%<br>0  | 7.69%<br>1 | 13 |
| Levee Failure   | 92.31%<br>12 | 0.00%<br>0  | 7.69%<br>1 | 13 |
| Lightning Strike  | 84.62%<br>11 | 15.38%<br>2 | 0.00%<br>0 | 13 |
| Mass Food and Animal Feed Contamination(bacteria, viruses, parasites, toxins) | 84.62%<br>11 | 7.69%<br>1  | 7.69%<br>1 | 13 |
| Nuclear Incident  | 92.31%<br>12 | 0.00%<br>0  | 7.69%<br>1 | 13 |
| Pandemic and Infectious Diseases  | 66.67%<br>8  | 33.33%<br>4 | 0.00%<br>0 | 12 |
| Radon Exposure  | 76.92%<br>10 | 15.38%<br>2 | 7.69%<br>1 | 13 |
| Terrorism   | 76.92%<br>10 | 15.38%<br>2 | 7.69%<br>1 | 13 |
| Tornado, Windstorm  | 69.23%<br>9  | 30.77%<br>4 | 0.00%<br>0 | 13 |
| Urban Fire and Explosion  | 92.31%<br>12 | 7.69%<br>1  | 0.00%<br>0 | 13 |
| Wildfire  | 76.92%<br>10 | 15.38%<br>2 | 7.69%<br>1 | 13 |
| Winter Storm  | 38.46%<br>5  | 53.85%<br>7 | 7.69%<br>1 | 13 |

**Q6 Based on the existence of a levee to protect York City and surrounding municipalities and the potential for Mass Food and Animal Feed Contamination in areas of York County, the Local Planning Team is proposing to add levee failure and Mass Food and Animal Feed Contamination to the list of hazards profiled by the York County Hazard Mitigation Plan. Do you agree or disagree with the addition of these hazards?**

Answered: 13 Skipped: 0

|  | AGREE        | DISAGREE   | TOTAL |
|--|--------------|------------|-------|
| Levee Failure  | 92.31%<br>12 | 7.69%<br>1 | 13    |
| Mass Food or Animal Feed Contamination(bacteria, viruses, parasites, toxins) | 91.67%<br>11 | 8.33%<br>1 | 12    |

**Q7 Based on the lack of past occurrences, disaster declaration, identification in the State or other County Plan, and/or being covered under one or more of the other hazards, the following hazards are not**

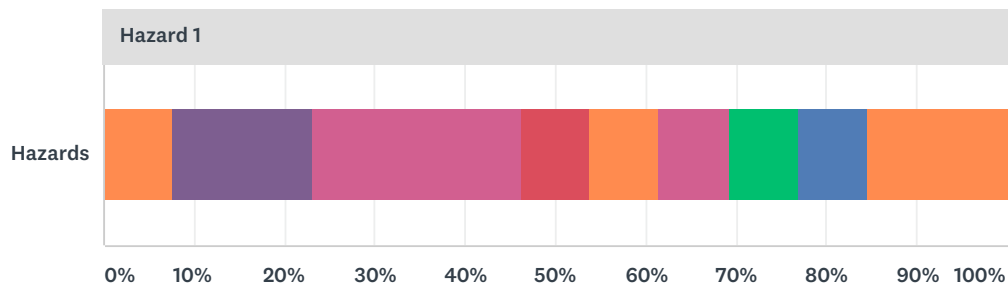
proposed to be profiled in the York County Hazard Mitigation Plan. Do you agree or disagree with their exclusion from the Plan for the reasons listed.

Answered: 13 Skipped: 0

|   | AGREE- DO NOT INCLUDE IN PLAN | DISAGREE- SHOULD BE INCLUDED IN PLAN | TOTAL |
|---|-------------------------------|--------------------------------------|-------|
| Expansive Soils(Expansion/Contraction of Clay Soils) (No problem known)                                     | 84.62%<br>11                  | 15.38%<br>2                          | 13    |
| Disorientation(Lost people) (Limited impact)  | 76.92%<br>10                  | 23.08%<br>3                          | 13    |
| Drowning (Limited impact)   | 84.62%<br>11                  | 15.38%<br>2                          | 13    |
| Transportation Accidents(Result of identified hazards or results in environmental hazard) (Already covered) | 58.33%<br>7                   | 41.67%<br>5                          | 12    |
| Utility Interruption(Result of identified hazards) (Already covered)  | 58.33%<br>7                   | 41.67%<br>5                          | 12    |
| War and Criminal Violence (War beyond scope of County/municipality, covered somewhat under terrorism)       | 76.92%<br>10                  | 23.08%<br>3                          | 13    |

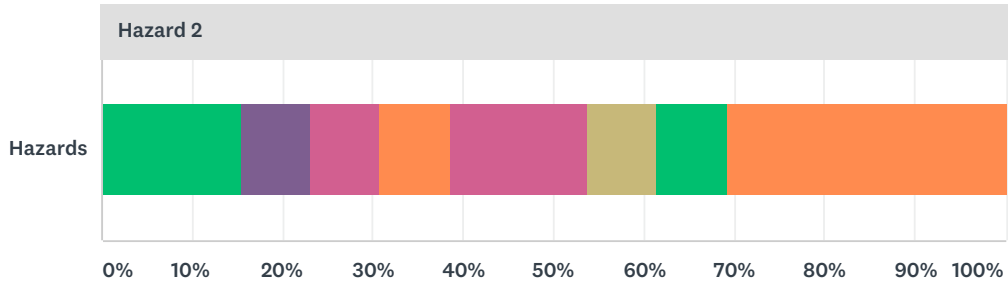
Q8 From your perspective, what are the top three (3) hazards in York County, Pennsylvania?

Answered: 13 Skipped: 0

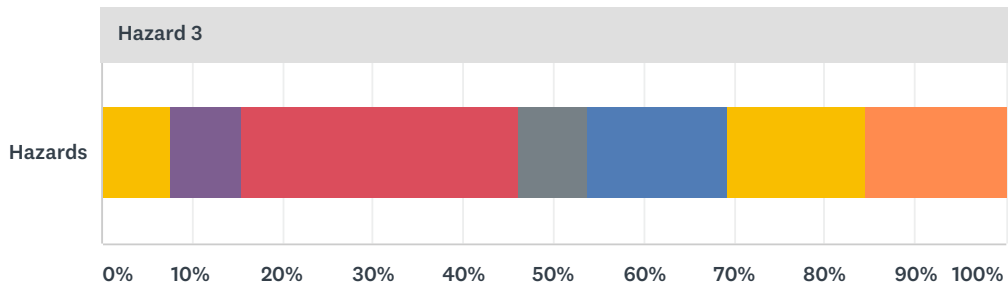


- Civil Disturbance
- Dam Failure
- Drought
- Earthquake
- Environmental Hazards
- Extreme Temperature
- Flood, Flash Flood, Ice Jam
- Hailstorm
- Hurricane, Tropical Storm, Nor'easter
- Invasive Species
- Landslide
- Land Subsidence, Sinkholes
- Levee Failure
- Lightning Strike
- Mass Food and Animal Contamination
- Nuclear Incident
- Pandemic and Infectious Diseases
- Radon Exposure
- Terrorism
- Tornado, Windstorm
- Transportation Accident
- Ubran Fire and Explosion
- Utility Interruption
- Wildfire
- Winter Storm

York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey- Public



- Civil Disturbance
- Environmental Hazards
- Flood, Flash Flood, Ice Jam
- Hurricane, Tropical Storm, Nor'easter
- Land Subsidence, Sinkholes
- Mass Food and Animal Contamination
- Pandemic and Infectious Diseases
- Tornado, Windstorm
- Utility Interruption
- Dam Failure
- Extreme Temperature
- Hailstorm
- Invasive Species
- Levee Failure
- Nuclear Incident
- Radon Exposure
- Terrorism
- Urban Fire and Explosion
- Wildfire
- Winter Storm
- Earthquake
- Landslide
- Lightning Strike



- Civil Disturbance
- Environmental Hazards
- Flood, Flash Flood, Ice Jam
- Hurricane, Tropical Storm, Nor'easter
- Land Subsidence, Sinkholes
- Mass Food and Animal Contamination
- Pandemic and Infectious Diseases
- Tornado, Windstorm
- Utility Interruption
- Dam Failure
- Extreme Temperature
- Hailstorm
- Invasive Species
- Levee Failure
- Nuclear Incident
- Radon Exposure
- Terrorism
- Urban Fire and Explosion
- Wildfire
- Winter Storm
- Earthquake
- Landslide
- Lightning Strike

Q9 I am familiar with the York County 2013 Hazard Mitigation Plan.

Answered: 13 Skipped: 0

| ANSWER CHOICES     | RESPONSES |   |
|--------------------|-----------|---|
| 5 (Strongly Agree) | 15.38%    | 2 |
| 4 (Agree)          | 30.77%    | 4 |
| 3 (No Opinion)     | 7.69%     | 1 |

|                       |        |           |
|-----------------------|--------|-----------|
| 2 (Disagree)          | 15.38% | 2         |
| 1 (Strongly Disagree) | 30.77% | 4         |
| <b>TOTAL</b>          |        | <b>13</b> |

**Q10 The greatest strength of the York County 2013 Hazard Mitigation Plan is:**

Answered: 3 Skipped: 10

**Q11 The York County 2013 Hazard Mitigation Plan does not adequately address the following:**

Answered: 3 Skipped: 10

**Q12 Issues to consider in the update to the York County Hazard Mitigation Plan include the following:**

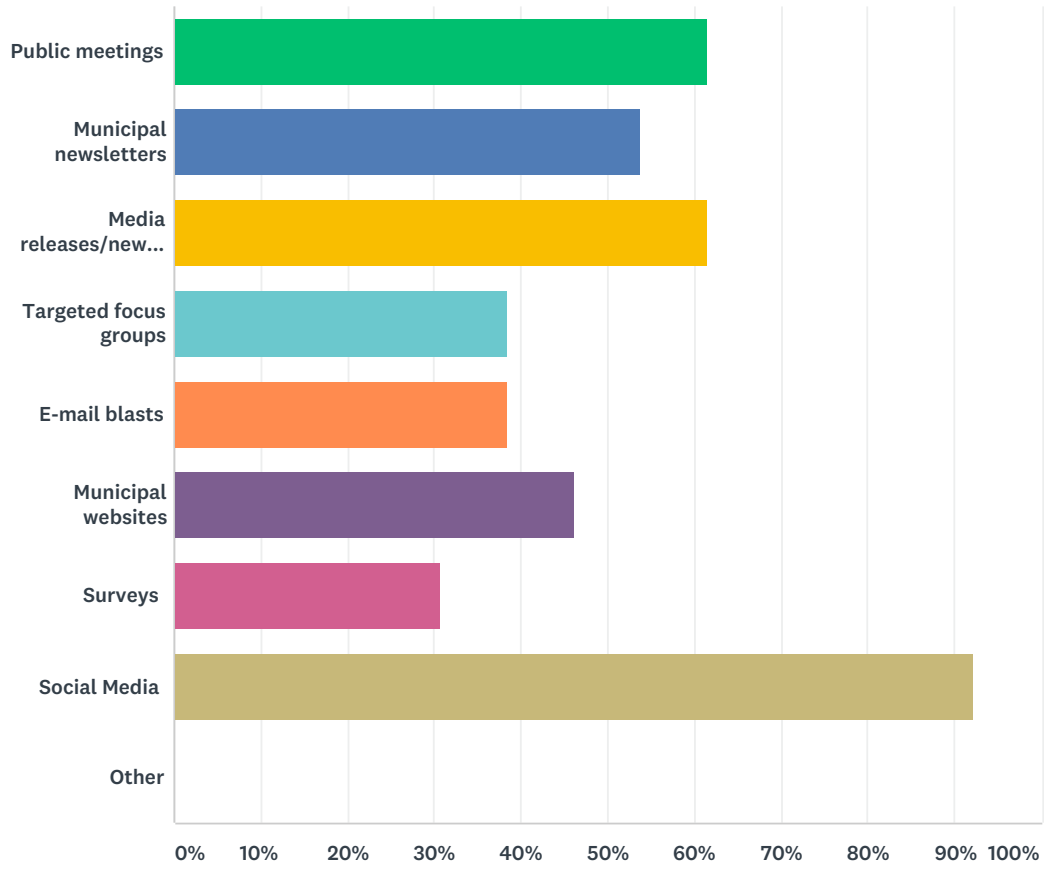
Answered: 13 Skipped: 0

| <b>ANSWER CHOICES</b>        | <b>RESPONSES</b> |    |
|------------------------------|------------------|----|
| Aging Population             | 69.23%           | 9  |
| Climate Change               | 38.46%           | 5  |
| Historic Resources           | 30.77%           | 4  |
| Infrastructure               | 84.62%           | 11 |
| Other (please specify)       | 0.00%            | 0  |
| <b>Total Respondents: 13</b> |                  |    |

**Q13 Public involvement is key in the development of a hazard mitigation plan. Indicate the most effective ways to involve the public (mark as many as apply).**

Answered: 13 Skipped: 0

# York County Hazard Mitigation Plan Update Hazard Identification and Prioritization Survey- Public



## Q10 The greatest strength of the York County 2013 Hazard Mitigation Plan is:

Answered: 3 Skipped: 10

| # | RESPONSES  | DATE              |
|---|--|-------------------|
| 1 | N/A  | 5/18/2017 4:33 PM |
| 2 | Winter Storm and Utility interruption mitigation strategies.                         | 5/17/2017 6:46 PM |
| 3 | Consolidates hazard information so that I may customize to my specific municipality. | 5/17/2017 3:27 PM |

## Q11 The York County 2013 Hazard Mitigation Plan does not adequately address the following:

Answered: 3 Skipped: 10

| # | RESPONSES  | DATE              |
|---|--|-------------------|
| 1 | N/A  | 5/18/2017 4:33 PM |
| 2 | Mass food and animal contamination. The agriculture industry is highly vulnerable to biological and chemical attacks.  | 5/17/2017 6:46 PM |
| 3 | - Invasive Species: I added locally; Coyotes, Feral Cats and Dogs and European Starlings - There was no were else to comment on Question 7: I believe that Transportation incidents should be included in the new plan as incidents may develop into other areas besides identified or environmental hazards - Likewise Utility Interruption should be included as it could be a result of grid failure or EMP. Those eventualities are not addressed. Need I remind you we are in the "What If" business. | 5/17/2017 3:27 PM |

## Krystal Hilt

---

**From:** Anne Walko  
**Sent:** Friday, March 16, 2018 8:56 AM  
**To:** 'conniestokes@aol.com'  
**Subject:** Information from Dallastown Borough needed to update the York County Hazard Mitigation Plan  
**Attachments:** Mitigation Actions by County and by Municipality - Dallastown Boro.xlsx; Appendix 19 to municipalities.pdf

**Importance:** High

Good morning!

As you may be aware, the York County Planning Commission is about the work of updating the York County 2013 Hazard Mitigation Plan. The Plan's purpose is to identify natural and human-made hazards that could impact lives and property in York County and to identify policies, actions, and tools to mitigate the impacts of those hazards. As we develop the Capability Assessment and Mitigation Strategy portions of the Hazard Mitigation planning process, your input is needed!

Two attachments are provided for your review and reply. The first attachment is fillable PDF form which collects information pertaining to local compliance with the National Flood Insurance Program (NFIP). There are 8 questions related to staff resources and compliance history. Simply fill it out using Adobe Acrobat Reader and then use the "Submit by Email" button to return the completed form. It will take just minutes. The information provided is necessary to our hazard mitigation planning efforts.

The other attachment is related to Mitigation Actions. It is an Excel spreadsheet with two worksheets: Municipality-specific actions and actions for York County/all 72 municipalities. Please review both worksheets. Provide and changes or corrections, along with any suggestions you have for additional project(s) in your municipality. Mitigation project ideas can be found on FEMA's website at <https://www.fema.gov/media-library/assets/documents/30627>.

Please share this email and attachments with all applicable municipal staff and elected/appointed officials, including your Emergency Management Coordinator, Municipal Engineer, and Planning Commission Board. This participation and input is critical to us as we develop the mitigation strategy for York County. **If you could kindly reply by April 2, 2018, it is appreciated.**

Please contact Roy Livergood ([rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)) or Anne Walko ([awalko@ycpc.org](mailto:awalko@ycpc.org)) with any questions.

Best regards,

*Anne M. Walko*  
*Senior Planner*





| Dallastown Borough  |  |   |                               |                           |                 |   |                                   |                         |
|---|--|---|-------------------------------|---------------------------|-----------------|---|-----------------------------------|-------------------------|
| <i>Dallastown Borough did not submit any individual projects for the York County 2013 All Hazard Mitigation Plan.</i> |  |   |                               |                           |                 |   |                                   |                         |
| Mitigation Action #   | Municipality   | Mitigation Action                               | Mitigation Technique Category | Hazard Addressed          | Estimated cost  | Potential Funding Sources                   | Lead Agency                       | Implementation Schedule |
| 102   | Dallastown Borough, East Manchester Township, Hanover Borough, Heidelberg Township, Hellam Township, Jackson Township, Jefferson Borough, Manchester Township, Manheim Township, New Salem Borough, North Codorus Township, North York Borough, Paradise Township, Penn Township, Red Lion Borough, Spring Garden Township, Spring Grove Borough, Springettsbury Township, West Manchester Township, West Manheim Township, West York Borough, York Township | Codorus Creek NPS Watershed Implementation Plan | Stream Channel Design         | Flood/flash flood/ice jam | \$12,281,166.00 | Growing Greener, EPA Section 319 NPS Grants | York County Conservation District | 2007-2025               |

## Appendix 19: Checklist to Identify Local Compliance with the National Flood Insurance Program (NFIP)

|              |  |
|--------------|--|
| Municipality |  |
| Date         |  |

*Participation in the NFIP is based on a voluntary agreement between a community and FEMA. Compliance with the NFIP, however, extends beyond mere participation in the program. The three basic components of the NFIP include floodplain identification and mapping risk, responsible floodplain management, and flood insurance. The requirements of the program are listed below. Please state whether your jurisdiction takes the following actions.*

| 1. Staff Resources   |   |
|--|---|
| Is your Community FPA or NFIP Coordinator certified?                             | Yes      No   |
| Is the floodplain management an auxiliary function?                              | Yes      No   |
| Provide an explanation of NFIP administration (check all that apply).            | Not applicable<br>Permit review<br>GIS<br>Education and outreach<br>Inspections<br>Engineering capabilities<br>Other (please specify) |
| What are the barriers to running an effective NFIP program in the community?     |   |
| 2. Compliance History  |   |
| Is your Community in good standing with the NFIP?                                | Yes      No   |
| Are there any outstanding compliance issues?                                     | Yes      No   |
| Has there been a Community Action Contact (CAC) or Community Action Visit (CAV)? | Yes      No<br>If yes, when?  |
| Is a CAC or CAV needed?  | Yes      No   |

Thank you for providing information to update the York County Hazard Mitigation Plan. Your cooperation is appreciated.

**Municipal Staff Resources and  
National Flood Insurance (NFIP)  
Compliance Survey Summary**

|  | Carroll Township | Chanceford Township | Codorus Township | Conewago Township        | Cross Roads Borough | Dallastown Borough | Delta Borough              | Dillsburg Borough | Dover Borough | Dover Township | East Hopewell Township | East Manchester Township | East Prospect Borough | Fairview Township   | Fawn Grove Borough | Fawn Township |
|--|------------------|---------------------|------------------|--------------------------|---------------------|--------------------|----------------------------|-------------------|---------------|----------------|------------------------|--------------------------|-----------------------|---|--------------------|---------------|
| <b>Staff Resources</b>   |                  |                     |                  |                          |                     |                    |                            |                   |               |                |                        |                          |                       |   |                    |               |
| Is your Community FPA or NFIP Coordinator Certified?                             | N                | N                   |                  | Y                        |                     | N                  | N                          | N                 |               | N              |                        |                          |                       | N   |                    | N             |
| Is the Floodplain management an auxiliary function?                              | N                | N                   |                  | N                        |                     | N                  | N                          | N                 |               | Y              |                        |                          |                       | N   |                    | N             |
| Indicate all NFIP administration that apply:                                     |                  |                     |                  |                          |                     |                    |                            |                   |               |                |                        |                          |                       |   |                    |               |
| Not applicable   |                  | X                   |                  |                          |                     |                    |                            |                   |               |                |                        |                          |                       |   |                    | X             |
| Permit Review  | X                |                     |                  | X                        |                     | X                  | X                          | X                 |               | X              |                        |                          |                       | X   |                    |               |
| GIS  |                  |                     |                  |                          |                     |                    |                            | X                 |               | X              |                        |                          |                       |   |                    |               |
| Education and Outreach   |                  |                     |                  |                          |                     |                    |                            | X                 |               | X              |                        |                          |                       | X   |                    |               |
| Inspections  | X                |                     |                  | X                        |                     |                    |                            | X                 |               |                |                        |                          |                       | X   |                    |               |
| Engineering Capabilities   | X                |                     |                  | X                        |                     |                    |                            | X                 |               |                |                        |                          |                       |   |                    |               |
| Other (Specify)  |                  |                     |                  |                          |                     |                    |                            |                   |               |                |                        |                          |                       |   |                    |               |
| What are the barriers to running an effective NFIP program in the community?     |                  |                     |                  | <i>budget restraints</i> |                     | <i>n/a</i>         | <i>available resources</i> | <i>none</i>       |               | <i>n/a</i>     |                        |                          |                       | <i>home-owner education &amp; acceptance of NFIP requirements</i> |                    |               |
| <b>Compliance History</b>  |                  |                     |                  |                          |                     |                    |                            |                   |               |                |                        |                          |                       |   |                    |               |
| Is your community in good standing with the NFIP?                                | Y                | Y                   |                  |                          |                     | Y                  | Y                          | Y                 |               | Y              |                        |                          |                       | Y   |                    | Y             |
| Are there any outstanding compliance issues?                                     | N                | N                   |                  |                          |                     | N                  | N                          | N                 |               | N              |                        |                          |                       | N   |                    | N             |
| Has there been a Community Action Contact (CAC) or Community Action Visit (CAV)? | CAC              | CAC                 | CAC              | CAC                      |                     | N                  | N                          | N                 |               | CAC            | CAC                    |                          |                       | CAC   |                    | N             |
| If yes, when?  | 12/14/2010       | 12/16/2010          | 9/2/2009         | 10/27/2009               |                     |                    |                            |                   |               | 10/19/2009     | 2/27/2017              |                          |                       | 8/13/2009   |                    |               |
| Is a CAC or CAV needed?  | N                | N                   |                  |                          |                     | N                  | N                          | N                 |               | N              |                        |                          |                       | N   |                    | N             |

**Municipal Staff Resources and  
National Flood Insurance (NFIP)  
Compliance Survey Summary**

|  | Felton<br>Borough | Franklin<br>Township | Franklinton<br>Borough | Glen Rock<br>Borough                       | GoldsBorough<br>Borough | Hallam<br>Borough | Hanover<br>Borough | Heidelberg<br>Township | Hellam<br>Township | Hopewell<br>Township | Jackson<br>Township | Jacobus<br>Borough | Jefferson<br>Borough | Lewisberry<br>Borough | Loganville<br>Borough | Lower<br>Chanceford<br>Township |
|--|-------------------|----------------------|------------------------|--|-------------------------|-------------------|--------------------|------------------------|--------------------|----------------------|---------------------|--------------------|----------------------|-----------------------|-----------------------|---------------------------------|
| <b>Staff Resources</b>   |                   |                      |                        |  |                         |                   |                    |                        |                    |                      |                     |                    |                      |                       |                       |                                 |
| Is your Community FPA or NFIP Coordinator Certified?                             | N                 |                      |                        | N  |                         | N                 |                    |                        | N                  |                      | N                   | N                  | N                    | N                     | N                     |                                 |
| Is the Floodplain management an auxiliary function?                              | Y                 |                      |                        | Y  |                         | N                 |                    |                        | N                  |                      | Y                   | Y                  | N                    | Y                     | N                     |                                 |
| <b>Indicate all NFIP administration that apply:</b>                              |                   |                      |                        |  |                         |                   |                    |                        |                    |                      |                     |                    |                      |                       |                       |                                 |
| Not applicable   |                   |                      |                        |  |                         |                   |                    |                        |                    |                      | X                   | X                  | X                    |                       | X                     |                                 |
| Permit Review  | X                 |                      |                        |  |                         | X                 |                    |                        | X                  |                      |                     |                    |                      | X                     |                       |                                 |
| GIS  |                   |                      |                        |  |                         |                   |                    |                        | X                  |                      |                     |                    |                      |                       |                       |                                 |
| Education and Outreach   |                   |                      |                        | X  |                         |                   |                    |                        |                    |                      |                     |                    |                      |                       |                       |                                 |
| Inspections  | X                 |                      |                        |  |                         |                   |                    |                        | X                  |                      |                     |                    |                      | X                     |                       |                                 |
| Engineering Capabilities   | X                 |                      |                        |  |                         |                   |                    |                        | X                  |                      |                     |                    |                      | X                     |                       |                                 |
| Other (Specify)  |                   |                      |                        |  |                         |                   |                    |                        |                    |                      |                     |                    |                      |                       |                       |                                 |
| What are the barriers to running an effective NFIP program in the community?     | <i>n/a</i>        |                      |                        | <i>no funding resources for mitigation</i> |                         | <i>n/a</i>        |                    |                        | <i>n/a</i>         |                      |                     |                    | <i>n/a</i>           | <i>n/a</i>            | <i>don't need it</i>  |                                 |
| <b>Compliance History</b>  |                   |                      |                        |  |                         |                   |                    |                        |                    |                      |                     |                    |                      |                       |                       |                                 |
| Is your community in good standing with the NFIP?                                | Y                 |                      |                        | Y  |                         | Y                 |                    |                        | Y                  |                      | Y                   | Y                  | Y                    | Y                     | Y                     |                                 |
| Are there any outstanding compliance issues?                                     | N                 |                      |                        | N  |                         | N                 |                    |                        | N                  |                      | N                   | N                  | N                    | N                     | N                     |                                 |
| Has there been a Community Action Contact (CAC) or Community Action Visit (CAV)? | N                 | CAC                  |                        | N  |                         | N                 |                    |                        | N                  | CAC                  | CAC                 | N                  | N                    | N                     | N                     |                                 |
| If yes, when?  |                   | 2/17/2010            |                        |  |                         |                   |                    |                        |                    | 2/25/2014            | 2/24/2014           |                    |                      |                       |                       |                                 |
| Is a CAC or CAV needed?  | N                 |                      |                        | N  |                         | N                 |                    |                        | N                  |                      | N                   | N                  | N                    | N                     | N                     |                                 |



**Municipal Staff Resources and  
National Flood Insurance (NFIP)  
Compliance Survey Summary**

|  | Red Lion Borough                        | Seven Valleys Borough | Shrewsbury Borough   | Shrewsbury Township | Spring Garden Township | Spring Grove Borough | Springettsbury Township | Springfield Township        | Stewartstown Borough                      | Warrington Township | Washington Township | Wellsville Borough | West Manchester Township | West Manheim Township | West York Borough | Windsor Borough  |
|--|---|-----------------------|--|---------------------|------------------------|----------------------|-------------------------|-----------------------------|---|---------------------|---------------------|--------------------|--------------------------|-----------------------|-------------------|--|
| <b>Staff Resources</b>   |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    |                          |                       |                   |  |
| Is your Community FPA or NFIP Coordinator Certified?                             | N                                       |                       | N  |                     |                        |                      |                         | Y                           | N   |                     | N                   |                    | N                        | N                     |                   | N  |
| Is the Floodplain management an auxiliary function?                              | N                                       |                       | N  |                     |                        |                      |                         | Y                           | N   |                     | Y                   |                    | N                        | Y                     |                   | Y  |
| <b>Indicate all NFIP administration that apply:</b>                              |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    |                          |                       |                   |  |
| Not applicable   |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    |                          |                       |                   |  |
| Permit Review  | X                                       |                       | X  |                     |                        |                      |                         | X                           |   |                     | X                   |                    |                          | X                     |                   | X  |
| GIS  |   |                       |  |                     |                        |                      |                         | X                           |   |                     |                     |                    |                          |                       |                   |  |
| Education and Outreach   |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    |                          |                       |                   | X  |
| Inspections  |   |                       |  |                     |                        |                      |                         | X                           |   |                     |                     |                    |                          | X                     |                   | X  |
| Engineering Capabilities   |   |                       |  |                     |                        |                      |                         | X                           |   |                     |                     |                    |                          |                       |                   | X  |
| Other (Specify)  |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    | provide maps             |                       |                   |  |
| What are the barriers to running an effective NFIP program in the community?     | <i>no floodplain within the borough</i> |                       | <i>We have no floodplains but ordinance to participate in NFIP</i> |                     |                        |                      |                         | <i>staffing limitations</i> | <i>no FEMA floodplains in the Borough</i> |                     |                     |                    | <i>liability</i>         | <i>n/a</i>            |                   | <i>a lot of rental units with no vested interest in property</i> |
| <b>Compliance History</b>  |   |                       |  |                     |                        |                      |                         |                             |   |                     |                     |                    |                          |                       |                   |  |
| Is your community in good standing with the NFIP?                                | Y                                       |                       | Y  |                     |                        |                      |                         | Y                           |   |                     | Y                   |                    | Y                        | Y                     |                   | Y  |
| Are there any outstanding compliance issues?                                     | N                                       |                       | N  |                     |                        |                      |                         | N                           |   |                     | N                   |                    | N                        | N                     |                   | N  |
| Has there been a Community Action Contact (CAC) or Community Action Visit (CAV)? | N                                       |                       | N  | CAC                 |                        |                      |                         | CAC                         |   |                     | CAC                 |                    | CAC                      | N                     |                   | CAC  |
| If yes, when?  |   |                       |  | 3/11/2014           |                        |                      |                         | 2/27/2017                   |   |                     | 2/2/2010            |                    | 1/22/2010                |                       |                   | 3/17/2017  |
| Is a CAC or CAV needed?  | N                                       |                       | N  |                     |                        |                      |                         | N                           |   |                     | N                   |                    | N                        | N                     |                   | Y  |

**Municipal Staff Resources and  
National Flood Insurance (NFIP)  
Compliance Survey Summary**

|  | Windsor<br>Township | Winterstown<br>Borough | Wrightsville<br>Borough | Yoe<br>Borough | York<br>City | York Haven<br>Borough | York<br>Township | Yorkana<br>Borough |
|--|---------------------|------------------------|-------------------------|----------------|--------------|-----------------------|------------------|--------------------|
| <b>Staff Resources</b>   |                     |                        |                         |                |              |                       |                  |                    |
| Is your Community FPA or NFIP Coordinator Certified?                             | N                   |                        |                         | N              |              | N                     | Y                |                    |
| Is the Floodplain management an auxiliary function?                              | Y                   |                        |                         | N              |              | N                     | Y                |                    |
| <b>Indicate all NFIP administration that apply:</b>                              |                     |                        |                         |                |              |                       |                  |                    |
| Not applicable   |                     |                        |                         |                |              |                       |                  |                    |
| Permit Review  | X                   |                        |                         | X              |              | X                     | X                |                    |
| GIS  |                     |                        |                         | X              |              |                       | X                |                    |
| Education and Outreach   | X                   |                        |                         | X              |              |                       |                  |                    |
| Inspections  | X                   |                        |                         | X              |              |                       | X                |                    |
| Engineering Capabilities   | X                   |                        |                         | X              |              |                       | X                |                    |
| Other (Specify)  |                     |                        |                         |                |              |                       |                  |                    |
| What are the barriers to running an effective NFIP program in the community?     | <i>n/a</i>          |                        |                         |                |              | <i>n/a</i>            |                  |                    |
| <b>Compliance History</b>  |                     |                        |                         |                |              |                       |                  |                    |
| Is your community in good standing with the NFIP?                                | Y                   |                        |                         | Y              |              | Y                     | Y                |                    |
| Are there any outstanding compliance issues?                                     | N                   |                        |                         | N              |              | N                     | N                |                    |
| Has there been a Community Action Contact (CAC) or Community Action Visit (CAV)? | CAC                 |                        |                         | N              | CAC          | N                     | CAC              |                    |
| If yes, when?  | 8/11/2009           |                        |                         |                | 12/21/2010   |                       | 8/31/2009        |                    |
| Is a CAC or CAV needed?  | N                   |                        |                         | N              |              | N                     | N                |                    |

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## **APPENDIX E – HAZUS REPORT**

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# Hazus-MH: Flood Event Report

**Region Name:** YorkCo\_DepthGrids  
**Flood Scenario:** YorkCo\_DepthGrid  
**Print Date:** Friday, March 31, 2017

**Disclaimer:**

*This version of Hazus utilizes 2010 Census Data.*

*Totals only reflect data for those census tracts/blocks included in the user's study region.*

*The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.*

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## General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Pennsylvania

**Note:**

Appendix A contains a complete listing of the counties contained in the region .

The geographical size of the region is 911 square miles and contains 11,976 census blocks. The region contains over 168 thousand households and has a total population of 434,972 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B .

There are an estimated 171,339 buildings in the region with a total building replacement value (excluding contents) of 28,206 million dollars (2010 dollars). Approximately 92.60% of the buildings (and 81.21% of the building value) are associated with residential housing.

### General Building Stock

Hazus estimates that there are 171,339 buildings in the region which have an aggregate total replacement value of 28,206 million (2010 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1**  
**Building Exposure by Occupancy Type for the Study Region**

| <b>Occupancy</b> | <b>Exposure (\$1000)</b> | <b>Percent of Total</b> |
|------------------|--------------------------|-------------------------|
| Residential      | 22,905,642               | 81.2%                   |
| Commercial       | 1,844,167                | 6.5%                    |
| Industrial       | 1,906,563                | 6.8%                    |
| Agricultural     | 566,968                  | 2.0%                    |
| Religion         | 237,892                  | 0.8%                    |
| Government       | 120,272                  | 0.4%                    |
| Education        | 624,770                  | 2.2%                    |
| <b>Total</b>     | <b>28,206,274</b>        | <b>100.00%</b>          |

**Table 2**  
**Building Exposure by Occupancy Type for the Scenario**

| <b>Occupancy</b> | <b>Exposure (\$1000)</b> | <b>Percent of Total</b> |
|------------------|--------------------------|-------------------------|
| Residential      | 8,709,919                | 79.7%                   |
| Commercial       | 536,579                  | 4.9%                    |
| Industrial       | 1,036,200                | 9.5%                    |
| Agricultural     | 358,504                  | 3.3%                    |
| Religion         | 52,733                   | 0.5%                    |
| Government       | 35,855                   | 0.3%                    |
| Education        | 196,006                  | 1.8%                    |
| <b>Total</b>     | <b>10,925,796</b>        | <b>100.00%</b>          |

### Essential Facility Inventory

For essential facilities, there are 18 hospitals in the region with a total bed capacity of 933 beds. There are 225 schools, 68 fire stations, 27 police stations and 72 emergency operation center.

## Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

|                                   |                   |
|-----------------------------------|-------------------|
| <b>Study Region Name:</b>         | YorkCo_DepthGrids |
| <b>Scenario Name:</b>             | YorkCo_DepthGrid  |
| <b>Return Period Analyzed:</b>    | 100               |
| <b>Analysis Options Analyzed:</b> | No What-Ifs       |

## General Building Stock Damage

Hazus estimates that about 346 buildings will be at least moderately damaged. This is over 75% of the total number of buildings in the scenario. There are an estimated 49 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

**Table 3: Expected Building Damage by Occupancy**

| Occupancy    | 1-10       |       | 11-20      |        | 21-30     |       | 31-40     |      | 41-50     |        | Substantially |      |
|--------------|------------|-------|------------|--------|-----------|-------|-----------|------|-----------|--------|---------------|------|
|              | Count      | (%)   | Count      | (%)    | Count     | (%)   | Count     | (%)  | Count     | (%)    | Count         | (%)  |
| Agriculture  | 0          | 0.00  | 0          | 0.00   | 0         | 0.00  | 0         | 0.00 | 0         | 0.00   | 0             | 0.00 |
| Commercial   | 1          | 14.29 | 6          | 85.71  | 0         | 0.00  | 0         | 0.00 | 0         | 0.00   | 0             | 0.00 |
| Education    | 0          | 0.00  | 0          | 0.00   | 0         | 0.00  | 0         | 0.00 | 0         | 0.00   | 0             | 0.00 |
| Government   | 0          | 0.00  | 1          | 100.00 | 0         | 0.00  | 0         | 0.00 | 0         | 0.00   | 0             | 0.00 |
| Industrial   | 0          | 0.00  | 0          | 0.00   | 0         | 0.00  | 0         | 0.00 | 1         | 100.00 | 0             | 0.00 |
| Religion     | 0          | 0.00  | 0          | 0.00   | 0         | 0.00  | 0         | 0.00 | 0         | 0.00   | 0             | 0.00 |
| Residential  | 179        | 34.62 | 178        | 34.43  | 78        | 15.09 | 23        | 4.45 | 10        | 1.93   | 49            | 9.48 |
| <b>Total</b> | <b>180</b> |       | <b>185</b> |        | <b>78</b> |       | <b>23</b> |      | <b>11</b> |        | <b>49</b>     |      |

**Table 4: Expected Building Damage by Building Type**

| Building Type | 1-10  |       | 11-20 |       | 21-30 |       | 31-40 |      | 41-50 |       | Substantially |       |
|---------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|---------------|-------|
|               | Count | (%)   | Count | (%)   | Count | (%)   | Count | (%)  | Count | (%)   | Count         | (%)   |
| Concrete      | 0     | 0.00  | 0     | 0.00  | 0     | 0.00  | 0     | 0.00 | 0     | 0.00  | 0             | 0.00  |
| ManufHousing  | 1     | 3.70  | 1     | 3.70  | 1     | 3.70  | 0     | 0.00 | 0     | 0.00  | 24            | 88.89 |
| Masonry       | 38    | 35.85 | 40    | 37.74 | 17    | 16.04 | 4     | 3.77 | 1     | 0.94  | 6             | 5.66  |
| Steel         | 1     | 16.67 | 4     | 66.67 | 0     | 0.00  | 0     | 0.00 | 1     | 16.67 | 0             | 0.00  |
| Wood          | 135   | 35.53 | 138   | 36.32 | 60    | 15.79 | 19    | 5.00 | 9     | 2.37  | 19            | 5.00  |



## Essential Facility Damage

Before the flood analyzed in this scenario, the region had 933 hospital beds available for use. On the day of the scenario flood event, the model estimates that 933 hospital beds are available in the region.

**Table 5: Expected Damage to Essential Facilities**

| Classification  | Total | # Facilities      |                      |             |
|-----------------|-------|-------------------|----------------------|-------------|
|                 |       | At Least Moderate | At Least Substantial | Loss of Use |
| Fire Stations   | 68    | 5                 | 0                    | 5           |
| Hospitals       | 18    | 0                 | 0                    | 0           |
| Police Stations | 27    | 0                 | 0                    | 0           |
| Schools         | 225   | 1                 | 0                    | 1           |

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

## Induced Flood Damage

### **Debris Generation**

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 26,855 tons of debris will be generated. Of the total amount, Finishes comprises 34% of the total, Structure comprises 36% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 1,074 truckloads (@25 tons/truck) to remove the debris generated by the flood.

## Social Impact

### **Shelter Requirements**

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 2,487 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 2,929 people (out of a total population of 434,972) will seek temporary shelter in public shelters.

## Economic Loss

The total economic loss estimated for the flood is 259.90 million dollars, which represents 2.38 % of the total replacement value of the scenario buildings.

### **Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 256.06 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 38.66% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

**Table 6: Building-Related Economic Loss Estimates**

(Millions of dollars)

| <b>Category</b>                     | <b>Area</b>     | <b>Residential</b> | <b>Commercial</b> | <b>Industrial</b> | <b>Others</b> | <b>Total</b>  |
|-------------------------------------|-----------------|--------------------|-------------------|-------------------|---------------|---------------|
| <b><u>Building Loss</u></b>         |                 |                    |                   |                   |               |               |
|                                     | Building        | 43.37              | 8.70              | 17.37             | 5.80          | 75.22         |
|                                     | Content         | 56.92              | 29.10             | 40.45             | 29.92         | 156.38        |
|                                     | Inventory       | 0.00               | 1.83              | 21.15             | 1.48          | 24.46         |
|                                     | <b>Subtotal</b> | <b>100.28</b>      | <b>39.62</b>      | <b>78.96</b>      | <b>37.20</b>  | <b>256.06</b> |
| <b><u>Business Interruption</u></b> |                 |                    |                   |                   |               |               |
|                                     | Income          | 0.01               | 0.50              | 0.00              | 0.12          | 0.64          |
|                                     | Relocation      | 0.09               | 0.09              | 0.02              | 0.06          | 0.25          |
|                                     | Rental Income   | 0.05               | 0.05              | 0.00              | 0.00          | 0.10          |
|                                     | Wage            | 0.05               | 0.64              | 0.02              | 2.15          | 2.85          |
|                                     | <b>Subtotal</b> | <b>0.20</b>        | <b>1.27</b>       | <b>0.04</b>       | <b>2.33</b>   | <b>3.84</b>   |
| <b>ALL</b>                          | <b>Total</b>    | <b>100.49</b>      | <b>40.89</b>      | <b>79.00</b>      | <b>39.53</b>  | <b>259.90</b> |

## **Appendix A: County Listing for the Region**

Pennsylvania  
- York

**Appendix B: Regional Population and Building Value Data**

|                           | Building Value (thousands of dollars) |                   |                  | Total             |
|---------------------------|---------------------------------------|-------------------|------------------|-------------------|
|                           | Population                            | Residential       | Non-Residential  |                   |
| <b>Pennsylvania</b>       |                                       |                   |                  |                   |
| York                      | 434,972                               | 22,905,642        | 5,300,632        | 28,206,274        |
| <b>Total</b>              | <b>434,972</b>                        | <b>22,905,642</b> | <b>5,300,632</b> | <b>28,206,274</b> |
| <b>Total Study Region</b> | <b>434,972</b>                        | <b>22,905,642</b> | <b>5,300,632</b> | <b>28,206,274</b> |

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## **APPENDIX F – WIND EVENTS**

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| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Lower Chanceford Township                  | 10/30/55 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 05/26/57 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 08/12/58 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Windsor Township                     | 07/23/62 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 05/10/63 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hellam Township                            | 07/29/64 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Windsor Township                     | 08/01/68 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| North Codorus Township                     | 08/06/68 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Chanceford Township                  | 07/02/70 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 06/07/71 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Warrington Township                        | 06/08/71 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Shrewsbury Borough                         | 08/07/72 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| North Codorus Township                     | 06/04/73 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Spring Garden Township                     | 06/23/73 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 06/24/73 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Penn Township                              | 07/03/75 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 03/21/76 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 07/11/76 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion Borough                           | 09/19/77 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg Borough                          | 09/19/77 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Fairview Township                          | 06/27/78 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover Township                             | 06/27/78 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Jackson Township                           | 05/12/80 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 07/22/80 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 08/08/80 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 08/11/80 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 07/20/81 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| North Hopewell Township                    | 09/23/81 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 06/16/82 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 06/27/82 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Fawn Grove Borough                         | 07/04/83 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 07/21/83 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 07/21/83 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 09/03/84 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| York Township                              | 06/03/85 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 06/03/85 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 07/08/85 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Chanceford Township                        | 07/25/85 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East Manchester Township                   | 06/11/86 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Wrightsville Borough                       | 07/18/86 | Thunderstorm Wind | 1      | 15       | \$0             | \$0         |
| Wrightsville Borough                       | 08/05/86 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Warrington Township                        | 08/10/86 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springettsbury Township                    | 06/30/87 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Paradise Township                          | 06/30/87 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East Manchester Township                   | 07/12/87 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Windsor Township                     | 07/26/87 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 05/17/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Warrington Township                        | 07/11/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion Borough                           | 07/11/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Carroll Township                           | 08/06/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| North Codorus Township                     | 08/06/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 08/15/88 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 03/31/89 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| North Codorus Township                     | 05/06/89 | Thunderstorm Wind | 0      | 1        | \$0             | \$0         |
| Winterstown Borough                        | 11/16/89 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Fairview Township                          | 11/20/89 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 11/20/89 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Paradise Township                          | 11/20/89 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 06/08/90 | Thunderstorm Wind | 0      | 10       | \$0             | \$0         |
| Peach Bottom Township                      | 06/08/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Carroll Township                           | 07/05/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Windsor Township                           | 07/05/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Jackson Township                           | 07/09/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion Borough                           | 07/09/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Peach Bottom Township                      | 07/09/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Windsor Township                     | 07/10/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 10/18/90 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg Borough                          | 04/09/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 04/09/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Shrewsbury Borough                         | 05/06/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover Borough                            | 05/06/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Conewago Township                          | 05/06/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lower Chanceford Township                  | 06/16/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hopewell Township                          | 07/07/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 09/18/91 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Township                              | 01/14/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Fairview Township                          | 07/15/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Codorus Township                           | 07/17/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York City                                  | 08/28/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Peach Bottom Township                      | 08/28/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg Borough                          | 09/22/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hellam Township                            | 09/22/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Fairview Township                          | 10/09/92 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 05/12/93 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Grove                                      | 08/11/93 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 08/17/93 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 08/28/93 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 08/28/93 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hallam                                     | 06/12/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Manchester                                 | 07/06/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 07/06/94 | Thunderstorm Wind | 0      | 4        | \$0             | \$0         |
| N Portion                                  | 07/15/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 07/18/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Sw Portion                                 | 08/14/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 11/01/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 11/01/94 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 04/09/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Rossville                                  | 04/09/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 04/09/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Central                                    | 04/09/95 | Thunderstorm Wind | 0      | 4        | \$0             | \$0         |
| Newberrytown                               | 05/29/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| West York                                  | 05/29/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Lewisberry                                 | 06/07/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Northern                                   | 07/06/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Southwest                                  | 07/10/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Northern And Southwest                     | 07/16/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 07/17/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Eastern                                    | 07/28/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 08/05/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Spring Grove                               | 08/05/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Wrightsville                               | 08/12/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 08/14/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East York                                  | 10/05/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 11/11/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East York                                  | 11/11/95 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 02/24/96 | High Wind         | 0      | 0        | \$0             | \$0         |
| Seven Valleys                              | 04/23/96 | Thunderstorm Wind | 0      | 0        | \$50,000        | \$0         |
| Dillsburg                                  | 05/11/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Labott                                     | 06/11/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 06/14/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Slate Hill                                 | 06/17/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 06/20/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Yorkana                                    | 06/20/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 07/03/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 08/28/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Spring Grove                               | 09/28/96 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 02/22/97 | High Wind         | 0      | 0        | \$0             | \$0         |
| York                                       | 05/01/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Newberrytown                               | 07/09/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 07/28/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Franklintown                               | 08/04/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 08/28/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Menges Mill                                | 09/11/97 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 01/09/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Manchester                                 | 04/08/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Manchester                                 | 05/29/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/31/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 06/16/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Foustown                                   | 06/30/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 08/10/98 | Thunderstorm Wind | 1      | 0        | \$0             | \$0         |
| York                                       | 09/07/98 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Spring Grove                               | 02/12/99 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 02/12/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Emigsville                                 | 02/12/99 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 02/12/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Dallastown                                 | 06/02/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Spring Grove                               | 06/02/99 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Spry                                       | 07/02/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Lewisberry                                 | 07/22/99 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Hanover                                    | 07/28/99 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 07/30/99 | Thunderstorm Wind | 0      | 0        | \$30,000        | \$0         |
| Hanover                                    | 08/14/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Delta                                      | 08/14/99 | Thunderstorm Wind | 0      | 0        | \$30,000        | \$0         |
| Jefferson                                  | 08/26/99 | Thunderstorm Wind | 0      | 0        | \$30,000        | \$0         |
| York                                       | 08/26/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Shrewsbury                                 | 08/26/99 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Yocumtown                                  | 09/06/99 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Not Listed                                 | 09/16/99 | High Wind         | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 09/29/99 | High Wind         | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 01/10/00 | High Wind         | 0      | 0        | \$0             | \$0         |
| Shrewsbury                                 | 05/13/00 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Hanover                                    | 06/02/00 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Spring Grove                               | 06/21/00 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Red Lion                                   | 07/14/00 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Not Listed                                 | 12/12/00 | High Wind         | 0      | 0        | \$13,900        | \$0         |
| Not Listed                                 | 02/10/01 | High Wind         | 0      | 0        | \$5,550         | \$0         |
| Spring Grove                               | 03/13/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Winterstown                                | 04/09/01 | Thunderstorm Wind | 0      | 0        | \$150,000       | \$0         |
| York                                       | 06/12/01 | Thunderstorm Wind | 0      | 0        | \$15,000        | \$0         |
| Hanover                                    | 06/12/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion                                   | 06/30/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 07/01/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 07/10/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| West Manheim                               | 08/13/01 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 03/09/02 | High Wind         | 0      | 0        | \$0             | \$0         |
| York                                       | 03/09/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 03/21/02 | High Wind         | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Emigsville                                 | 04/28/02 | Thunderstorm Wind | 0      | 0        | \$15,000        | \$0         |
| Winterstown                                | 05/12/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/13/02 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| York                                       | 05/13/02 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Spring Grove                               | 06/06/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Craley                                     | 06/19/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Wellsville                                 | 08/02/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Springvale                                 | 08/24/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 08/24/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 09/27/02 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 02/23/03 | High Wind         | 0      | 0        | \$0             | \$0         |
| Newberrytown                               | 07/05/03 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 07/06/03 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| West Manheim                               | 07/06/03 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dover                                      | 07/21/03 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dillsburg                                  | 08/06/03 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Newberrytown                               | 08/16/03 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 11/13/03 | High Wind         | 1      | 0        | \$0             | \$0         |
| Hanover                                    | 05/07/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hallam                                     | 05/07/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/07/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/09/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/09/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 05/18/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Glen Rock                                  | 05/25/04 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| New Freedom                                | 05/25/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 06/01/04 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Newberrytown                               | 07/14/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 07/27/04 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Newberrytown                               | 08/04/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Haven                                 | 08/19/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Manchester                                 | 08/19/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion                                   | 08/19/04 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Sunny Burn                                 | 05/28/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 06/06/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Thomasville                                | 06/06/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Dover                                      | 06/09/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 06/09/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Haven                                 | 08/07/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Weigelstown                                | 11/06/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 11/06/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 11/06/05 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 02/04/06 | Thunderstorm Wind | 0      | 0        | \$20,000        | \$0         |
| York                                       | 02/04/06 | Thunderstorm Wind | 0      | 0        | \$200,000       | \$0         |
| Stewartstown                               | 06/02/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Loganville                                 | 06/02/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dallastown                                 | 07/04/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 07/04/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion                                   | 07/04/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Windsor                                    | 07/04/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Red Lion                                   | 09/28/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York                                       | 11/16/06 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Not Listed                                 | 12/01/06 | High Wind         | 0      | 0        | \$0             | \$0         |
| Dallastown                                 | 12/01/06 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Loganville                                 | 05/27/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Stewartstown                               | 05/27/07 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| East Prospect                              | 06/01/07 | Thunderstorm Wind | 0      | 0        | \$25,000        | \$0         |
| Hallam                                     | 06/19/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| West York                                  | 07/28/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| West York                                  | 07/29/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 08/03/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 08/03/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Hanover                                    | 08/03/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dover                                      | 08/25/07 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Strinestown                                | 02/06/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Seven Vlys                                 | 03/08/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dallastown                                 | 03/08/08 | Thunderstorm Wind | 0      | 0        | \$25,000        | \$0         |
| Not Listed                                 | 03/08/08 | High Wind         | 0      | 0        | \$0             | \$0         |
| York Arpt                                  | 07/20/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Kralltown                                  | 07/23/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Felton                                     | 07/27/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dallastown                                 | 07/27/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Shrewsbury                                 | 08/02/08 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| York Furnace                               | 08/10/08 | Thunderstorm Wind | 0      | 0        | \$8,000         | \$0         |
| Not Listed                                 | 12/31/08 | High Wind         | 0      | 0        | \$5,000         | \$0         |
| Not Listed                                 | 02/12/09 | High Wind         | 0      | 0        | \$50,000        | \$0         |
| Yorkshire                                  | 03/29/09 | Thunderstorm Wind | 0      | 0        | \$115,000       | \$0         |
| Spry                                       | 06/10/09 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Seven Vlys                                 | 06/10/09 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Glen Rock                                  | 06/10/09 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Brodbeck                                   | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| York                                       | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$2,500         | \$0         |
| York                                       | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Dallastown                                 | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$500           | \$0         |
| York                                       | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Red Lion                                   | 06/20/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dillsburg                                  | 06/26/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dover                                      | 06/26/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Emigsville                                 | 08/02/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Red Lion                                   | 08/02/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Windsor                                    | 08/09/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Brownnton                                  | 08/09/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Hanover                                    | 08/11/09 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Hanover                                    | 08/18/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lightner                                   | 08/18/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Mt Wolf                                    | 08/18/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Starview                                   | 08/18/09 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Not Listed                                 | 01/25/10 | Strong Wind       | 0      | 0        | \$1,000         | \$0         |
| Lewisberry                                 | 04/16/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lewisberry                                 | 04/16/10 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East York                                  | 04/16/10 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| East York                                  | 04/16/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Manchester                                 | 05/14/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lehman                                     | 05/27/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Wrightsville                               | 05/31/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York Haven                                 | 06/04/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Hanover                                    | 06/04/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Bandana                                    | 06/04/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |



| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| East Prospect                              | 06/22/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Stonybrook                                 | 06/24/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dover                                      | 06/24/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Sinsheim                                   | 06/24/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 07/25/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Seven Vlys                                 | 07/25/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Jacobs Mills                               | 08/04/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Shrewsbury                                 | 08/16/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Siddonsburg                                | 09/22/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Grangeville                                | 09/22/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Fawn Grove                                 | 09/22/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lehman                                     | 09/22/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Craley                                     | 09/30/10 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Not Listed                                 | 02/19/11 | High Wind         | 0      | 0        | \$0             | \$0         |
| West Manheim                               | 04/16/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Franklinton                                | 04/16/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 04/16/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Shrewsbury                                 | 04/16/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Rossville                                  | 04/28/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Strinestown                                | 05/26/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| West York                                  | 05/26/11 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Dover                                      | 05/26/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| East Prospect                              | 05/26/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Roler                                      | 05/27/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Newberrytown                               | 05/27/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Cly  | 06/09/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Leaders Hgts                               | 06/09/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Stewartstown                               | 06/09/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| West York                                  | 06/11/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lightner                                   | 06/11/11 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Relay                                      | 06/11/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Stoverstown                                | 06/11/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Leaders Hgts                               | 06/11/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Lightner                                   | 06/12/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Wrightsville                               | 06/12/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Hallam                                     | 06/12/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| York                                       | 06/12/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Menges Mill                                | 07/22/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Spring Grove                               | 07/22/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Wilshire Hills                             | 07/22/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Nashville                                  | 07/23/11 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| New Bridgeville                            | 07/23/11 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$5,000     |
| Jacobus                                    | 08/19/11 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Not Listed                                 | 08/28/11 | Strong Wind       | 0      | 0        | \$10,000        | \$0         |
| Dover                                      | 05/27/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Emigsville                                 | 05/29/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 06/03/12 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Lehman                                     | 06/29/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Starview                                   | 06/29/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 07/07/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 07/07/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dillsburg                                  | 07/18/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 07/18/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| New Market                                 | 07/26/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Yorkshire                                  | 07/26/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Glen Rock                                  | 07/26/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Etters                                     | 07/31/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Cly  | 08/03/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Etters                                     | 08/03/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Wellsville                                 | 08/04/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| York                                       | 08/04/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dover                                      | 08/05/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| West York                                  | 08/05/12 | Thunderstorm Wind | 0      | 1        | \$5,000         | \$0         |
| Bandana                                    | 09/01/12 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Seven Vlys                                 | 09/08/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| New Salem                                  | 09/08/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Strinestown                                | 09/08/12 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Freysville                                 | 09/08/12 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Not Listed                                 | 10/29/12 | High Wind         | 0      | 0        | \$0             | \$0         |
| Dover                                      | 04/19/13 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Dallastown                                 | 06/13/13 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Stewartstown                               | 06/13/13 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |        |          |                 |             |
|--|----------|-------------------|--------|----------|-----------------|-------------|
| Location                                   | Date     | Event Type        | Deaths | Injuries | Property Damage | Crop Damage |
| Hallam                                     | 06/25/13 | Thunderstorm Wind | 0      | 0        | \$5,000         | \$0         |
| Stewartstown                               | 06/25/13 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Stewartstown                               | 06/28/13 | Thunderstorm Wind | 0      | 0        | \$2,500         | \$0         |
| Bryansville                                | 07/28/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| Red Lion                                   | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$10,000        | \$0         |
| Springvale                                 | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| West York                                  | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| York                                       | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| Pleasureville                              | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| York                                       | 09/12/13 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| York Haven                                 | 06/03/14 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Airville                                   | 07/03/14 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Dillsburg                                  | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Lehman                                     | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$0             | \$0         |
| Botts                                      | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Lewisberry                                 | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| East York                                  | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$500           | \$0         |
| New Salem                                  | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| New Freedom                                | 07/08/14 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Wrightsville                               | 07/27/14 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| York Arpt                                  | 05/27/15 | Thunderstorm Wind | 0      | 0        | \$500           | \$0         |
| Lewisberry                                 | 06/08/15 | Thunderstorm Wind | 0      | 0        | \$500           | \$0         |
| Shrewsbury                                 | 06/23/15 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Seven Vlys                                 | 06/23/15 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| Cross Rds                                  | 06/23/15 | Thunderstorm Wind | 0      | 0        | \$4,000         | \$0         |
| Siddonsburg                                | 07/09/15 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| York                                       | 07/09/15 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Sticks                                     | 07/18/15 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Strinestown                                | 08/20/15 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Shrewsbury                                 | 09/12/15 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Bandana                                    | 10/09/15 | Thunderstorm Wind | 0      | 0        | \$500           | \$0         |
| Hametown                                   | 10/28/15 | Thunderstorm Wind | 0      | 0        | \$3,000         | \$0         |
| Wellsville                                 | 02/24/16 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Nashville                                  | 02/24/16 | Thunderstorm Wind | 0      | 0        | \$2,000         | \$0         |
| Dallastown                                 | 02/24/16 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |
| Wago Jct                                   | 02/24/16 | Thunderstorm Wind | 0      | 0        | \$1,000         | \$0         |

| York County Windstorms – 1950 through 2017 |          |                   |          |           |                    |                |
|--|----------|-------------------|----------|-----------|--------------------|----------------|
| Location                                   | Date     | Event Type        | Deaths   | Injuries  | Property Damage    | Crop Damage    |
| Not Listed                                 | 04/03/16 | High Wind         | 0        | 0         | \$5,000            | \$0            |
| Hilton                                     | 06/05/16 | Thunderstorm Wind | 0        | 0         | \$3,000            | \$0            |
| Spring Grove                               | 06/21/16 | Thunderstorm Wind | 0        | 0         | \$20,000           | \$0            |
| Leaders Hgts                               | 06/21/16 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| North York                                 | 06/28/16 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Farmers                                    | 07/08/16 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Hilton                                     | 07/25/16 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Zions View                                 | 07/28/16 | Thunderstorm Wind | 0        | 0         | \$8,000            | \$0            |
| Nashville                                  | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Emigsville                                 | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Bair                                       | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$3,000            | \$0            |
| Strinestown                                | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Newberrytown                               | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Hallam                                     | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Wrightsville                               | 08/16/16 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Loganville                                 | 02/25/17 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Yoe  | 02/27/17 | Thunderstorm Wind | 0        | 0         | \$1,000,000        | \$0            |
| Rinely                                     | 05/19/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Franklinton                                | 06/19/17 | Thunderstorm Wind | 0        | 0         | \$8,000            | \$0            |
| Rossville                                  | 06/19/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Newberrytown                               | 06/19/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| Hanover                                    | 06/19/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| North York                                 | 07/17/17 | Thunderstorm Wind | 0        | 0         | \$10,000           | \$0            |
| New Salem                                  | 08/02/17 | Thunderstorm Wind | 0        | 0         | \$2,000            | \$0            |
| Loganville                                 | 08/04/17 | Thunderstorm Wind | 0        | 0         | \$0                | \$0            |
| Red Lion                                   | 08/04/17 | Thunderstorm Wind | 0        | 0         | \$0                | \$0            |
| Dillsburg                                  | 08/19/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| West York                                  | 09/05/17 | Thunderstorm Wind | 0        | 0         | \$12,000           | \$0            |
| Grangeville                                | 09/05/17 | Thunderstorm Wind | 0        | 0         | \$4,000            | \$0            |
| <b>Total</b>                               |          |                   | <b>3</b> | <b>35</b> | <b>\$2,667,950</b> | <b>\$5,000</b> |

Source: NOAA

# **APPENDIX G – HAZARD MITIGATION PLAN REVIEW CROSSWALK**

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## LOCAL MITIGATION PLAN REVIEW TOOL

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The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan’s strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

|  |   |  |
|--|---|--|
| <b>Jurisdiction: York County<br/>consisting of 72 municipalities</b> | <b>Title of Plan: York County 2018<br/>Hazard Mitigation Plan</b> | <b>Date of Plan:<br/>October 2, 2018</b> |
| <b>Local Point of Contact:<br/>Roy O. Livergood, Jr.</b>             | <b>Address:<br/>28 East Market Street<br/>York, PA 17401-1580</b> |  |
| <b>Title:<br/>Senior Planner</b>                                     |   |  |
| <b>Agency:<br/>York County Planning Commission</b>                   |   |  |
| <b>Phone Number:<br/>(717) 771-9870 ext. 1756</b>                    | <b>E-Mail: rlivergood@ycpc.org</b>                                |  |

|                        |               |              |
|------------------------|---------------|--------------|
| <b>State Reviewer:</b> | <b>Title:</b> | <b>Date:</b> |
|                        |               |              |

|   |               |              |
|---|---------------|--------------|
| <b>FEMA Reviewer:</b>                                 | <b>Title:</b> | <b>Date:</b> |
|   |               |              |
| <b>Date Received in FEMA Region <i>(insert #)</i></b> |               |              |
| <b>Plan Not Approved</b>                              |               |              |
| <b>Plan Approvable Pending Adoption</b>               |               |              |
| <b>Plan Approved</b>                                  |               |              |

**SECTION 1:  
REGULATION CHECKLIST**

**INSTRUCTIONS:** The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is ‘Not Met.’ Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

| <b>1. REGULATION CHECKLIST</b>  | <b>Location in Plan</b>   |            |                |
|---|---|------------|----------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>   | <b>(section and/or page number)</b>                                 | <b>Met</b> | <b>Not Met</b> |
| <b>ELEMENT A. PLANNING PROCESS</b>  |   |            |                |
| A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))  | Sections 3.1, 3.2, 3.5, Table 3.5-1, Appendix C. Pgs. 15-16, 18-23. |            |                |
| A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2)) | Sections 3.3, 3.4. Appendix A and B. Pgs. 16-18.                    |            |                |
| A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))  | Sections 3.3, 3.4. Appendix A and B. Pgs. 16-18.                    |            |                |
| A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))  | Section 5.2.5. Pgs. 223-224.  |            |                |
| A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))   | Sections 7.1, 7.2, 7.4. Pgs. 259-261.                               |            |                |
| A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))   | Section 7.2. Pgs. 259-260.  |            |                |
| <b><u>ELEMENT A: REQUIRED REVISIONS</u></b>   |   |            |                |



| <b>1. REGULATION CHECKLIST</b>   |   | <b>Location in Plan</b><br>(section and/or<br>page number) | <b>Met</b> | <b>Not<br/>Met</b> |
|--|---|--|------------|--------------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>  |   |  |            |                    |
| <b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>  |   |  |            |                    |
| B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))   | Sections 4.2 through 4.4. Pgs. 26-185.                              |  |            |                    |
| B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))   | Sections 4.2 through 4.4. Pgs. 26-185.                              |  |            |                    |
| B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))  | Sections 4.3 through 4.4. Pgs. 33- 185.                             |  |            |                    |
| B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))  | Table 4.3.4.3-2. Pgs. 69-70.  |  |            |                    |
| <b><u>ELEMENT B: REQUIRED REVISIONS</u></b>  |   |  |            |                    |
| <b>ELEMENT C. MITIGATION STRATEGY</b>  |   |  |            |                    |
| C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))  | Sections 5.1 through 5.2.5.3, Pgs. 199-224.                         |  |            |                    |
| C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))  | Section 5.2.1.1, Pgs. 203-206. Table 6.4-1, Pg. 238 Action #29.     |  |            |                    |
| C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))   | Section 6.2, Pgs. 232-233.  |  |            |                    |
| C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii)) | Sections 6.3 through 6.4. Pgs. 233 – 245.                           |  |            |                    |
| C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))                      | Section 6.4. Pgs. 234 – 236. Tables 6.4-1 and 6.4-2 Pgs. 237 – 257. |  |            |                    |
| C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))                      | Section 7.3. Pgs. 260 – 261.  |  |            |                    |
| <b><u>ELEMENT C: REQUIRED REVISIONS</u></b>  |   |  |            |                    |

| <b>1. REGULATION CHECKLIST</b>  |  | <b>Location in Plan</b><br>(section and/or<br>page number) | <b>Met</b> | <b>Not<br/>Met</b> |
|---|--|--|------------|--------------------|
| <b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>   |  |  |            |                    |
| <b>ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION</b> (applicable to plan updates only)   |  |  |            |                    |
| D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))  | Sections 2.1 through 2.4.1. Pgs. 5- 11. Section 4.4.3. Pgs. 194 – 198. |  |            |                    |
| D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))  | Section 6.1. Pgs. 226- 232.  |  |            |                    |
| D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))   | Section 6.1. Pgs. 225 – 226 .  |  |            |                    |
| <b><u>ELEMENT D: REQUIRED REVISIONS</u></b>   |  |  |            |                    |
| <b>ELEMENT E. PLAN ADOPTION</b>   |  |  |            |                    |
| E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5)) |  |  |            |                    |
| E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))                     |  |  |            |                    |
| <b><u>ELEMENT E: REQUIRED REVISIONS</u></b>   |  |  |            |                    |
| <b>ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)</b>  |  |  |            |                    |
| F1.   |  |  |            |                    |
| F2.   |  |  |            |                    |
| <b><u>ELEMENT F: REQUIRED REVISIONS</u></b>   |  |  |            |                    |

## SECTION 2: PLAN ASSESSMENT

**INSTRUCTIONS:** The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

***Plan Strengths and Opportunities for Improvement*** is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

***Resources for Implementing Your Approved Plan*** provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

## **A. Plan Strengths and Opportunities for Improvement**

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

### **Element A: Planning Process**

*How does the Plan go above and beyond minimum requirements to document the planning process with respect to:*

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

### **Element B: Hazard Identification and Risk Assessment**

*In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:*

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

*How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:*

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

### **Element C: Mitigation Strategy**

*How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:*

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

### **Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)**

*How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:*

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

## **B. Resources for Implementing Your Approved Plan**

*Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:*

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

**SECTION 3:  
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)**

**INSTRUCTIONS:** For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

| MULTI-JURISDICTION SUMMARY SHEET |                   |  |                 |  |  |                    |                           |   |                              |  |                            |                                  |
|----------------------------------|-------------------|--|-----------------|--|--|--------------------|---------------------------|---|------------------------------|--|----------------------------|----------------------------------|
| #                                | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC        | Mailing Address                                      | Email                                      | Phone              | Requirements Met (Y/N)    |   |                              |  |                            |                                  |
|                                  |                   |  |                 |  |  |                    | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require-<br>ments |
| 1                                | Carroll           | Township   | Faye Romberger  | 555 Chestnut Grove Rd<br>Dillsburg, PA 17019         | fromberg<br>er@carrol<br>ltownship.<br>com | (717) 432-<br>4951 | Y                         | Y   | Y                            | Y  |                            | Y                                |
| 2                                | Chanceford        | Township   | Tonya Jackson   | 51 Muddy Creek Forks Rd<br>Brogue, PA 17309          | chancefor<br>dtpw@zo<br>ominterne<br>t.net | (717) 927-<br>6401 | Y                         | Y   | Y                            | Y  |                            | Y                                |
| 3                                | Codorus           | Township   | April Rehbein   | 4631 Shaffers Church Rd<br>Glennville, PA 17329-8923 | secretary<br>@codorus<br>township.<br>org  | (717) 235-<br>4634 | Y                         | Y   | Y                            | Y  |                            | Y                                |
| 4                                | Conewago          | Township   | Lou Anne Bostic | 490 Copenhaffer Rd<br>York, PA 17404                 | conetwp<br>@comcast<br>.net                | (717) 266-<br>2122 | Y                         | Y   | Y                            | Y  |                            | Y                                |
| 5                                | Cross Roads       | Borough  | Martha J Miller | 13231 Cross Roads Ave<br>Cross Roads, PA 17322       | millerspud<br>s@verizon<br>.net            |                    | Y                         | Y   | Y                            | Y  |                            | Y                                |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name  | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC              | Mailing Address                                       | Email   | Phone              | Requirements Met (Y/N)    |   |                              |  |                            |                                 |
|----|--------------------|--|-----------------------|---|---|--------------------|---------------------------|---|------------------------------|--|----------------------------|---------------------------------|
|    |                    |  |                       |   |   |                    | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>n & Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require<br>ments |
| 6  | Dallastown         | Borough  | Connie Stokes         | 175 E Broad St<br>Dallastown, PA 17313                | conniesto<br>kes@aol.c<br>om                  | (717) 244-<br>6626 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 7  | Delta              | Borough  | Sherrie Wood          | PO Box 278<br>Delta, PA 17314                         | delta.boro<br>ugh@veri<br>zon.net             | (717) 456-<br>6248 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 8  | Dillsburg          | Borough  | Karen Deibler         | 151 S Baltimore St<br>Dillsburg, PA 17019             | dillsburg<br>@dillsbur<br>g.com               | (717) 432-<br>9969 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 9  | Dover              | Borough  | Linford<br>Bledsoe    | 46 Butter Rd<br>Dover, PA 17315                       | lbledsoe<br>overboro<br>@comcast<br>.net      | (717) 292-<br>6530 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 10 | Dover              | Township   | Laurel A<br>Oswalt    | 2480 W Canal Rd<br>Dover, PA 17315                    | laoswalt@<br>dovertow<br>nship.org            | (717) 292-<br>3634 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 11 | East Hopewell      | Township   | Martha J<br>Miller    | 8916 Hickory Rd<br>Felton, PA 17322                   | ehopetwp<br>@verizon.<br>net                  | (717) 993-<br>6529 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 12 | East<br>Manchester | Township   | David Gentzler        | 5080 N Sherman St Ext<br><br>Mt Wolf, PA 17347        | emantwp<br>@comcast<br>.net                   | (717) 266-<br>6735 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 13 | East Prospect      | Borough  | Mindy K<br>Barshinger | PO Box 334<br>East Prospect, PA 17317                 | epboro@<br>netzero.n<br>et                    | (717) 252-<br>0177 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 14 | Fairview           | Township   | Donald Martin<br>III  | 599 Lewisberry Rd<br>New Cumberland, PA<br>17070-2399 | donmartin<br>@twp.fair<br>view.pa.u<br>s      | (717) 901-<br>5210 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 15 | Fawn Grove         | Borough  | Cathy E<br>Kirkwood   | PO Box 131<br>Fawn Grove, PA 17321                    | fawngrov<br>eborough<br>@zoomint<br>ernet.net | (717) 382-<br>4153 | Y                         | Y   | Y                            | Y  |                            | Y                               |



**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC           | Mailing Address                          | Email                          | Phone          | Requirements Met (Y/N)    |   |                              |  |                            |                                 |
|----|-------------------|--|--------------------|--|--------------------------------|----------------|---------------------------|---|------------------------------|--|----------------------------|---------------------------------|
|    |                   |  |                    |  |                                |                | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>n & Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require<br>ments |
| 16 | Fawn              | Township   | Amy L Mottram      | PO Box 229<br>New Park, PA 17352-0229    | fawntwp@yahoo.com              | (717) 382-4834 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 17 | Felton            | Borough  | Joy Flinchbaugh    | 88 Main St<br>Felton, PA 17322           | feltonboroughoffice@gmail.com  | (717) 246-6493 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 18 | Franklin          | Township   | Teresa Adams       | 150 Century Ln<br>Dillsburg, PA 17019    | franklintwp@pa.net             | (717) 432-3773 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 19 | Franklintown      | Borough  | Kelly Kunkle       | PO Box 88<br>Franklintown, PA 17323-0088 | FTOWNBORO@COMCAST.NET          | (717) 432-4047 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 20 | Glen Rock         | Borough  | Ann E Merrick      | PO Box 116<br>Glen Rock, PA 17327        | glenrockborough@comcast.net    | (717) 235-3206 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 21 | Goldsboro         | Borough  | Lee V Fishel       | PO Box 14<br>Etters, PA 17319            | Goldsborough@comcast.net       | (717) 938-3456 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 22 | Hallam            | Borough  | Sharon Dupler      | 250 W Beaver St<br>Hallam, PA 17406      | secretary@hallamborough.com    | (717) 755-0810 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 23 | Hanover           | Borough  | Michael R Bowersox | 44 Frederick St<br>Hanover, PA 17331     | mbowersox@hanoverboroughpa.gov | (717) 637-3877 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 24 | Heidelberg        | Township   | Norma Markle       | 6424 York Rd<br>Spring Grove, PA 17362   | heidelbergtwp@earthlink.net    | (717) 225-6606 | Y                         | Y   | Y                            | Y  |                            | Y                               |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC         | Mailing Address                                | Email                              | Phone          | Requirements Met (Y/N)    |   |                              |  |                            |                                 |
|----|-------------------|--|------------------|--|------------------------------------|----------------|---------------------------|---|------------------------------|--|----------------------------|---------------------------------|
|    |                   |  |                  |  |                                    |                | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require<br>ments |
| 25 | Hellam            | Township   | Corina Mann      | 44 Walnut Springs Rd<br>York, PA 17406         | cmann@hellamtownship.com           | (717) 434-1300 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 26 | Hopewell          | Township   | Kristy Smallwood | PO Box 429<br>Stewartstown, PA 17363           | kspevak@hopewelltownship.com       | (717) 993-2027 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 27 | Jackson           | Township   | William J Conn   | 439 Roth's Church Rd<br>Spring Grove, PA 17362 | manager@jacksontwp.org             | (717) 225-5661 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 28 | Jacobus           | Borough  | Cynthia M Ferree | 126 N Cherry Ln<br>Jacobus, PA 17407-1000      | jacobusborough@verizon.net         | (717) 428-1752 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 29 | Jefferson         | Borough  | Janny Graham     | PO Box 146<br>Codorus, PA 17311                | jeffersonboro@comcast.net          | (717) 229-0545 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 30 | Lewisberry        | Borough  | Mackensie Greene | PO Box 186<br>Lewisberry, PA 17339             | boro.manager@lewisberryborough.org | (717) 938-3596 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 31 | Loganville        | Borough  | Norma J Duttera  | PO Box 88<br>Loganville, PA 17342              | loganvilleborough@yahoo.com        | (717) 428-3938 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 32 | Lower Chanceford  | Township   | Susan M Wiley    | 4120 Delta Rd<br>Airville, PA 17302            | lctwp@zominternet.net              | (717) 862-3589 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 33 | Lower Windsor     | Township   | Sande Cunningham | 2425 Craley Rd<br>Wrightsville, PA 17368       | Townshipmgr@lowerwindsor.com       | (717) 244-6813 | Y                         | Y   | Y                            | Y  |                            | Y                               |

**MULTI-JURISDICTION SUMMARY SHEET**

| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC             | Mailing Address                                 | Email                                    | Phone              | Requirements Met (Y/N)    |   |                              |  |                            |                                 |
|----|-------------------|--|----------------------|---|--|--------------------|---------------------------|---|------------------------------|--|----------------------------|---------------------------------|
|    |                   |  |                      |   |  |                    | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require<br>ments |
| 34 | Manchester        | Borough  | Judith Hilliard      | 225 S Main St<br>Manchester, PA 17345           | jrh@manc<br>hesterbor<br>ough.com        | (717) 266-<br>1022 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 35 | Manchester        | Township   | Timothy R<br>James   | 3200 Farmtrail Rd<br>York, PA 17406             | t.james@<br>mantwp.c<br>om               | (717) 764-<br>4646 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 36 | Manheim           | Township   | Loren Riebling       | 5191 Wool Mill Road<br>Glennville,PA 17329-9464 | ldrmanhei<br>m@comc<br>ast.net           | (717) 229-<br>2862 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 37 | Monaghan          | Township   | Linda L Altland      | 202 S York Rd<br>Dillsburg, PA 17019            | monagha<br>ntownship<br>@comcast<br>.net | (717) 697-<br>2132 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 38 | Mt Wolf           | Borough  | Steven Kehler        | PO Box 458<br>Mt Wolf, PA 17347                 | office@M<br>tWolfBoro<br>ugh.com         | (717) 266-<br>3211 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 39 | New Freedom       | Borough  | T. L. Crawford       | 49 E High St<br>New Freedom, PA 17349           | nfboro@n<br>fdc.net                      | (717) 235-<br>2337 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 40 | New Salem         | Borough  | Andrew<br>Shaffer    | PO Box 243<br>York New Salem, PA<br>17371       | newsalem<br>boro@gm<br>ail.com           | (717) 739-<br>6053 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 41 | Newberry          | Township   | Donald Keener        | 1915 Old Trail Rd<br>Etters, PA 17319           | dkeener@<br>newberryt<br>wp.com          | (717) 938-<br>6992 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 42 | North Codorus     | Township   | Sharon M<br>Kerchner | 1986 Stoverstown Rd<br>Spring Grove, PA 17362   | nctmanag<br>er@comc<br>ast.net           | (717) 225-<br>4812 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 43 | North Hopewell    | Township   | Kerrie Ebaugh        | 13081 High Point Rd<br>Felton, PA 17322         | northhop<br>ewelltp<br>@hotmail.<br>com  | (717) 246-<br>2398 | Y                         | Y   | Y                            | Y  |                            | Y                               |

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| #  | Jurisdiction Name | Jurisdiction Type<br>(city/borough/<br>township/<br>village, etc.) | Plan POC               | Mailing Address  | Email  | Phone              | Requirements Met (Y/N)    |   |                              |  |                            |                                 |
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| 44 | North York        | Borough  | Brittany Reed          | 350 E 6th Ave<br>York, PA 17404                              | boroughof<br>northyork<br>_905@co<br>mcast.net | (717) 845-<br>3976 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 45 | Paradise          | Township   | Christine M<br>Mentzer | 82 Beaver Creek Rd<br>Abbottstown, PA 17301                  | paratwp@<br>comcast.n<br>et                    | (717) 259-<br>0385 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 46 | Peach Bottom      | Township   | Catherine<br>Bilger    | 6880 Delta Rd Ste 3<br>Delta, PA 17314                       | pbtwp@z<br>oominter<br>net.net                 | (717) 456-<br>5083 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 47 | Penn              | Township   | Kristina J<br>Rodgers  | 20 Wayne Ave<br>Hanover, PA 17331                            | pennadmi<br>n@comca<br>st.net                  | (717) 632-<br>7366 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 48 | Railroad          | Borough  | Jean M<br>Greene       | PO Box 56<br>Railroad, PA 17355                              | railroadbo<br>rough@co<br>mcast.net            | (717) 235-<br>5042 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 49 | Red Lion          | Borough  | Dianne Price           | PO Box 190<br>Red Lion, PA 17356                             | dprice@re<br>dlionpa.o<br>rg                   | (717) 244-<br>3475 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 50 | Seven Valleys     | Borough  | Cheryl D Bahn          | PO Box 277<br>Seven Valleys, PA 17360                        | thebahns<br>1@verizo<br>n.net                  | (717) 792-<br>1261 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 51 | Shrewsbury        | Borough  | Cindy L Bosley         | 35 W Railroad Ave<br>Shrewsbury, PA 17361                    | cbosley@<br>shrewsbur<br>yborough.<br>org      | (717) 235-<br>4371 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 52 | Shrewsbury        | Township   | Todd A Zeigler         | 11505 Susquehanna Trail<br>South Glen Rock, PA<br>17327-9067 | manager<br>@shrewsb<br>urytowns<br>hip.org     | (717) 235-<br>3011 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 53 | Spring Garden     | Township   | Gregory J<br>Maust     | 558 S Ogontz St<br>York, PA 17403                            | gmaust@s<br>gtwp.org                           | (717) 848-<br>2858 | Y                         | Y   | Y                            | Y  |                            | Y                               |

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| 54 | Spring Grove      | Borough  | Andrew Shaffer         | 1 Campus Ave<br>Spring Grove, PA 17362                     | manager@springgroveboro.com     | (717) 225-5791 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 55 | Springettsbury    | Township   | Benjamin Marchant      | 1501 Mt Zion Rd<br>York, PA 17402                          | Ben.Marchant@springettsbury.com | (717) 757-3521 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 56 | Springfield       | Township   | Barbara E Sweitzer     | 9211 Susquehanna Trail<br>South Seven Valleys, PA<br>17360 | barbspringfield9211@comcast.net | (717) 428-1413 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 57 | Stewartstown      | Borough  | Melissa Matthews       | 6 N Main St Ste A<br>Stewartstown, PA 17363                | melissa@stewartstown.org        | (717) 993-2963 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 58 | Warrington        | Township   | Rebecca Knaub-Bradshaw | 3345 Rosstown Rd<br>Wellsville, PA 17365                   | office@warringtonwp.org         | (717) 432-9082 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 59 | Washington        | Township   | Diane Deardorff        | 14 Creek Rd<br>East Berlin, PA 17316                       | washtwp@comcast.net             | (717) 432-9814 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 60 | Wellsville        | Borough  | Stephanie L Bruce      | PO Box 115<br>Wellsville, PA 17365                         | wellsvil@ptd.net                | (717) 432-3395 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 61 | West Manchester   | Township   | Kelly Kelch            | 380 East Berlin Rd<br>York, PA 17408                       | kkelch@wmtwp.com                | (717) 792-3505 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 62 | West Manheim      | Township   | Marc Woerner           | 2412 Baltimore Pike<br>Hanover, PA 17331                   | mwoerner@westmanheimtwp.com     | (717) 632-0320 | Y                         | Y   | Y                            | Y  |                            | Y                               |

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| 63 | West York         | Borough  | Linda Diaz          | 1381 W Poplar St<br>York, PA 17404       | linda.diaz<br>@wyboro<br>ugh.org              | (717) 846-<br>8889      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 64 | Windsor           | Borough  | Donna Martin        | PO Box 190<br>Windsor, PA 17366          | djmwinds<br>or@comc<br>ast.net                | (717) 244-<br>6615      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 65 | Windsor           | Township   | Jennifer<br>Gunnert | 1480 Windsor Rd<br>Red Lion, PA 17356    | jgunnet@<br>windsort<br>wp.com                | (717) 244-<br>3512      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 66 | Winterstown       | Borough  | Kerrie Ebaugh       | 12244 Winterstown Rd<br>Felton, PA 17322 | info@wint<br>erstowbn<br>orough.co<br>m       | (717) 825-<br>6463      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 67 | Wrightsville      | Borough  | Tammie Hoff         | PO Box 187<br>Wrightsville, PA 17368     | secretary<br>@wrights<br>villeboro<br>ugh.com | (717) 252-<br>2768 x 13 | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 68 | Yoe               | Borough  | Diana Dvorak        | 150 N Maple St<br>Yoe, PA 17313          | Secretary<br>@YoeBor<br>ough.org              | (717) 244-<br>5904      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 69 | York              | City   | Cheryl<br>Wormley   | PO Box 509<br>York, PA 17405             | cwormley<br>@yorkcity<br>.org                 | (717) 849-<br>2280      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 70 | York Haven        | Borough  | Pamela Billett      | PO Box 169<br>York Haven, PA 17370       | yorkhaven<br>borough<br>@comcast<br>.net      | (717) 266-<br>7261      | Y                         | Y   | Y                            | Y  |                            | Y                               |
| 71 | York              | Township   | Gary Milbrand       | 190 Oak Rd<br>Dallastown, PA 17313       | g.milbran<br>d@yorkto<br>wnship.co<br>m       | (717) 741-<br>3861      | Y                         | Y   | Y                            | Y  |                            | Y                               |

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|----|-------------------|--|---------------|---------------------------------|-----------------------------|--------------------|---------------------------|---|------------------------------|--|----------------------------|----------------------------------|
|    |                   |  |               |                                 |                             |                    | A.<br>Planning<br>Process | B.<br>Hazard<br>Identificatio<br>& Risk<br>Assessment | C.<br>Mitigation<br>Strategy | D.<br>Plan<br>Review,<br>Evaluation<br>&<br>Implement<br>ation | E.<br>Plan<br>Adoptio<br>n | F.<br>State<br>Require-<br>ments |
| 72 | Yorkana           | Borough  | Juanita Smith | 71 Main St<br>Yorkana, PA 17406 | Yorkana7<br>1@yahoo.<br>com | (717) 755-<br>6780 | Y                         | Y   | Y                            | Y  |                            | Y                                |

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# **APPENDIX H – HAZARD MITIGATION PLANNING PERSPECTIVES**

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## York County Hazard Mitigation Plan 2018 Update

By Roy Livergood, Senior Planner

### What is Hazard Mitigation and Hazard Mitigation Planning?

The Federal Emergency Management Agency (FEMA) defines Hazard Mitigation as “any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. The primary purpose of mitigation planning is to systematically identify policies, actions, and tools that can be used to implement those actions.” Pre-disaster mitigation actions are those taken in advance of a hazard event to interrupt the cycle of damage, reconstruction and repeated damage. Successful mitigation actions can be a cost effective means of reducing future losses.

### Why do we need a hazard mitigation Plan?

The Disaster Mitigation Act of 2000, (DMA 2000), requires the development and submission of a hazard mitigation plans by not only the State, but also local governments (counties/municipalities) as a condition of receiving various types of pre- and post- disaster assistance for mitigation efforts as identified under the Stafford Act. The three (3) main programs providing hazard mitigation assistance include:

### Hazard Mitigation Grant Program (HMGP)

The HMGP provides funding for long-term hazard mitigation measures following major disaster declarations. Funding is available to implement projects in accordance with State, territorial, federally-recognized tribal, and local priorities.

### Pre-Disaster Mitigation (PDM)

The PDM program provides funds on an annual basis for hazard mitigation planning and the implementation of mitigation projects. FEMA provides funding for measures to reduce or eliminate overall risk from natural hazards.

### Flood Mitigation Assistance (FMA)

The FMA program provides funds on an annual basis so that measures can be taken to reduce or eliminate the risk of flood damage to buildings insured under the National Flood Insurance Program. The FMA program for Fiscal Year 2013 and beyond includes provisions to mitigate Severe Repetitive Loss and Repetitive Loss properties.

More information on these grants is available at: <https://www.fema.gov/hazard-mitigation-assistance>.



Beyond grant eligibility, the Hazard Mitigation Plan identifies hazards and actions that can be used by municipalities in land use planning, emergency

management planning, and public awareness. Other organizations, such as the York County Planning Commission (YCPC), are also using information contained in the Plan for planning outreach and consideration of grant request and project funding.

### **What Requirements Does This Place on my Municipality?**

The York County Hazard Mitigation Plan 2018 Update is an awareness document that identifies potential hazards and actions to deal with those hazards. It is a multi-hazard (natural and human-made) and multi-municipal (information provided at municipal level for all 72 municipalities) Plan guided by a Local Planning Team and based on input from York County municipalities, adjacent counties, the public, and related organizations. The only requirement by FEMA, is for your municipality to recognize the Plan by adopting it via resolution. This adoption places no requirements on the municipality to implement the actions identified. However, it is hoped that municipalities will take the information into consideration as part of land use planning, emergency management planning, and outreach to residents, as well as, strive to address hazard mitigation when feasible.

### **What information is provided by the Plan?**

Section 1 introduces the Plan. Section 2 provides a brief community profile which addresses geography/environment, population/demographics and land use/development. Section 3 gives a description of the planning process used to create the Plan. Section 4 identifies the hazards affecting the County and profiles and ranks them. Section 5 summarizes the tools available to address hazards and assesses municipal capability implement hazard mitigation. Section 6 identifies goals, objectives, and actions to address the identified hazards. Section 7 identifies how the Plan will implemented, evaluated, and updated. Section 8 describes adoption of the Plan.



### **What Hazards are identified for York County?**

There are 23 hazards identified by the Plan. The hazards are ranked by probability, impact, spatial extent, warning time, and duration to arrive a risk factor of high, moderate or low. In descending order, hazards ranked as high include nuclear incidents, flood/flash flood/ice jam, winter storms, environmental hazards, radon exposure, urban fires/explosions, pandemic and infectious disease, extreme temperatures, and terrorism. Hazards ranked as moderate include, in descending order, mass food and animal feed contamination, hurricane/tropical storm/nor'easter, tornado/wind-storm, dam failure, hailstorm, and wildfire. Hazards ranked as low, in descending order, include lighting strike, drought, levee failure, subsidence/sinkhole, invasive species, earthquake, civil disturbance, and landslide.

### **What are the goals of the Plan?**

Four goals are identified by the Plan and include reducing the possibility of injury or death to County residents and potential losses or damages from the identified hazards, encouraging a

coordinated effort in dealing with hazard mitigation, promoting proper planning and disaster resistant development, and increasing public understanding, support, and demand for hazard mitigation. In support of these goals there are 10 objectives and 131 mitigation actions identified that cover all 72 municipalities and the 23 identified hazards.

For more information, please contact:

Roy Livergood at (717) 771-9870 ext.1756 or [rlivergood@ycpc.org](mailto:rlivergood@ycpc.org)

Additionally, the Plan and related information are available on the YCPC website at:

<http://www.ycpc.org/environment/hazard-mitigation-planning-and-implementation.html>